TRACY HILLS SPECIFIC PLAN

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

VOLUME II

DECEMBER 2014

## APPENDIX H-4

HIGHWAY RAMP MERGE/DIVERGE ANALYSIS (HCS), DATED FALL 2014

		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSH	EET				
General	Inform				Site Infor						
Analyst Agency or C		Kimle	ey-Horn & Asso		eeway/Dir of Tr inction	avel	I-580 E I-580/0	EB Corral Hollov	v Road		
ate Perforr		8/14/			ırisdiction						
nalysis Tim		AM P		Ar	nalysis Year		Existin	g			
	cription	Tracy Hills Spe	ecific Plan								
nputs			Fra avvav Nivas	hanaf Lanaa N						1	
pstream A	dj Ramp		1	ber of Lanes, N	2					Downstre	am Adj
Yes	On		Ramp Numbe	•	1					Ramp	
_ 103				ane Length, L <sub>A</sub>	250					☐Yes	On
✓ No	Off			ane Length L <sub>D</sub>						☑ No	Off
			Freeway Volui		178						ft
ıp =	ft		Ramp Volume		41					L <sub>down</sub> =	IL
<sub>u</sub> =	veh/h		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
u	VC11/11		Ramp Free-Fl	ow Speed, S <sub>FR</sub>	55.0						
onvers	sion to	pc/h Und	der Base (	Conditions							
(pc/h	1)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_{HV}$	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
reeway		178	0.92	Level	18	0	0.	.917	1.00	<u> </u>	211
Ramp		41	0.70	Level	11	0	_	.948	1.00		62
JpStream											
ownStrear	m										
-4i4	ion of	<u> </u>	Merge Areas			Fatimat		D	iverge Areas		
stimat	ion or					Estimat	ion c				
		$V_{12} = V_{F}$	(P <sub>FM</sub> )					V <sub>12</sub> = \	$V_R + (V_F - V_F)$	R)P <sub>FD</sub>	
<sub>EQ</sub> =		(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(	Equation 13	-12 or 13-1	13)
FM =		1.000	using Equat	ion (Exhibit 13-6)		P <sub>FD</sub> =		U	sing Equation	on (Exhibit 1	3-7)
12 =		211 p	c/h			V <sub>12</sub> =		p	c/h		
<sub>3</sub> or V <sub>av34</sub>		0 pc/h	n (Equation	13-14 or 13-17)	)	$V_3$ or $V_{av34}$		p	c/h (Equation	13-14 or 13-	17)
s V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 2,700	pc/h? Yes	s 🗹 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 2,7	'00 pc/h? [	]Yes □No		
s V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5 *	V <sub>12</sub> /2 □ Yes				Is V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 1.5	5 * V <sub>12</sub> /2 $\square$	]Yes □No		
Yes,V <sub>12a</sub> =	=	pc/h ( 13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		c/h (Equatio -19)	on 13-16, 1	3-18, or
apacit	y Ched					Capacit			-19)		
		Actual	С	apacity	LOS F?			Actual	Ca	pacity	LOS F?
						V <sub>F</sub>			Exhibit 13	-8	
V <sub>F</sub> (		273	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13	-8	
- F(	5	2.0	Exhibit 10 0			V <sub>R</sub>			Exhibit 13	3-	
									10		
low En	tering		fluence A		\" \ " \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Flow Er			ge Influei		
\/		Actual	1	Desirable	Violation?	\/	+	Actual	Max Des	sirable T	Violation?
V <sub>R1</sub>		273	Exhibit 13-8	4600:All	No	V <sub>12</sub>	<u> </u>	1	Exhibit 13-8		<u> </u>
			nination (i			<del>-</del>			erminatio		( <del>F</del> )
			0.0078 V <sub>12</sub> - 0.0	JU627 L <sub>A</sub>					0086 V <sub>12</sub> - 0	1.009 L <sub>D</sub>	
	0 (pc/mi/li					.,	oc/mi/l				
	(Exhibit 1							13-2)			
peed L	Determ	ination				Speed L	Deter	minatio	n		
s = 0.	299 (Exib	it 13-11)				$D_s = (E$	Exhibit 1	13-12)			
	1.6 mph (E	Exhibit 13-11)				S <sub>R</sub> = m	nph (Ext	nibit 13-12)			
	/A mph (E	xhibit 13-11)				$S_0 = m$	iph (Ext	nibit 13-12)			
= 61		xhibit 13-13)				S = m	nph (Ext	nibit 13-13)			
- 0		,					/				

		RAMP	S AND RAI	//P JUNCTI	IONS WOR	RKSHEE	T			
General Infor	mation	10 1111		Site Infor						
Analyst		ey-Horn & Asso	ciates F	reeway/Dir of Tr		580 EB				
Agency or Company		,		lunction			rral Hollow Road			
Date Performed	8/14/	2014	J	lurisdiction						
Analysis Time Period	d AM P	Peak	A	Analysis Year	Ex	xisting				
Project Description	Tracy Hills Spe	ecific Plan								
Inputs										
Upstream Adj R	Ramp	1 '	ber of Lanes, N	2					wnstrea	m Adj
□Ves □	On	Ramp Numbe		1				Rai	mp	
☐Yes	_I ON	Acceleration L	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration L	ane Length L <sub>D</sub>	200					No	Off
		Freeway Volu	me, V <sub>F</sub>	178					INO	
L <sub>up</sub> = f	t	Ramp Volume	, V <sub>D</sub>	58				L <sub>dov</sub>	<sub>vn</sub> =	ft
'		1	-Flow Speed, S <sub>FF</sub>	70.0						
V <sub>u</sub> = v	eh/h	•	ow Speed, S <sub>FR</sub>	35.0				$V_{D}$	=	veh/h
Camuraraian 4	/b		111	33.0						
Conversion t	<i>o pe/ii one</i> 	der base (	Jonailions	1	1	I				
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	$f_{HV}$	f <sub>p</sub>	v =	V/PHF	$x f_{HV} x f_{p}$
Freeway	178	0.92	Level	18	0	0.917	1.00		21	1
Ramp	58	0.69	Level	19	0	0.913	1.00		92	
UpStream				1						
DownStream										
		Merge Areas					Diverge Are	as		
Estimation of	f v <sub>12</sub>				Estimatio	on of v <sub>12</sub>	2			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )				V	12 = V <sub>R</sub> + (V <sub>F</sub>	- V <sub>D</sub> )P <sub>r</sub>	-D	
L <sub>EQ</sub> =	12 1	tion 13-6 or	13-7)		L <sub>EQ</sub> =		(Equation		_	
-EQ P <sub>FM</sub> =		Equation (E	•		P <sub>FD</sub> =		1.000 using		-	
	_	Lquation (L	Allibit 13-0)				_	⊏qua⊪	OII (EXIIID	11 13-1)
V <sub>12</sub> =	pc/h	F " 10	44 40 47		V <sub>12</sub> =		211 pc/h			40.4=)
V <sub>3</sub> or V <sub>av34</sub>			-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>	0.700 #	0 pc/h (Equ		3-14 or	13-17)
Is $V_3$ or $V_{av34} > 2,70$							h? ☐ Yes ☑			
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5					Is V <sub>3</sub> or V <sub>av34</sub>	> 1.5 * V <sub>12</sub> /	2 ☐ Yes ☑			
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =		pc/h (Equa	tion 13-	-16, 13- <sup>-</sup>	18, or 13-
Capacity Che	13-19)				Capacity	Chocks	<u>19)</u>			
Capacity Cite	1	1 0	on a city	LOS F?	Capacity			Canaci	4	LOS F?
	Actual	<del>l ĭ</del>	apacity	LUSF?	\/		tual Exhibit	Capaci		1
					V <sub>F</sub>	21			4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$ -	V <sub>R</sub> 11			4800	No
					$V_R$	9:	2 Exhibit	13-10	2000	No
Flow Entering	g Merge In	fluence A	rea		Flow Ente	ering Di	verge Influ	ence	Area	
	Actual	T .	Desirable	Violation?		Actual	Max De			Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	211	Exhibit 13	-8 44	100:All	No
Level of Serv	ice Detern	nination (i	f not F)			Service	Determina	tion (i	f not F	<del>-</del> )
$D_R = 5.475 + 0.00$							+ 0.0086 V <sub>12</sub>	_		•
D <sub>R</sub> = (pc/mi/ln	• •	- 12	- A		L '	(pc/mi/ln)			Ŋ	
	,				I ***	.,				
LOS = (Exhibit					<u>`</u>	Exhibit 13				
Speed Deterr	nination				Speed De					
$M_S = (Exibit 1)$	3-11)				1 *	86 (Exhibit				
S <sub>R</sub> = mph (Ext	nibit 13-11)				$S_{R} = 57.8$	mph (Exh	ibit 13-12)			
	nibit 13-11)				$S_0 = N/A$	mph (Exhi	ibit 13-12)			
	nibit 13-13)				S = 57.8	B mph (Exh	ibit 13-13)			
. ,		All Rights Resen	ved.		HCS2010 <sup>™</sup>			Gener	ated: 9/1/2	2014 1:11 P

		RAI	<u>MPS AND</u>	RAMP JUN	<u>CTIONS W</u>	<u>ORKSH</u>	EET				
eneral	Inform	nation			Site Infor	mation					
nalyst gency or C	ompany	Kimle	ey-Horn & Asso		eeway/Dir of Tr nction	avel	I-580 W I-580/C	VB Corral Hollov	v Road		
ate Perforr		8/14/			risdiction						
nalysis Tim		AM P		Ar	nalysis Year		Existing	9			
	cription	Tracy Hills Spe	ecific Plan								
nputs			Fra avvav Nivra	hanaf Lanas N						1	
pstream A	dj Ramp		•	ber of Lanes, N	2					Downstre	am Adj
Yes	On		Ramp Numbe	•	1					Ramp	
_ 165				ane Length, L <sub>A</sub>	400					☐Yes	On
✓ No	Off			ane Length L <sub>D</sub>						☑ No	Off
			Freeway Volu	me, V <sub>F</sub>	1689					l.	
<sub>.p</sub> =	ft		Ramp Volume	$, V_R$	325					L <sub>down</sub> =	ft
_	veh/h		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
=	veii/ii		Ramp Free-Fl	ow Speed, S <sub>FR</sub>	55.0					I.D	
onvers	sion to	pc/h Und	der Base	Conditions							
(pc/h	1)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	x f <sub>HV</sub> x f <sub>p</sub>
reeway		1689	0.92	Level	18	0	0.9	917	1.00		2001
Ramp		325	0.72	Level	13	0	0.9	939	1.00		481
JpStream							_				
)ownStrear	m		Merge Areas			-			iverge Areas		
stimat	ion of	V	Weige Aleas			Estimat	ion o	fv	iverge Areas		
Stimat	1011 01		/B \			Lotimat				,5	
		$V_{12} = V_{F}$							/ <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>		
<u>=</u> Q =			ation 13-6 or			L <sub>EQ</sub> =			Equation 13		
FM =				ion (Exhibit 13-6)		P <sub>FD</sub> =			sing Equation	on (Exhibit 1	3-7)
12 =		2001				V <sub>12</sub> =		•	c/h		
<sub>3</sub> or V <sub>av34</sub>				13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			oc/h (Equation		17)
		pc/h? Yes							]Yes □No		
s V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5 *	V <sub>12</sub> /2 □ Yes				Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5		]Yes □No		
Yes,V <sub>12a</sub> =	=	pc/h ( 13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		ic/h (Equatio i-19)	on 13-16, 1	3-18, or
apacit	v Ched		<u>'</u>			Capacit	v Che		-10)		
		Actual	С	apacity	LOS F?		Ť	Actual	Ca	pacity	LOS F?
						V <sub>F</sub>			Exhibit 13-	<u> </u>	
V		2482	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>D</sub>		Exhibit 13-	.8	
V <sub>FO</sub>	ט	£40Z	LAHIDIL 13-0		INU		- '\		Exhibit 13		+
						V <sub>R</sub>			10		
low En	tering		fluence A		1	Flow En			ge Influer		
		Actual		Desirable	Violation?	<del> </del>		Actual	Max Des	irable	Violation?
V <sub>R1</sub>		2482	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		<u></u>
			nination (			-			terminatio		<i>F</i> )
D <sub>R</sub> =	5.475 + (	0.00734 v <sub>R</sub> + 0	0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>			D <sub>R</sub> = 4	1.252 + 0.	0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
R = 22	2.1 (pc/mi/	ln)				$D_R = (p$	oc/mi/lr	n)			
OS = C	(Exhibit 1	3-2)				LOS = (E	Exhibit	13-2)			
peed L	Determ	ination				Speed L	Deter	minatio	n		
s = 0.	324 (Exib	t 13-11)				D <sub>s</sub> = (E	xhibit 1	3-12)			
	•	Exhibit 13-11)				1	ph (Exh	ibit 13-12)			
		,				I ''		nibit 13-12)			
_= N	/A mnh /⊢	X[]][]]] 1.5-111									
	/A mph (E ).9 mph (E	Exhibit 13-11)				ľ		nibit 13-13)			

		RAMP	S AND RAN	MP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation		<u> </u>	Site Infor						
Analyst Agency or Company Date Performed	Kimle	ey-Horn & Asso /2014	J	reeway/Dir of Tr unction urisdiction	avel	I-580 W I-580 ar		Hollow Road		
Analysis Time Period				nalysis Year		Existing	ı			
	Tracy Hills Sp					LXIOUII				
Inputs										
Upstream Adj R	amp	Freeway Num Ramp Numbe	ber of Lanes, N	2					Downstrea	am Adj
□Yes □	On	1 '	ane Length, L <sub>A</sub>	ı					Ramp    Yes	□On
☑ No □	Off	Deceleration I Freeway Volu	ane Length L <sub>D</sub>	200 1886					✓No	Off
L <sub>up</sub> = fi	t	Ramp Volume	e, V <sub>R</sub>	197					L <sub>down</sub> =	ft
V <sub>u</sub> = ve	eh/h		-Flow Speed, $S_{FF}$ ow Speed, $S_{FR}$	70.0 35.0					V <sub>D</sub> =	veh/h
Conversion to	pc/h Un	der Base	Conditions							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_{HV}$	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1886	0.92	Level	18	0	0.9	917	1.00	22	235
Ramp	197	0.77	Level	14	0	0.9	935	1.00	2	74
UpStream										
DownStream		Manna Annaa			ļ			\		
Estimation of		Merge Areas			Ectimat	iono		Diverge Areas		
Estimation of	V <sub>12</sub>				Estimat	1011 0				
	$V_{12} = V_{F}$	(P <sub>FM</sub> )					V <sub>12</sub> =	$V_R + (V_F - V_F)$	R)P <sub>FD</sub>	
L <sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(	Equation 13-1	2 or 13-13	5)
P <sub>FM</sub> =	using	Equation (	Exhibit 13-6)		P <sub>FD</sub> =		1.	000 using Equ	uation (Exh	ibit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		22	235 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		$V_3$ or $V_{av34}$		0	pc/h (Equatio	n 13-14 o	r 13-17)
Is $V_3$ or $V_{av34} > 2,70$	0 pc/h?	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 2,70	00 pc/h? [	∃Yes <b>☑</b> No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *	'V <sub>12</sub> /2	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5	* V <sub>12</sub> /2	∃Yes <b>☑</b> No		
If Yes,V <sub>12a</sub> =	pc/h ( 13-19)	Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub> =		19	c/h (Equation 9)	13-16, 13	-18, or 13-
Capacity Che	cks				Capacit	y Che	ecks			
	Actual	C	apacity	LOS F?			Actual	<del></del>	pacity	LOS F?
					$V_{F}$		2235	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	1961	Exhibit 13-8	4800	No
					$V_R$		274	Exhibit 13-10	2000	No
Flow Entering	Merae Ir	fluence A	rea		1		a Dive	rge Influenc	ce Area	-
	Actual	i	Desirable	Violation?		_	ctual	Max Desirab		Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	2	235	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)			f Serv	ice De	terminatio	n (if not	<del> </del>
$D_R = 5.475 + 0.1$								.0086 V <sub>12</sub> - 0.0	•	,
D <sub>R</sub> = (pc/mi/ln	• • •	12	A		L	к 1.7 (рс/		12	ט ייי	
LOS = (Exhibit '	,				I	٠.	oit 13-2)			
,	•									
Speed Detern					Speed L					
M <sub>S</sub> = (Exibit 13	*				1 *	-	khibit 13-	*		
	ibit 13-11)				1	-	(Exhibit	•		
•	ibit 13-11)				$S_0 = N$	/A mph	(Exhibit	13-12)		
S = mph (Exh	ibit 13-13)				S = 5	7.3 mph	(Exhibit	13-13)		
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		INIP S AIND	RAMP JUN			:EI				
<u>senerai into</u>	rmation			Site Infor	mation					
nalyst	Kim	ley-Horn & Asso	ciates Fr	eeway/Dir of Tr	avel	I-580 EB				
gency or Compar	ny		Ju	nction	1	I-580/Corral	Hollow F	Road		
ate Performed		1/2014	Ju	risdiction						
nalysis Time Peri		Peak	Ar	nalysis Year		Existing				
roject Description	Tracy Hills Sp	pecific Plan								
nputs		1								
Jpstream Adj Ram	ıp	Freeway Numb	er of Lanes, N	2					Downstre	am Adj
		Ramp Number	of Lanes, N	1					Ramp	
Yes C	On	Acceleration L	ane Length, L <sub>A</sub>	250					Yes	On
✓ No 🔲 C	∖ff	Deceleration L	ane Length L							
¥ NO L	ווע	Freeway Volur		1433					✓ No	Off
<sub>up</sub> = ft		Ramp Volume	'	333					L <sub>down</sub> =	ft
up -			11						401111	
u = veh	/h		Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
		Ramp Free-Flo	110	55.0						
Conversion	<del></del>	der Base (	Conditions	Y		_				
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	$f_{HV}$		f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>n</sub>
reeway	1433	0.92	Level	18	0	0.917	$\dashv$	1.00		698
Ramp	333	0.92	Level	6	0	0.917	+	1.00		399
UpStream	333	0.00	Level	U	-	0.971	-	1.00	•	שפט
DownStream		+ +				+				
		Merge Areas				•	Dive	erge Areas		
stimation o	of V <sub>12</sub>	•			Estimati	on of v	2	•		
		(D )						± (\/ \/ '	\D	
_	$V_{12} = V_F$		40.7			<b>v</b> 1		+ (V <sub>F</sub> - V <sub>R</sub> )		٥,
EQ =		uation 13-6 or			L <sub>EQ</sub> =			uation 13-		
P <sub>FM</sub> =	1.000	using Equati	on (Exhibit 13-6)		P <sub>FD</sub> =		usi	ng Equatio	n (Exhibit 13	3-7)
′ <sub>12</sub> =	1698	pc/h			V <sub>12</sub> =		pc/	h		
/ <sub>3</sub> or V <sub>av34</sub>	0 pc	/h (Equation 1	3-14 or 13-17)		$V_3$ or $V_{av34}$		pc/l	n (Equation 1	3-14 or 13-1	7)
s V <sub>3</sub> or V <sub>av34</sub> > 2,	700 pc/h? 🗌 \Upsilon e	es 🗹 No			Is V <sub>3</sub> or V <sub>av3</sub>	<sub>34</sub> > 2,700 pc	/h? 🔲 Y	′es 🗌 No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5	5 * V <sub>12</sub> /2   Ye	es 🗸 No			Is V <sub>3</sub> or V <sub>av3</sub>	<sub>M</sub> > 1.5 * V <sub>12</sub>	/2 🗀 Y	′es □No		
f Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =			h (Equatior	n 13-16, 1	3-18, or
	13-19						13-1	9)		
Capacity Ch	_				Capacity					
	Actual	C	apacity	LOS F?	<u> </u>	Ad	tual		pacity	LOS F?
					$V_{F}$			Exhibit 13-8	3	
$V_{FO}$	2097	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13-8	3	
- FO	2001							Exhibit 13-	-	
					V <sub>R</sub>			10		
		<i>CI</i> 4	roa		Elow En	terina D	iverg	e Influen	ce Area	
Flow Enterii	_				FIOW EII					
	Actual	Max [	Desirable	Violation?		Actual	Ĭ	Max Desi	rable	Violation'
V <sub>R12</sub>	Actual 2097	Max [ Exhibit 13-8	Desirable 4600:All	Violation? No	V <sub>12</sub>	Actual	E	xhibit 13-8		
V <sub>R12</sub>	Actual 2097	Max [ Exhibit 13-8	Desirable 4600:All		V <sub>12</sub>	Actual	E			
V <sub>R12</sub> .evel of Ser	Actual 2097 <b>Vice Deter</b>	Max [ Exhibit 13-8	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of	Actual Service	Dete	xhibit 13-8	n (if not	
V <sub>R12</sub> Level of Ser	Actual 2097 2097 4 0.00734 v R +	Max [ Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of	Actual Service D <sub>R</sub> = 4.252	Dete	xhibit 13-8 <b>rminatio</b>	n (if not	
V <sub>R12</sub> .evel of Ser  D <sub>R</sub> = 5.475	Actual 2097 *Vice Deter + 0.00734 v <sub>R</sub> + /mi/ln)	Max [ Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of  D <sub>R</sub> = (p	Actual Service D <sub>R</sub> = 4.252 c/mi/ln)	<b>Dete</b> : + 0.00	xhibit 13-8 <b>rminatio</b>	n (if not	
$V_{R12}$ Level of Ser $D_R = 5.475$ $D_R = 20.1 \text{ (pc.)}$ $D_R = 20.1 \text{ (pc.)}$ $D_R = 20.1 \text{ (pc.)}$	Actual 2097  *Vice Determ + 0.00734 v <sub>R</sub> + /mi/ln)  viit 13-2)	Max [ Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of  D <sub>R</sub> = (p) LOS = (E	Actual Service  D <sub>R</sub> = 4.252 c/mi/ln) Exhibit 13-2	Dete	xhibit 13-8 <b>rminatio</b>	n (if not	
$V_{R12}$ Level of Ser $D_R = 5.475$ $D_R = 20.1 \text{ (pc.)}$ $D_R = C \text{ (Exhib)}$ Speed Determines	Actual 2097  *Vice Determination Actual 2097  *Vice Determination Actual 2097  **Print	Max [ Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of  D <sub>R</sub> = (p  LOS = (E  Speed D	Actual  Service  D <sub>R</sub> = 4.252  c/mi/ln)  ixhibit 13-2	Dete: + 0.00	xhibit 13-8 <b>rminatio</b>	n (if not	
$V_{R12}$ Level of Ser $D_R = 5.475$ $D_R = 20.1 \text{ (pc.)}$ $D_R = C \text{ (Exhibition of the context)}$	Actual 2097  *Vice Determ + 0.00734 v <sub>R</sub> + /mi/ln)  viit 13-2)	Max [ Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of  D <sub>R</sub> = (p  LOS = (E  Speed D  D <sub>s</sub> = (E:	Actual  Service  D <sub>R</sub> = 4.252  c/mi/ln)  exhibit 13-12)	Dete: 2 + 0.00	xhibit 13-8 <b>rminatio</b>	n (if not	
$V_{R12}$ Level of Ser $D_R = 5.475$ $O_R = 20.1 \text{ (pc)}$ $OS = C \text{ (Exhib}$ Speed Determine $M_S = 0.325 \text{ (Exhib}$	Actual 2097  *Vice Determination Actual 2097  *Vice Determination Actual 2097  **Print	Max I Exhibit 13-8 <b>mination (i</b> 0.0078 V <sub>12</sub> - 0.0	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of  D <sub>R</sub> = (p) LOS = (E  Speed D  D <sub>s</sub> = (E:	Actual  Service  D <sub>R</sub> = 4.252  c/mi/ln)  ixhibit 13-2	Dete: 2 + 0.00	xhibit 13-8 <b>rminatio</b>	n (if not	
$V_{R12}$ Level of Ser $D_R = 5.475$ $D_R = 20.1 \text{ (pc.)}$ $D_R = 0.325  (Exhibition of the proof of $	Actual 2097  **Vice Determ + 0.00734 v <sub>R</sub> + /mi/ln) bit 13-2)  **rmination  xibit 13-11)	Max I Exhibit 13-8 <b>mination (i</b> 0.0078 V <sub>12</sub> - 0.0	Desirable 4600:All <b>f not F)</b>		$V_{12}$ Level of $D_R = (p)$ LOS = (E  Speed D $D_S = (E)$ $D_S = (E)$ $D_S = (E)$	Actual  Service  D <sub>R</sub> = 4.252  c/mi/ln)  exhibit 13-12)	Deter + 0.00 (2) (3-12)	xhibit 13-8 <b>rminatio</b>	n (if not	

		RAMP	S AND RAM	MP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation	1 5 11111		Site Infor			· <b>-</b> ·			
Analyst Agency or Company		ey-Horn & Asso		reeway/Dir of Trunction		I-580 E		Hollow Road		
Date Performed	8/14	/2014		urisdiction		1 000 0	na conan	ionom rioda		
Analysis Time Period	l PM F	Peak	Α	nalysis Year		Existing	]			
Project Description	Tracy Hills Sp	ecific Plan								
Inputs										
Upstream Adj R	amp	Freeway Num Ramp Numbe	ber of Lanes, N	2 1					Downstrea Ramp	am Adj
Yes	On	Acceleration L	ane Length, L <sub>A</sub>	•					Yes	□On
✓ No	Off	Deceleration I Freeway Volu	_ane Length L <sub>D</sub>	200 1433					✓ No	Off
L <sub>up</sub> = ff	t	Ramp Volume	e, V <sub>R</sub>	263					L <sub>down</sub> =	ft
V <sub>u</sub> = ve	eh/h		-Flow Speed, S <sub>FF</sub> low Speed, S <sub>FR</sub>	70.0 35.0					V <sub>D</sub> =	veh/h
Conversion to	n nc/h l ln		111							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1433	0.92	Level	18	0	0.	917	1.00	16	i98
Ramp	263	0.91	Level	8	0	0.	962	1.00	3	01
UpStream										
DownStream										
<b>5</b> - 4i 4i 4		Merge Areas			<b>F</b> . 4:	· · · · ·		Diverge Areas		
Estimation of	· V <sub>12</sub>				Estimat	ion o	t v <sub>12</sub>			
	$V_{12} = V_{F}$	(P <sub>FM</sub> )					V <sub>12</sub> =	· V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	R)P <sub>FD</sub>	
L <sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(	Equation 13-1	2 or 13-13	)
P <sub>FM</sub> =	using	Equation (	Exhibit 13-6)		P <sub>FD</sub> =		1.	000 using Equ	uation (Exhi	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		16	698 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		0	pc/h (Equation	n 13-14 oı	13-17)
Is $V_3$ or $V_{av34} > 2,70$	-		,			<sub>.24</sub> > 2,7		Yes ☑No		,
Is $V_3$ or $V_{av34} > 1.5$ *								☐Yes ☑No		
If Yes,V <sub>12a</sub> =		Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub>	-		c/h (Equation	13-16, 13	-18, or 13-
Capacity Che	cks				Capacit	ty Che	ecks			
•	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
					$V_{F}$		1698	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	1397	Exhibit 13-8	4800	No
. 0					V <sub>R</sub>		301	Exhibit 13-1	0 2000	No
Flow Entering	n Marga Ir	ofluence A	roa		-			rge Influen		1 119
r iow Lincinig	Actual	i	Desirable	Violation?	1 1011 L1		Actual	Max Desirab		Violation?
V <sub>R12</sub>	7 101001	Exhibit 13-8	200400	710.00.011	V <sub>12</sub>	_	698	Exhibit 13-8	4400:All	No
Level of Serv	ica Datarı		if not F)		_			termination		1
$D_R = 5.475 + 0.1$					+			.0086 V <sub>12</sub> - 0.0	•	' )
• •	• • • • • • • • • • • • • • • • • • • •	0.0070 V <sub>12</sub>	0.00027 LA					.0000 12 0.	003 LD	
D <sub>R</sub> = (pc/mi/ln)	,				1 ''	7.1 (pc/	•			
LOS = (Exhibit	,						oit 13-2)			
Speed Detern	nination				Speed I					
$M_S = (Exibit 13)$	3-11)					-	xhibit 13-	-		
$S_R = mph (Exh$	ibit 13-11)				1	7.3 mph	(Exhibit	13-12)		
	ibit 13-11)				$S_0 = N$	I/A mph	(Exhibit	13-12)		
	ibit 13-13)				S = 5	7.3 mph	(Exhibit	13-13)		
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9/1/2014

		RAI	MPS AND	<b>RAMP JUN</b>	CTIONS W	ORKSH	EET				
Genera	l Inforn				Site Infor						
Analyst Agency or O Date Perfor		Kimle 8/14/2	ey-Horn & Asso 2014	Jı	reeway/Dir of Tr unction urisdiction	avel	I-580 V I-580/C	/B orral Hollo	w Road		
nalysis Tir	me Period	PM P	'eak	A	nalysis Year		Existing	9			
	cription 7	racy Hills Spe	cific Plan								
nputs			L							1	
Jpstream A	dj Ramp		Freeway Num Ramp Numbe	ber of Lanes, N r of Lanes. N	2 1					Downstre Ramp	am Adj
Yes	On		'	ane Length, L <sub>A</sub>	400					□Yes	On
✓ No	Off		Deceleration I Freeway Volu	ane Length L <sub>D</sub>	967					☑ No	Off
- <sub>up</sub> =	ft		Ramp Volume		86					L <sub>down</sub> =	ft
/ <sub>u</sub> =	veh/h			-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
				ow Speed, S <sub>FR</sub>	55.0						
onver	sion to	pc/h Und		Conditions		1		1		1	
(pc/	h)	v (Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_{HV}$	f <sub>p</sub>	v = V/PHI	x f <sub>HV</sub> x f <sub>p</sub>
Freeway		967	0.92	Level	18	0	_	917	1.00		1146
Ramp		86	0.83	Level	5	0	0.	976	1.00		106
<u>UpStream</u> DownStrea	ım						_				
JOWNSTIE			Merge Areas						iverge Areas		
stimat	tion of	V <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
		V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )						V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub>	)P <sub>ED</sub>	
EQ =			ation 13-6 o	13-7)		L <sub>EQ</sub> =			Equation 13-		13)
				ion (Exhibit 13-6	)	P <sub>FD</sub> =			using Equatio		
/ <sub>12</sub> =		1146 p		(=	,	V <sub>12</sub> =			oc/h	(=/	• . ,
or V <sub>av34</sub>				13-14 or 13-17	١	V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equation 1	13-14 or 13-1	17)
	a > 2.700	pc/h? Yes		10 11 01 10 11	,		ou > 2.7		∃Yes □ No		,
		/ <sub>12</sub> /2 □ Yes							Yes No		
Yes,V <sub>12a</sub>		pc/h (		3-16, 13-18, or		If Yes,V <sub>12a</sub> =		ı	oc/h (Equatio	n 13-16, 1	3-18, or
	ty Chec	13-19)				Capacit			3-19)		
Japach	iy Onec	Actual		apacity	LOS F?	Dapacit	J	Actual	Car	pacity	LOS F?
		riotaai	İ	араону	20011	V <sub>F</sub>		7101441	Exhibit 13-		
V <sub>F</sub>		1252	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13-		1
- F	0	1202	Exhibit 10 0		110	V <sub>R</sub>			Exhibit 13	-	
low Er	ntering	Merge In	fluence A	rea	<u> </u>	Flow En	nterin	g Dive	rge Influen	ce Area	 !
	Ţ	Actual		Desirable	Violation?		A	Actual	Max Des	irable	Violation
$V_{R1}$	12	1252	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
evel o	f Servic	e Detern	nination (	if not F)		Level or	f Serv	vice De	terminatio	n (if not	<i>F</i> )
D <sub>R</sub> =	= 5.475 + 0	.00734 v <sub>R</sub> + 0	0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>			D <sub>R</sub> = 4	.252 + 0	.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
) <sub>R</sub> = 1	2.7 (pc/mi/	ln)				$D_R = (p$	oc/mi/lı	ר)			
OS = B	Exhibit 13	3-2)				LOS = (E	Exhibit	13-2)			
Speed I	Determ	ination				Speed L	Deter	minatio	n		
1 <sub>S</sub> = 0	.291 (Exibi	t 13-11)				D <sub>s</sub> = (E	Exhibit 1	3-12)			
	,	xhibit 13-11)				1	ph (Exh	ibit 13-12)			
		khibit 13-11)				1	iph (Exh	ibit 13-12)			
		xhibit 13-13)				1 '	ph (Exh	ibit 13-13)			
	- •	,									

		RAMP	S AND RAI	//P JUNCTI	ONS WOR	KSHEET			
General Infor	mation			Site Infor					
Analyst		y-Horn & Asso	ciates F	reeway/Dir of Tr		580 WB			
Agency or Company		,,		lunction		580 and Corral	l Hollow Road		
Date Performed	8/14/2	2014	J	lurisdiction					
Analysis Time Period	D PM P	eak	A	Analysis Year	Ex	xisting			
Project Description	Tracy Hills Spe	cific Plan							
Inputs									
Upstream Adj R	amp	l '	ber of Lanes, N	2				Downstrea	m Adj
	To:-	Ramp Number	of Lanes, N	1				Ramp	
☐ Yes ☐	On	Acceleration L	ane Length, L <sub>A</sub>					Yes	On
✓ No	Off	Deceleration L	ane Length L <sub>D</sub>	200				<b>☑</b> No	Off
		Freeway Volur	me, V <sub>F</sub>	1019				INO	
$L_{up} = f$	t	Ramp Volume	, V <sub>D</sub>	52				L <sub>down</sub> =	ft
·			Flow Speed, S <sub>FF</sub>	70.0					
$V_u = V_v$	eh/h		ow Speed, S <sub>FR</sub>	35.0				$V_D =$	veh/h
Comversion 4		<u> </u>	110	33.0					
Conversion to	o pe/ii one V	ler base (	Jonailions	1	1		1		
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	$f_{HV}$	f <sub>p</sub>	v = V/PHF	$x f_{HV} x f_{p}$
Freeway	1019	0.92	Level	18	0	0.917	1.00	120	)7
Ramp	52	0.93	Level	4	0	0.980	1.00	57	
UpStream	-								
DownStream									
		Merge Areas					Diverge Areas		
Estimation of	<sup>f</sup> v <sub>12</sub>				Estimatio	n of v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P.,., )				V <sub>40</sub>	= V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	3)P_D	
l =		tion 13-6 or	13_7)		  =		(Equation 13-1		
L <sub>EQ</sub> = D -		Equation (E			L <sub>EQ</sub> =			-	
P <sub>FM</sub> =	_	Equation (E	Kilibit 13-0)		P <sub>FD</sub> =		1.000 using Equ	Jation (Exhib	il 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		1207 pc/h		
V <sub>3</sub> or V <sub>av34</sub>			-14 or 13-17)		$V_3$ or $V_{av34}$		0 pc/h (Equation	n 13-14 or	13-17)
Is $V_3$ or $V_{av34} > 2,70$							☐Yes ☑No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5					Is V <sub>3</sub> or V <sub>av34</sub>		☐ Yes ☑ No		
If Yes,V <sub>12a</sub> =		Equation 13-	-16, 13-18, or		If Yes,V <sub>12a</sub> =		pc/h (Equation	13-16, 13- <sup>-</sup>	18, or 13-
Capacity Che	13-19)						19)		
Capacity Che	Ĭ	1 0	9	1 00 50	Capacity	1		9	LOS F?
	Actual		apacity	LOS F?	\/	Actua		pacity	1
					V <sub>F</sub>	1207		+	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$ -	V <sub>R</sub> 1150	Exhibit 13-8	4800	No
					$V_R$	57	Exhibit 13-1	0 2000	No
Flow Entering	g Merge In	fluence A	rea		Flow Ente	ering Dive	erge Influen	ce Area	
	Actual	1	Desirable	Violation?		Actual	Max Desirab		Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	1207	Exhibit 13-8	4400:All	No
Level of Serv	ice Detern	nination (i	f not F)			Service D	eterminatio	n (if not F	=)
$D_R = 5.475 + 0.$							0.0086 V <sub>12</sub> - 0.	•	
D <sub>R</sub> = (pc/mi/ln	• • •	- 12	A		L '	k (pc/mi/ln)	- 12	U	
	•				1	. ,			
LOS = (Exhibit					`	Exhibit 13-2)			
Speed Detern	nination				Speed De				
M <sub>S</sub> = (Exibit 1:	3-11)				1 -	3 (Exhibit 1	•		
S <sub>R</sub> = mph (Exh	nibit 13-11)				$S_{R} = 57.9$	mph (Exhibi	it 13-12)		
	ibit 13-11)				$S_0 = N/A$	mph (Exhibit	t 13-12)		
	ibit 13-13)				S = 57.9	mph (Exhibi	it 13-13)		
. ,		All Rights Reserv	red		HCS2010 <sup>TM</sup>			enerated: 9/2/2	2014 9·42 Δ

		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSH	EET				
Genera	I Inform				Site Infor						
Analyst Agency or ( Date Perfor		Kimle 8/14/2	ey-Horn & Asso	Jı	reeway/Dir of Tr unction urisdiction		I-580 E I-580/C	B orral Hollo	w Road		
Analysis Tir		6/ 14/2 AM P			nalysis Year		Fxisting	g Plus Proj	ect		
		Fracy Hills Spe					_,	<u>, </u>	-		
nputs	•	,									
Jpstream A	dj Ramp		Freeway Num Ramp Numbe	ber of Lanes, N	2					Downstre	am Adj
□Yes	On		· ·	ane Length, L <sub>A</sub>	1 250					Ramp Yes	On
✓ No	Off		Deceleration I Freeway Volu	_ane Length L <sub>D</sub> me. V_	178					☑ No	Off
up =	ft		Ramp Volume	, V <sub>R</sub>	221					L <sub>down</sub> =	ft
/ <sub>u</sub> =	veh/h			-Flow Speed, $S_{FF}$ ow Speed, $S_{FR}$	70.0 55.0					V <sub>D</sub> =	veh/h
Conver	sion to	pc/h Und	der Base	Conditions						•	
(pc/		V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
Freeway		178	0.92	Level	18	0	0.9	917	1.00		211
Ramp		221	0.70	Level	11	0	0.9	948	1.00		333
UpStream							_				
DownStrea	im		l Merge Areas			-			Diverge Areas		
stimat	tion of	V 40	vierge Areas			Estimat	ion o	f V <sub>40</sub>	iverge Areas		
			(D )							\D	
		$V_{12} = V_F$							$V_R + (V_F - V_R)$		
EQ =			ation 13-6 o			L <sub>EQ</sub> =			(Equation 13-		
<sub>FM</sub> =				ion (Exhibit 13-6	)	P <sub>FD</sub> =			using Equation	on (Exhibit 1	3-7)
12 =		211 p	c/h			V <sub>12</sub> =		- 1	oc/h		
or V <sub>av34</sub>		-		13-14 or 13-17	)	$V_3$ or $V_{av34}$			pc/h (Equation ´		17)
		pc/h? Yes							∃Yes □No		
s V <sub>3</sub> or V <sub>av</sub>	<sub>v34</sub> > 1.5 * '	V <sub>12</sub> /2 □ Yes	s 🗹 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 1.5	* V <sub>12</sub> /2	∃Yes □No		
Yes,V <sub>12a</sub>	=		(Equation 13	3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		oc/h (Equatio	n 13-16, 1	3-18, or
	ty Chec	13-19)				Capacit			3-19)		
Japacii	y Chec	Actual	1 6	apacity	LOS F?	Capacit	y Circ	Actual	Ca	pacity	LOS F?
		Actual		apacity	LOGTE	V <sub>F</sub>		Actual	Exhibit 13-		LOGIE
						$V_{FO} = V_F$	- \/		Exhibit 13-		<u> </u>
$V_{F}$	0	544	Exhibit 13-8		No		- VR		Exhibit 13		<u> </u>
						$V_R$			10	<sup>-</sup>	
low E	ntering	Merge In	fluence A	rea		Flow Er	nterin	g Dive	rge Influer	ice Area	1
		Actual		Desirable	Violation?		I	Actual	Max Des	irable	Violation'
$V_{R1}$	12	544	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
.evel o	f Servi	ce Detern	nination (	if not F)		Level of	f Serv	vice De	terminatio	n (if not	: <b>F</b> )
D <sub>R</sub> =	= 5.475 + 0	.00734 v <sub>R</sub> + 0	).0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>			D <sub>R</sub> = 4	.252 + 0	.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
	.0 (pc/mi/lr		-				oc/mi/lr			_	
	(Exhibit 1	-					Exhibit				
		ination				Speed L			on .		
						<del></del>	Exhibit 1				
•	.300 (Exibi	•						ibit 13-12)			
		Exhibit 13-11)				I ''					
0		xhibit 13-11)				ľ		ibit 13-12)			
= 6	1.6 mph (E	Exhibit 13-13)				S = m	ph (Exh	ibit 13-13)			
	042	sity of Elorida A	II Rights Reserv	rod		HCS2010	TM .			Generated:	0/4/0044

		RAMP	S AND RAI	MP JUNCTI	ONS WO	RKS	HEET			
General Info	rmation		_ / I W/II	Site Infor			· ·			
Analyst Agency or Compan		ey-Horn & Asso		Freeway/Dir of Tr Junction		I-580 E I-580 a		ollow Road		
Date Performed Analysis Time Peric	8/14/ od AM P			Jurisdiction Analysis Year		Eviatina	r Dlug Droid	o o t		
Project Description				Allalysis i cai		EXISTIN	g Plus Proje	:01		
Inputs										
Upstream Adj I	Ramp	Freeway Num Ramp Numbe	ber of Lanes, N	2 1					Downstrea Ramp	ım Adj
☐Yes [	On	l '	ane Length, L	1					•	
☑ No [	Off	1	ane Length L <sub>D</sub>	200					Yes	□ On
		Freeway Volu	me, V <sub>F</sub>	420					✓ No	Off
L <sub>up</sub> =	ft	Ramp Volume		242					L <sub>down</sub> =	ft
V <sub>u</sub> = ,	veh/h		-Flow Speed, S <sub>FI</sub>	•					V <sub>D</sub> =	veh/h
Conversion	to nc/h l ln/		ow Speed, S <sub>FR</sub>	35.0						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	Τ	f <sub>HV</sub>	fp	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	420	0.92	Level	18	0		917	1.00	49	
Ramp	242	0.69	Level	19	0	0.	913	1.00	38	34
UpStream						+				
DownStream	1	l I Merge Areas					<u>I</u>	iverge Areas		
Estimation o		go 7			Estimati	ion o				
	V <sub>12</sub> = V <sub>F</sub>	( P )						V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P==	
L <sub>EQ</sub> =		tion 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-1		)
P <sub>FM</sub> =		Equation (E			P <sub>FD</sub> =		-	)00 using Equ		
V <sub>12</sub> =	pc/h		·		V <sub>12</sub> =			8 pc/h	,	,
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		0	pc/h (Equation	n 13-14 or	13-17)
Is $V_3$ or $V_{av34} > 2.7$	00 pc/h?	s 🗌 No			Is V <sub>3</sub> or V <sub>av3</sub>	<sub>34</sub> > 2,7	00 pc/h? [	Yes <b>☑</b> No		
Is $V_3$ or $V_{av34} > 1.5$					Is V <sub>3</sub> or V <sub>av3</sub>	<sub>34</sub> > 1.5		Yes ☑ No		
If Yes,V <sub>12a</sub> =	pc/h ( 13-19)		-16, 13-18, or		If Yes,V <sub>12a</sub> =	:	p: 19	c/h (Equation ))	13-16, 13-	18, or 13-
Capacity Ch					Capacity	y Ch				
	Actual	С	apacity	LOS F?			Actual	Ca	pacity	LOS F?
					V <sub>F</sub>		498	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	114	Exhibit 13-8		No
					V <sub>R</sub>		384	Exhibit 13-1		No
Flow Enterin	<del>1 - 1</del>	i		\/ialatian0	Flow En	_		ge Influen		\/:= =#:==0
V <sub>R12</sub>	Actual	Exhibit 13-8	Desirable	Violation?	V <sub>12</sub>	1 -	Actual 498	Max Desirab Exhibit 13-8	4400:All	Violation? No
Level of Serv	vice Detern		if not F)					terminatio		
D <sub>R</sub> = 5.475 + 0								0086 V <sub>12</sub> - 0.	•	,
D <sub>R</sub> = (pc/mi/lı		12	^			7 (pc/r		12	D	
LOS = (Exhibit	13-2)				LOS = A	(Exhib	oit 13-2)			
Speed Deter	mination				Speed D	eter	minatio	n		
M <sub>S</sub> = (Exibit 1	13-11)				D <sub>s</sub> = 0.4	463 (E:	xhibit 13-	12)		
-	hibit 13-11)					'.0 mph	(Exhibit	13-12)		
S <sub>0</sub> = mph (Ex	hibit 13-11)				1 '	-	(Exhibit 1	•		
	hibit 13-13)						(Exhibit			
Copyright © 2013 Univ	versity of Florida, A	All Rights Reser	ved		HCS2010 <sup>™</sup>	Versio	n 6.50	Ge	nerated: 9/2/2	2014 10:57 A

Ramp Number Acceleration Deceleration Freeway Volum Freeway Free Ramp Free-F Inder Base PHF 0.92 0.72  Merge Areas  V <sub>F</sub> (P <sub>FM</sub> ) quation 13-6 c	mber of Lanes, N er of Lanes, N Lane Length, L Lane Length L Ume, V Ee-Flow Speed, S E-Flow Speed, S Terrain Level Level	Site Informeeway/Dir of Transcription (Inction Interest) (Intion Intion Interest) (Intion Intion	%Rv 0 0	I-580 WB I-580/Corral Hol Existing Plus Pri  f <sub>HV</sub> 0.917 0.939  ion of v <sub>12</sub> V <sub>12</sub> =	f <sub>p</sub> 1.00 1.00 Diverge Areas V <sub>R</sub> + (V <sub>F</sub> - V <sub>C</sub> (Equation 1	/ <sub>R</sub> )P <sub>FD</sub> 3-12 or 13-	☐ On ☐ Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub> 2001 1732
Freeway Nur Ramp Numb Acceleration Deceleration Freeway Volum Freeway Free Ramp Free-F Ram	mber of Lanes, N er of Lanes, N er of Lanes, N Lane Length, L Lane Length L D ume, V E e Flow Speed, S F Flow Speed, S Terrain Level Level	2 1 400 1689 1171 70.0 55.0  %Truck 18 13	%Rv 0 0	f <sub>HV</sub> 0.917 0.939	f <sub>p</sub> 1.00 1.00 Diverge Areas V <sub>R</sub> + (V <sub>F</sub> - V <sub>C</sub> (Equation 1	Ramp  Yes  No $L_{down} = V_D = V = V/PH$ $V_D = V = V/PH$ $V_R)P_{FD}$ 3-12 or 13-	☐ On ☐ Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub> 2001 1732
Freeway Nur Ramp Numb Acceleration Deceleration Freeway Volum Freeway Volum Freeway Free Ramp Free-F R	mber of Lanes, N er of Lanes, N Lane Length, L Lane Length L Dume, V Ee, V R ee-Flow Speed, S FF Conditions Terrain Level Level	2 1 400 1689 1171 70.0 55.0 %Truck 18 13	%Rv 0 0 <b>Estimati</b> L <sub>EQ</sub> =	f <sub>HV</sub> 0.917 0.939	f <sub>p</sub> 1.00 1.00 Diverge Areas V <sub>R</sub> + (V <sub>F</sub> - V <sub>C</sub> (Equation 1	Ramp  Yes  No $L_{down} = V_D = V = V/PH$ $V_D = V = V/PH$ $V_R)P_{FD}$ 3-12 or 13-	☐ On ☐ Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub> 2001 1732
Freeway Nur Ramp Numbin Acceleration Deceleration Freeway Volum Freeway Free Ramp Free-Finder Base PHF 0.92 0.72  Merge Areas  V <sub>F</sub> (P <sub>FM</sub> ) Quation 13-6 columination 13-6 columination	mber of Lanes, N er of Lanes, N Lane Length, L <sub>A</sub> Lane Length L <sub>D</sub> ume, V <sub>F</sub> ee, V <sub>R</sub> ee-Flow Speed, S <sub>FF</sub> Flow Speed, S <sub>FR</sub> Conditions  Terrain Level Level	2 1 400 1689 1171 70.0 55.0 %Truck 18 13	%Rv 0 0 <b>Estimati</b> L <sub>EQ</sub> =	f <sub>HV</sub> 0.917 0.939	f <sub>p</sub> 1.00 1.00 Diverge Areas V <sub>R</sub> + (V <sub>F</sub> - V <sub>C</sub> (Equation 1	Ramp  Yes  No $L_{down} = V_D = V = V/PH$ $V_D = V = V/PH$ $V_R)P_{FD}$ 3-12 or 13-	☐ On ☐ Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub> 2001 1732
Ramp Number Acceleration Deceleration Freeway Volum Freeway Free Ramp Free-F Inder Base PHF 0.92 0.72 Merge Areas  V <sub>F</sub> (P <sub>FM</sub> ) quation 13-6 color using Equation	er of Lanes, N Lane Length, L <sub>A</sub> Lane Length L <sub>D</sub> ume, V <sub>F</sub> ee, V <sub>R</sub> ee-Flow Speed, S <sub>FR</sub> Conditions  Terrain Level Level	1 400 1689 1171 70.0 55.0 %Truck 18 13	0 0 <b>Estimati</b> L <sub>EQ</sub> =	0.917 0.939 ion of v <sub>12</sub>	1.00 1.00 Diverge Areas	Ramp  Yes  No $L_{down} = V_D = V = V/PH$ $V_D = V = V/PH$ $V_R)P_{FD}$ 3-12 or 13-	☐ On ☐ Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub> 2001 1732
Ramp Number Acceleration Deceleration Freeway Volum Freeway Free Ramp Free-F Inder Base PHF 0.92 0.72 Merge Areas  V <sub>F</sub> (P <sub>FM</sub> ) quation 13-6 color using Equation	er of Lanes, N Lane Length, L <sub>A</sub> Lane Length L <sub>D</sub> ume, V <sub>F</sub> ee, V <sub>R</sub> ee-Flow Speed, S <sub>FR</sub> Conditions  Terrain Level Level	1 400 1689 1171 70.0 55.0 %Truck 18 13	0 0 <b>Estimati</b> L <sub>EQ</sub> =	0.917 0.939 ion of v <sub>12</sub>	1.00 1.00 Diverge Areas	Ramp  Yes  No $L_{down} = V_D = V = V/PH$ $V_D = V = V/PH$ $V_R)P_{FD}$ 3-12 or 13-	☐ On ☐ Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub> 2001 1732
Acceleration Deceleration Freeway Volum Freeway Free Ramp Free-F Inder Base PHF 0.92 0.72 Merge Areas  V <sub>F</sub> (P <sub>FM</sub> ) quation 13-6 columning Equation	Lane Length, L <sub>A</sub> Lane Length L <sub>D</sub> ume, V <sub>F</sub> ie, V <sub>R</sub> ee-Flow Speed, S <sub>FR</sub> Conditions  Terrain  Level  Level	400 1689 1171 70.0 55.0 %Truck 18 13	0 0 <b>Estimati</b> L <sub>EQ</sub> =	0.917 0.939 ion of v <sub>12</sub>	1.00 1.00 Diverge Areas	Yes  V No  L <sub>down</sub> =  V = V/PH  V = V/PH  R)P <sub>FD</sub> 3-12 or 13-	Off ft veh/h  F x f <sub>HV</sub> x f <sub>p</sub> 2001 1732
Freeway Volum Ramp Volum Freeway Free Ramp Free-F Inder Base PHF 0.92 0.72 Merge Areas V <sub>F</sub> (P <sub>FM</sub> ) quation 13-6 columning Equation	ume, V <sub>F</sub> ee, V <sub>R</sub> ee-Flow Speed, S <sub>FF</sub> Flow Speed, S <sub>FR</sub> Conditions  Terrain  Level  Level	1171 70.0 55.0 %Truck 18 13	0 0 <b>Estimati</b> L <sub>EQ</sub> =	0.917 0.939 ion of v <sub>12</sub>	1.00 1.00 Diverge Areas	$L_{down} = V_{D} = V = V/PH$ $V	ft veh/h F x f <sub>HV</sub> x f <sub>p</sub> 2001 1732
Ramp Volum Freeway Free Ramp Free-F Inder Base PHF 0.92 0.72 Merge Areas  V <sub>F</sub> (P <sub>FM</sub> ) quation 13-6 co using Equation	e, V <sub>R</sub> e-Flow Speed, S <sub>FF</sub> Flow Speed, S <sub>FR</sub> Conditions  Terrain  Level  Level	70.0 55.0 %Truck 18 13	0 0 <b>Estimati</b> L <sub>EQ</sub> =	0.917 0.939 ion of v <sub>12</sub>	1.00 1.00 Diverge Areas	V <sub>D</sub> = v = V/PH v = V/PH R)P <sub>FD</sub> 3-12 or 13-	veh/h F x f <sub>HV</sub> x f <sub>p</sub> 2001 1732
Ramp Free-Finder Base PHF 0.92 0.72 Merge Areas V <sub>F</sub> (P <sub>FM</sub> ) quation 13-6 coordinates	Clow Speed, S <sub>FR</sub> Conditions  Terrain  Level  Level  Der 13-7)	%Truck 18 13	0 0 <b>Estimati</b> L <sub>EQ</sub> =	0.917 0.939 ion of v <sub>12</sub>	1.00 1.00 Diverge Areas	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub> 2001 1732
PHF 0.92 0.72 Merge Areas  V <sub>F</sub> (P <sub>FM</sub> ) quation 13-6 coordinates of the coordinates of th	Terrain Level Level or 13-7)	18 13	0 0 <b>Estimati</b> L <sub>EQ</sub> =	0.917 0.939 ion of v <sub>12</sub>	1.00 1.00 Diverge Areas	/ <sub>R</sub> )P <sub>FD</sub> 3-12 or 13-	2001 1732
PHF  0.92  0.72  Merge Areas  V <sub>F</sub> (P <sub>FM</sub> ) quation 13-6 coordinates are seen to the second se	Terrain Level Level	18 13	0 0 <b>Estimati</b> L <sub>EQ</sub> =	0.917 0.939 ion of v <sub>12</sub>	1.00 1.00 Diverge Areas	/ <sub>R</sub> )P <sub>FD</sub> 3-12 or 13-	2001 1732
0.72  Merge Areas  V <sub>F</sub> (P <sub>FM</sub> )  quation 13-6 columns are using Equation	Level	13	0  Estimati  L <sub>EQ</sub> =	0.939 ion of v <sub>12</sub>	1.00  Diverge Areas  V <sub>R</sub> + (V <sub>F</sub> - V <sub>C</sub> (Equation 1)	/ <sub>R</sub> )P <sub>FD</sub> 3-12 or 13-	1732
Merge Areas  V <sub>F</sub> (P <sub>FM</sub> )  quation 13-6 columns are using Equation	or 13-7)		Estimati	ion of v <sub>12</sub>	Diverge Areas  V <sub>R</sub> + (V <sub>F</sub> - \ (Equation 1	/ <sub>R</sub> )P <sub>FD</sub> 3-12 or 13-	
V <sub>F</sub> (P <sub>FM</sub> ) quation 13-6 c ) using Equa			L <sub>EQ</sub> =		= V <sub>R</sub> + (V <sub>F</sub> - \ (Equation 1	/ <sub>R</sub> )P <sub>FD</sub> 3-12 or 13-	13)
V <sub>F</sub> (P <sub>FM</sub> ) quation 13-6 c ) using Equa			L <sub>EQ</sub> =		= V <sub>R</sub> + (V <sub>F</sub> - \ (Equation 1	/ <sub>R</sub> )P <sub>FD</sub> 3-12 or 13-	13)
V <sub>F</sub> (P <sub>FM</sub> ) quation 13-6 c ) using Equa			L <sub>EQ</sub> =		= V <sub>R</sub> + (V <sub>F</sub> - \ (Equation 1	/ <sub>R</sub> )P <sub>FD</sub> 3-12 or 13-	13)
quation 13-6 c		1	L <sub>EQ</sub> =		(Equation 1	3-12 or 13-	13)
quation 13-6 c		ı		v <sub>12</sub> -	(Equation 1	3-12 or 13-	13)
using Equa		)					10)
	ILIOIT (EXTIIDIL 13-0)		L ED _				10 7\
pc/n					using Equat pc/h	IIOII (EXIIIDIL	13-7)
o/b /Cauchion	10 11 0= 10 17)		V <sub>12</sub> =		•	12 11 or 12	17)
	13-14 or 13-17)	)	V <sub>3</sub> or V <sub>av34</sub>	<sub>34</sub> > 2,700 pc/h?	pc/h (Equation		11)
res ☑No							
res ☑No	3-16, 13-18, or			<sub>34</sub> > 1.5 * V <sub>12</sub> /2	□ Yes □ N     pc/h (Equat		13_18 or
11 (Equation 1	5-10, 15-10, or		If Yes,V <sub>12a</sub> =	•	13-19)	1011 13-10,	13-10, 01
·			Capacity	y Checks			
	Capacity	LOS F?		Actua	I C	Capacity	LOS F?
			$V_{F}$		Exhibit 1	3-8	
Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>	Exhibit 1	3-8	
			V <sub>R</sub>			3-	
Influence /	Area		Flow En	terina Dive		ence Area	<del></del>
		Violation?	1011	Actual			Violation
	1	No	V <sub>12</sub>		Exhibit 13-8		
rmination	(if not F)			Service D	eterminati	on (if no	t F)
	·		1				- /
12	Α				12	D	
			I				
					ion		
			<del>  '                                   </del>				
				-	)\		
-			1				
•			1 *				
. 1 .					21		
1 1	Exhibit 13-8  Enfluence A  Max  Exhibit 13-8  Ermination  R + 0.0078 V <sub>12</sub> - 0	Exhibit 13-8  Parameter Max Desirable Exhibit 13-8 Exhibi	Exhibit 13-8 No  Parameter Area  Max Desirable Violation? Exhibit 13-8 4600:All No  Paramination (if not F) R + 0.0078 V <sub>12</sub> - 0.00627 L <sub>A</sub> 11) 11)	Capacity  LOS F? $V_F$ $V_{FO} = V_F$ $V_{R} = Influence Area$ Max Desirable  Exhibit 13-8  Violation?  Exhibit 13-8  Violation?  Exhibit 13-8  Violation?  Level of $V_{R} = V_{R} = V_{$	Exhibit 13-8  No $V_F$ $V_{FO} = V_F - V_R$ $V_R$ Plow Entering Diverge to the property of the property o	Capacity LOS F? Actual $V_F$ Exhibit 1 .8 $V_F$ Exhibit 13.9 $V_F$ Exhibit 13.9 $V_F$ Exhibit 13.10 $V_F$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$

		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HFFT			
General Infor	mation	T CANTI	O AND IVAN	Site Infor		711110				
Analyst		ey-Horn & Asso	ociates F	reeway/Dir of Ti		I-580 W	/B			
Agency or Company				unction		I-580 aı	nd Corral F	Iollow Road		
Date Performed		/2014		urisdiction						
Analysis Time Period			A	nalysis Year		Existing	Plus Proj	ect		
	Tracy Hills Spo	ecific Plan								
Inputs		<u> </u>						1		
Upstream Adj R	amp	Freeway Num Ramp Numbe	ber of Lanes, N	2 1					Downstrea Ramp	am Adj
□Yes □	On	1 '	ane Length, L <sub>A</sub>	,					Yes	□On
☑ No □	Off	1	Lane Length L <sub>D</sub>	200					✓No	Off
L <sub>up</sub> = fi		Freeway Volu	•	1960					L <sub>down</sub> =	ft
_up	·	Ramp Volume		271					down	
V <sub>u</sub> = ve	eh/h	1	-Flow Speed, S <sub>FF</sub> low Speed, S <sub>FR</sub>	70.0 35.0					V <sub>D</sub> =	veh/h
Conversion to	nc/h Hn		* 110	33.0						
(pc/h)	V	PHF	Terrain	%Truck	%Rv	Т	$f_{HV}$	fp	v = V/PHF	x f x f
Freeway	(Veh/hr) 1960	0.92	Level	18	0	_	·нv 917	1.00		322
Ramp	271	0.92	Level	14	0		935	1.00		77
UpStream	211	0.77	Level	14	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	0.3	933	1.00	3	11
DownStream						+				
Dominou dum		Merge Areas		1				iverge Areas		
Estimation of					Estimat	ion o				
	V <sub>12</sub> = V <sub>F</sub>	/ D \						V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	\D	
I =	12 1	(' <sub>FM</sub> ) ation 13-6 or	13 7)		=			TR ' (VF - VF Equation 13-1	`	1
L <sub>EQ</sub> =					L <sub>EQ</sub> =		-	-		
P <sub>FM</sub> =	_	Equation (I	=XIIIDIL 13-0)		P <sub>FD</sub> =			000 using Equ	lation (Exn	DIT 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =			322 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	-		-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equatio	n 13-14 oi	· 13-17)
Is $V_3$ or $V_{av34} > 2,70$						• .		☐Yes ☑No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 '					Is V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 1.5		☐Yes ☑No		
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		c/h (Equation	13-16, 13	-18, or 13-
Capacity Che	13-19)	)			Capacit		19	9)		
Capacity Cite	Actual	T 7	`anasih.	LOS F?	Tapacit	y Circ		l Co.	no oitu	LOS F?
	Actual		Capacity	LUSF!	V <sub>F</sub>		Actual	Exhibit 13-8	pacity 4800	1
.,						- , <i>,</i>	2322		+	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$		1945	Exhibit 13-8	4800	No
					$V_R$		377	Exhibit 13-10	2000	No
Flow Entering	g Merge In	ifluence A	\rea		Flow Er	nterin	g Dive	rge Influen		
	Actual	Max	Desirable	Violation?		- /	Actual	Max Desirab	le	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>	2	322	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)		Level or	f Serv	rice De	terminatio	n (if not	F)
$D_R = 5.475 + 0.$	00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	- 0.00627 L <sub>A</sub>			D <sub>R</sub> = 4	.252 + 0	.0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				$D_R = 2$	2.4 (pc/	mi/ln)			
LOS = (Exhibit	13-2)						oit 13-2)			
Speed Detern					Speed L			<u> </u>		
•					1		khibit 13-			
M <sub>S</sub> = (Exibit 13	•						(Exhibit	•		
	ibit 13-11)				1		-	•		
•	ibit 13-11)				1	-	(Exhibit	· ·		
S = mph (Exh	ibit 13-13)						(Exhibit	13-13)		
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		RAI	<u>MPS AND</u>	RAMP JUN	<u>CTIONS</u> W	<u>ORKSH</u>	EET				
General	I Inform				Site Infor						
Analyst		Kimle	ey-Horn & Asso		eeway/Dir of Tr		I-580 E				
gency or C					nction		I-580/C	Corral Hollov	v Road		
ate Perfori		8/14/			risdiction			D. D.			
nalysis Tin		PM F Fracy Hills Spe		Ar	nalysis Year		Existing	g Plus Proje	ect		
nputs	сприоп	racy milis spe	ecilic Plan								
			Freeway Num	ber of Lanes, N	2					1	
pstream A	dj Ramp		1							Downstre	am Adj
Yes	On		Ramp Numbe		1					Ramp	
				ane Length, L <sub>A</sub>	250					☐ Yes	On
✓ No	Off			ane Length L <sub>D</sub>						✓ No	Off
	61		Freeway Volu		1433					l.	ft
<sub>.p</sub> =	ft		Ramp Volume		449					L <sub>down</sub> =	IL
=	veh/h		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
u	VCIIIII		Ramp Free-Fl	ow Speed, S <sub>FR</sub>	55.0						
onver	sion to	pc/h Und	der Base (	Conditions							
(pc/l	n)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_{HV}$	fp	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
reeway		1433	0.92	Level	18	0	_	917	1.00	ļ	1698
Ramp		449	0.86	Level	6	0	_	971	1.00		538
JpStream		. 10	2.00			Ť	<del>  "</del>				
ownStrea	m										
			Merge Areas					D	iverge Areas		
stimat	ion of	v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
		V <sub>12</sub> = V <sub>F</sub>	(P <sub>FM</sub> )					V <sub>12</sub> = \	/ <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	R)P <sub>FD</sub>	
EQ =		(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(	Equation 13	-12 or 13-1	13)
-				ion (Exhibit 13-6)		P <sub>FD</sub> =			Ising Equation		
12 =		1698		,		V <sub>12</sub> =			oc/h	•	,
<sub>3</sub> or V <sub>av34</sub>				13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		•	c/h (Equation	13-14 or 13-	17)
	> 2.700	pc/h? Ye:					> 2.7		Yes □No		,
		V <sub>12</sub> /2							Yes □No		
				3-16, 13-18, or					c/h (Equatio		3-18. or
Yes,V <sub>12a</sub> =		13-19)				If Yes,V <sub>12a</sub> =		13	3-19)		
apacit	y Chec	cks				Capacit	y Che	ecks			
		Actual	C	apacity	LOS F?		_	Actual		pacity	LOS F?
						V <sub>F</sub>			Exhibit 13-	-8	
V <sub>F</sub>	0	2236	Exhibit 13-8		No	$V_{FO} = V_{F}$	-V <sub>R</sub>		Exhibit 13-	-8	
						V <sub>R</sub>			Exhibit 13	3-	
Jour Er	toring	Margala	fluonos A	<u> </u>			oto vin	o Divor	ge Influer		
IOW EI	iteririg T	Actual	fluence A	Desirable	Violation?	FIOW EI		Actual	Max Des		Violation?
V <sub>R1</sub>		2236	Exhibit 13-8	4600:All	No	V <sub>12</sub>	+ '	เงเนตเ	Exhibit 13-8	,,, abie	v ioiatioi1
			nination (		140		f San	ico Do	termination	n (if not	<u> </u>
			•			t					
			0.0078 V <sub>12</sub> - 0.0	JUUZI LA		L			0086 V <sub>12</sub> - 0	.oos L <sub>D</sub>	
	1.1 (pc/mi/	•				I ''	oc/mi/lı				
	(Exhibit 1						Exhibit				
peed L	Determ	ination				Speed L			n		
I <sub>S</sub> = 0.	.330 (Exib	t 13-11)				I " '	Exhibit 1	•			
R= 60	0.8 mph (E	Exhibit 13-11)				S <sub>R</sub> = m	iph (Exh	nibit 13-12)			
	/A mph (E	xhibit 13-11)				$S_0 = m$	iph (Exh	nibit 13-12)			
-		xhibit 13-13)				S = m	nh (Exh	nibit 13-13)			
= 60	o.o mpn (L	Allibit 10 10)				P - '''	יואיו (באוי	1101t 10-10)			

		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HFFT			
General Infor	mation	I CAN	O AITO ITAII	Site Infor		71110	··			
Analyst		ey-Horn & Asso	nciates F	reeway/Dir of Ti		I-580 E	 R			
Agency or Company	Millio	cy Hom a 71330		unction				Iollow Road		
Date Performed	8/14	/2014		urisdiction		1 000 ai	ia Conan	IOIIOW I TOUG		
Analysis Time Period				nalysis Year		Existing	Plus Proj	ect .		
	Tracy Hills Sp			, 6.6 . 64.		LXIOTING	, r 100 r 10j	501		
Inputs	Tracy Time op	oomo r iair								
•		Freeway Num	ber of Lanes, N	2						
Upstream Adj R	amp	1 '	-						Downstrea	am Adj
□Yes□	On	Ramp Numbe		1					Ramp	
□ res □	JOH	Acceleration L	ane Length, L <sub>A</sub>						Yes	On
☑ No □	Off	Deceleration I	_ane Length L <sub>D</sub>	200					□ NI -	□ o"
	3011	Freeway Volu	me, V <sub>r</sub>	2455					✓ No	Off
L <sub>up</sub> = fi	t	Ramp Volume	•	1022					L <sub>down</sub> =	ft
ир		1								
V,, = ve	eh/h	1	-Flow Speed, S <sub>FF</sub>						$V_D =$	veh/h
			ow Speed, S <sub>FR</sub>	35.0						
Conversion to	o pc/h Un	der Base	Conditions							
(pc/h)	V	PHF	Terrain	%Truck	%Rv		$f_HV$	fp	v = V/PHF	x f x f
, ,	(Veh/hr)	<del>                                     </del>	Torrain	<u> </u>	ļ	_		· ·		
Freeway	2455	0.92	Level	18	0	0.9	917	1.00	29	09
Ramp	1022	0.91	Level	8	0	0.0	962	1.00	11	68
UpStream		<b>└</b>		<u> </u>						
DownStream		لـــل								
		Merge Areas						iverge Areas		
Estimation of	' V <sub>12</sub>				Estimat	ion o	t v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
l =	12 1	tion 13-6 or	13_7)		l =			Equation 13-1		\
L <sub>EQ</sub> =			*		L <sub>EQ</sub> =		-	-		
P <sub>FM</sub> =	_	Equation (	EXHIBIT 13-0)		P <sub>FD</sub> =			000 using Equ	iation (Exni	DIT 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		29	09 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	-		-14 or 13-17)		$V_3$ or $V_{av34}$		0	pc/h (Equatio	n 13-14 oı	· 13-17)
Is $V_3$ or $V_{av34} > 2,70$	0 pc/h?	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 2,70	00 pc/h? [	∃Yes ☑No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *	V <sub>12</sub> /2 ☐ Ye	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5	* V <sub>12</sub> /2	]Yes ☑No		
			-16, 13-18, or		If Yes,V <sub>12a</sub> =	• .		c/h (Equation	13-16, 13	-18, or 13-
If Yes,V <sub>12a</sub> =	13-19	)					19	9)		
Capacity Che	cks				Capacit	y Che	ecks			
	Actual	C	apacity	LOS F?			Actual	Ca	oacity	LOS F?
					$V_{F}$		2909	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V-	1741	Exhibit 13-8	4800	No
*FO		EXHIBIT TO 0							1000	
					V <sub>R</sub>		1168	Exhibit 13-10		No
Flow Entering	g Merge In	fluence A	rea		Flow En	<u>iterin</u>	g Dive	ge Influenc		
	Actual	Max	Desirable	Violation?		1	Actual	Max Desirab	le	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>	2	909	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)		Level of	f Serv	ice De	terminatio	if not	F)
$D_R = 5.475 + 0.$					<del></del>			.0086 V <sub>12</sub> - 0.0	•	,
	• • •	12						12		
	,				''	7.5 (pc/	,			
LOS = (Exhibit	•						it 13-2)			
Speed Detern	nination				Speed L	Deteri	minatic	n		
M <sub>S</sub> = (Exibit 1:	3-11)				$D_s = 0$	.533 (E)	chibit 13-	12)		
-	*					-	(Exhibit	•		
	ibit 13-11)					-	•	•		
	ibit 13-11)				1 *	-	(Exhibit	•		
S = mph (Exh	ibit 13-13)				S = 55	5.1 mph	(Exhibit	13-13)		
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		RAI	MPS AND	<b>RAMP JUN</b>	CTIONS W	ORKSH	EET				
Genera	l Inforn				Site Infor						
Analyst Agency or C Date Perfor		Kimle 8/14/	ey-Horn & Asso	Jı	reeway/Dir of Tr unction urisdiction	avel	I-580 V I-580/0	VB Corral Hollo	w Road		
nalysis Tin		PM P			nalysis Year		Existin	g Plus Proj	ect		
roject Des	cription T	racy Hills Spe	cific Plan		•						
nputs											
Jpstream A	dj Ramp		Freeway Num Ramp Numbe	ber of Lanes, N r of Lanes. N	2 1					Downstre Ramp	am Adj
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	400					Yes	On
✓ No	Off		Deceleration I Freeway Volu	ane Length L <sub>D</sub> me, V <sub>⊏</sub>	967					☑ No	Off
up =	ft		Ramp Volume		326					L <sub>down</sub> =	ft
/ <sub>u</sub> =	veh/h			-Flow Speed, $S_{FF}$ ow Speed, $S_{FR}$	70.0 55.0					V <sub>D</sub> =	veh/h
Convor	cion to	no/h Hn/		. 117	55.0						
		<i>pc/n Und</i> ∀		Conditions					_	1	
(pc/l	h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
reeway		967	0.92	Level	18	0	_	.917	1.00		1146
Ramp		326	0.83	Level	5	0	0.	.976	1.00	<u> </u>	403
<u>UpStream</u> DownStrea	m									1	
	•		Merge Areas				-1		Diverge Areas		
stimat	ion of	12				Estimat	ion c	of v <sub>12</sub>			
		V <sub>12</sub> = V <sub>F</sub>	(P <sub>EM</sub> )						V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
EQ =		.= .	ation 13-6 o	13-7)		L <sub>EQ</sub> =			(Equation 13		13)
) <sub>FM</sub> =				ion (Exhibit 13-6	)	P <sub>FD</sub> =			、 · using Equatio		
' <sub>12</sub> =		1146		•	,	V <sub>12</sub> =			pc/h	,	,
or V <sub>av34</sub>				13-14 or 13-17	)	V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equation	13-14 or 13-	17)
	, <sub>34</sub> > 2,700	pc/h? TYes			,		, <sub>34</sub> > 2,7		∐Yes		•
		/ <sub>12</sub> /2 □ Yes							☐Yes ☐No		
Yes,V <sub>12a</sub>				3-16, 13-18, or		If Yes,V <sub>12a</sub> =			pc/h (Equatio 3-19)		3-18, or
Capacit	y Chec	ks				Capacit	y Ch	ecks			
		Actual	C	apacity	LOS F?			Actual	_	pacity	LOS F?
						V <sub>F</sub>			Exhibit 13-	-	
V <sub>F</sub>	0	1549	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13-		
						V <sub>R</sub>			Exhibit 13 10	3-	
low Er	ntering	Merge In	fluence A	rea		Flow Er	nterin	g Dive	rge Influer	nce Area	<u>'</u>
	Ĭ	Actual		Desirable	Violation?			Actual	Max Des		Violation'
$V_{R1}$	2	1549	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
		e Detern	nination (	if not F)		Level of	f Ser	vice De	terminatio	n (if not	: <b>F</b> )
D <sub>R</sub> =	5.475 + 0	.00734 v <sub>R</sub> + 0	0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>			D <sub>R</sub> = 4	1.252 + 0	.0086 V <sub>12</sub> - 0	0.009 L <sub>D</sub>	
<sub>R</sub> = 1	4.9 (pc/mi/l	n)				$D_R = (p$	oc/mi/l	n)			
	(Exhibit 13	3-2)				LOS = (E	Exhibit	13-2)			
Speed L	Determ	ination				Speed L			on		
•	.295 (Exibit					<del></del>	Exhibit 1				
	,	xhibit 13-11)						nibit 13-12)			
		chibit 13-11)				1		nibit 13-12)			
		xhibit 13-13)				1 *		nibit 13-13)			
	' '	,						/			

		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation	T CANTI	O AILD ITAII	Site Infor		71110				
Analyst		ey-Horn & Asso	ociates F	reeway/Dir of Ti		I-580 W	/B			
Agency or Company		,		unction		I-580 aı	nd Corral H	Iollow Road		
Date Performed	8/14	/2014	Jı	urisdiction						
Analysis Time Period	l PM F	Peak	A	nalysis Year		Existing	Plus Proj	ect		
Project Description	Tracy Hills Sp	ecific Plan								
Inputs										
Upstream Adj R	amp	1	ber of Lanes, N	2					Downstrea	am Adj
□Yes□	On	Ramp Numbe		1					Ramp	
103	1011	1	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration I	ane Length L <sub>D</sub>	200					✓No	Off
		Freeway Volu	me, V <sub>F</sub>	1178						
L <sub>up</sub> = fi	t	Ramp Volume	e, V <sub>R</sub>	211					L <sub>down</sub> =	ft
		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					\/ -	voh/h
$V_u = V_0$	eh/h	Ramp Free-F	ow Speed, S <sub>FR</sub>	35.0					$V_D =$	veh/h
Conversion to	n nc/h l ln		. 117							
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>in</sub> , x f <sub>i</sub>
, ,	(Veh/hr)	<b></b>		<u> </u>	<u> </u>	_		ı.		
Freeway	1178	0.92	Level	18	0	_	917	1.00		96
Ramp	211	0.93	Level	4	0	0.9	980	1.00	2	31
UpStream		$\vdash$			-	+				
DownStream		Merge Areas			+			iverge Areas		
Estimation of		merge Areas			Estimat	ion o		iverge Areas		
					Lotimat	1011 0				
	$V_{12} = V_{F}$							$V_R + (V_F - V_F)$		
L <sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(1	Equation 13-1	2 or 13-13	)
P <sub>FM</sub> =	using	Equation (I	Exhibit 13-6)		P <sub>FD</sub> =		1.	000 using Equ	uation (Exh	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		13	896 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		0	pc/h (Equatio	n 13-14 oi	· 13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	0 pc/h?	s 🗆 No				34 > 2,7	00 pc/h?	Yes <b>☑</b> No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *						• .		Yes <b>☑</b> No		
			-16, 13-18, or		1			c/h (Equation	13-16, 13	-18, or 13-
If Yes,V <sub>12a</sub> =	13-19				If Yes,V <sub>12a</sub> =		19			
Capacity Che	cks				Capacit	y Che	ecks			
	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
					$V_{F}$		1396	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	1165	Exhibit 13-8	4800	No
10					V <sub>R</sub>		231	Exhibit 13-10	0 2000	No
Elow Entoring	Morgo Ir	fluonoo /	roo							110
Flow Entering	Actual	il .	Desirable	Violation?	FIOW EI		Actual	rge Influend Max Desirab		Violation?
V	Actual	Exhibit 13-8	Desirable	Violations	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		396	Exhibit 13-8	4400:All	No
V <sub>R12</sub>	iaa Datam		:£4 [[]		V <sub>12</sub>					1
Level of Serv					+			termination		<u>r)                                    </u>
$D_R = 5.475 + 0.$	• • • • • • • • • • • • • • • • • • • •	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>		1	D <sub>R</sub> = 4	.252 + 0	.0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				$D_R = 14$	4.5 (pc/	mi/ln)			
LOS = (Exhibit	13-2)				LOS = B	(Exhib	oit 13-2)			
Speed Detern	nination				Speed L	Deter	minatio	n		
M <sub>S</sub> = (Exibit 1:	3-11)				$D_s = 0$	.449 (E	xhibit 13-	·12)		
-	ibit 13-11)					-	(Exhibit			
	-				1	-	(Exhibit	•		
•	ibit 13-11) ibit 13-13)					-	-	·-		
. ,					<u></u>		(Exhibit			
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0		MPS AND	IVAINE JOIN			<u></u> 1			
General Info				Site Infor					
Analyst		ey-Horn & Asso		eeway/Dir of Tr		I-580 WB			
Agency or Compan	-			nction	ļ	I-580/Corral Ho	llow Road		
Date Performed		/2014		risdiction					
Analysis Time Perio		Peak	Ar	nalysis Year		Existing+Project	t Mitigated		
Project Description	Tracy Hills Sp	ecific Plan							
nputs								1	
Jpstream Adj Ram	р	Freeway Num	per of Lanes, N	2				Downstre	am Adj
		Ramp Number	of Lanes, N	1				Ramp	•
☐ Yes ☐ O	n	Acceleration L	ane Length, L <sub>A</sub>	400				□Yes	On
			ane Length L <sub>D</sub>						
☑ No ☐ O	т	Freeway Volum	- 0	1689				✓ No	Off
= ft			'					L <sub>down</sub> =	ft
<sub>-up</sub> = ft		Ramp Volume	11	425				down	
/ <sub>u</sub> = veh/	'h	Freeway Free	Flow Speed, S <sub>FF</sub>	70.0				V <sub>D</sub> =	veh/h
u VCIII		Ramp Free-Flo	ow Speed, S <sub>FR</sub>	55.0				١٠	
Conversion	to pc/h Un	der Base (	Conditions					•	
(pc/h)	V	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	fp	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
	(Veh/hr)						<u>'</u>		
Freeway	1689	0.92	Level	18	0	0.917	1.00	+	2001
Ramp	425	0.72	Level	13	0	0.939	1.00		629
UpStream									
DownStream		1					<u> </u>		
<b></b>		Merge Areas			<b>F</b> = 45 45	·	Diverge Areas		
Estimation o	of V <sub>12</sub>				Estimati	on of v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	(P <sub>EM</sub> )				V <sub>12</sub>	= V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub>	<sub>R</sub> )P <sub>ED</sub>	
- <sub>EQ</sub> =		ation 13-6 or	13-7)		L <sub>EQ</sub> =		(Equation 13		13)
P <sub>FM</sub> =			ion (Exhibit 13-6)		P <sub>FD</sub> =		using Equati		
<sub>12</sub> =			OTT (EXTIIDIT 10-0)				pc/h	OII (EXIIIDIL I	0-1)
· <del>-</del>	2001	•			V <sub>12</sub> =		•	10 11 10	47)
$V_3$ or $V_{av34}$	-		13-14 or 13-17)		$V_3$ or $V_{av34}$		pc/h (Equation		17)
Is $V_3$ or $V_{av34} > 2,7$							Yes No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5					Is V <sub>3</sub> or V <sub>av3</sub>	$_{34} > 1.5 * V_{12}/2$	☐ Yes ☐ No		
f Yes,V <sub>12a</sub> =	•		-16, 13-18, or		If Yes,V <sub>12a</sub> =		pc/h (Equation	on 13-16, 1	3-18, or
	13-19	)					13-19)		
Capacity Ch	_			1	Capacity	/ Checks			1
	Actual	C	apacity	LOS F?	ļ	Actu		apacity	LOS F?
		1 1			$V_{F}$		Exhibit 13	-8	
$V_{FO}$	2630	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>	Exhibit 13	-8	
FU					V <sub>R</sub>		Exhibit 13	3-	
							10		
low Enterin	_	_			Flow En		erge Influe		1
	Actual	1 .	Desirable	Violation?		Actual	Max De:	sirable	Violation
$V_{R12}$	2630	Exhibit 13-8	4600:All	No	V <sub>12</sub>	<u> </u>	Exhibit 13-8	<u></u>	<u> </u>
Level of Serv	vice Deteri	mination (i	f not F)		Level of	Service L	eterminatio	on (if not	t <b>F</b> )
D <sub>R</sub> = 5.475	+ 0.00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> - 0.0	0627 L <sub>∆</sub>		<del> </del>		0.0086 V <sub>12</sub> - 0		-
) <sub>R</sub> = 23.2 (pc/		12	^			c/mi/ln)	12	D	
	•								
OS = C (Exhibi						xhibit 13-2)	· · · · ·		
Speed Deter	mination				<del>  '                                   </del>	eterminat	ion		
$M_{\rm S} = 0.331  (E)$	xibit 13-11)				$D_s = (E_s)$	xhibit 13-12)			
	n (Exhibit 13-11)				S <sub>R</sub> = mp	oh (Exhibit 13-1	2)		
3 <sub>⊳</sub> = 60.7 mph									
					S <sub>0</sub> = mr	oh (Exhibit 13-1	2)		
$S_0 = N/A mph$	(Exhibit 13-11) n (Exhibit 13-13)				I *	oh (Exhibit 13-1 oh (Exhibit 13-1	•		

		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSH	EET				
Genera	l Inform				Site Infor						
Analyst Agency or C Date Perfor			ey-Horn & Asso	J	reeway/Dir of Tr unction urisdiction	avel	I-580 W I-580/C	/B orral Hollo	w Road		
nalysis Tin		8/14/: PM P			nalysis Year		Evisting	j+Project N	Mitigated		
		Fracy Hills Spe			inaryolo i oui		LAISTING	g · i Tojocci i	milgated		
nputs											
Jpstream A	di Ramn		Freeway Num	ber of Lanes, N	2					Downstre	am Adi
	_		Ramp Numbe	r of Lanes, N	1					Ramp	
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	400					☐Yes	On
✓ No	Off		Deceleration I	ane Length L <sub>D</sub>						✓ No	Off
			Freeway Volu	$me, V_F$	967					<u> </u>	
up =	ft		Ramp Volume	e, V <sub>R</sub>	223					L <sub>down</sub> =	ft
/ <sub>u</sub> =	veh/h		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
u	VCII/II		Ramp Free-Fl	ow Speed, S <sub>FR</sub>	55.0						
Conver	sion to	pc/h Und	der Base	Conditions							
(pc/l	h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_{HV}$	$f_p$	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
reeway		967	0.92	Level	18	0	0.9	917	1.00		1146
Ramp		223	0.83	Level	5	0		976	1.00		275
JpStream											
DownStrea	m		<u> </u>						\ A		
stimat	ion of	V	Merge Areas			Estimat	ion o	f v	Diverge Areas		
			(D )							\D	
_		V <sub>12</sub> = V <sub>F</sub>	( r <sub>FM</sub> ) ation 13-6 o	r 12 7)		_			V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub> Equation 13		13)
EQ =				i 13-7) ion (Exhibit 13-6	١	L <sub>EQ</sub> = P <sub>FD</sub> =			using Equation		
FM = 12 =		1146		ווטוו (באוווטונ וט-ט	)	V <sub>12</sub> =			oc/h	JII (EXIIIDIL I	J-1)
12 ' <sub>3</sub> or V <sub>av34</sub>				13-14 or 13-17	)	V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equation	13-14 or 13-	17)
	2.700 × ء	pc/h? TYes		10-14-01-10-17	,		a <sub>4</sub> > 2.70		Yes □No		,
		V <sub>12</sub> /2							∃Yes ⊟No		
f Yes,V <sub>12a</sub> :		pc/h		3-16, 13-18, or		If Yes,V <sub>12a</sub> =		ı	oc/h (Equatio		3-18, or
		13-19)							3-19)		
Capacit	y Cned		1 6	`anasitu	100.50	Capacit	y Che		0-		1 100 50
		Actual		Capacity	LOS F?	V <sub>F</sub>		Actual	Exhibit 13-	pacity	LOS F?
					l	$V_{FO} = V_{F}$	- \/		Exhibit 13-	-	
V <sub>F</sub>	0	1421	Exhibit 13-8		No		V R		Exhibit 13		
						V <sub>R</sub>			10		
low Er	ntering	Merge In	fluence A	rea		Flow Er	nterin	g Dive	rge Influer	nce Area	
		Actual	1	Desirable	Violation?		F	Actual	Max Des	sirable	Violation
V <sub>R1</sub>		1421	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
			nination (			<del>-</del>			terminatio		: <b>F</b> )
			0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>		1			.0086 V <sub>12</sub> - 0	).009 L <sub>D</sub>	
	3.9 (pc/mi/	*					oc/mi/lr				
	(Exhibit 1						Exhibit				
Speed L	Determ	ination				Speed L			n		
1 <sub>S</sub> = 0	.293 (Exibi	it 13-11)				1 "	Exhibit 1				
	1.8 mph (E	Exhibit 13-11)				I ''		ibit 13-12)			
U		xhibit 13-11)				ľ		ibit 13-12)			
	1.8 mph (E	Exhibit 13-13)				S = m	nph (Exh	ibit 13-13)			
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		RAI	MPS AND	<b>RAMP JUN</b>	<b>CTIONS W</b>	ORKSHI	EET				
General	Inforn				Site Infor						
Analyst Agency or Co Date Perforn		Kimle 8/14/	ey-Horn & Asso	Jı	reeway/Dir of Tr unction urisdiction		I-580 EB I-580/Cor	ral Hollov	w Road		
Analysis Tim		6/14// AM P			nalysis Year		Existing F	Plus Build	lout		
		racy Hills Spe			,		5				
nputs											
Jpstream Ac	dj Ramp		Freeway Num Ramp Numbe	ber of Lanes, N	2					Downstre Ramp	am Adj
Yes	On		Acceleration I	ane Length, L <sub>A</sub>	250					Yes	On
✓ No	Off		Deceleration I Freeway Volu	Lane Length L <sub>D</sub>	178					☑ No	Off
up =	ft		Ramp Volume		279					L <sub>down</sub> =	ft
/ <sub>u</sub> =	veh/h			-Flow Speed, $S_{FF}$ ow Speed, $S_{FR}$	70.0 55.0					V <sub>D</sub> =	veh/h
Convers	sion to	nc/h Hnd		Conditions	00.0						
(pc/h		V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>F</sub>	IV	f <sub>p</sub>	v = V/PH	x f <sub>HV</sub> x f <sub>p</sub>
Freeway		178	0.92	Level	18	0	0.91	7	1.00		211
Ramp		279	0.70	Level	11	0	0.94	.8	1.00		420
JpStream											
DownStream	m								Niverna Anses		
stimati	ion of	<u> </u>	Merge Areas			Estimat	ion of	V	iverge Areas		
	1011 01		<u>/B</u> )			LStillat	1011 01				
		$V_{12} = V_F$							$V_R + (V_F - V_R)$		
EQ =			ation 13-6 o			L <sub>EQ</sub> =			Equation 13-		
<sub>FM</sub> =				tion (Exhibit 13-6)	)	P <sub>FD</sub> =			using Equation	on (Exhibit 1	3-7)
12 =		211 p				V <sub>12</sub> =			oc/h		
or V <sub>av34</sub>		-		13-14 or 13-17	)	V <sub>3</sub> or V <sub>av34</sub>			oc/h (Equation 1		17)
		pc/h? Yes							☐Yes ☐ No		
s V <sub>3</sub> or V <sub>av3</sub>	<sub>34</sub> > 1.5 * \	√ <sub>12</sub> /2		. 40 40 40		Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5 *		☐Yes ☐ No		0.40
Yes,V <sub>12a</sub> =	=	pc/h ( 13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		oc/h (Equatio 3-19)	n 13-16, 1	3-18, or
Capacity	v Chec		<u>'</u>			Capacit	v Che		, 10)		
	Ī	Actual		Capacity	LOS F?	<del>†                                    </del>		Actual	Ca	pacity	LOS F?
				•		V <sub>F</sub>			Exhibit 13-		
V <sub>FC</sub>		631	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13-	-8	
FC						V <sub>R</sub>			Exhibit 13	j-	
low En	terina	Merae In	fluence A	rea		Flow En	terina	Diver	ge Influer	nce Area	_ <b></b>
	Ĭ	Actual		Desirable	Violation?			tual	Max Des		Violation?
V <sub>R12</sub>	2	631	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
* K12		ce Detern	nination (	if not F)	-	Level of	<sup>F</sup> Servi	ce De	terminatio	n (if not	<i>F</i> )
	Servi					1			.0086 V <sub>12</sub> - 0		-
evel of			).0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>			D <sub>R</sub> - 4.2			D	
.evel of D <sub>R</sub> =		.00734 v <sub>R</sub> + 0	).0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		1	oc/mi/ln)		12	р	
D <sub>R</sub> = 8.6	5.475 + 0 6 (pc/mi/lr	.00734 v <sub>R</sub> + 0	).0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		$D_R = (p$	oc/mi/ln)		12	<sub>-</sub>	
D <sub>R</sub> = 8.6 OS = A	5.475 + 0 6 (pc/mi/lr (Exhibit 1	.00734 v <sub>R</sub> + ( ı) 3-2)	0.0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		D <sub>R</sub> = (p LOS = (E	oc/mi/ln) Exhibit 1	3-2)			
D <sub>R</sub> = 8.6 OS = A	5.475 + 0 6 (pc/mi/lr (Exhibit 13 <b>Determ</b>	.00734 v <sub>R</sub> + 0 n) 3-2) <b>ination</b>	0.0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		D <sub>R</sub> = (p LOS = (E <b>Speed L</b>	oc/mi/ln) Exhibit 1 <b>Determ</b>	3-2) inatio			
evel of $D_R = 0.00$	5.475 + 0 6 (pc/mi/lr (Exhibit 13 <b>Determ</b> 301 (Exibi	.00734 v <sub>R</sub> + 0 n) 3-2) <b>ination</b> t 13-11)	0.0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		$D_R = (p)$ $LOS = (E)$ $Speed L$ $D_S = (E)$	oc/mi/ln) Exhibit 1 <b>Determ</b> Exhibit 13-	3-2) <b>inatio</b> 12)			
D <sub>R</sub> = 8.6 OS = A Opeed D D <sub>S</sub> = 0.3	5.475 + 0 6 (pc/mi/lr (Exhibit 13 <b>Determ</b> 301 (Exibi	.00734 v <sub>R</sub> + 0 n) 3-2) <b>ination</b> t 13-11) exhibit 13-11)	).0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		$D_R = (p)$ $LOS = (E)$ $Speed L$ $D_S = (E)$ $S_R = m$	oc/mi/ln) Exhibit 1 Determ Exhibit 13- ph (Exhib	3-2) <b>inatio</b> 12) it 13-12)			
D <sub>R</sub> = 0.00 = 0.	5.475 + 0 6 (pc/mi/lr (Exhibit 1: <b>Determ</b> 301 (Exibi 1.6 mph (E	.00734 v <sub>R</sub> + 0 n) 3-2) <b>ination</b> t 13-11)	).0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		$D_R$ = (p LOS = (E <b>Speed L</b> $D_S$ = (E $S_R$ = m $S_0$ = m	oc/mi/ln) Exhibit 1 <b>Determ</b> Exhibit 13-	3-2) <b>inatio</b> 12) it 13-12) it 13-12)			

		RAMP	S AND RAM	MP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation	1 (7-(14))	O AND IVAN	Site Infor		71110	·			
Analyst		ey-Horn & Asso	nciates F	reeway/Dir of Ti		I-580 EI	 R			
Agency or Company	Millio	by-Holli & Asse		unction				Hollow Road		
Date Performed	8/14	/2014		urisdiction		1-300 ai	iu Corrai i	TOILOW TOOLG		
Analysis Time Period				nalysis Year		Existino	Plus Buil	dout		
	Tracy Hills Sp					LAIDIIII	i lao Bali	aoat		
Inputs	Tracy Time op	oomo i idii								
		Freeway Num	ber of Lanes, N	2						
Upstream Adj R	amp	1 '							Downstrea	am Adj
□Yes□	On	Ramp Numbe		1					Ramp	
□ res □	JOH	Acceleration L	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration I	_ane Length L <sub>D</sub>	200					□ Na	□ o#
	3011	Freeway Volu	me, V <sub>r</sub>	540					✓ No	Off
L <sub>up</sub> = fi	t	Ramp Volume	•	362					L <sub>down</sub> =	ft
ир		1								
V,, = ve	eh/h	1	-Flow Speed, S <sub>FF</sub>						$V_D =$	veh/h
			ow Speed, S <sub>FR</sub>	35.0						
Conversion to	o pc/h Un	der Base	Conditions							
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	fp	v = V/PHF	x f x f
, ,	(Veh/hr)	<b>↓</b>	10114111		ļ					· ·
Freeway	540	0.92	Level	18	0	0.9	917	1.00	64	40
Ramp	362	0.69	Level	19	0	9.0	913	1.00	5	74
UpStream		ļļ								
DownStream		لــــِـــا								
		Merge Areas						Diverge Areas		
Estimation of	v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )					V <sub>12</sub> =	: V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
l =	12 1	tion 13-6 or	13_7)		l =			Equation 13-1		1
L <sub>EQ</sub> =					L <sub>EQ</sub> =			-		•
P <sub>FM</sub> =	_	Equation (	=XNIDIT 13-6)		P <sub>FD</sub> =			000 using Equ	uation (Exhi	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		64	10 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		$V_3$ or $V_{av34}$		0	pc/h (Equation	n 13-14 or	13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	0 pc/h?	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	34 > 2,70	00 pc/h? [	☐Yes ☑No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 '					Is V <sub>3</sub> or V <sub>3V</sub>	<sub>34</sub> > 1.5	* V <sub>12</sub> /2	☐Yes ☑No		
			-16, 13-18, or		" "	• .		c/h (Equation	13-16, 13-	-18, or 13-
If Yes,V <sub>12a</sub> =	13-19		, ,		If Yes,V <sub>12a</sub> =	=		9) ` '	,	,
Capacity Che	cks				Capacit	y Che	ecks			
	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
			•		$V_{F}$		640	Exhibit 13-8	4800	No
V		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>			Exhibit 13-8	+	
$V_{FO}$		EXHIBIT 13-6					66	<del></del>	1	No
					$V_R$		574	Exhibit 13-1	0 2000	No
Flow Entering	g Merge In	fluence A	rea		Flow Er	nterin	g Dive	rge Influen	ce Area	
	Actual	T .	Desirable	Violation?		A	ctual	Max Desirab	le	Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	(	640	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)	1		f Serv	rice De	termination	n (if not	F)
$D_R = 5.475 + 0.$					+			.0086 V <sub>12</sub> - 0.0	_	' /
	• • •	0.0076 V <sub>12</sub> -	0.00027 L <sub>A</sub>					.0000 v <sub>12</sub> - 0.0	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	,				$D_R = 8.$	.0 (pc/n	ni/ln)			
LOS = (Exhibit '	13-2)				LOS = A	(Exhib	it 13-2)			
Speed Detern	nination				Speed L	Deteri	minatio	on		
•					<del></del>		chibit 13			
M <sub>S</sub> = (Exibit 13	*				1 -			•		
	ibit 13-11)				1	-	(Exhibit	•		
$S_0 = mph (Exh$	ibit 13-11)				$S_0 = N$	/A mph	(Exhibit	13-12)		
S = mph (Exh	ibit 13-13)				S = 50	6.6 mph	(Exhibit	13-13)		
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		RAI	<u>MPS AND</u>	RAMP JUN	<u>CTIONS</u> W	<u> /ORKS</u> H	<u>EET</u>				
eneral	Inform	nation			Site Infor	mation					
nalyst		Kimle	ey-Horn & Asso	ciates Fr	eeway/Dir of Tr	avel	I-580 W	В			
gency or C				Ju	ınction		I-580/Cd	orral Hollov	/ Road		
ate Perforr	med	8/14/	2014	Ju	ırisdiction						
nalysis Tim		AM F		Ar	nalysis Year		Existing	Plus Build	out		
	cription	Tracy Hills Spe	ecific Plan								
nputs										1	
pstream Ad	di Ramp		Freeway Num	ber of Lanes, N	2					Downstre	am Adi
	.,		Ramp Numbe	r of Lanes, N	1					Ramp	,
Yes	On		Acceleration L	ane Length, L <sub>Δ</sub>	400					☐Yes	On
				ane Length L <sub>D</sub>							
✓ No	Off		Freeway Volu		1689					✓ No	Off
=	ft									L <sub>down</sub> =	ft
ıp =			Ramp Volume	11	1404					down	
' =	veh/h			-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
				ow Speed, S <sub>FR</sub>	55.0						
onvers	sion to	pc/h Und	der Base (	Conditions							
(pc/h	1)	V	PHF	Terrain	%Truck	%Rv	l f	: HV	$f_p$	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
	·	(Veh/hr)				ļ	_			<u> </u>	۴
reeway		1689 1404	0.92	Level	18	0	0.9	+	1.00		2001 2077
Ramp		1404	0.72	Level	13	U	0.9	139	1.00	<u> </u>	2077
JpStream DownStrear			-				+			-	
ownoucai			Merge Areas					<u>_</u>	iverge Areas		
stimat	ion of	V <sub>40</sub>				Estimat	ion of	f V <sub>40</sub>			
			/ D \						0.1 . 1.1	\D	
		$V_{12} = V_{F}$							' <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>		
<u>=</u> Q =			ation 13-6 or			L <sub>EQ</sub> =			Equation 13		
FM =		1.000	using Equat	ion (Exhibit 13-6)		P <sub>FD</sub> =		u	sing Equation	on (Exhibit 1	3-7)
12 =		2001	pc/h			V <sub>12</sub> =		р	c/h		
or V <sub>av34</sub>		0 pc/l	n (Equation	13-14 or 13-17)	)	$V_3$ or $V_{av34}$		р	c/h (Equation	13-14 or 13-	17)
s V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 2,700	pc/h? Ye:	s 🗹 No			Is V <sub>3</sub> or V <sub>av</sub>	34 > 2,70	00 pc/h? [	]Yes □No		
		V <sub>12</sub> /2 □ Ye				Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5 <sup>1</sup>	* V <sub>12</sub> /2	Yes □No	ı	
Yes,V <sub>12a</sub> =				3-16, 13-18, or		If Yes,V <sub>12a</sub> =			c/h (Equatio		3-18, or
		13-19)						13	-19)		
apacit	y Chec	ks			-	Capacit	y Che	cks			
		Actual	C	apacity	LOS F?			Actual		pacity	LOS F?
						$V_{F}$			Exhibit 13-	-8	
V <sub>FC</sub>	, I	4078	Exhibit 13-8		No	$V_{FO} = V_{F}$	-V <sub>R</sub>		Exhibit 13-	-8	
FC						V <sub>R</sub>			Exhibit 13	3-	
									10		
low En	tering		fluence A			Flow En	_		ge Influei		
		Actual	1	Desirable	Violation?		A	ctual	Max Des	sirable	Violation
V <sub>R1</sub>		4078	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
evel of	Servi	ce Detern	nination (	if not F)		Level of	f Serv	ice Det	erminatio	n (if not	: <b>F</b> )
D <sub>R</sub> =	5.475 + 0	.00734 v <sub>R</sub> + 0	0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>			D <sub>R</sub> = 4.	252 + 0.	0086 V <sub>12</sub> - 0	0.009 L <sub>D</sub>	
	3.8 (pc/mi/		-				oc/mi/ln			_	
	(Exhibit 1	•				I ''	Exhibit				
		ination				Speed L			n		
•						<del>  '                                   </del>					
•	507 (Exib	•				I " '	xhibit 13	•			
	5.8 mph (E	Exhibit 13-11)				I ''		bit 13-12)			
<sub>0</sub> = N/	/A mph (E	xhibit 13-11)				$S_0 = m$	ph (Exhi	bit 13-12)			
						S = m	h / [h:	F: 10 10\			
= 55	o.8 mph (E	Exhibit 13-13)				S = m	ıprı (⊏xnı	bit 13-13)			

		RAMP	S AND RAI	/P JUNCTION	ONS WC	RKS	HEET			
General Infor	mation	10 1111	- / IV-III	Site Infori			· · — • ·			
Analyst Agency or Company	Kimle	ey-Horn & Asso	J	reeway/Dir of Tra		I-580 V I-580 a		Hollow Road		
Date Performed Analysis Time Period	8/14/ AM P			lurisdiction Analysis Year		Eviation	n Divo Duile	dout		
Project Description				alialysis i cal		EXISTI	g Plus Build	Jout		
Inputs	Tracy Time ope	Joine F Idir								
Upstream Adj R	amp	I	ber of Lanes, N	2					Downstrea	am Adj
Yes	On	Ramp Numbe Acceleration L	ane Length, L	1					Ramp  ☐ Yes	On
✓ No	Off	1	ane Length L <sub>D</sub>	200					✓ No	Off
L <sub>up</sub> = f	•	Freeway Volu	•	2024					L <sub>down</sub> =	ft
-up '		Ramp Volume		335					down	
$V_u = V_u$	eh/h		-Flow Speed, S <sub>FF</sub> low Speed, S <sub>FR</sub>	70.0 35.0					V <sub>D</sub> =	veh/h
Conversion to	o pc/h Und		. 117						<u> </u>	
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	2024	0.92	Level	18	0	0.	917	1.00	23	198
Ramp	335	0.77	Level	14	0	0.	935	1.00	4	66
UpStream						-				
DownStream		I I Merge Areas					<u> </u>	Diverge Areas		
Estimation of		morgo / nodo			Estimat	ion o	$fv_{42}$	717 01 90 7 11 040		
	V <sub>12</sub> = V <sub>F</sub>	/ D \						V <sub>R</sub> + (V <sub>F</sub> - V	\D	
l =		(' <sub>FM</sub> / ition 13-6 or	13_7)		  =			Equation 13-	–	)
L <sub>EQ</sub> = P <sub>FM</sub> =		Equation (			L <sub>EQ</sub> = P <sub>FD</sub> =			000 using Eq		
·	pc/h	Equation (	-XIIIDIC 10 0)		V <sub>12</sub> =			898 pc/h	dation (EXII	bit 15-7)
V <sub>3</sub> or V <sub>av34</sub>	•	Fauation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equati	on 13-14 o	13-17)
Is $V_3$ or $V_{av34} > 2,70$			110110111			a > 2.7		Yes ☑ No	511 10 11 01	10 17)
Is $V_3$ or $V_{av34} > 1.5$								∃Yes ☑ No		
If Yes,V <sub>12a</sub> =		Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub> =			c/h (Equation	n 13-16, 13	-18, or 13-
Capacity Che					Capacit	y Ch		,		
•	Actual	C	apacity	LOS F?			Actual	Ca	apacity	LOS F?
					$V_{F}$		2398	Exhibit 13-	8 4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	1932	Exhibit 13-	8 4800	No
					$V_R$		466	Exhibit 13-1	0 2000	No
Flow Entering	g Merge In	fluence A	rea		Flow Er	nterin	g Dive	rge Influer		
	Actual	<del>†                                    </del>	Desirable	Violation?		_	Actual	Max Desira	1	Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>		2398	Exhibit 13-8	4400:All	No
<b>Level of Service Determination (if not F)</b> $D_{R} = 5.475 + 0.00734 \text{ V}_{R} + 0.0078 \text{ V}_{12} - 0.00627 \text{ L}_{A}$								terminatio	•	<i>F)</i>
	• • • • • • • • • • • • • • • • • • • •	0.0078 V <sub>12</sub> -	· 0.00627 L <sub>A</sub>					.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	•				l ''	3.1 (pc	,			
LOS = (Exhibit							oit 13-2)			
Speed Detern	nination				Speed L					
M <sub>S</sub> = (Exibit 1	3-11)				-	-	xhibit 13-	-		
	ibit 13-11)					-	(Exhibit			
	ibit 13-11)				*	-	(Exhibit			
	ibit 13-13)						(Exhibit			
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Concret lafe		MIS AND	RAMP JUN			<u> </u>			
General Info				Site Infor					
Analyst		ey-Horn & Asso		eeway/Dir of Tr		I-580 EB	5 .		
Agency or Company		10044		Inction		I-580/Corral Holl	ow Road		
Date Performed Analysis Time Perio		/2014 Page		risdiction		Eviation Diva Dui	ilalat		
			AI	nalysis Year		Existing Plus Bui	lidout		
Project Description   Inputs	Tracy mills Spe	ecilic Pian							
πραιδ		Francisco Nicora	hanaflanaa N					1	
Jpstream Adj Ramp	)	1	ber of Lanes, N	2				Downstre	am Adj
		Ramp Numbe	r of Lanes, N	1				Ramp	
□Yes □O	n	Acceleration L	ane Length, L <sub>A</sub>	250				☐Yes	On
☑No □O	ff	Deceleration L	ane Length L <sub>D</sub>						_
	11	Freeway Volui	me, V <sub>r</sub>	1433				✓ No	Off
- <sub>up</sub> = ft		Ramp Volume		699				L <sub>down</sub> =	ft
up									
/ <sub>u</sub> = veh/	h		-Flow Speed, S <sub>FF</sub>	70.0				V <sub>D</sub> =	veh/h
u		Ramp Free-Fl	ow Speed, S <sub>FR</sub>	55.0					
Conversion	to pc/h Une	der Base (	Conditions						
(pc/h)	V () ( =  = / = =)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	fp	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
	(Veh/hr)	<del>                                     </del>			<b>.</b>	-	<u> </u>		<u> </u>
Freeway	1433	0.92	Level	18	0	0.917	1.00	+	1698
Ramp	699	0.86	Level	6	0	0.971	1.00	-	837
JpStream	<b>├</b>	<b> </b>					ļ		
DownStream	<u> </u>	Marria Arraa			-		Diverse Asses		
		Merge Areas			Ectimoti	ion of v	Diverge Areas		
stimation o	1 V <sub>12</sub>				ESuman	ion of v <sub>12</sub>			
	$V_{12} = V_{F}$	(P <sub>FM</sub> )				V <sub>12</sub> =	$V_R + (V_F - V_I)$	<sub>R</sub> )P <sub>FD</sub>	
EQ =	(Equ	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(Equation 13	-12 or 13-1	13)
) <sub>FM</sub> =			ion (Exhibit 13-6)		P <sub>FD</sub> =		using Equation		
' <sub>12</sub> =	1698		(=:::::::::::::::::::::::::::::::::::::		V <sub>12</sub> =		pc/h	(	,
		•	10 44 40 47)				•	10 11 10	17)
<sup>7</sup> <sub>3</sub> or V <sub>av34</sub>			13-14 or 13-17)	1	V <sub>3</sub> or V <sub>av34</sub>	. 0.700 #0	pc/h (Equation		17)
s $V_3$ or $V_{av34} > 2.7$						<sub>34</sub> > 2,700 pc/h?			
ls V <sub>3</sub> or V <sub>av34</sub> > 1.5					Is V <sub>3</sub> or V <sub>av3</sub>	<sub>34</sub> > 1.5 * V <sub>12</sub> /2			
Yes,V <sub>12a</sub> =			3-16, 13-18, or		If Yes,V <sub>12a</sub> =		pc/h (Equation	on 13-16, 1	3-18, or
Capacity Ch	13-19)	)					3-19)		
араспу Сп	1	1 0		100.50	Capacity	y Checks	1 0		1 100 5
	Actual	<del>                                     </del>	apacity	LOS F?	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Actual		apacity	LOS F
					V <sub>F</sub>		Exhibit 13	-8	
$V_{FO}$	2535	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>	Exhibit 13	-8	
. 0					V <sub>R</sub>		Exhibit 13	3-	
	<u></u>						10		
low Enterin	<del></del>	1			Flow En	tering Dive			
	Actual	1 1	Desirable	Violation?		Actual	Max Des	sirable	Violation
V <sub>R12</sub>	2535	Exhibit 13-8	4600:All	No	V <sub>12</sub>		Exhibit 13-8		
evel of Serv	∕ice Deterr	nination (i	if not F)		Level of	Service De	eterminatio	on (if not	t F)
D <sub>R</sub> = 5.475 -	+ 0.00734 v <sub>R</sub> + 0	0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>			O <sub>R</sub> = 4.252 + 0	0.0086 V <sub>12</sub> - 0	0.009 L <sub>D</sub>	
<sub>R</sub> = 23.3 (pc/r		12	,,			c/mi/ln)	12	D	
	•					Exhibit 13-2)			
ineed Deter	mination				<del></del>	eterminati	on		
peca Deter					$D_s = (E_s)$	xhibit 13-12)			
•	'ibit 13-11)								
M <sub>S</sub> = 0.343 (Ex	•				S <sub>R</sub> = mp	oh (Exhibit 13-12	)		
$I_S = 0.343 \text{ (Ex}$ $R = 60.4 \text{ mph}$	(Exhibit 13-11)					•	•		
$I_S = 0.343 \text{ (Ex}$ $R = 60.4 \text{ mph}$ $0 = N/A \text{ mph}$	•				S <sub>0</sub> = mp	oh (Exhibit 13-12 oh (Exhibit 13-12 oh (Exhibit 13-13	)		

		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HFFT			
General Infor	mation	I C/-CIVII	O AITO ITAII	Site Infor		11110				
Analyst		ey-Horn & Asso	nciates F	reeway/Dir of Ti		I-580 E	 R			
Agency or Company	IXIIIII	cy-Holli & Asse		unction				Iollow Road		
Date Performed	8/14	/2014		urisdiction		1-500 ai	iu Corrai i	IOIIOW IXOau		
Analysis Time Period				nalysis Year		Existing	Plus Build	lout		
	Tracy Hills Sp					LXIOUITE	i lao Balk	iout .		
Inputs	Tracy Time op	oomo r iair								
•		Freeway Num	ber of Lanes, N	2						
Upstream Adj R	amp	1 '							Downstrea	am Adj
□Yes□	On	Ramp Numbe		1					Ramp	
□ res □	JOH	Acceleration L	ane Length, L <sub>A</sub>						Yes	On
☑ No □	Off	Deceleration I	_ane Length L <sub>D</sub>	200					□ N -	□ o"
	1011	Freeway Volu	me, V <sub>r</sub>	2525					✓ No	Off
L <sub>up</sub> = fi	t	Ramp Volume	•	1092					L <sub>down</sub> =	ft
ир		1								
V,, = ve	eh/h	1	-Flow Speed, S <sub>FF</sub>						$V_D =$	veh/h
			ow Speed, S <sub>FR</sub>	35.0						
Conversion to	pc/h Un	der Base	Conditions							
(pc/h)	V	PHF	Terrain	%Truck	%Rv		$f_HV$	$f_p$	v = V/PHF	x f x f
, ,	(Veh/hr)	<del>                                     </del>	Torrain	<b></b>	<u> </u>	_		ı.		· ·
Freeway	2525	0.92	Level	18	0	0.9	917	1.00	29	92
Ramp	1092	0.91	Level	8	0	0.9	962	1.00	12	48
UpStream		<b>└</b>		ļ						
DownStream										
		Merge Areas			<u> </u>			iverge Areas		
Estimation of	V <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
l =	12 1	tion 13-6 or	13_7)		l =			Equation 13-1		1
L <sub>EQ</sub> =			*		L <sub>EQ</sub> =		-	-		
P <sub>FM</sub> =	_	Equation (	EXHIBIT 13-0)		P <sub>FD</sub> =			000 using Equ	lation (Exni	DIT 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =			992 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	-		-14 or 13-17)		$V_3$ or $V_{av34}$		0	pc/h (Equatio	n 13-14 oı	13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	0 pc/h? 🗌 Ye	s 🗌 No			Is V <sub>3</sub> or V <sub>av3</sub>	<sub>34</sub> > 2,70	00 pc/h? [	∃Yes ☑No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *	V <sub>12</sub> /2	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5	* V <sub>12</sub> /2	JYes ☑ No		
			-16, 13-18, or		If Yes,V <sub>12a</sub> =	• .		c/h (Equation	13-16, 13	-18, or 13-
If Yes,V <sub>12a</sub> =	13-19	)					19	9)		
Capacity Che	cks				Capacit	y Che	ecks			
	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
					$V_{F}$		2992	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V-	1744	Exhibit 13-8	4800	No
*FO		EXHIBIT TO 0							1000	
					$V_R$		1248	Exhibit 13-10		No
Flow Entering	g Merge In	fluence A	rea	_	Flow En	terin	g Dive	rge Influen		
	Actual	Max	Desirable	Violation?		1	\ctual	Max Desirab	le	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>	2	992	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)		Level of	Serv	rice De	terminatio	n (if not	<del></del> F)
$D_R = 5.475 + 0.$					<del>                                     </del>			.0086 V <sub>12</sub> - 0.0		<u>,                                      </u>
		12	-Д		1			12	р	
	•					3.2 (pc/	,			
LOS = (Exhibit							oit 13-2)			
Speed Detern	nination				Speed L	Deteri	minatio	n		
M <sub>S</sub> = (Exibit 13	R-11)				$D_s = 0.$	540 (E)	khibit 13-	-12)		
-	•				1 -		(Exhibit	-		
	ibit 13-11)									
•	ibit 13-11)				1 *	-	(Exhibit	·-		
S = mph (Exh	ibit 13-13)				S = 54	4.9 mph	(Exhibit	13-13)		
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		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSH	EET				
General	Inform				Site Infor						
nalyst		Kimle	y-Horn & Asso	ciates Fr	eeway/Dir of Tr	avel	I-580 WE	3			
gency or C	ompany			Ju	ınction		I-580/Co	rral Hollow	Road		
ate Perforr	ned	8/14/	2014	Ju	ırisdiction						
nalysis Tim		PM P		Ar	nalysis Year		Existing	Plus Buildo	out		
	ription	Tracy Hills Spe	ecific Plan								
nputs			L							1	
pstream Ad	dj Ramp		•	ber of Lanes, N	2					Downstre	am Adj
			Ramp Numbe	r of Lanes, N	1					Ramp	
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	400					☐Yes	On
✓No	Off		Deceleration L	ane Length L <sub>D</sub>						☑ No	□ o#
	0		Freeway Volu	me, V <sub>F</sub>	967					INO	Off
<sub>.ip</sub> =	ft		Ramp Volume	, V <sub>D</sub>	686					L <sub>down</sub> =	ft
				Flow Speed, S <sub>FF</sub>	70.0					ļ ,	
_ =	veh/h			ow Speed, S <sub>FR</sub>	55.0					V <sub>D</sub> =	veh/h
`onvor	sion to	nc/h Hn		110	33.0					<u> </u>	
		γραπι υπο V		Conditions	I	1				1	
(pc/h	1)	v (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>t</sub>	HV	$f_p$	v = V/PHI	$F \times f_{HV} \times f_{p}$
reeway		967	0.92	Level	18	0	0.9	17	1.00		1146
Ramp		686	0.83	Level	5	0	0.9		1.00		847
JpStream			Ì								
OownStrear	n										
			Merge Areas					Di	verge Areas		
stimat	ion of	v <sub>12</sub>				Estimat	ion of	v <sub>12</sub>			
		V <sub>12</sub> = V <sub>F</sub>	(P <sub>FM</sub> )					V <sub>12</sub> = V	<sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub>	)P <sub>FD</sub>	
EQ =		(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(E	Equation 13-	12 or 13-1	13)
 FM =				ion (Exhibit 13-6)		P <sub>FD</sub> =			sing Equatio		
12 =		1146		, , ,		V <sub>12</sub> =			c/h	,	- /
or V <sub>av34</sub>				13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		•	c/h (Equation 1	13-14 or 13-	17)
	> 2 700	pc/h? Yes		10-14-01-10-17)			> 2.70		Yes No	10 14 01 10	''')
		V <sub>12</sub> /2							Yes No		
				s-16, 13-18, or					res ∟ino c/h (Equatio	n 13 16 1	3 18 or
Yes,V <sub>12a</sub> =	:	13-19)		-10, 13-10, 01		If Yes,V <sub>12a</sub> =	=		.19)	11 13-10, 1	J- 10, UI
apacit	y Chec					Capacit	y Che	cks	,		
		Actual	С	apacity	LOS F?			Actual	Car	pacity	LOS F?
						$V_{F}$			Exhibit 13-	8	
V <sub>FC</sub>		1993	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13-	8	
. F(	)	1000	EXHIBIT TO 0		""				Exhibit 13	- 1	
						V <sub>R</sub>			10		
low En	tering		fluence A			Flow Er		-	ge Influen		
		Actual		Desirable	Violation?		Ad	tual	Max Desi	irable	Violation
V <sub>R1</sub>		1993	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
evel of	Servi	ce Detern	nination (	f not F)		Level of	f Servi	ce Det	erminatio	n (if not	<i>F</i> )
D <sub>R</sub> =	5.475 + 0	0.00734 v <sub>R</sub> + 0	0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>			$D_R = 4.5$	252 + 0.0	0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
<sub>R</sub> = 18	3.1 (pc/mi/	ln)				$D_R = (p$	oc/mi/ln)	)			
	 (Exhibit 1	*				I ''	žxhibit 1				
		ination				Speed L			<u> </u>		
•						<del>  '                                   </del>	Exhibit 13		•		
•	306 (Exib	•						•			
		Exhibit 13-11)				I ''	iph (Exhib	•			
0		xhibit 13-11)				ľ	iph (Exhib	•			
= 61	1.4 mph (E	Exhibit 13-13)				S = m	iph (Exhib	oit 13-13)			

		RAMP	S AND RAM	MP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation	1 (7-(11))	O AITO ITAII	Site Infor		711110				
Analyst		ey-Horn & Asso	ciates F	reeway/Dir of Ti		I-580 W	/B			
Agency or Company		o,		unction				Hollow Road		
Date Performed	8/14	/2014	J	urisdiction						
Analysis Time Period	PM F	Peak	Α	nalysis Year		Existing	Plus Build	dout		
Project Description	Tracy Hills Sp	ecific Plan				•				
Inputs										
Upstream Adj Ra	amp	1	ber of Lanes, N	2					Downstrea	am Adj
☐ Yes ☐	] On	Ramp Numbe		1					Ramp	
	JOH	Acceleration L	ane Length, L <sub>A</sub>						Yes	$\square$ On
✓ No	Off	Deceleration I	ane Length L <sub>D</sub>	200					✓No	Off
		Freeway Volu	me, V <sub>F</sub>	1248						
L <sub>up</sub> = ft		Ramp Volume	e, V <sub>R</sub>	281					L <sub>down</sub> =	ft
		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					\	
$V_u = V_0$	eh/h		ow Speed, S <sub>FR</sub>	35.0					$V_D =$	veh/h
Conversion to	nc/h Hn		. 117							
	γ <del>ρεπ οπ</del>		Conditions		1	Т	_	_		
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_{HV}$	f <sub>p</sub>	v = V/PHF	$x f_{HV} x f_{p}$
Freeway	1248	0.92	Level	18	0	0.9	917	1.00	14	79
Ramp	281	0.93	Level	4	0	0.9	980	1.00	30	08
UpStream		Î		1						
DownStream										
		Merge Areas						Diverge Areas		
Estimation of	v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
L <sub>EQ</sub> =		ation 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-1		)
		Equation (E						000 using Equ		
P <sub>FM</sub> =	_	Equation (I	-XIIIDIL 13-0)		P <sub>FD</sub> =				וואבן ווטווגג	DIC 13-1)
V <sub>12</sub> =	pc/h	/F (; 40	44 40 47)		V <sub>12</sub> =			179 pc/h		40.4=\
$V_3$ or $V_{av34}$	-		-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equatio	n 13-14 oi	13-17)
Is $V_3$ or $V_{av34} > 2,70$								☐Yes ☑No		
Is $V_3$ or $V_{av34} > 1.5$ *					Is V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 1.5		☐Yes ☑No		
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		c/h (Equation	13-16, 13-	-18, or 13-
Capacity Che	13-19	)			Capacit		19	9)		
Сарасну Спе	Actual	1 0	on a situ	LOS F?	Tapacit	y Circ		1 00	no oite :	LOS F?
	Actual	<del>                                     </del>	apacity	LUSF?	\		Actual		pacity	
					V <sub>F</sub>		1479	Exhibit 13-8	+	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$		1171	Exhibit 13-8	4800	No
					$V_R$		308	Exhibit 13-1	0 2000	No
Flow Entering	Merge Ir	fluence A	rea		Flow Er	nterin	g Dive	rge Influen	ce Area	
	Actual	i	Desirable	Violation?		I	Actual	Max Desirab	le	Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	1	479	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)		+	f Serv	rice De	terminatio	n (if not	F)
$D_R = 5.475 + 0.0$					+			.0086 V <sub>12</sub> - 0.0	•	,
D <sub>R</sub> = (pc/mi/ln)	• • •	12	-Д		I_	5.2 (pc/		12	<sub>-</sub> D	
					1		•			
LOS = (Exhibit 1							oit 13-2)			
Speed Detern	nination				Speed L					
M <sub>S</sub> = (Exibit 13	3-11)				$D_s = 0$	.456 (E	xhibit 13-	-12)		
-	ibit 13-11)				$S_R = 5$	7.2 mph	(Exhibit	13-12)		
	ibit 13-11)				1	/A mph	(Exhibit	13-12)		
	ibit 13-13)					-	(Exhibit	•		
. ,		All Rights Reser	vod		HCS2010 <sup>TM</sup>				nerated: 0/2/	2014 11:02 A

		RAMP	S AND RAM	/P JUNCTI	ONS WO	RKS	HEET			
General Infor	mation		- / IVAII	Site Infori			· · — • ·			
Analyst Agency or Company	Kimle	ey-Horn & Asso	J	reeway/Dir of Tra	avel	I-580 E I-580 a		Iollow Road		
Date Performed	8/14/			lurisdiction		Tuintin.	D:I.d 4	Miti mata d		
Analysis Time Period Project Description				Analysis Year		Existing	g+Buildout	witigated		
Inputs	Tracy Tillis Ope	CITIC I IAII								
•		Freeway Num	ber of Lanes, N	2					Downstra	am Adi
Upstream Adj R	amp	Ramp Numbe		2					Downstrea Ramp	am Auj
☐Yes	On	I '	_ane Length, L <sub>Δ</sub>	_					I ·	По-
	70"	1	Lane Length L <sub>D</sub>	200					Yes	□ On
☑ No □	Off	Freeway Volu		540					✓ No	Off
L <sub>up</sub> = f	t	Ramp Volume		362					L <sub>down</sub> =	ft
		1							ļ.,	
V <sub>u</sub> = v	eh/h		low Speed, S <sub>FR</sub>	35.0					V <sub>D</sub> =	veh/h
Conversion to	o nc/h Und	· ·	. 117							
	V V			0/ TI-	0/ D	T	f	t	V = V/DHE	vf vf
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	_	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	X I <sub>HV</sub> X I <sub>p</sub>
Freeway	540	0.92	Level	18	0	_	917	1.00		40
Ramp	362	0.69	Level	19	0	0.	913	1.00	5	74
UpStream DownStream		$\vdash$				+				
Downoucam	<u> </u>	Merge Areas						iverge Areas	1	
Estimation of					Estimat	ion o	f V <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>5++</sub> )						V <sub>R</sub> + (V <sub>F</sub> - V		
L <sub>EQ</sub> =		tion 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-	–	)
P <sub>FM</sub> =		Equation (	•		P <sub>FD</sub> =			000 using Eq		
V <sub>12</sub> =	pc/h	_900000 (-			V <sub>12</sub> =			0 pc/h	dation (Exil	Dit 10 1)
$V_3$ or $V_{av34}$	•	Fouation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equation	on 13-14 oi	13-17)
Is $V_3$ or $V_{av34} > 2,70$						ر 2.7 × 2.7		Yes ☑No		.0,
Is $V_3$ or $V_{av34} > 1.5$								Yes ☑No		
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =			c/h (Equation	13-16, 13	-18, or 13-
	13-19)						19	9)		
Capacity Che		1 -		1	Capacit	y Ch				
	Actual		Capacity	LOS F?			Actual	_	apacity	LOS F?
.,					V <sub>F</sub>	.,	640	Exhibit 13-	+	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	66	Exhibit 13-		No
					V <sub>R</sub>		574	Exhibit 13-1		No
Flow Entering		1		1	Flow En	_		ge Influen		1
.,	Actual	<del>T</del>	Desirable	Violation?	.,		Actual	Max Desiral		Violation?
V <sub>R12</sub>	<u> </u>	Exhibit 13-8			V <sub>12</sub>		640	Exhibit 13-8	4400:All	No No
Level of Serv					<del></del>			terminatio	•	F)
$D_R = 5.475 + 0.$		0.0078 V <sub>12</sub> -	- 0.00627 L <sub>A</sub>					0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	•					7 (pc/r	,			
LOS = (Exhibit							oit 13-2)			
Speed Detern	nination				Speed L	Deter	minatic	n		
M <sub>S</sub> = (Exibit 1:	3-11)				I -	-	xhibit 13-	•		
S <sub>R</sub> = mph (Exh	nibit 13-11)				1		(Exhibit	· ·		
	nibit 13-11)				$S_0 = N$	/A mph	(Exhibit	13-12)		
	nibit 13-13)				S = 56	6.6 mph	(Exhibit	13-13)		
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		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation			Site Infor			··			
Analyst Agency or Company		ey-Horn & Asso	J	reeway/Dir of Tra	avel	I-580 E I-580 a		Hollow Road		
Date Performed Analysis Time Period	8/14/			urisdiction		Cuinting	. Duildaut	Mitigatad		
Project Description				nalysis Year		Existing	g+Buildout	Miligated		
Inputs	Tracy Tillio Opc	JOING F IGHT								
Upstream Adj R	amp	1	ber of Lanes, N	2					Downstrea	am Adj
□Yes	On	Ramp Numbe	r of Lanes, N .ane Length, L <sub>₄</sub>	2					Ramp	
✓ No	Off	1	ane Length L <sub>D</sub>	200					☐ Yes ✓ No	☐ On ☐ Off
		Freeway Volu	•	1092					L <sub>down</sub> =	ft
L <sub>up</sub> = fi	l	Ramp Volume		2525					-down	it.
V <sub>u</sub> = ve	eh/h	1	-Flow Speed, S <sub>FF</sub> ow Speed, S <sub>FR</sub>	70.0 35.0					V <sub>D</sub> =	veh/h
Conversion to	o pc/h Und		* 110							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1092	0.92	Level	18	0	0.	917	1.00	12	294
Ramp	2525	0.91	Level	8	0	0.	962	1.00	28	386
UpStream DownStream		$\vdash$		_		_				
DownStream		I I Merge Areas						Diverge Areas		
Estimation of					Estimat	ion o	f V <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P )						V <sub>R</sub> + (V <sub>F</sub> - V	_\P	
L <sub>EQ</sub> =		tion 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-1	–	3)
-EQ P <sub>FM</sub> =		Equation (			P <sub>FD</sub> =		•	000 using Eq		
V <sub>12</sub> =	pc/h	Lquation (	27(110)( 10 0)		V <sub>12</sub> =			294 pc/h	dation (Exil	ioit io i)
$V_3$ or $V_{av34}$	•	Equation 13	-14 or 13-17)		$V_3$ or $V_{av34}$			pc/h (Equation	on 13-14 or	r 13-17)
Is $V_3$ or $V_{av34} > 2,70$			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			., > 2,7		∃Yes ☑No		,
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 '								Yes ☑ No		
If Yes,V <sub>12a</sub> =		Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub> =	• .		c/h (Equation	13-16, 13	-18, or 13-
Capacity Che		<u> </u>			Capacit	y Ch		-		
	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
					$V_{F}$		1294	Exhibit 13-	4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	-1592	Exhibit 13-	3 4800	No
					$V_R$		2886	Exhibit 13-1		No
Flow Entering		1		•	Flow En	_		rge Influen		•
\ <u>'</u>	Actual	Max Exhibit 13-8	Desirable	Violation?	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		Actual 294	Max Desiral Exhibit 13-8	ole 4400:All	Violation?
V <sub>R12</sub> Level of Serv	ioo Dotorn		if not E		V <sub>12</sub>		-	terminatio		No No
$D_R = 5.475 + 0.$		•						.0086 V <sub>12</sub> - 0.	•	<i>r)</i>
D <sub>R</sub> = 3.473 ° 0. D <sub>R</sub> = (pc/mi/ln		0.0070 V <sub>12</sub>	0.00027 L <sub>A</sub>			.3 (pc/r		.0000 v <sub>12</sub> - 0.	003 LD	
LOS = (Exhibit	•						oit 13-2)			
LOS - (LXIIIDIL					Speed L			<u> </u>		
,	nination				ISDEEU L	Jeter	mmauc	711		
Speed Detern					<del>                                     </del>	600 / [-	vhihit 12	12)		
Speed Determ	3-11)				$D_s = 0.$	-	xhibit 13-	-		
Speed Determ  M <sub>S</sub> = (Exibit 13  S <sub>R</sub> = mph (Exh	3-11) nibit 13-11)				D <sub>s</sub> = 0. S <sub>R</sub> = 50	0.7 mph	(Exhibit	13-12)		
Speed Determ $M_S =$ (Exibit 13 $S_R =$ mph (Exh $S_0 =$ mph (Exh	3-11)				$D_s = 0.0$ $S_R = 50$ $S_0 = N_0$	0.7 mph /A mph		13-12) 13-12)		

		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSHI	EET			
General	Inform				Site Infor					
Analyst Agency or Co Date Perforn		Kimle 8/14/	ey-Horn & Asso	Jι	reeway/Dir of Tr unction urisdiction		I-580 WB I-580/Corral H	ollow Road		
nalysis Tim		6/ 14/. AM P			nalysis Year		Existing+Build	out Mitigated		
		racy Hills Spe		7.0	naryolo roar		Exioung · Dalla	out willigatou		
nputs	'	,								
pstream Ac	dj Ramp		1	ber of Lanes, N	2				Downstre	am Adj
Yes	On		Ramp Number Acceleration I	er of Lanes, N ∟ane Length, L <sub>A</sub>	1 400				Ramp	Πο-
✓No	Off		Deceleration	Lane Length L <sub>D</sub>					☐ Yes ☑ No	□ On □ Off
	<b>.</b> .		Freeway Volu		1689				I	
up =	ft		Ramp Volume		648				L <sub>down</sub> =	ft
' =	veh/h			e-Flow Speed, S <sub>FF</sub>	70.0				V <sub>D</sub> =	veh/h
				low Speed, S <sub>FR</sub>	55.0				5	
Convers	sion to	pc/h Und	der Base	Conditions						
(pc/h	1)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
reeway		1689	0.92	Level	18	0	0.917	1.00		2001
Ramp		648	0.72	Level	13	0	0.939	1.00		958
JpStream										
OownStream	n _		l Merge Areas					Diverge Area	 e	
stimati	ion of v	/12	merge Areas			Estimat	ion of v <sub>12</sub>	Diverge Alleu		
		V <sub>12</sub> = V <sub>F</sub>	( D )					, = V <sub>R</sub> + (V <sub>F</sub> - V	\/ \D	
=		.= .	\' <sub>FM</sub> / ation 13-6 o	r 13_7)			<b>v</b> 12		<sup>v</sup> R <sup>ル</sup> FD  3-12 or 13-1	13)
EQ = =				tion (Exhibit 13-6)	١	L <sub>EQ</sub> = P <sub>FD</sub> =			ition (Exhibit 1	
<sub>FM</sub> = <sub>12</sub> =		2001		tion (Exhibit 13-6)	)	V <sub>12</sub> =		pc/h	ILIOIT (EXIIIDIL I	3-1)
				12 14 or 12 17	`	V <sub>12</sub> - V <sub>3</sub> or V <sub>av34</sub>		•	n 13-14 or 13-	17\
<sub>3</sub> or V <sub>av34</sub>	> 2 700	pc/h? TYes		13-14 or 13-17)	)		> 2 700 pc/b	PC/II (Equalion   PC/III (Equalion   PC/III   PC		17)
		/ <sub>12</sub> /2  \( \text{Yes}						res □ N □Yes □ N		
				3-16, 13-18, or					งง tion 13-16, 1	3-18 or
Yes,V <sub>12a</sub> =		13-19)		3 10, 10 10, 01		If Yes,V <sub>12a</sub> =		13-19)	11011 10 10, 1	0 10, 01
Capacity	y Chec	ks				Capacit	y Checks			
		Actual	(	Capacity	LOS F?		Actu		Capacity	LOS F?
						V <sub>F</sub>		Exhibit 1	13-8	
			Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>	Exhibit 1	13-8	
V <sub>FC</sub>		2959								
V <sub>FC</sub>		2959	Eximon 10 0			V <sub>R</sub>		Exhibit 10	13-	
				Area			ntering Div	Exhibit 10		<u> </u> 
			fluence A	<b>Area</b> Desirable	Violation?		ntering Div	verge Influe		
	tering	Merge In	fluence A		Violation?			verge Influe	ence Area	
Flow En	ntering	Merge In Actual 2959	fluence A	Desirable 4600:All	1	Flow En	Actual	verge Influe	ence Area lesirable	Violation
V <sub>R12</sub> .evel of	tering	Merge In Actual 2959 ce Detern	fluence A Max Exhibit 13-8	Desirable 4600:All (if not F)	1	Flow En	Actual F Service	10  Verge Influe  Max D  Exhibit 13-8	ence Area lesirable B	Violation
Flow En $V_{R12}$ evel of $D_{R} =$	tering	Merge In Actual 2959 Ce Detern .00734 v R + C	fluence A Max Exhibit 13-8	Desirable 4600:All (if not F)	1	V <sub>12</sub> Level of	Actual F Service	Max D Exhibit 13-6	ence Area lesirable B	Violation
V <sub>R12</sub> evel of  D <sub>R</sub> = 25	2 <b>F Service</b> 5.475 + 0.	Merge In Actual 2959 ce Detern .00734 v <sub>R</sub> + 0	fluence A Max Exhibit 13-8	Desirable 4600:All (if not F)	1	Flow En	Actual  F Service I  D <sub>R</sub> = 4.252 -	Max D Exhibit 13-8  Determinat + 0.0086 V <sub>12</sub> -	ence Area lesirable B	Violation
Flow En $V_{R12}$ Evel of $D_R = 0$ $C_R = 0$ $C_R = 0$ $C_R = 0$	2 F Service 5.475 + 0 5.6 (pc/mi/l (Exhibit 13	Merge In Actual 2959 ce Detern .00734 v <sub>R</sub> + 0 n)	fluence A Max Exhibit 13-8	Desirable 4600:All (if not F)	1	V <sub>12</sub> Level of  D <sub>R</sub> = (p LOS = (E	Actual  F Service I  D <sub>R</sub> = 4.252 -  pc/mi/ln)  Exhibit 13-2)	10   Verge Influe   Max D   Exhibit 13-6   Determinat   + 0.0086 V <sub>12</sub> -	ence Area lesirable B	Violation
Flow En $V_{R12}$ Level of $D_R = 0$ $C_R = 0$	stering 2 f Service 5.475 + 0 6.6 (pc/mi/l (Exhibit 13	Merge In Actual 2959 ce Detern 00734 v R + 0 n) 3-2) ination	fluence A Max Exhibit 13-8	Desirable 4600:All (if not F)	1	Flow En	Actual  F Service I  D <sub>R</sub> = 4.252 -  pc/mi/ln)  Exhibit 13-2)  Determina	10   Verge Influe   Max D   Exhibit 13-6   Determinat   + 0.0086 V <sub>12</sub> -	ence Area lesirable B	Violation
Flow En $V_{R12}$ Evel of $D_R =$ $R = 25$ $OS = C$ Speed D $S = 0.3$	stering  2  F Service 5.475 + 0.5.6 (pc/mi/l (Exhibit 13)  Determination of the control of the c	Merge In Actual 2959 Ce Detern .00734 v <sub>R</sub> + 0 n) 3-2) ination	fluence A Max Exhibit 13-8	Desirable 4600:All (if not F)	1	V <sub>12</sub>   Level of	Actual  F Service I  D <sub>R</sub> = 4.252 -  pc/mi/ln)  Exhibit 13-2)  Determina  Exhibit 13-12)	Max D Exhibit 13-8  Determinat + 0.0086 V <sub>12</sub> -	ence Area lesirable B	Violation
V <sub>R12</sub> evel of  D <sub>R</sub> = 25 OS = C  Speed D S = 0.3 R = 60	2 5.475 + 0. 5.6 (pc/mi/l (Exhibit 13) Determination (Exhibit 13) 352 (Exibit 13)	Merge In Actual 2959 Ce Detern .00734 v R + C n) 3-2) ination :13-11) xhibit 13-11)	fluence A Max Exhibit 13-8	Desirable 4600:All (if not F)	1	Flow En	Actual  F Service I  D <sub>R</sub> = 4.252 -  Dec/mi/In)  Exhibit 13-2)  Determinal  Exhibit 13-12)  ph (Exhibit 13-	10   Verge Influe   Max D   Exhibit 13-6   Determinat   + 0.0086 V <sub>12</sub> -	ence Area lesirable B	Violation
V <sub>R12</sub> evel of  D <sub>R</sub> = 25 OS = C Speed D S = 0.3 S = 60 D = N/	stering  F Service 5.475 + 0 5.6 (pc/mi/l (Exhibit 13 Determi 352 (Exibit 0.1 mph (Exident) (Exhibit 13 Determi 0.2 mph (Exhibit 13 Determi 0.3 mph (Exhibit 13 Determi 0.4 mph (Exhibit 13 Determi 0.5 mph (Exhibit 13 Determi 0.	Merge In Actual 2959 Ce Detern .00734 v <sub>R</sub> + 0 n) 3-2) ination	fluence A Max Exhibit 13-8	Desirable 4600:All (if not F)	1	V <sub>12</sub>   Level of     D <sub>R</sub> = (p     LOS = (E     Speed L     D <sub>S</sub> = (E     S <sub>R</sub> = m     S <sub>0</sub> = m	Actual  F Service I  D <sub>R</sub> = 4.252 -  pc/mi/ln)  Exhibit 13-2)  Determina  Exhibit 13-12)	10   Verge Influe   Max D   Exhibit 13-4   Determinat   + 0.0086 V <sub>12</sub> -	ence Area lesirable B	Violation

	R/	AMPS AND	RAMP JUNG	CTIONS W	ORKSHI	EET		
General In	formation			Site Infor				
Analyst	Kir	nley-Horn & Asso	ociates Fr	eeway/Dir of Tr	avel	I-580 WB		
gency or Comp	oany		Ju	nction		I-580/Corral Hol	low Road	
ate Performed		4/2014		risdiction				
nalysis Time P		1 Peak	Ar	nalysis Year		Existing+Buildou	ut Mitigated	
	ion Tracy Hills S	pecific Plan						
nputs		l						1
lpstream Adj Ra	amp	1	ber of Lanes, N	2				Downstream Adj
¬ □	10.	Ramp Numbe	r of Lanes, N	1				Ramp
Yes	On	Acceleration L	ane Length, L <sub>A</sub>	400				☐ Yes ☐ On
✓ No	Off	Deceleration I	ane Length L <sub>D</sub>					☑ No ☐ Off
		Freeway Volu	me, V <sub>F</sub>	967				✓ No ☐ Off
<sub>ip</sub> = ft	t	Ramp Volume	, V <sub>D</sub>	543				L <sub>down</sub> = ft
			-Flow Speed, S <sub>FF</sub>	70.0				
u = ve	eh/h		ow Speed, S <sub>FR</sub>	55.0				V <sub>D</sub> = veh/h
onvorcio	n to no/h II		111	33.0				
	n to pc/h U				1 .			T
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	$v = V/PHF x f_{HV} x f$
reeway	967	0.92	Level	18	0	0.917	1.00	1146
Ramp	543	0.83	Level	5	0	0.976	1.00	671
JpStream								
ownStream					ļ			
- 41 41		Merge Areas			<b>F</b> - 4' 4'	·	Diverge Areas	<u> </u>
stimation	1 of V <sub>12</sub>				Estimati	ion of v <sub>12</sub>		
	V <sub>12</sub> = \	/ <sub>F</sub> (P <sub>FM</sub> )				V <sub>12</sub> =	= V <sub>R</sub> + (V <sub>F</sub> - \	√ <sub>R</sub> )P <sub>FD</sub>
EQ =	(Eq	uation 13-6 o	r 13-7)		L <sub>EQ</sub> =		(Equation 1	3-12 or 13-13)
FM =	1.000	using Equat	ion (Exhibit 13-6)		P <sub>FD</sub> =		using Equa	tion (Exhibit 13-7)
12 =	1146	pc/h			V <sub>12</sub> =		pc/h	
<sub>3</sub> or V <sub>av34</sub>		•	13-14 or 13-17)	ı	V <sub>3</sub> or V <sub>av34</sub>		pc/h (Equation	n 13-14 or 13-17)
	2,700 pc/h?Y		,			<sub>34</sub> > 2,700 pc/h?		·
	1.5 * V <sub>12</sub> /2  \( \text{Y} \)					<sub>34</sub> > 1.5 * V <sub>12</sub> /2		
			3-16, 13-18, or					ion 13-16, 13-18, or
Yes,V <sub>12a</sub> =	13-1				If Yes,V <sub>12a</sub> =		13-19)	
Capacity C	Checks			_	Capacity	y Checks		
	Actual		apacity	LOS F?	<u> </u>	Actua		Capacity LOS F
					V <sub>F</sub>		Exhibit 1	3-8
$V_{FO}$	1817	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>	Exhibit 1	3-8
					V <sub>R</sub>		Exhibit 1	13-
	<u> </u>	<u> </u>				<u> </u>	10	
low Enter	ring Merge	_		\/ialatia.a2	Flow En	tering Dive		
\/	Actual	Exhibit 13-8	Desirable 4600:All	Violation?	\/	Actual	+	esirable Violatio
V <sub>R12</sub>	1817		4600:All	No	V <sub>12</sub>	Comite - 5	Exhibit 13-8	
	ervice Dete				<del></del>			ion (if not F)
	75 + 0.00734 v <sub>R</sub>	+ u.uu/& V <sub>12</sub> - 0.1	JU02/ L <sub>A</sub>		L	D <sub>R</sub> = 4.252 +	u.0086 V <sub>12</sub> -	0.009 L <sub>D</sub>
D <sub>R</sub> = 5.4					1	c/mi/ln)		
D <sub>R</sub> = 5.4	pc/mi/ln)				l 00 (F	Exhibit 13-2)		
D <sub>R</sub> = 5.4	pc/mi/ln) hibit 13-2)							
D <sub>R</sub> = 5.4 <sub>R</sub> = 16.8 ( <sub>I</sub> OS = B (Ext						Determinat	ion	
D <sub>R</sub> = 5.4 R = 16.8 (I DS = B (Exh Speed Det	hibit 13-2)				Speed D		ion	
$D_{R} = 5.4$ $D_{R} = 16.8 (property)$ $D_$	hibit 13-2) Fermination (Exibit 13-11)	1)			<b>Speed D</b> D <sub>s</sub> = (E	<b>Determinat</b> xhibit 13-12)		
$D_{R} = 5.4$ $C_{R} = 16.8 (I_{R} = 16.8 ($	termination (Exibit 13-11) high (Exhibit 13-11)	•			Speed D  D <sub>s</sub> = (E  S <sub>R</sub> = m <sub>l</sub>	Determinate Exhibit 13-12) ph (Exhibit 13-12	2)	
$D_R = 5.4$ $R = 16.8 (pos = $	hibit 13-2) Fermination (Exibit 13-11)	)			$\begin{array}{ccc} \textbf{Speed D} \\ \textbf{D}_{\text{S}} = & (\textbf{E} \\ \textbf{S}_{\text{R}} = & \textbf{m} \\ \textbf{S}_{\text{0}} = & \textbf{m} \end{array}$	<b>Determinat</b> xhibit 13-12)	2) 2)	

	RΔ	MPS AND	RAMP JUN	CTIONS W	ORKSH	FFT				
General Infor		O 7 (11 D	TO THE COLL	Site Infor						
Analyst		ey-Horn & Ass	ociates Fr	eeway/Dir of Tr		I-580	EB			
Agency or Company		.,		nction			Corral Hollo	w Road		
Date Performed	8/14/	/2014	Ju	risdiction						
Analysis Time Period			Ar	nalysis Year		Cumu	lative			
Project Description	Tracy Hills Sp	ecific Plan								
Inputs									i	
Upstream Adj Ramp		Freeway Num	ber of Lanes, N	2					Downstre	eam Adj
		Ramp Numbe	er of Lanes, N	1					Ramp	
☐ Yes ☐ On	l	Acceleration I	_ane Length, L <sub>A</sub>	250					□Yes	On
☑No ☐Off	f	Deceleration	Lane Length L <sub>D</sub>						- Na	
		Freeway Volu	ime, V <sub>F</sub>	38					☑ No	Off
L <sub>up</sub> = ft		Ramp Volume	e, V <sub>P</sub>	109					L <sub>down</sub> =	ft
			e-Flow Speed, S <sub>FF</sub>	70.0					<b>,</b>	
V <sub>u</sub> = veh/h			low Speed, S <sub>FR</sub>	55.0					V <sub>D</sub> =	veh/h
Conversion to	o no/h Hn			33.0					<u> </u>	
	y <del>pc/ii oii</del>		Conditions		1	1			1	
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_{HV}$	$f_p$	v = V/PH	$F x f_{HV} x f_{p}$
Freeway	38	0.92	Level	18	0		).917	1.00		45
Ramp	109	0.70	Level	11	0	(	).948	1.00		164
UpStream										
DownStream										
		Merge Areas			<u> </u>			iverge Areas		
Estimation of	v <sub>12</sub>				Estimat	ion (	of v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	(P <sub>FM</sub> )					V <sub>12</sub> = '	V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub>	)P <sub>ED</sub>	
L <sub>EQ</sub> =	(Equ	ation 13-6 o	r 13-7)		L <sub>EQ</sub> =		(	Equation 13-	12 or 13-	13)
P <sub>FM</sub> =			tion (Exhibit 13-6)		P <sub>FD</sub> =			using Equatio		
V <sub>12</sub> =	45 pc		(=/		V <sub>12</sub> =			oc/h	(=,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,
V <sub>3</sub> or V <sub>av34</sub>	•		13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			oc/h (Equation 1	3 1/1 or 13	17\
ls V <sub>3</sub> or V <sub>av34</sub> > 2,70			13-14 01 13-17)			~ n		Yes □ No	3-14-01-13-	17)
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *			0 16 10 10 0		"			Yes No	- 40 40 4	10.40
If Yes,V <sub>12a</sub> =	13-19		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	•		oc/h (Equation 3-19)	n 13-16,	13-18, 01
Capacity Che		/			Capacit	v Ch		,		
	Actual		Capacity	LOS F?	1		Actual	Car	pacity	LOS F?
					V <sub>F</sub>			Exhibit 13-8	T .	
.,,				l	$V_{FO} = V_{F}$	- \/-		Exhibit 13-8	+	1
$V_{FO}$	209	Exhibit 13-8		No	VFO - VF	V R		Exhibit 13-	_	_
					$V_R$			10	1	
Flow Entering	Merae Ir	fluence A	\rea	•	Flow En	teri	na Dive	rge Influen	ce Area	<u></u>
	Actual		Desirable	Violation?		T	Actual	Max Desi		Violation?
V <sub>R12</sub>	209	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
Level of Serv	ice Deterr	nination (	if not F)			Ser	vice De	terminatio	n (if no	t <b>F</b> )
	0.00734 v <sub>R</sub> +	•			+			.0086 V <sub>12</sub> - 0.		,
$D_R = 5.5 \text{ (pc/mi/s)}$		0.0070 712 0.	00021		1	oc/mi/		12	.000 <u>-</u> Б	
	•				'\ "		,			
LOS = A (Exhibit	•				<u> </u>		it 13-2)			
Speed Detern	nination				Speed L			n		
M <sub>S</sub> = 0.298 (Exil	bit 13-11)						13-12)			
	(Exhibit 13-11)				S <sub>R</sub> = m	ph (Ex	hibit 13-12)			
	Exhibit 13-11)				$S_0 = m$	ph (Ex	hibit 13-12)			
S = 61.6 mph (	(Exhibit 13-13)				S = m	ph (Ex	hibit 13-13)			
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		RAI	MPS AND	<b>RAMP JUN</b>	CTIONS W	ORKSHI	EET				
General	Inform				Site Infor						
Analyst		Kimle	y-Horn & Asso	ciates Fr	eeway/Dir of Tr	avel	I-580 EB				
gency or C				Ju	nction		I-580/Lam	mers Roa	d		
ate Perforn		8/14/			risdiction						
nalysis Tim		AM P		Ar	nalysis Year		Cumulativ	е			
	ription	racy Hills Spe	cific Plan								
nputs			l							1	
lpstream Ad	dj Ramp			ber of Lanes, N	2					Downstre	am Adj
			Ramp Numbe	r of Lanes, N	1					Ramp	
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	250					☐Yes	On
✓No	Off		Deceleration L	ane Length L <sub>D</sub>							□ <b>0</b> "
			Freeway Volui	me, V <sub>F</sub>	174					☑ No	☐ Off
<sub>.ip</sub> =	ft		Ramp Volume	, V <sub>D</sub>	41					L <sub>down</sub> =	ft
				-Flow Speed, S <sub>FF</sub>	70.0					l .	
_ =	veh/h			ow Speed, S <sub>FR</sub>	55.0					V <sub>D</sub> =	veh/h
`~ ~ ~ ~ ~	.i 4.	m a /b 1 lm		110	33.0						
onvers	Sion to	pc/n und		Conditions	I	T	1			l	
(pc/h	)	v (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>H</sub> \	/	$f_p$	v = V/PHI	$F x f_{HV} x f_{p}$
reeway		174	0.92	Level	18	0	0.917	,	1.00		206
Ramp		41	0.70	Level	11	0	0.948	_	1.00		62
JpStream											-
ownStrear	n										
			Merge Areas					Div	erge Areas		
stimati	ion of	v <sub>12</sub>				Estimati	ion of v	12			
		V <sub>12</sub> = V <sub>F</sub>	(P <sub>EM</sub> )					V <sub>12</sub> = V <sub>1</sub>	+ (V <sub>F</sub> - V <sub>R</sub>	)P <sub>ED</sub>	
EQ =			ation 13-6 or	13-7)		L <sub>EQ</sub> =			quation 13-		13)
=Q FM =				ion (Exhibit 13-6)		P <sub>FD</sub> =			ing Equatio		
гм <sub>12</sub> =		206 p		IOTT (EXHIBIT 10-0)		V <sub>12</sub> =		po		ו אוטווג ו	0-1)
		•		10 11 10 17)						2 11 12	17\
or V <sub>av34</sub>	. 0 700	-		13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>	. 0.700		/h (Equation 1	3-14 OF 13-	17)
		pc/h? Yes							Yes No		
		V <sub>12</sub> /2 ☐ Yes		10 10 10					Yes □ No	. 10 10 1	0.40
Yes,V <sub>12a</sub> =	:	pc/n ( 13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	:	pc 13-	:/h (Equation	n 13-16, 1	3-18, or
apacit	v Chec					Capacit	v Chec		10)		
		Actual	С	apacity	LOS F?			Actual	Car	pacity	LOS F?
	Î			, ,		V <sub>F</sub>			Exhibit 13-8		
\ /		000			<b>1</b>	V <sub>FO</sub> = V <sub>F</sub>	- V-		Exhibit 13-8		
$V_{FC}$	)	268	Exhibit 13-8		No		*R		Exhibit 13		
						V <sub>R</sub>			10		
low En	tering	Merge In	fluence A	rea	•	Flow En	tering	Diverg	e Influen	ce Area	)
	Ĭ	Actual	-	Desirable	Violation?		Act		Max Desi		Violation?
V <sub>R12</sub>	2	268	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
		ce Detern	nination (i	if not F)			Service	e Dete	erminatio	n (if not	<i>F</i> )
			0.0078 V <sub>12</sub> - 0.0						086 V <sub>12</sub> - 0.		,
	0 (pc/mi/lr		12	A			c/mi/ln)	•	12	ט– יי	
								2)			
	(Exhibit 1						Exhibit 13				
•	eterm	ination				Speed D			)		
I <sub>S</sub> = 0.2	299 (Exibi	t 13-11)				I " '	xhibit 13-1	•			
<sub>R</sub> = 61	.6 mph (E	Exhibit 13-11)				S <sub>R</sub> = m	ph (Exhibit	13-12)			
	A mnh (F	xhibit 13-11)				S <sub>0</sub> = m	ph (Exhibit	13-12)			
<sub>Դ</sub> = N/	/ \ 1111P11 (L	KINDIC TO TT									
,		Exhibit 13-13)				I .	ph (Exhibit	13-13)			

		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation			Site Infor						
Analyst		ey-Horn & Asso	ociates F	reeway/Dir of Ti		I-580 E	<u></u> В			
Agency or Company		,		unction				Hollow Road		
Date Performed	8/14/	/2014	Jı	urisdiction						
Analysis Time Period	AM F	Peak	А	nalysis Year		Cumula	tive			
Project Description	Tracy Hills Sp	ecific Plan								
Inputs										
Upstream Adj R	amp	1 '	nber of Lanes, N	2					Downstrea	am Adj
□Yes □	On	Ramp Numbe		1					Ramp	
103	] (11	1	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration	Lane Length L <sub>D</sub>	200					✓No	Off
		Freeway Volu	ime, V <sub>F</sub>	215						
L <sub>up</sub> = fi	t	Ramp Volume	e, V <sub>R</sub>	177					L <sub>down</sub> =	ft
		Freeway Free	e-Flow Speed, S <sub>FF</sub>	70.0					\/ -	vab/b
$V_u = V_0$	eh/h	1	low Speed, S <sub>FR</sub>	35.0					$V_D =$	veh/h
Conversion to	n nc/h l ln		111							
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x fx f
. ,	(Veh/hr)	ļ		<u> </u>	<u> </u>			г		۴
Freeway	215	0.92	Level	18	0		917	1.00		55
Ramp	177	0.69	Level	19	0	0.9	913	1.00	2	81
UpStream		$\vdash$			-	+				
DownStream		Merge Areas			+			Diverge Areas		
Estimation of		Weige Aleas			Estimat	ion o		iverge Areas		
Loumation of					Lotimat					
	$V_{12} = V_{F}$							$V_R + (V_F - V_F)$		
L <sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(	Equation 13-1	2 or 13-13	)
P <sub>FM</sub> =	using	Equation (	Exhibit 13-6)		P <sub>FD</sub> =		1.	000 using Equ	uation (Exh	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		25	55 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	3-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		0	pc/h (Equatio	n 13-14 oi	· 13-17)
Is $V_3$ or $V_{av34} > 2,70$	0 pc/h?	s 🗌 No				,34 > 2,70	00 pc/h?	Yes <b>☑</b> No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *								Yes <b>☑</b> No		
			-16, 13-18, or		1			c/h (Equation	13-16, 13	-18, or 13-
If Yes,V <sub>12a</sub> =	13-19				If Yes,V <sub>12a</sub> =		19			
Capacity Che	cks				Capacit	y Che	ecks			
	Actual		Capacity	LOS F?			Actual	Ca	pacity	LOS F?
					$V_{F}$		255	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	-26	Exhibit 13-8	4800	No
10					V <sub>R</sub>		281	Exhibit 13-10	0 2000	No
Elow Entoring	Morgo Ir	fluonoo	\							110
Flow Entering	Actual	1	Desirable	Violation?	FIOW EI		Actual	rge Influend Max Desirab		Violation?
\/	Actual	Exhibit 13-8	Desirable	VIOIALIOITE	1	_				1
V <sub>R12</sub>	. 5 .		"E ( E)		V <sub>12</sub>		255	Exhibit 13-8	4400:All	No No
Level of Serv					+			terminatio	•	F)
$D_R = 5.475 + 0.$	00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> ·	- 0.00627 L <sub>A</sub>			$D_R = 4$	.252 + 0	.0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				$D_R = 4$	.6 (pc/n	ni/ln)			
LOS = (Exhibit	13-2)				LOS = A	(Exhib	it 13-2)			
Speed Detern	nination				Speed L	Deteri	minatio	on		
$M_S = (Exibit 13)$					1		khibit 13-			
-	*					-	(Exhibit			
	ibit 13-11)					-	•	•		
•	ibit 13-11)				1	-	(Exhibit	· ·		
S = mph (Exh	ibit 13-13)						(Exhibit	13-13)		
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		RAMP	S AND RAI	AP JUNCTION	ONS WC	RKS	HEET			
General Infor	mation		- / IVAII	Site Infori			· · — • ·			
Analyst Agency or Company	Kimle	y-Horn & Asso	J	reeway/Dir of Tra lunction		I-580 E I-580 a	B nd Lammer	rs Road		
Date Performed Analysis Time Period	8/14/2 I AM P			lurisdiction Analysis Year		Cumula	ativo.			
Project Description			<i>r</i>	alialysis i cal		Cumula	auve			
Inputs	Tracy Time ope	ono i ian								
Upstream Adj R	amp	Freeway Num Ramp Numbe	ber of Lanes, N	2					Downstrea Ramp	am Adj
☐ Yes ☐	On	l '	ane Length, L <sub>A</sub>	,					Yes	On
✓ No	Off		ane Length L <sub>D</sub>	200					✓No	Off
L <sub>up</sub> = fi	t	Freeway Volu Ramp Volume		236 62					L <sub>down</sub> =	ft
V <sub>u</sub> = ve	eh/h		-Flow Speed, S <sub>FF</sub> low Speed, S <sub>FR</sub>	70.0 35.0					V <sub>D</sub> =	veh/h
Conversion to	o nc/h l Inc		111	33.0						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	Τ	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	236	0.92	Level	18	0	0.	917	1.00	2	80
Ramp	62	0.69	Level	19	0	0.	913	1.00	ç	98
UpStream						$\perp$				
DownStream		Merge Areas			<u> </u>			iverge Areas		
Estimation of		vicige Aleas			Estimat	ion o		iverge Areas		
		/ D \						\/ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\D	
l –	V <sub>12</sub> = V <sub>F</sub>		10.7)					$V_R + (V_F - V_F)$	–	
L <sub>EQ</sub> =		tion 13-6 or	*		L <sub>EQ</sub> =			Equation 13-1		-
P <sub>FM</sub> =	pc/h	Equation (	=X11101t 13-0)		P <sub>FD</sub> =			000 using Eq	uation (Exn	IDIT 13-7)
V <sub>12</sub> = V <sub>3</sub> or V <sub>av34</sub>	•	Equation 12	-14 or 13-17)		V <sub>12</sub> =			0 pc/h	on 12 11 o	. 10 17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70			-14 01 13-17)		V <sub>3</sub> or V <sub>av34</sub>	> 2 7		pc/h (Equatio ∃Yes	)II 13-14 U	13-17)
Is $V_3$ or $V_{av34} > 2,70$								Yes ☑ No		
If Yes,V <sub>12a</sub> =		Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub> :	•		c/h (Equation	13-16, 13	-18, or 13-
Capacity Che	cks				Capacit	y Ch		,		
	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
					$V_{F}$		280	Exhibit 13-	8 4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	182	Exhibit 13-	8 4800	No
					$V_R$		98	Exhibit 13-1	0 2000	No
Flow Entering	g Merge In	fluence A	rea		Flow Er	nterin	g Diver	ge Influen	ce Area	
	Actual	Max	Desirable	Violation?			Actual	Max Desiral	ole	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>		280	Exhibit 13-8	4400:All	No
Level of Serv	ice Detern	nination (	if not F)		Level o	f Serv	vice De	terminatio	n (if not	F)
$D_R = 5.475 + 0.$	00734 v <sub>R</sub> + (	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>			$D_R = 4$	.252 + 0.	.0086 V <sub>12</sub> - 0.	.009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				$D_R = 4$	.9 (pc/r	ni/ln)			
LOS = (Exhibit	13-2)				LOS = A	(Exhil	oit 13-2)			
Speed Detern	nination				Speed L	Deter	minatio	n		
M <sub>S</sub> = (Exibit 13	3-11)				$D_s = 0$	.437 (E	xhibit 13-	12)		
-	ibit 13-11)				S <sub>R</sub> = 5	7.8 mph	(Exhibit	13-12)		
	ibit 13-11)				$S_0 = N$	/A mph	(Exhibit 1	13-12)		
	ibit 13-13)				S = 5	7.8 mph	(Exhibit	13-13)		
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		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSH	EET				
Genera	l Inforn				Site Infor						
Analyst Agency or 0 Date Perfor		Kimle 8/14/	ey-Horn & Asso	Jı	reeway/Dir of Tra unction urisdiction	avel	I-580 W I-580/C	/B orral Hollo	w Road		
Analysis Tir		AM P	eak	А	nalysis Year		Cumula	ative			
Project Des	scription -	Гracy Hills Spe	cific Plan								
nputs										1	
Jpstream A	Adj Ramp		Freeway Num Ramp Numbe	ber of Lanes, N r of Lanes, N	2 1					Downstre Ramp	am Adj
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	400					Yes	On
✓ No	Off		Deceleration I Freeway Volu	Lane Length L <sub>D</sub> me, V <sub>F</sub>	1073					☑ No	Off
up =	ft		Ramp Volume	, V <sub>R</sub>	622					L <sub>down</sub> =	ft
/ <sub>u</sub> =	veh/h			-Flow Speed, $S_{FF}$ ow Speed, $S_{FR}$	70.0 55.0					V <sub>D</sub> =	veh/h
Conver	sion to	nc/h Hnd	1	Conditions	00.0						
(pc/		V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
Freeway		1073	0.92	Level	18	0	0.9	917	1.00		1271
Ramp		622	0.72	Level	13	0	0.9	939	1.00		920
UpStream											
DownStrea	am		Merge Areas			-			Diverge Areas		
Estimat	tion of		vierge Areas			Estimat	ion o	$f_{V_{42}}$	nverge Areas		
		V <sub>12</sub> = V <sub>F</sub>	( D \						V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub>	\D	
=			( ' <sub>FM </sub> / ation 13-6 o	- 12 7)		_			v <sub>R</sub> ' (v <sub>F</sub> - v <sub>R</sub> (Equation 13-		13)
<sub>EQ</sub> = <sub>FM</sub> =				ion (Exhibit 13-6	١	L <sub>EQ</sub> = P <sub>FD</sub> =			using Equation		
<sub>12</sub> =		1271		IOTT (EXTIDIT TO O	,	V <sub>12</sub> =			oc/h	on (Exhibit i	0-1)
7 <sub>3</sub> or V <sub>av34</sub>				13-14 or 13-17	)	V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equation 1	13-14 or 13-	17)
	> 2.700	pc/h? Yes		10 11 01 10 11	,		a, > 2.70		Yes No		,
		V <sub>12</sub> /2							∃Yes ⊟No		
f Yes,V <sub>12a</sub>				3-16, 13-18, or		If Yes,V <sub>12a</sub> =		1	oc/h (Equatio 3-19)		3-18, or
Capacit	ty Chec	ks				Capacit	y Che	ecks			
		Actual	C	apacity	LOS F?		$ \Box$	Actual		pacity	LOS F?
						V <sub>F</sub>			Exhibit 13-		
$V_{F}$	0	2191	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13-		
						V <sub>R</sub>			Exhibit 13 10	·	
low E	ntering	Merge In	fluence A	rea		Flow Er	terin	g Dive	rge Influer	ice Area	<u>'</u>
	Ĭ	Actual		Desirable	Violation?			\ctual	Max Des		Violation <sup>4</sup>
$V_{R1}$	12	2191	Exhibit 13-8	4600:AII	No	V <sub>12</sub>			Exhibit 13-8		
			nination (			1			terminatio		: F)
D <sub>R</sub> =	= 5.475 + 0	0.00734 v <sub>R</sub> + 0	0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>			D <sub>R</sub> = 4	.252 + 0	.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
<sub>R</sub> = 1	9.6 (pc/mi/	ln)				$D_R = (p$	oc/mi/lr	ר)			
	3 (Exhibit 1					LOS = (E	Exhibit	13-2)			
Speed	Determ	ination				Speed L	Deteri	minatio	on		
M <sub>S</sub> = 0	.312 (Exib	t 13-11)				$D_s = (E_s)$	Exhibit 1	3-12)			
	•	Exhibit 13-11)				S <sub>R</sub> = m	iph (Exh	ibit 13-12)			
		xhibit 13-11)				$S_0 = m$	iph (Exh	ibit 13-12)			
	1.3 mph (E	Exhibit 13-13)				S = m	ph (Exh	ibit 13-13)			
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		RAI	<u>MPS AND</u>	RAMP JUN	<u>CTIONS</u> W	<u>/ORKSH</u>	EET				
General	l Inform				Site Infor						
Analyst			y-Horn & Asso	ciates Fr	eeway/Dir of Tr		I-580 W	/B			
gency or C	Company		•	Ju	ınction		I-580/La	ammers Ro	ad		
ate Perfori	med	8/14/	2014	Ju	ırisdiction						
nalysis Tin	ne Period	AM P	eak eak	Ar	nalysis Year		Cumula	ative			
roject Des	cription	Tracy Hills Spe	ecific Plan								
nputs			_								
pstream A	di Ramp		Freeway Num	ber of Lanes, N	2					Downstre	am Adi
po	,p		Ramp Numbe	r of Lanes, N	1					Ramp	
Yes	On		Acceleration L	ane Length, L <sub>Δ</sub>	400					□Yes	On
¬				ane Length L <sub>D</sub>							
✓ No	Off		Freeway Volu	5	1583					✓ No	Off
=	ft									L <sub>down</sub> =	ft
ıp =	10		Ramp Volume	11	112					down	
=	veh/h			-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
u			Ramp Free-Fl	ow Speed, S <sub>FR</sub>	55.0						
onver	sion to	pc/h Und	der Base (	Conditions							
(pc/l	h)	V	PHF	Terrain	%Truck	%Rv		$f_{HV}$	$f_p$	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
	,	(Veh/hr)				ļ	_			ļ	
reeway		1583	0.92	Level	18	0	_	917	1.00		1876
Ramp		112	0.72	Level	13	0	0.9	939	1.00		166
JpStream JownStrea	m						-				
ownouca			Merge Areas					<u>_</u>	iverge Areas	l	
stimat	ion of	V <sub>42</sub>	geeac			Estimat	ion o	f V <sub>42</sub>			
			/ D \						/ . () / . \ /	\D	
		$V_{12} = V_F$		10 =)					$V_R + (V_F - V_F)$		4.0\
=Q =			ation 13-6 or			L <sub>EQ</sub> =			Equation 13		
FM =		1.000	using Equat	ion (Exhibit 13-6)		P <sub>FD</sub> =		ι	sing Equation	on (Exhibit 1	3-7)
12 =		1876 <sub>l</sub>	oc/h			V <sub>12</sub> =		p	c/h		
<sub>3</sub> or V <sub>av34</sub>		0 pc/l	n (Equation	13-14 or 13-17)	)	$V_3$ or $V_{av34}$		ŗ	c/h (Equation	13-14 or 13-	17)
s V <sub>3</sub> or V <sub>av</sub>	, <sub>34</sub> > 2,700	pc/h? TYe	s 🗹 No			Is V <sub>3</sub> or V <sub>av</sub>	34 > 2,7	00 pc/h? [	Yes □No		
		V <sub>12</sub> /2				Is V <sub>3</sub> or V <sub>av</sub>	, <sub>34</sub> > 1.5	* V <sub>12</sub> /2	]Yes □ No		
Yes,V <sub>12a</sub> =				3-16, 13-18, or		If Yes,V <sub>12a</sub> =			c/h (Equatio		3-18, or
		13-19)						13	-19)		
apacit	y Chec	cks			-	Capacit	y Che	ecks			
		Actual	C	apacity	LOS F?			Actual	_	pacity	LOS F?
						$V_{F}$			Exhibit 13-	8	
V <sub>F</sub>		2042	Exhibit 13-8		No	$V_{FO} = V_{F}$	-V <sub>R</sub>		Exhibit 13-	8	
F.	0					V <sub>R</sub>	Ī		Exhibit 13	-	
									10		
low Er	ntering		fluence A			Flow Er	_		ge Influer		
		Actual		Desirable	Violation?			Actual	Max Des	irable	Violation
$V_{R1}$		2042	Exhibit 13-8	4600:AII	No	V <sub>12</sub>			Exhibit 13-8		
evel o	f Servi	ce Detern	nination (	if not F)		Level or	f Serv	rice Det	erminatio	n (if not	t <b>F</b> )
D <sub>R</sub> =	5.475 + (	0.00734 v <sub>R</sub> + 0	0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>			$D_R = 4$	.252 + 0.	0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
	8.8 (pc/mi/		-				oc/mi/lr		· <del>-</del>	_	
	(Exhibit 1	•				I ''	Exhibit				
		ination				Speed L			n		
•						<del>  '                                   </del>					
•	.307 (Exib	,					Exhibit 1	,			
		Exhibit 13-11)				I ''		ibit 13-12)			
0		xhibit 13-11)				$S_0 = m$	ph (Exh	ibit 13-12)			
	1 / mnh /	Exhibit 13-13)				S = m	nh (Fxh	ibit 13-13)			
= 6	1.4 IIIpii (E	-Allibit 10-10)				ľ '''	٠٠٠ (٢٠٠٠)	ibit io io,			

		RAMP	S AND RAI	MP JUNCTI	ONS WOR	RKSHEE	:T			
General Info	mation			Site Infor						
Analyst		ey-Horn & Asso	ciates F	reeway/Dir of Tr		580 WB				
Agency or Company		,,		Junction			rral Hollow Road			
Date Performed	8/14/	2014		Jurisdiction						
Analysis Time Perio	d AM P	eak eak	A	Analysis Year	С	umulative				
Project Description	Tracy Hills Spe	ecific Plan								
Inputs										
Upstream Adj F	Ramp	1 '	ber of Lanes, N	2				Downst	ream	n Adj
□v	70-	Ramp Numbe	r of Lanes, N	1				Ramp		
☐ Yes ☐	On	Acceleration L	ane Length, L <sub>A</sub>					Yes	[	On
☑ No	Off	Deceleration L	ane Length L <sub>D</sub>	200				✓ No	ſ	Off
	_	Freeway Volu	me, V <sub>F</sub>	1545				IVO	I.	OII
L <sub>up</sub> = 1	t	Ramp Volume	, V <sub>D</sub>	472				L <sub>down</sub> =		ft
			-Flow Speed, S <sub>FF</sub>	= 70.0						
V <sub>u</sub> = v	eh/h		ow Speed, S <sub>ER</sub>	35.0				$V_D =$	'	veh/h
Communica	/b		* 111	33.0						
Conversion t	o pe/ii one	ier base (	Jonanions	1		Т	ı			
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	$f_{HV}$	f <sub>p</sub>	v = V/P	HF x	$f_{HV} x f_p$
Freeway	1545	0.92	Level	18	0	0.917	1.00		1830	)
Ramp	472	0.77	Level	14	0	0.935	1.00		656	
UpStream	1									
DownStream										
		Merge Areas					Diverge Area	IS		
Estimation o	f v <sub>12</sub>				Estimation	on of v <sub>1</sub>	2			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )				V	12 = V <sub>R</sub> + (V <sub>F</sub>	- V <sub>D</sub> )P <sub>CD</sub>		
L <sub>EQ</sub> =		tion 13-6 or	13-7)		L <sub>EQ</sub> =		(Equation 1	IX IB	.13)	
-EQ P <sub>FM</sub> =		Equation (E	•		P <sub>FD</sub> =		1.000 using			12 7\
	_	Lquation (L	-Allibit 15-0)				=	Equation (E	XIIIDIL	13-1)
V <sub>12</sub> =	pc/h	- " 10	44 40 47)		V <sub>12</sub> =		1830 pc/h			a
V <sub>3</sub> or V <sub>av34</sub>			-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>	0.700	0 pc/h (Equ		or 1	3-17)
Is $V_3$ or $V_{av34} > 2,70$							h? ☐ Yes ☑ I			
Is $V_3$ or $V_{av34} > 1.5$					Is V <sub>3</sub> or V <sub>av34</sub>	> 1.5 * V <sub>12</sub> /	2 ☐ Yes ☑ N			
If Yes,V <sub>12a</sub> =	pc/h ( 13-19)		-16, 13-18, or		If Yes,V <sub>12a</sub> =		pc/h (Equat	tion 13-16,	13-18	8, or 13-
Capacity Che					Capacity	Chocks	19)			
Capacity Cite	Actual		apacity	LOS F?	Capacity		tual	Capacity		LOS F?
	Actual	<del>l ĭ</del>	арасну	2001:	V <sub>F</sub>		30 Exhibit		10	No No
.,,		E 1 11 11 40 0						_		
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$ -					No
					$V_R$	6	56 Exhibit 1	13-10 200	00	No
Flow Entering	g Merge In	fluence A	rea		Flow Enter	ering D	iverge Influ	ence Are	a	
	Actual	Max	Desirable	Violation?		Actual	Max Des	sirable	耳	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>	1830	Exhibit 13-	-8 4400:A	.11	No
Level of Serv	rice Detern	nination (i	if not F)		Level of S	Service	Determinat	tion (if no	ot F)	)
D <sub>R</sub> = 5.475 + 0					1		+ 0.0086 V <sub>12</sub>			
D <sub>R</sub> = (pc/mi/lr		12	7		L '	c 2 (pc/mi/ln	.=	D		
LOS = (Exhibit	•					Exhibit 13	•			
· ·					`					
Speed Deteri					Speed De					
$M_S = (Exibit 1)$	3-11)				1 *	37 (Exhibit				
S <sub>R</sub> = mph (Ext	nibit 13-11)				1		nibit 13-12)			
S <sub>0</sub> = mph (Ext	nibit 13-11)				$S_0 = N/A$	mph (Exh	ibit 13-12)			
	nibit 13-13)				S = 56.4	1 mph (Exh	nibit 13-13)			
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		RAMP	S AND RAI	/P JUNCTI	ONS WO	RKS	HEET			
General Infor	mation	10 1111		Site Infor						
Analyst Agency or Company		ey-Horn & Asso		reeway/Dir of Tr		I-580 W I-580 aı	/B nd Lamme	rs Road		
Date Performed	8/14	/2014	J	lurisdiction						
Analysis Time Period	l AM F	Peak	A	Analysis Year		Cumula	tive			
	Tracy Hills Sp	ecific Plan								
Inputs								_		
Upstream Adj R	amp	Freeway Num Ramp Numbe	ber of Lanes, N	2 1					Downstrea Ramp	am Adj
□Yes	On	Acceleration L	ane Length, L <sub>A</sub>	·					Yes	On
☑ No	Off	Deceleration I Freeway Volu	Lane Length L <sub>D</sub>	200 1695					✓ No	Off
L <sub>up</sub> = fi	t	Ramp Volume	e, V <sub>R</sub>	112					L <sub>down</sub> =	ft
V <sub>u</sub> = ve	eh/h	1	-Flow Speed, S <sub>FF</sub> low Speed, S <sub>FR</sub>	70.0 35.0					V <sub>D</sub> =	veh/h
Conversion to	nc/h Un		111							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1695	0.92	Level	18	0	0.9	917	1.00	20	108
Ramp	112	0.77	Level	14	0	0.9	935	1.00	1	56
UpStream										
DownStream										
		Merge Areas						Diverge Areas		
Estimation of	<sup>f</sup> v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>E</sub>	( P <sub>EM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
L <sub>EQ</sub> =		ation 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-1		)
P <sub>FM</sub> =		Equation (I	*		P <sub>FD</sub> =			000 using Equ		
·	pc/h	Equation (	Exhibit 10 0)		V <sub>12</sub> =			000 using Eqt 108 pc/h	adion (Exil	DIC 10-1)
	•	(Caucatian 40	44 40 47)		·-			•	40 44	- 40 47\
$V_3$ or $V_{av34}$	-		-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>	. 0.7		pc/h (Equatio	on 13-14 oi	13-17)
Is $V_3$ or $V_{av34} > 2,70$								☐Yes ☑No		
Is $V_3$ or $V_{av34} > 1.5$ *					Is V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 1.5		☐Yes ☑No		
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		c/h (Equation	13-16, 13	-18, or 13-
Capacity Che	13-19	)			Capacit		19	9)		
Сарасну Спе	Actual	T 7	`anasitu	LOS F?	Tapacit	y Circ		1 00	no oitu	LOS F?
	Actual		Capacity	LUST?	\/		Actual	Exhibit 13-8	pacity	1
.,					V <sub>F</sub>	<del>  </del>	2008	_	+	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$		1852	Exhibit 13-8	4800	No
					$V_R$		156	Exhibit 13-1	0 2000	No
Flow Entering	g Merge Ir	fluence A	\rea		Flow Er	nterin	g Dive	rge Influen	ce Area	
	Actual	Max	Desirable	Violation?		l l	Actual	Max Desirab	le	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>	2	800	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)		Level of	f Serv	rice De	terminatio	n (if not	<del>F</del> )
$D_R = 5.475 + 0.1$					+			.0086 V <sub>12</sub> - 0.0		
D <sub>R</sub> = (pc/mi/ln	• • • • • • • • • • • • • • • • • • • •	12	A		L	9.7 (pc/		12	Ь	
LOS = (Exhibit '	,				1		oit 13-2)			
,	,									
Speed Detern	nination				Speed L					
M <sub>S</sub> = (Exibit 13	3-11)				1 *		khibit 13-	-		
$S_R = mph (Exh$	ibit 13-11)				1	7.6 mph	(Exhibit	13-12)		
S <sub>0</sub> = mph (Exh	ibit 13-11)				$S_0 = N$	/A mph	(Exhibit	13-12)		
	ibit 13-13)				S = 5	7.6 mph	(Exhibit	13-13)		
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		RAI	MPS AND	RAMP JUN	<u>CTIONS</u> W	<u>/ORKSHI</u>	<u>EET</u>			
eneral I	Inform	nation			Site Infor	mation				
nalyst		Kimle	y-Horn & Asso	ciates Fr	eeway/Dir of Tr	avel	I-580 EB			
gency or Cor				Ju	nction		I-580/Corral H	ollow Road		
ate Performe		8/14/			risdiction					
nalysis Time		PM P		Ar	nalysis Year		Cumulative			
	ption T	racy Hills Spe	cific Plan							
nputs									1	
pstream Adj	Ramp		Freeway Num	per of Lanes, N	2				Downstre	am Adj
	_		Ramp Number	of Lanes, N	1				Ramp	•
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	250				□Yes	On
✓No	Off		Deceleration L	ane Length L						
- INO			Freeway Volur		1567				✓ No	Off
ıp =	ft		Ramp Volume		695				L <sub>down</sub> =	ft
ip				Flow Speed, S <sub>FF</sub>	70.0					
u =	veh/h								$V_D =$	veh/h
-			Ramp Free-Flo	111	55.0					
onversi	on to	pc/h Und	der Base (	Conditions		·				
(pc/h)		V (Veh/hr)	PHF	Terrain	%Truck	%Rv	$f_{HV}$	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
reeway	-+	1567	0.92	Level	18	0	0.917	1.00		1857
Ramp	-+	695	0.92	Level	6	0	0.917	1.00	+	832
JpStream		033	0.00	Level	0	, ·	0.371	1.00		002
ownStream										
	•		Merge Areas					Diverge Area	s	
stimatio	on of v	/12				Estimati	ion of v <sub>12</sub>			
		V <sub>12</sub> = V <sub>F</sub>	(P)					= V <sub>R</sub> + (V <sub>F</sub> - '	V_ \P	
_		.= .	· · <sub>FM /</sub> ation 13-6 or	12.7\			<b>*</b> 12		*R/' FD  3-12 or 13-1	12)
≣Q = _						L <sub>EQ</sub> =				
<sub>FM</sub> =				on (Exhibit 13-6)		P <sub>FD</sub> =			ition (Exhibit 1	3-1)
12 =		1857				V <sub>12</sub> =		pc/h		
<sub>3</sub> or V <sub>av34</sub>		-		3-14 or 13-17)		$V_3$ or $V_{av34}$			n 13-14 or 13-	17)
		pc/h? 🗌 Yes						? ☐ Yes ☐ N		
s $V_3$ or $V_{av34}$	> 1.5 * \	/ <sub>12</sub> /2 □ Yes				Is V <sub>3</sub> or V <sub>av3</sub>	<sub>34</sub> > 1.5 * V <sub>12</sub> /2	☐Yes ☐N	10	
Yes,V <sub>12a</sub> =				-16, 13-18, or		If Yes,V <sub>12a</sub> =	:		tion 13-16, 1	3-18, or
apacity	Chan	13-19)					v Checks	13-19)		
араспу	Criec			angoit.	LOS F?	Capacity		ıol (	Canacity	LOS F?
		Actual	l i	apacity	LUS F?	V <sub>F</sub>	Actu	Exhibit 1	Capacity	LUSF?
						<u> </u>	,,			
$V_{FO}$		2689	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>	Exhibit 1		
						V <sub>R</sub>		Exhibit 10	13-	
low Ent	orina	Morgo In	l <u> </u>	roa		Flow En	toring Div	<u>l 10</u> ∕erge Influ	onco Aros	<u> </u>
TOW LITE	ering T	Actual	-	Desirable	Violation?	FIOW EII	Actual		esirable	Violation
V <sub>R12</sub>		2689	Exhibit 13-8	4600:All	No	V <sub>12</sub>	Autual	Exhibit 13-8	1	v ioiation
	Somi				INU		F Consider !			! <b>E</b> \
			nination (i					Determinat		· <i>Γ)</i>
			0.0078 V <sub>12</sub> - 0.0	0021 LA				+ 0.0086 V <sub>12</sub> -	. 0.009 L <sub>D</sub>	
<sub>R</sub> = 24.5	5 (pc/mi/l						oc/mi/ln)			
	Exhibit 13	3-2)					Exhibit 13-2)			
		ination				Speed L	Determina	tion		
OS = C (E	eterm					D - /F	xhibit 13-12)			
OS = C (E Speed De		13-11)				P <sub>S</sub> - (E	ATTION TO TE			
OS = C (E Speed De S = 0.35	51 (Exibit	•					•	12)		
COS = C (E) $COS = C (E)$	51 (Exibit 2 mph (E	xhibit 13-11)				S <sub>R</sub> = m	ph (Exhibit 13-	•		
COS = C (E) $COS = C (E)$	51 (Exibit 2 mph (E . mph (Ex	•				$S_R = m$ $S_0 = m$	•	12)		

		RAI	MPS AND	RAMP JUN	CTIONS W	<u>/ORKSHI</u>	<u>EET</u>			
General	Inform				Site Infor					
nalyst		Kimle	ey-Horn & Asso	ciates Fr	eeway/Dir of Tr	avel	I-580 EB			
gency or Co				Ju	nction		I-580/Lammers	Road		
ate Perforn		8/14/			risdiction					
nalysis Tim		PM P		Ar	nalysis Year		Cumulative			
	ription	Tracy Hills Spe	ecific Plan							
nputs			l						1	
lpstream Ac	dj Ramp			ber of Lanes, N	2				Downstre	eam Adj
			Ramp Numbe		1				Ramp	
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	250				☐Yes	On
✓No	Off		Deceleration L	ane Length L <sub>D</sub>					☑ No	Off
			Freeway Volui	me, V <sub>F</sub>	1806				INO	
ıp =	ft		Ramp Volume	, V <sub>D</sub>	252				L <sub>down</sub> =	ft
				-Flow Speed, S <sub>FF</sub>	70.0				<b>.</b>	
=	veh/h			ow Speed, S <sub>FR</sub>	55.0				$V_D =$	veh/h
`onvoro	sion to	no/h Hn/		110	33.0					
		, μω/π υπο ∀		Conditions		1 .		<del></del>		
(pc/h	1)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	$F \times f_{HV} \times f_{p}$
reeway		1806	0.92	Level	18	0	0.917	1.00		2140
Ramp		252	0.86	Level	6	0	0.971	1.00		302
JpStream										
ownStrean	n									
4 4 .	·		Merge Areas			Fational		Diverge Area	S	
stimati	ion ot	v <sub>12</sub>				Estimati	ion of v <sub>12</sub>			
		$V_{12} = V_{F}$	(P <sub>FM</sub> )				V <sub>12</sub>	= V <sub>R</sub> + (V <sub>F</sub> - '	$V_R)P_{FD}$	
EQ =		(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(Equation 1	3-12 or 13-	13)
FM =		1.000	using Equat	ion (Exhibit 13-6)		P <sub>FD</sub> =		using Equa	ition (Exhibit 1	13-7)
12 =		2140	pc/h			V <sub>12</sub> =		pc/h		
<sub>3</sub> or V <sub>av34</sub>				13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		pc/h (Equatio	n 13-14 or 13-	17)
	., > 2.700	pc/h? Ye		,			> 2.700 pc/h	? ☐ Yes ☐ N		,
		V <sub>12</sub> /2						☐Yes ☐N		
				3-16, 13-18, or		1			tion 13-16, 1	13-18. or
Yes,V <sub>12a</sub> =		13-19)				If Yes,V <sub>12a</sub> =	1	13-19)		
Capacity	y Chec	cks				Capacit	y Checks			
		Actual	C	apacity	LOS F?		Actu		Capacity	LOS F?
						V <sub>F</sub>		Exhibit 1	13-8	
$V_{FC}$		2442	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>	Exhibit 1	13-8	
						V <sub>R</sub>		Exhibit	13-	
<del></del>			<u> </u>				<u> </u>	10		
iow En	tering		fluence A		\/ialatian0	Flow En		erge Influ		
\/		Actual 2442	Exhibit 13-8	Desirable 4600:All	Violation?	\/	Actual	Exhibit 13-8	esirable	Violation
V <sub>R12</sub>					No	V <sub>12</sub>	[ Com et = - *			<u> </u>
			nination (			1		<u>Determinat</u>		1 <i>F)</i>
			0.0078 V <sub>12</sub> - 0.0	1002/ L <sub>A</sub>				- 0.0086 V <sub>12</sub> -	. u.uu9 L <sub>D</sub>	
	2.8 (pc/mi/	•					oc/mi/ln)			
OS = C	(Exhibit 1	3-2)					Exhibit 13-2)			
	eterm	ination				Speed D	Determina	tion		
peed D		:+ 12 11\				D <sub>s</sub> = (E	xhibit 13-12)			
•	338 (Fxih	1[ [3-11]				'	•			
l <sub>S</sub> = 0.3	338 (Exib	,				S <sub>P</sub> = m	ph (Exhibit 13-	12)		
S = 0.3 R = 60	).5 mph (E	Exhibit 13-11)				I ''	ph (Exhibit 13- ph (Exhibit 13-	· ·		
$I_S = 0.3$ $I_R = 60$ $I_S = 0.3$	).5 mph (E 'A mph (E	,				$S_0 = m$	ph (Exhibit 13-1 ph (Exhibit 13-1 ph (Exhibit 13-1	12)		

		RAMP	S AND RAN	/P JUNCTI	ONS WO	RKS	HEET			
General Infor	mation		<u> </u>	Site Infor						
Analyst Agency or Company		ey-Horn & Asso		reeway/Dir of Tr		I-580 E I-580 aı		Hollow Road		
Date Performed		/2014		lurisdiction						
Analysis Time Period				Analysis Year		Cumula	tive			
	Tracy Hills Sp	ecific Plan								
Inputs		le v						1		
Upstream Adj R	amp	Freeway Num Ramp Numbe	ber of Lanes, N r of Lanes, N	2 1					Downstrea Ramp	am Adj
Yes	On	1	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration I Freeway Volu	ane Length L <sub>D</sub>	200 2058					✓ No	Off
L <sub>up</sub> = ff	t	Ramp Volume		491					L <sub>down</sub> =	ft
V <sub>u</sub> = ve	eh/h	1	-Flow Speed, $S_{FF}$ ow Speed, $S_{FR}$	70.0					V <sub>D</sub> =	veh/h
Conversion to	o nc/h Hn		111	33.0						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_{HV}$	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>D</sub>
Freeway	2058	0.92	Level	18	0	0.9	917	1.00	24	138
Ramp	491	0.91	Level	2	0		990	1.00		45
UpStream	-					1				
DownStream										
		Merge Areas						Diverge Areas		
Estimation of	<sup>f</sup> V <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>E</sub>	(P <sub>EM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	P <sub>FD</sub>	
L <sub>EQ</sub> =		ation 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-1	`	3)
P <sub>FM</sub> =		Equation (	•		P <sub>FD</sub> =		-	000 using Equ		
V <sub>12</sub> =	pc/h	1 (	,		V <sub>12</sub> =			138 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	•	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equatio	n 13 14 o	· 13 17\
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	-		-14-01-13-17)			> 2.7		Yes ☑No	11 13-14 01	13-17)
Is $V_3$ or $V_{av34} > 2,70$								Yes ☑ No		
If Yes,V <sub>12a</sub> =		Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub>	•		c/h (Equation	13-16, 13	-18, or 13-
Capacity Che		/			Capacit	v Che		<i>5)</i>		
	Actual		apacity	LOS F?	l	,	Actual	Ca	pacity	LOS F?
	7 totaar	† Ť	apaony	20011	V <sub>F</sub>		2438	Exhibit 13-8		No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- \/	1893	Exhibit 13-8		No
*FO		EXHIBIT 10 0			V <sub>FO</sub> V <sub>R</sub>		545	Exhibit 13-10	1000	
·	<u> </u>	<u> </u>								No
Flow Entering		T .		1 1/21-12-0	Flow Er		_	rge Influen		1/2-1-20
.,,	Actual	<del>† r</del>	Desirable	Violation?	<b>—</b>	_	Actual	Max Desirab		Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>		438	Exhibit 13-8	4400:All	No
Level of Serv					+			termination		<i>F)</i>
$D_R = 5.475 + 0.$	00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>			$D_R = 4$	.252 + 0	.0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				$D_R = 2$	3.4 (pc/	mi/ln)			
LOS = (Exhibit 1	13-2)				LOS = C	(Exhib	oit 13-2)			
Speed Detern	nination				Speed I	Deter	minatio	on		
M <sub>S</sub> = (Exibit 13	3-11)				1 -		khibit 13-	•		
S <sub>R</sub> = mph (Exh	ibit 13-11)				1		(Exhibit	•		
$S_0 = mph (Exh$	ibit 13-11)				$S_0 = N$	/A mph	(Exhibit	13-12)		
	ibit 13-13)				S = 5	6.6 mph	(Exhibit	13-13)		
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		RAMP	S AND RAI	MP JUNCTI	ONS WOR	RKSHEE	ΞT			
General Info	rmation	10 1111		Site Infor						
Analyst		ey-Horn & Asso	ciates	reeway/Dir of Tr		580 EB				
Agency or Company		,		Junction		580 and La	mmers R	oad		
Date Performed	8/14/	2014		Jurisdiction						
Analysis Time Peric	d PM F	Peak	,	Analysis Year	С	umulative				
Project Description	Tracy Hills Spe	ecific Plan								
Inputs										
Upstream Adj I	Ramp	l '	ber of Lanes, N	2					ownstrea	m Adj
	7.0	Ramp Numbe	r of Lanes, N	1				R	lamp	
☐ Yes [	On	Acceleration L	ane Length, L <sub>A</sub>						Yes	On
✓ No [	Off	Deceleration L	ane Length L <sub>D</sub>	200						
	_ 0	Freeway Volu	me, V <sub>F</sub>	2118					✓ No	Off
L <sub>up</sub> =	ft	Ramp Volume		312				L,	down =	ft
		1	-Flow Speed, S <sub>FI</sub>	70.0						
$V_u = V_u$	/eh/h	•	ow Speed, S <sub>FR</sub>	35.0				V	<sub>D</sub> =	veh/h
•			111	35.0						
Conversion		ger Base (	conditions		1	<u> </u>				
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	$f_{HV}$		f <sub>p</sub> v	= V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	2118	0.92	Level	18	0	0.917		1.00	250	09
Ramp	312	0.91	Level	2	0	0.990		1.00	34	6
UpStream										
DownStream										
=		Merge Areas			=			rge Areas		
Estimation o	t v <sub>12</sub>				Estimation	on of v <sub>1</sub>	2			
	V <sub>12</sub> = V <sub>F</sub>	(P <sub>FM</sub> )				V	/ <sub>12</sub> = V <sub>F</sub>	+ (V <sub>F</sub> - V <sub>R</sub> )	$P_{FD}$	
L <sub>EQ</sub> =	(Equa	ition 13-6 or	13-7)		L <sub>EQ</sub> =		(Equ	ation 13-12	or 13-13)	)
P <sub>FM</sub> =		Equation (E	•		P <sub>FD</sub> =			using Equa		
V <sub>12</sub> =	pc/h	1 (	, ,		V <sub>12</sub> =		2509			,
V <sub>3</sub> or V <sub>av34</sub>	•	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			/h (Equation	12 14 or	12 17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,7			-14 01 13-17)			> 2 700 pa			13-14 01	13-17)
					Is V <sub>3</sub> or V <sub>av34</sub>					
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5			16 12 10 00		Is V <sub>3</sub> or V <sub>av34</sub>	> 1.5 " V <sub>12</sub>			2 16 12	10 0 12
If Yes,V <sub>12a</sub> =	13-19)		-16, 13-18, or		If Yes,V <sub>12a</sub> =		19)	(Equation 1	3-10, 13-	16, 01 13-
Capacity Ch		<u>'                                    </u>			Capacity	Checks				
Capacity Cir	Actual	С	apacity	LOS F?	Capacity		ctual	Сара	acity	LOS F?
	1.000	i i			V <sub>F</sub>		509	Exhibit 13-8	4800	No
\/		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub> -		163	Exhibit 13-8	4800	+ -
$V_{FO}$		EXHIBIT 13-0				-				No
					V <sub>R</sub>		46	Exhibit 13-10	2000	No
Flow Enterin	1	T .			Flow Enter					
	Actual	<del>i r</del>	Desirable	Violation?		Actual	_	Max Desirable		Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	2509	E	xhibit 13-8	4400:All	No
Level of Serv	vice Detern	nination (i	if not F)		Level of S	Service	Deter	mination	(if not F	<del>-</del> )
$D_R = 5.475 + 0$	.00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>		D	<sub>R</sub> = 4.252	+ 0.00	86 V <sub>12</sub> - 0.00	09 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/lı	n)				$D_{R} = 24.0$	) (pc/mi/lr	1)			
LOS = (Exhibit	13-2)				1 **	 Exhibit 13	3-2)			
Speed Deter					Speed De					
$M_S = (Exibit 1)$					1 '	59 (Exhibi		)		
-	•					l mph (Ext				
	hibit 13-11)				1			-		
	hibit 13-11)				1 *	mph (Exh		-		
S = mph (Ex	hibit 13-13)					mph (Ext		13)		
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	RA	MPS AND	RAMP JUNG	CTIONS W	/ORKSHI	EET			
General Inf				Site Infor					
Analyst	Kiml	ley-Horn & Asso	ciates Fr	eeway/Dir of Tr	avel	I-580 WB			
gency or Compa	any		Ju	nction		I-580/Corral I	Hollow		
ate Performed		1/2014		risdiction					
nalysis Time Pe		Peak	Ar	nalysis Year		Cumulative			
	on Tracy Hills Sp	ecific Plan							
nputs		Te						<u> </u>	
lpstream Adj Ra	mp	1	ber of Lanes, N	2				Downstream Ad	dj
		Ramp Numbe		1				Ramp	
Yes 🗌	On	Acceleration L	ane Length, L <sub>A</sub>	400				☐ Yes ☐ C	On
✓ No	Off	Deceleration I	ane Length L <sub>D</sub>					☑ No □ C	<b>-</b> 44
	<b>.</b>	Freeway Volu	me, V <sub>F</sub>	1139				IMNO LIC	ווכ
<sub>ip</sub> = ft		Ramp Volume	, V <sub>D</sub>	271				L <sub>down</sub> = ft	
•			-Flow Speed, S <sub>FF</sub>	70.0					
u = ve	h/h		ow Speed, S <sub>FR</sub>	55.0				V <sub>D</sub> = veh	/h
`onvorcior	to no/h lin		111	33.0					
	n to pc/h Un				1 .		_	1	
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF x f <sub>H\</sub>	/ x f <sub>p</sub>
reeway	1139	0.92	Level	18	0	0.917	1.00	1349	
Ramp	271	0.83	Level	7	0	0.966	1.00	338	
JpStream									
ownStream									
- 4! 4!		Merge Areas			F - 4' 4	· • · ·	Diverge Are	as	
stimation	от V <sub>12</sub>				Estimat	ion of v <sub>1.</sub>	2		
	$V_{12} = V_{F}$	<sub>-</sub> (P <sub>FM</sub> )				$V_1$	<sub>2</sub> = V <sub>R</sub> + (V <sub>F</sub> -	· V <sub>R</sub> )P <sub>FD</sub>	
EQ =	(Equ	uation 13-6 or	· 13-7)		L <sub>EQ</sub> =		(Equation	13-12 or 13-13)	
<sub>FM</sub> =	1.000	using Equat	ion (Exhibit 13-6)		P <sub>FD</sub> =		using Equ	ation (Exhibit 13-7)	
12 =	1349	pc/h			V <sub>12</sub> =		pc/h		
<sub>3</sub> or V <sub>av34</sub>		•	13-14 or 13-17)	ı	V <sub>3</sub> or V <sub>av34</sub>		pc/h (Equati	ion 13-14 or 13-17)	
	2,700 pc/h?		,			a > 2.700 pc	h? ☐ Yes ☐	•	
	1.5 * V <sub>12</sub> /2						2		
			3-16, 13-18, or		1			ation 13-16, 13-18,	or
Yes,V <sub>12a</sub> =	13-19				If Yes,V <sub>12a</sub> =	1	13-19)		<u> </u>
Capacity C	hecks			_	Capacit	y Checks	3		
	Actual	C	apacity	LOS F?	<u> </u>	Ac	tual		OS F?
					V <sub>F</sub>		Exhibit	13-8	
$V_{FO}$	1687	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>	Exhibit	13-8	
					V <sub>R</sub>		Exhibit		
	<u> </u>					<u> </u>	10		
. – .	ıng Werge II			\/inlatia=2	Flow En			Jence Area	lation
low Enter			Desirable	Violation?	<b></b>	Actual	Exhibit 13		lation?
	Actual		4600: AII	No	I 1/			)-O	
V <sub>R12</sub>	Actual 1687	Exhibit 13-8	4600:All	No	V <sub>12</sub>	. Comito o		4: a. a. /: f. m. a. 4. F.\	
V <sub>R12</sub> evel of Se	Actual 1687 Prvice Deteri	Exhibit 13-8 mination (	if not F)	No	Level of		Determina	tion (if not F)	
V <sub>R12</sub> .evel of Se D <sub>R</sub> = 5.47	Actual 1687 2 rvice Deteri 5 + 0.00734 v <sub>R</sub> +	Exhibit 13-8 mination (	if not F)	No	Level of	D <sub>R</sub> = 4.252		<u> </u>	
V <sub>R12</sub> evel of Se D <sub>R</sub> = 5.47 R = 16.0 (p	Actual 1687 2 rvice Deteri 5 + 0.00734 v <sub>R</sub> + c/mi/ln)	Exhibit 13-8 mination (	if not F)	No	Level of	D <sub>R</sub> = 4.252 oc/mi/ln)	<b>Determina</b> + 0.0086 V <sub>12</sub>	<u> </u>	
V <sub>R12</sub> evel of Se D <sub>R</sub> = 5.47 R = 16.0 (p	Actual 1687 2 rvice Deteri 5 + 0.00734 v <sub>R</sub> +	Exhibit 13-8 mination (	if not F)	No	Level of  D <sub>R</sub> = (p  LOS = (E	D <sub>R</sub> = 4.252 oc/mi/ln) Exhibit 13-2	<b>Determina</b> + 0.0086 V <sub>12</sub>	<u> </u>	
evel of Se $D_R = 5.47$ R = 16.0 (p) DS = B (Exh)	Actual 1687 2 rvice Deteri 5 + 0.00734 v <sub>R</sub> + c/mi/ln)	Exhibit 13-8 mination (	if not F)	No	Level of  D <sub>R</sub> = (p  LOS = (E	D <sub>R</sub> = 4.252 oc/mi/ln)	<b>Determina</b> + 0.0086 V <sub>12</sub>	<u> </u>	
V <sub>R12</sub> .evel of Se  D <sub>R</sub> = 5.47  R = 16.0 (p  OS = B (Exh	Actual 1687 Frvice Determination Actual 1687 Frvice Determination	Exhibit 13-8 mination (	if not F)	No	D <sub>R</sub> = (p LOS = (E Speed L	D <sub>R</sub> = 4.252 oc/mi/ln) Exhibit 13-2	<b>Determina</b> + 0.0086 V <sub>12</sub>	<u> </u>	
V <sub>R12</sub> evel of Se  D <sub>R</sub> = 5.47  R = 16.0 (p  DS = B (Exh  Epeed Dete	Actual 1687 5 + 0.00734 v <sub>R</sub> + c/mi/ln) ibit 13-2) ermination Exibit 13-11)	Exhibit 13-8 <b>mination (</b> 0.0078 V <sub>12</sub> - 0.0	if not F)	No	D <sub>R</sub> = (p LOS = (E <b>Speed L</b> D <sub>s</sub> = (E	D <sub>R</sub> = 4.252 pc/mi/ln) Exhibit 13-2 <b>Determin</b> Exhibit 13-12)	<b>Determina</b> + 0.0086 V <sub>12</sub> ) ation	<u> </u>	
V <sub>R12</sub> <b>evel of Se</b> D <sub>R</sub> = 5.47  R = 16.0 (p  OS = B (Exh <b>Speed Dete</b> S = 0.298 ( R = 61.7 m	Actual 1687  Frvice Determ 5 + 0.00734 v <sub>R</sub> + c/mi/ln) ibit 13-2)  Ermination  Exibit 13-11) ph (Exhibit 13-11)	Exhibit 13-8 <b>mination (</b> 0.0078 V <sub>12</sub> - 0.0	if not F)	No	$\begin{array}{c} \textbf{Level of} \\ \textbf{D}_{R} = & (\textbf{p} \\ \textbf{LOS} = & (\textbf{E} \\ \textbf{Speed L} \\ \textbf{D}_{s} = & (\textbf{E} \\ \textbf{S}_{R} = & \textbf{m} \\ \end{array}$	D <sub>R</sub> = 4.252 pc/mi/ln) Exhibit 13-2 <b>Determin</b> Exhibit 13-12) ph (Exhibit 13	<b>Determina</b> + 0.0086 V <sub>12</sub> ) ation	<u> </u>	
V <sub>R12</sub> evel of Se  D <sub>R</sub> = 5.47  R = 16.0 (p  OS = B (Exh  Epeed Dete  S = 0.298 ( R = 61.7 m  D = N/A mp	Actual 1687 5 + 0.00734 v <sub>R</sub> + c/mi/ln) ibit 13-2) ermination Exibit 13-11)	Exhibit 13-8 <b>mination (</b> 0.0078 V <sub>12</sub> - 0.0	if not F)	No	$\begin{array}{cccc} \textbf{Level of} \\ & & & \\ & & $	D <sub>R</sub> = 4.252 pc/mi/ln) Exhibit 13-2 <b>Determin</b> Exhibit 13-12)	Determina + 0.0086 V <sub>12</sub> ) ation	<u> </u>	

		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSH	EET				
Genera	l Infori				Site Infor						
nalyst gency or C	Company	Kimle	ey-Horn & Asso		eeway/Dir of Tr	avel	I-580 V I-580/L	VB ammers Ro	oad		
ate Perfor		8/14/	2014	Ju	ırisdiction						
nalysis Tin	ne Period	PM F	eak eak	Ar	nalysis Year		Cumula	ative			
roject Des	cription	Tracy Hills Spe	ecific Plan								
nputs			-								
pstream A	dj Ramp			ber of Lanes, N	2					Downstre	am Adj
¬.,			Ramp Numbe	r of Lanes, N	1					Ramp	
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	400					□Yes	On
✓ No	Off		Deceleration L	ane Length L <sub>D</sub>						☑ No	Off
			Freeway Volu	me, V <sub>F</sub>	1318					I.	
ıp =	ft		Ramp Volume	, V <sub>R</sub>	246					L <sub>down</sub> =	ft
<sub>u</sub> =	veh/h		Freeway Free	-Flow Speed, $S_{FF}$	70.0					V <sub>D</sub> =	veh/h
u	VCII/II		Ramp Free-Fl	ow Speed, S <sub>FR</sub>	55.0						
onver	sion to	pc/h Und	der Base	Conditions							
(pc/l	h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	$f_p$	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
reeway		1318	0.92	Level	18	0	0.	917	1.00		1562
Ramp		246	0.83	Level	7	0	0.	966	1.00		307
JpStream											
)ownStrea	ım		Marga Arasa						iverse Areas		
stimat	tion of	V	Merge Areas			Estimat	ion o	of V	iverge Areas		
			/D )							``	
_		$V_{12} = V_F$		. 40 7)		_			$V_R + (V_F - V_F)$		4.0)
<u>=</u> Q =			ation 13-6 or			L <sub>EQ</sub> =			Equation 13		
FM =				ion (Exhibit 13-6)		P <sub>FD</sub> =			ısing Equati	on (Exhibit 1	13-7)
12 =		1562				V <sub>12</sub> =		•	oc/h		
<sub>3</sub> or V <sub>av34</sub>				13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			oc/h (Equation		17)
		) pc/h?  Ye							Yes No		
		V <sub>12</sub> /2		10 10 10					Yes No		10.40
Yes,V <sub>12a</sub> :	=	pc/n 13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		oc/h (Equatio 3-19)	on 13-16, 1	13-18, or
apacit	ty Che					Capacit	y Ch		,		
		Actual	C	apacity	LOS F?			Actual	Ca	apacity	LOS F?
						$V_{F}$			Exhibit 13	-8	
V <sub>F</sub>	0	1869	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13	-8	
	Ü					V <sub>R</sub>			Exhibit 13	3-	
' <b></b>	. 4		<u> </u>				-4	Di	10	4	
iow Er	ntering	Actual	fluence A	<b>rea</b> Desirable	Violation?	Flow Er	_	Actual	<b>ge Influe</b> Max Des		Violation
V <sub>R1</sub>		1869	Exhibit 13-8	4600:All	No No	V <sub>12</sub>	+-'	notuai	Exhibit 13-8	sii avie	violation
			nination (		110		f San	vice Do	terminatio	n (if no	( F)
			0.0078 V <sub>12</sub> - 0.0			<del></del>			0086 V <sub>12</sub> - 0	•	. 1 )
			7.0070 V <sub>12</sub> - 0.0	70027 L <sub>A</sub>					0000 v <sub>12</sub> - 0	7.003 L <sub>D</sub>	
	7.4 (pc/mi	-				I ''	oc/mi/lı				
	Exhibit 1						Exhibit				
•	Determ	ination				Speed L			n		
I <sub>S</sub> = 0	.302 (Exib	it 13-11)				1 '	Exhibit 1	•			
<sub>R</sub> = 6	1.5 mph (I	Exhibit 13-11)				I ''		nibit 13-12)			
		xhibit 13-11)				$S_0 = m$	nph (Exh	nibit 13-12)			
	1.5 mph (I	Exhibit 13-13)				S = m	nph (Exh	nibit 13-13)			
			II Rights Reserv			HCS2010				Generated:	

		RAMP	S AND RAN	/P JUNCTI	ONS WO	RKS	HEET			
General Infor	mation	4 W WITH		Site Infor						
Analyst		ey-Horn & Asso	ociates F	reeway/Dir of Tr		I-580 W	/B			
Agency or Company		-,		unction				Hollow Road		
Date Performed	8/14/	/2014	J	urisdiction						
Analysis Time Period	PM F	Peak	Д	nalysis Year		Cumula	tive			
Project Description	Tracy Hills Sp	ecific Plan								
Inputs										
Upstream Adj R	amp	1 1	ber of Lanes, N	2					Downstrea	am Adj
□Yes□	On	Ramp Numbe		1					Ramp	
103	] (11	1	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration I	_ane Length L <sub>D</sub>	200					✓ No	Off
		Freeway Volu	me, V <sub>F</sub>	1245						
L <sub>up</sub> = ff	t	Ramp Volume	e, V <sub>R</sub>	106					L <sub>down</sub> =	ft
		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					\/ -	vab/b
$V_u = V_0$	eh/h	1	low Speed, S <sub>FR</sub>	35.0					$V_D =$	veh/h
Conversion to	nc/h Hn		111							
(pc/h)	<i>∨</i>	PHF	Terrain	%Truck	%Rv	Т.	f	f	v = V/PHF	vf vf
(ρζ/11)	(Veh/hr)	<b>↓</b>	Terrairi	/0 ITUCK	/0 T\ V	_	f <sub>HV</sub>	r		r
Freeway	1245	0.92	Level	18	0	0.9	917	1.00		75
Ramp	106	0.93	Level	4	0	0.9	980	1.00	1	16
UpStream		<b></b>				+				
DownStream		Marga Arasa						Niverse Arese		
Estimation of		Merge Areas			Estimat	ion o		Diverge Areas		
Estillation of	<b>V</b> 12				LStilliat	ion o				
	$V_{12} = V_{F}$	(P <sub>FM</sub> )					V <sub>12</sub> =	$V_R + (V_F - V_F)$	<sub>R</sub> )P <sub>FD</sub>	
L <sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(1	Equation 13-1	2 or 13-13	5)
P <sub>FM</sub> =	using	Equation (	Exhibit 13-6)		P <sub>FD</sub> =		1.	000 using Eqเ	uation (Exhi	ibit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		14	175 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equation	n 13-14 o	r 13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	-		,			., > 2.70		∃Yes ☑No		- /
Is $V_3$ or $V_{av34} > 1.5$ *								Yes ☑ No		
			-16, 13-18, or		1			c/h (Equation	13-16 13	-18 or 13-
If Yes,V <sub>12a</sub> =	13-19		10, 10 10, 01		If Yes,V <sub>12a</sub> =	=	19		10 10, 10	10, 01 10
Capacity Che	cks				Capacit	y Che	ecks			
	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
			•		$V_{F}$		1475	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V <sub>D</sub>	1359	Exhibit 13-8	4800	No
- FO					V <sub>R</sub>		116	Exhibit 13-1	1000	_
	<u> </u>	<u> </u>								No
Flow Entering		T .		1.7.1.00	Flow En	_		rge Influen		1 Vr.1.C 0
.,	Actual	<del>† r</del>	Desirable	Violation?	<del>  ,,</del>	_	ctual	Max Desirab		Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>		475	Exhibit 13-8	4400:All	No
Level of Serv								terminatio		F)
$D_R = 5.475 + 0.$	00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	· 0.00627 L <sub>A</sub>			$D_R = 4$	.252 + 0	.0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				D <sub>R</sub> = 15	5.1 (pc/	mi/ln)			
LOS = (Exhibit	13-2)				LOS = B	(Exhib	it 13-2)			
Speed Detern	nination				Speed L			on		
$M_S = (Exibit 13)$					<del></del>		chibit 13-			
-	•				1 *	-	(Exhibit	-		
	ibit 13-11)					-	•	-		
•	ibit 13-11)				1	-	(Exhibit	•		
S = mph (Exh	ibit 13-13)				S = 57	7.7 mph	(Exhibit	13-13)		
Copyright © 2013 Unive	ersity of Florida,	All Rights Reser	ved		HCS2010 <sup>™</sup>	M Versio	on 6.50	G	enerated: 9/2	2/2014 2:55 P

		RAMP	S AND RAI	/P JUNCTI	ONS WOF	RKSH	EET			
General Infor	mation			Site Infor						
Analyst		ey-Horn & Asso	ciates F	reeway/Dir of Tr		-580 WE				
Agency or Company		,,		lunction			Lammers	s Road		
Date Performed	8/14/2	2014	J	lurisdiction						
Analysis Time Period	PM P	eak eak	A	Analysis Year	C	Cumulati	ve			
Project Description	Tracy Hills Spe	ecific Plan								
Inputs										
Upstream Adj R	amp	1	ber of Lanes, N	2					Downstrea	m Adj
	On	Ramp Number	of Lanes, N	1				Į.	Ramp	
☐ Yes ☐	JON	Acceleration L	ane Length, L <sub>A</sub>						☐Yes	On
☑ No □	Off	Deceleration L	ane Length L <sub>D</sub>	200					<b>☑</b> No	Off
		Freeway Volur	me, V <sub>F</sub>	1410					INO	
L <sub>up</sub> = fi	:	Ramp Volume	, V <sub>D</sub>	92				L	-down =	ft
·			Flow Speed, S <sub>FF</sub>	70.0						
V <sub>u</sub> = ve	eh/h	Ramp Free-Flo		35.0				)	√ <sub>D</sub> =	veh/h
Comversion t			111	33.0						
Conversion to	y pe/ii one	ier base (	Jonailions	1	1	Т				
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	f⊦	IV	f <sub>p</sub>	/ = V/PHF	$x f_{HV} x f_{p}$
Freeway	1410	0.92	Level	18	0	0.91	7	1.00	167	71
Ramp	92	0.93	Level	4	0	0.98	<del></del>	1.00	10	1
UpStream		1		<u> </u>		1				
DownStream										
		Merge Areas						verge Areas		
Estimation of	v <sub>12</sub>				Estimation	on of	V <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P.,, )					V <sub>40</sub> = '	V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub>	)P	
l =	12 1	tion 13-6 or	13_7)		l =			quation 13-12		
L <sub>EQ</sub> =					L <sub>EQ</sub> =		-	-	•	
P <sub>FM</sub> =	_	Equation (E	exhibit 13-6)		P <sub>FD</sub> =			00 using Equ	ation (Exnit	oit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =			'1 pc/h		
V <sub>3</sub> or V <sub>av34</sub>			-14 or 13-17)		${ m V_3}$ or ${ m V_{av34}}$			oc/h (Equation	n 13-14 or	13-17)
Is $V_3$ or $V_{av34} > 2,70$								Yes ☑ No		
Is $V_3$ or $V_{av34} > 1.5$					Is V <sub>3</sub> or V <sub>av34</sub>	<sub>i</sub> > 1.5 *		Yes 🗹 No		
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =			:/h (Equation	13-16, 13-	18, or 13-
.20	13-19)					Oha	19	)		
Capacity Che		1 0	.,	1.00.50	Capacity	Che		1 0	.,	1 . 00 50
	Actual	C	apacity	LOS F?	١,		Actual		acity	LOS F?
					V <sub>F</sub>		1671	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	1570	Exhibit 13-8	4800	No
					$V_R$		101	Exhibit 13-10	2000	No
Flow Entering	Merae In	fluence A	rea		Flow Ent	erina	Diver	ge Influenc	e Area	-
	Actual	1	Desirable	Violation?	†		tual	Max Desirabl		Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	16		Exhibit 13-8	4400:All	No
Level of Serv	ice Detern		f not F)	1	-			ermination		
$D_R = 5.475 + 0.$								0086 V <sub>12</sub> - 0.0	•	,
	• •	0.3070 <b>v</b> <sub>12</sub> -	0.00027 LA		1			12 0.0	-D	
D <sub>R</sub> = (pc/mi/ln					1	8 (pc/n	,			
LOS = (Exhibit						Exhibit				
Speed Detern	nination				Speed Do	eterm	inatio	n		
M <sub>S</sub> = (Exibit 13	3-11)				$D_{s} = 0.43$	37 (Ext	nibit 13-1	12)		
-	ibit 13-11)				S <sub>R</sub> = 57.8	8 mph (	Exhibit 1	3-12)		
	ibit 13-11)					mph (E	Exhibit 1	3-12)		
	ibit 13-13)						Exhibit 1	· ·		
	/				1. 07.	/		,		

		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSH	EET				
General	Inforr				Site Infor						
Analyst Agency or C	omnany	Kimle	ey-Horn & Asso		eeway/Dir of Tr	avel	I-580 E	B Corral Hollo	w Road		
ate Perforn		8/14/	2014		risdiction		1-300/C	orial Hono	w IXUau		
nalysis Tim		AM P			nalysis Year		Cumula	ative Plus E	Buildout		
		Tracy Hills Spe			,						
nputs											
pstream Ad	dj Ramp		· ·	ber of Lanes, N	2					Downstre	am Adj
Yes			Ramp Numbe	•	1					Ramp	
_ Yes	On			ane Length, L <sub>A</sub>	250					☐Yes	On
✓ No	Off		Freeway Volu	ane Length L <sub>D</sub>	67					☑ No	Off
<sub>.p</sub> =	ft		Ramp Volume	'	129					L <sub>down</sub> =	ft
ир				·, * <sub>R</sub> -Flow Speed, S <sub>FF</sub>	70.0						
' u =	veh/h									$V_D =$	veh/h
				ow Speed, S <sub>FR</sub>	55.0						
onvers	sion to	pc/n Und	ger Base	Conditions	1	1	_			1	
(pc/h	)	v (Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_{HV}$	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
reeway		67	0.92	Level	18	0	0.	917	1.00		79
Ramp		129	0.70	Level	11	0	0.	948	1.00		194
JpStream							_				
OownStrear	n		Merge Areas			-			iverge Areas		
stimati	ion of	V	Weige Aleas			Estimat	ion o	of V.	iverge Areas		
			/D )							\ <u></u>	
		$V_{12} = V_F$		40.7					$V_R + (V_F - V_F)$		4.0\
<u>=</u> Q =			ation 13-6 o			L <sub>EQ</sub> =			Equation 13		
<sub>FM</sub> =				ion (Exhibit 13-6)		P <sub>FD</sub> =			using Equati	on (Exhibit 1	13-7)
12 =		79 pc				V <sub>12</sub> =			oc/h		
<sub>3</sub> or V <sub>av34</sub>				13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			oc/h (Equation		17)
		pc/h? Yes							☐Yes ☐ No		
s V <sub>3</sub> or V <sub>av3</sub>	<sub>34</sub> > 1.5 *	V <sub>12</sub> /2 □ Yes				Is V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 1.5		Yes No		
Yes,V <sub>12a</sub> =		pc/n ( 13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		oc/h (Equatio 3-19)	on 13-16, 1	13-18, or
apacit	y Che	cks				Capacit	y Ch	ecks	Í		
		Actual	C	apacity	LOS F?			Actual		apacity	LOS F?
						V <sub>F</sub>			Exhibit 13	i-8	
$V_{FC}$	,	273	Exhibit 13-8		No	$V_{FO} = V_{F}$	-V <sub>R</sub>		Exhibit 13	-8	
, ,						V <sub>R</sub>			Exhibit 1	3-	
low En	toring	Morgolp	l <u>l</u> fluence A	<b>***</b>			to viv	o Divo	rge Influe		<u> </u>
TOW EII	tering	Actual		Desirable	Violation?	FIOW EI	_	Actual	Max De		Violation
V <sub>R12</sub>	, +	273	Exhibit 13-8	4600:All	No	V <sub>12</sub>	+-	Journal	Exhibit 13-8	1	VIOIGUOII
			nination (		1.10		f Son	vice Do	termination	on (if no	t F)
			0.0078 V <sub>12</sub> - 0.0			1			.0086 V <sub>12</sub> - (	•	. ,
	9 (pc/mi/li			A			oc/mi/l		12	000 <b>-</b> D	
		-				I ''					
	(Exhibit 1						Exhibit		<u> </u>		
•		ination				Speed L			n		
•	299 (Exib	,					Exhibit 1	,			
		Exhibit 13-11)				I ''		nibit 13-12)			
		xhibit 13-11)				$S_0 = m$	iph (Exh	nibit 13-12)			
= 61	.6 mph (E	Exhibit 13-13)				S = m	iph (Exh	nibit 13-13)			
$S_0 = N/S = 61$	A mph (E .6 mph (I	xhibit 13-11) Exhibit 13-13)	II Rights Reserv	ved		$S_0 = m$	iph (Exh iph (Exh	nibit 13-12) nibit 13-13)		Generated:	0/2/201

		RAI	MPS AND	RAMP JUN	<b>CTIONS W</b>	ORKSHI	EET				
General	Inform				Site Infor						
Analyst Agency or Co Date Perform		Kimle 8/14/	y-Horn & Asso	Jı	reeway/Dir of Tr unction urisdiction		I-580 EB I-580/Lar	nmers Ro	oad		
Analysis Tim		AM P			nalysis Year		Cumulati	ve Plus P	Project		
roject Desc	ription T	racy Hills Spe	cific Plan		•				<u> </u>		
nputs											
Jpstream Ad	dj Ramp		Freeway Num Ramp Numbe	ber of Lanes, N r of Lanes. N	2 1					Downstre Ramp	am Adj
Yes	On		Acceleration I	ane Length, L <sub>A</sub>	250					Yes	On
✓ No	Off		Deceleration I Freeway Volu	Lane Length L <sub>D</sub> me, V <sub>F</sub>	204					☑ No	Off
- <sub>up</sub> =	ft		Ramp Volume	e, V <sub>R</sub> -Flow Speed, S <sub>FF</sub>	70 70.0					L <sub>down</sub> =	ft
/ <sub>u</sub> =	veh/h		Ramp Free-F	ow Speed, S <sub>FR</sub>	55.0					V <sub>D</sub> =	veh/h
Convers	sion to		der Base	Conditions							
(pc/h	)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>l</sub>		f <sub>p</sub>		F x f <sub>HV</sub> x f <sub>p</sub>
Freeway	$\perp$	204	0.92	Level	18	0	0.91	-	1.00		242
Ramp		70	0.70	Level	11	0	0.94	В	1.00		106
JpStream DownStream	n						_			<u> </u>	
Jown Oct Can		ı	Merge Areas					<u>_</u> D	iverge Areas		
stimati	ion of v	/12	<b></b>			Estimat	ion of	V <sub>12</sub>			
		V <sub>12</sub> = V <sub>F</sub>	(P)						V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	\P	
=			ation 13-6 o	r 13 <sub>-</sub> 7)		  =			Equation 13		13)
<sub>EQ</sub> = ' <sub>FM</sub> =				ion (Exhibit 13-6	١	L <sub>EQ</sub> = P <sub>FD</sub> =			using Equation		
FM 1 <sub>12</sub> =		242 p		IOII (EXIIIDIL 13-0	)	V <sub>12</sub> =			oc/h	ו זוטווואבן) דוכ	J-1)
12 ′ <sub>3</sub> or V <sub>av34</sub>		•		13-14 or 13-17	١	V <sub>3</sub> or V <sub>av34</sub>			oc/h (Equation	13 1 <i>1</i> or 13 ·	17)
	> 2 700	pc/h? TYes		13-14-01-13-17	)		> 2.700		Yes No		17)
		/ <sub>12</sub> /2 □ Yes							∃ Yes □ No		
				3-16, 13-18, or		1			⊒ res  □ no oc/h (Equatio		3-18 or
Yes,V <sub>12a</sub> =	:	13-19)	(Equation 1	7 10, 10 10, 01		If Yes,V <sub>12a</sub> =	•		3-19)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0-10, OI
Capacity	y Chec	ks				Capacit	y Che	cks			
		Actual		Capacity	LOS F?			Actual	Ca	pacity	LOS F?
						$V_{F}$			Exhibit 13-	-8	
$V_{FO}$	,	348	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13-	-8	
10						V <sub>R</sub>			Exhibit 13 10	3-	
low En	tering	Merge In	fluence A	rea		Flow En	tering	Diver	ge Influer	nce Area	<del>'</del>
	Ĭ	Actual	-	Desirable	Violation?			tual	Max Des		Violation'
\/	$\frac{1}{2}$	348	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
<b>v</b> R12		e Detern	nination (	if not F)	-	Level of	Servi	ce De	terminatio	n (if not	<b>F</b> )
V <sub>R12</sub> .evel of	Servic					1	D = 4 '	252 + 0.	.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
evel of			).0078 V <sub>12</sub> - 0.	00627 L <sub>₄</sub>			U <sub>R</sub> - 4.4				
.evel of		.00734 v <sub>R</sub> + 0	).0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		1			12	Б	
D <sub>R</sub> = 6.6	5.475 + 0 6 (pc/mi/ln	00734 v <sub>R</sub> + 0	).0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		$D_R = (p$	c/mi/ln)		12	D	
D <sub>R</sub> = 6.6 OS = A (	5.475 + 0. 6 (pc/mi/ln (Exhibit 13	00734 v <sub>R</sub> + 0 ) 3-2)	0.0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		D <sub>R</sub> = (p LOS = (E	oc/mi/ln) Exhibit 1	3-2)			
D <sub>R</sub> = 6.6 OS = A (	5.475 + 0 6 (pc/mi/ln (Exhibit 13 <b>Determ</b>	00734 v <sub>R</sub> + 0 ) 3-2) <b>ination</b>	0.0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		D <sub>R</sub> = (p LOS = (E <b>Speed D</b>	oc/mi/ln) Exhibit 1 <b>Determ</b>	3-2) iinatio			
evel of $D_{R} = 6.6$ $OS = A ($ $Open D_{S} = 0.2$	5.475 + 0.6 (pc/mi/ln (Exhibit 13 <b>Determ</b> 299 (Exibit	00734 v <sub>R</sub> + 0 ) 3-2) i <b>nation</b> :13-11)	0.0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		D <sub>R</sub> = (p LOS = (E <b>Speed L</b> D <sub>s</sub> = (E	oc/mi/ln) Exhibit 1 Determ Exhibit 13-	3-2) <b>inatio</b> 12)			
$D_{R} = 0.2$	5.475 + 0.6 (pc/mi/ln (Exhibit 13 <b>Determ</b> ) 299 (Exibit .6 mph (E	00734 v <sub>R</sub> + 0 ) 3-2) i <b>nation</b> : 13-11) xhibit 13-11)	0.0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		$D_R$ = (p LOS = (E <b>Speed L</b> $D_S$ = (E $S_R$ = m	oc/mi/ln) Exhibit 1 Determ Exhibit 13- ph (Exhib	3-2) <b>ninatio</b> 12) it 13-12)			
D <sub>R</sub> = 0.6 OS = A (Copeed D Speed D Speed D Speed D N/O	5.475 + 0.6 (pc/mi/ln (Exhibit 13 <b>Determ</b> 299 (Exibit .6 mph (E	00734 v <sub>R</sub> + 0 ) 3-2) i <b>nation</b> :13-11)	0.0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>		$D_R$ = (p LOS = (E <b>Speed L</b> $D_S$ = (E $S_R$ = m $S_0$ = m	oc/mi/ln) Exhibit 1 Determ Exhibit 13-	3-2) <b>ninatio</b> 12) it 13-12) it 13-12)			

		RAMP	S AND RAM	/P JUNCTI	ONS WO	RKS	HEET			
General Infor	mation		- / IVAII	Site Infori			· · — • ·			
Analyst Agency or Company		ey-Horn & Asso	J	reeway/Dir of Tra lunction		I-580 E I-580 a		Iollow Road		
Date Performed Analysis Time Period	8/14/ AM P			lurisdiction Analysis Year		Cumula	ative Plus P	Project		
Project Description			,	araryoro r oar		Oumaic	auvo i ius i	ТОЈООТ		
Inputs										
Upstream Adj R	amp	Freeway Num Ramp Numbe	ber of Lanes, N	2 1					Downstrea Ramp	am Adj
Yes	On		ane Length, L <sub>A</sub>	·					Yes	□On
✓ No	Off	1	ane Length L <sub>D</sub>	200					✓No	Off
L <sub>up</sub> = f	t	Freeway Volu Ramp Volume		274 207					L <sub>down</sub> =	ft
V <sub>u</sub> = v	eh/h		Flow Speed, S <sub>FF</sub>						V <sub>D</sub> =	veh/h
0	//- 11	· ·	ow Speed, S <sub>FR</sub>	35.0						
Conversion to	o pc/n Und V	der Base	Conditions	1	ı	_	ı		I	
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	+	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	· ·
Freeway	274	0.92	Level	18	0		917	1.00		25
Ramp UpStream	207	0.69	Level	19	0	0.	913	1.00	3.	29
DownStream		<del>                                     </del>				+				
		Merge Areas					Ď	iverge Areas	•	
Estimation of	<sup>F</sup> V <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V	<sub>R</sub> )P <sub>FD</sub>	
L <sub>EQ</sub> =	(Equa	ition 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-	–	5)
P <sub>FM</sub> =	using	Equation (	Exhibit 13-6)		P <sub>FD</sub> =		1.0	000 using Eq	uation (Exhi	ibit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =			5 pc/h		•
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		0	pc/h (Equation	on 13-14 o	r 13-17)
Is $V_3$ or $V_{av34} > 2,70$	0 pc/h?	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 2,7	00 pc/h? [	∃Yes <b>☑</b> No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 '	'V <sub>12</sub> /2	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5	* V <sub>12</sub> /2 [	∃Yes <b>☑</b> No		
If Yes,V <sub>12a</sub> =	pc/h ( 13-19)		-16, 13-18, or		If Yes,V <sub>12a</sub> =	=	p 19	c/h (Equatior	13-16, 13	-18, or 13-
Capacity Che					Capacit			<i>7)</i>		
	Actual		apacity	LOS F?		<i>,                                    </i>	Actual	Ca	apacity	LOS F?
			' '		$V_{F}$		325	Exhibit 13-		No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V <sub>R</sub>	-4	Exhibit 13-	8 4800	No
. 0					V <sub>R</sub>		329	Exhibit 13-1	0 2000	No
Flow Entering	g Merge In	fluence A	rea		Flow En	terin	g Dive	ge Influen		_
	Actual	<del>T</del>	Desirable	Violation?		_	Actual	Max Desira		Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>		325	Exhibit 13-8	4400:All	No
Level of Serv								terminatio		<i>F</i> )
$D_R = 5.475 + 0.$	• • • • • • • • • • • • • • • • • • • •	0.0078 V <sub>12</sub> -	· 0.00627 L <sub>A</sub>					.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	•				l ''	2 (pc/r	,			
LOS = (Exhibit							oit 13-2)			
Speed Detern	nination				Speed L					
M <sub>S</sub> = (Exibit 1:	•						xhibit 13-	-		
• •	ibit 13-11)						(Exhibit	-		
	ibit 13-11)				l *	-	(Exhibit 1	•		
	ibit 13-13)						(Exhibit	13-13)		
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		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKSI	HEET			
General Infor	mation	1 55 11111		Site Infor						
Analyst		ey-Horn & Asso	ociates F	reeway/Dir of Ti		I-580 EE	3			
Agency or Company		-,		unction			d Lamme	rs Road		
Date Performed		/2014	Jı	urisdiction						
Analysis Time Period	d AM F	Peak	Α	nalysis Year		Cumula	tive Plus F	Project		
Project Description	Tracy Hills Sp	ecific Plan								
Inputs										
Upstream Adj R	amp	1 '	ber of Lanes, N	2					Downstrea	am Adj
□Yes□	On	Ramp Numbe		1					Ramp	
103	1011	1	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration I	Lane Length L <sub>D</sub>	200					✓ No	Off
		Freeway Volu	me, V <sub>F</sub>	355						
L <sub>up</sub> = fi	t	Ramp Volume	e, V <sub>R</sub>	151					L <sub>down</sub> =	ft
		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					\/ -	vab/b
$V_u = V_0$	eh/h	1	low Speed, S <sub>FR</sub>	35.0					$V_D =$	veh/h
Conversion to	n nc/h l ln		111							
(pc/h)	<i>γ</i> γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ	PHF	Terrain	%Truck	%Rv	Τ,	: HV	fp	v = V/PHF	vf vf
. ,	(Veh/hr)	<b></b>	Terrain	<u> </u>	<u> </u>	_		· ·	V V/1 1 11	'HV 'P
Freeway	355	0.92	Level	18	0	0.9		1.00	4	21
Ramp	151	0.69	Level	19	0	0.9	13	1.00	2	40
UpStream		$\vdash$				_				
DownStream		Marga Arasa			<u> </u>			Jivaraa Araaa		
Estimation of		Merge Areas			Estimat	ion o		iverge Areas		
Estillation of	V <sub>12</sub>				LStilliat	ion o				
	$V_{12} = V_{F}$	(P <sub>FM</sub> )					V <sub>12</sub> =	$V_R + (V_F - V_F)$	<sub>R</sub> )P <sub>FD</sub>	
L <sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(1	Equation 13-1	2 or 13-13	)
P <sub>FM</sub> =	using	Equation (I	Exhibit 13-6)		P <sub>FD</sub> =		1.	000 using Equ	uation (Exhi	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		42	21 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equatio	n 13-14 o	· 13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	-		,			., > 2.70		∃Yes ☑ No		- /
Is $V_3$ or $V_{av34} > 1.5$								Yes ☑ No		
			-16, 13-18, or					c/h (Equation	13-16 13	-18 or 13-
If Yes,V <sub>12a</sub> =	13-19		10, 10 10, 01		If Yes,V <sub>12a</sub> =	=	19		10 10, 10	10, 01 10
Capacity Che	cks				Capacit	y Che	cks			
	Actual		apacity	LOS F?			Actual	Ca	pacity	LOS F?
					$V_{F}$		421	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V <sub>D</sub>	181	Exhibit 13-8	4800	No
, FO					V <sub>R</sub>		240	Exhibit 13-10	+	
	<u> </u>	<u> </u>								No
Flow Entering		il .		1 15 15 0	Flow En			rge Influen		\" \ ' \ O
.,	Actual	<del>i</del> r	Desirable	Violation?	.,		ctual	Max Desirab		Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>		21	Exhibit 13-8	4400:All	No
Level of Serv								terminatio	•	<i>F</i> )
$D_R = 5.475 + 0.$	00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	- 0.00627 L <sub>A</sub>			$D_R = 4$	.252 + 0	.0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				$D_R = 6.$	1 (pc/m	ni/ln)			
LOS = (Exhibit	13-2)				LOS = A	(Exhib	it 13-2)			
Speed Detern	•				Speed L			n		
•					<del>  '                                   </del>		hibit 13-			
$M_S = (Exibit 13)$					1			•		
	ibit 13-11)						(Exhibit	•		
	ibit 13-11)				1 *	-	Exhibit	·-		
S = mph (Exh	ibit 13-13)				S = 57	7.4 mph	(Exhibit	13-13)		
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	RAI	MPS AND	RAMP JUN	CTIONS W	ORKSH	EET	1			
General Infor		• /	1011111	Site Infor						
Analyst		ey-Horn & Ass	ociates Fr	eeway/Dir of Tr		I-580	WB			
Agency or Company		,		nction		I-580/	Corral Hollov	w Road		
Date Performed	8/14/	2014	Ju	risdiction						
Analysis Time Period	l AM F		Ar	nalysis Year		Cumu	ılative Plus P	roject		
Project Description	Tracy Hills Spe	ecific Plan								
Inputs		<u>.                                    </u>								
Upstream Adj Ramp		1 '	ber of Lanes, N	2					Downstre	am Adj
		Ramp Numbe	er of Lanes, N	1					Ramp	
Yes On		Acceleration I	_ane Length, L <sub>A</sub>	400					☐Yes	On
☑No ☐Off	f	Deceleration	Lane Length L <sub>D</sub>						✓ No	Off
		Freeway Volu	ime, V <sub>F</sub>	1242						
L <sub>up</sub> = ft		Ramp Volume	e, V <sub>R</sub>	702					L <sub>down</sub> =	ft
		Freeway Free	Flow Speed, S <sub>FF</sub>	70.0					\/ <b>-</b>	veh/h
$V_u = veh/h$		Ramp Free-F	low Speed, S <sub>FR</sub>	55.0					V <sub>D</sub> =	veii/ii
Conversion to	o pc/h Und		111							
	V			0/ Truck	0/ Dv		f I	f	v = \//DUI	Evf vf
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v – v/Pni	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1242	0.92	Level	18	0	(	0.917	1.00	•	1472
Ramp	702	0.72	Level	13	0	(	0.939	1.00	,	1038
UpStream						_				
DownStream		l Merge Areas						iverge Areas		
Estimation of		merge Areas			Estimat	ion	of v.	iverge Areas		
		(D )							\D	
	$V_{12} = V_{F}$							$V_R + (V_F - V_R)$		
L <sub>EQ</sub> =	-	ation 13-6 o			L <sub>EQ</sub> =			Equation 13-		
P <sub>FM</sub> =			tion (Exhibit 13-6)		P <sub>FD</sub> =			using Equatio	n (Exhibit 1	3-7)
V <sub>12</sub> =	1472				V <sub>12</sub> =			oc/h		
$V_{3}$ or $V_{av34}$			13-14 or 13-17)		$V_3$ or $V_{av34}$			oc/h (Equation 1	3-14 or 13-1	17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70								∃Yes □ No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *					Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.		☐Yes ☐ No		
If Yes,V <sub>12a</sub> =			3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		oc/h (Equation	n 13-16, 1	3-18, or
Capacity Che	13-19)				Capacit			3-19)		
Capacity One	Actual	1 (	Capacity	LOS F?	Dapach	y Oi	Actual	Car	pacity	LOS F?
	7101001	<u> </u>	Jupuony	1 2001:	V <sub>F</sub>		7 totaai	Exhibit 13-8		20011
					<u> </u>	\/		Exhibit 13-8	+	+
$V_{FO}$	2510	Exhibit 13-8		No	$V_{FO} = V_{F}$	- <b>v</b> R		Exhibit 13-	_	-
					$V_R$			10	1	
Flow Entering	Merge In	fluence A	\rea	•	Flow En	iteri	ng Diver	ge Influen	ce Area	
	Actual		Desirable	Violation?			Actual	Max Desi		Violation?
V <sub>R12</sub>	2510	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
Level of Serv	ice Detern	nination (	if not F)		Level of	f Sei	rvice De	terminatio	n (if not	F)
h—————————————————————————————————————	0.00734 v <sub>R</sub> + 0				1——			.0086 V <sub>12</sub> - 0.		,
D <sub>R</sub> = 22.1 (pc/m		12	^			oc/mi/		12	D	
LOS = C (Exhibit	•				I		it 13-2)			
Speed Detern							rminatio	n e		
					+			<u>'11</u>		
$M_S = 0.325 (Exilon)$	•				1 °		13-12)			
11	(Exhibit 13-11)				I ''		khibit 13-12)			
. ,	Exhibit 13-11)				ľ		khibit 13-12)			
	(Exhibit 13-13)						khibit 13-13)			
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		RAI	MPS AND	<b>RAMP JUN</b>	CTIONS W	ORKSH	EET				
Genera	l Inforn				Site Infor						
Analyst Agency or C			ey-Horn & Asso	Jı	reeway/Dir of Tr unction	avel	I-580 W I-580/La	/B ammers Ro	oad		
ate Perfor nalysis Tir		8/14/: AM P			urisdiction nalysis Year		Cumula	ntive Plus F	Project		
		racy Hills Spe			narysis rear		Cumuic	ilive i ius i	TOJECT		
nputs											
Jpstream A	di Dama		Freeway Num	ber of Lanes, N	2					Downstre	am Adi
ppstieatii A	uj Kallip		Ramp Numbe	r of Lanes, N	1					Downstre Ramp	aiii Auj
Yes	On		Acceleration L	ane Length, L	400					Yes	On
d NI a				ane Length L <sub>D</sub>							_
✓ No	Off		Freeway Volu		1663					☑ No	Off
up =	ft		Ramp Volume		391					L <sub>down</sub> =	ft
				-Flow Speed, S <sub>FF</sub>							
' u =	veh/h			ow Speed, S <sub>FR</sub>	55.0					V <sub>D</sub> =	veh/h
Convor	cion to	nc/h Hn/		Conditions	33.0					<u> </u>	
		<i>pc/II UII</i> €			T	1 0:-	1	, 1		,,,,,,,,,	
(pc/	h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	x f <sub>HV</sub> x f <sub>p</sub>
Freeway		1663	0.92	Level	18	0	0.9	917	1.00		1970
Ramp		391	0.72	Level	13	0	0.9	939	1.00		578
JpStream 0							_				
OownStrea	m I		l Merge Areas			-			iverge Areas	<u>l</u>	
stimat	ion of	V 40	Merge Areas			Estimat	ion o	fv.	iverge Areas		
			/D \							\D	
_		$V_{12} = V_F$		- 40. 7)		L _			V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub>		10)
EQ =			ation 13-6 or		`	L <sub>EQ</sub> =			Equation 13-		
= =				ion (Exhibit 13-6	)	P <sub>FD</sub> =			using Equatio	on (Exnibit 1	3-7)
12 =		1970				V <sub>12</sub> =			oc/h	10.1110	4 = \
or V <sub>av34</sub>	. 0 700	-		13-14 or 13-17	)	V <sub>3</sub> or V <sub>av34</sub>	. 0.7		oc/h (Equation 1	13-14 or 13-	17)
		pc/h? Yes							Yes No		
		V <sub>12</sub> /2		0 16 12 19 or					Yes No		2 10 or
Yes,V <sub>12a</sub>	=	13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		oc/h (Equatio 3-19)	11 13-16, 1	3-18, 01
Capacit	y Chec					Capacit	y Che	ecks	,		
		Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
						V <sub>F</sub>			Exhibit 13-	8	
V <sub>F</sub>		2548	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13-	8	
F		20.0				V <sub>R</sub>			Exhibit 13	-	
									10	<u> </u>	
low Er	ntering		fluence A		1 15 15 0	Flow Er			rge Influer		
17	$\longrightarrow$	Actual	1	Desirable	Violation?	\/	+-	Actual	Max Des	irabie	Violation <sup>a</sup>
V <sub>R1</sub>		2548	Exhibit 13-8	4600:All	No	V <sub>12</sub>	<u> </u>	rios D-	Exhibit 13-8	n /:= :	<u> </u>
			nination (			1			terminatio		<i>r)</i>
			0.0078 V <sub>12</sub> - 0.0	JU021 L <sub>A</sub>					.0086 V <sub>12</sub> - 0	.uua L <sub>D</sub>	
	2.6 (pc/mi/	•					oc/mi/lr				
	(Exhibit 1						Exhibit				
Speed I	Determ	ination				Speed L			n		
I <sub>S</sub> = 0	.327 (Exibi	t 13-11)				1 "	Exhibit 1				
R= 6	0.8 mph (E	xhibit 13-11)				I ''	ıph (Exh	ibit 13-12)			
	/A mph (E	xhibit 13-11)				$S_0 = m$	iph (Exh	ibit 13-12)			
	0.8 mph (E	xhibit 13-13)				S = m	nph (Exh	ibit 13-13)			
U						l*	F 1				

		RAMP	S AND RAI	MP JUNCTI	ONS WO	RKS	HEET			
General Info	rmation		_ / I W/II	Site Infor						
Analyst		ey-Horn & Asso	ciates l	Freeway/Dir of Tr	avel	I-580 W	/B			
Agency or Compan	=	0044		Junction		I-580 aı	nd Corral H	Iollow Road		
Date Performed Analysis Time Perio	8/14/ od AM P			Jurisdiction Analysis Year		Cumuls	ative Plus P	roject		
Project Description			,	anaryoro i car		Oumuic	uve i ius i	TOJECT		
Inputs	, ,									
Upstream Adj	Ramp	Freeway Num	ber of Lanes, N	2					Downstrea	ım Adj
	_	Ramp Numbe	r of Lanes, N	1					Ramp	,
☐ Yes ☐	∐ On	Acceleration L	ane Length, L <sub>A</sub>						□Yes	On
☑ No i	Off	Deceleration L	ane Length L <sub>D</sub>	200					✓No	Off
	<i>c.</i>	Freeway Volui		1794						ft
L <sub>up</sub> =	ft	Ramp Volume		552					L <sub>down</sub> =	IL
V <sub>u</sub> = ,	veh/h		-Flow Speed, S <sub>FI</sub>	<sub>F</sub> 70.0					V <sub>D</sub> =	veh/h
_			ow Speed, S <sub>FR</sub>	35.0					_	
Conversion		der Base (	Conditions						1	
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	$f_p$	v = V/PHF	$x f_{HV} x f_{p}$
Freeway	1794	0.92	Level	18	0	0.9	917	1.00	21	26
Ramp	552	0.77	Level	14	0	0.9	935	1.00	76	67
UpStream										
DownStream		Merge Areas					<u>l</u>	iverge Areas		
Estimation o		incige Aicus			Estimati	ion o		iverge Areas		
	V <sub>12</sub> = V <sub>F</sub>	/ D \						V <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub>	/D	
l =		tion 13-6 or	13_7)		l =			V <sub>R</sub> ' (V <sub>F</sub> - V <sub>I</sub> Equation 13-1	–	١
L <sub>EQ</sub> = P <sub>FM</sub> =		Equation (E			L <sub>EQ</sub> = P <sub>FD</sub> =		-	000 using Eq		
V <sub>12</sub> =	pc/h	Equation (E	Extribit 10 0)		V <sub>12</sub> =			26 pc/h	dation (Exili	on 10 7)
V <sub>3</sub> or V <sub>av34</sub>	•	Fouation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equation	on 13-14 or	13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,7						., > 2.7		Yes ☑No	)	10 17)
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5								Yes ☑No		
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =			c/h (Equation	13-16, 13-	18, or 13-
	13-19)				-		19	9)		
Capacity Ch		1 0	9	1 100 50	Capacity	y Che		1 0	9	1,00,50
	Actual		apacity	LOS F?	V <sub>F</sub>		Actual 2126	Exhibit 13-8	pacity 3 4800	LOS F?
V		Evhibit 12 0				\/			+	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- v <sub>R</sub>	1359	Exhibit 13-8		No
·	<u> </u>	[ ]			V <sub>R</sub>		767	Exhibit 13-1		No
Flow Enterin	<del></del>	1	I <b>rea</b> Desirable	Violation?	Flow En	_		ge Influen		Violation?
V <sub>R12</sub>	Actual	Exhibit 13-8	טינטוו מטוע	Violation?	V <sub>12</sub>	1	Actual 126	Max Desirate Exhibit 13-8	4400:All	Violation?
Level of Serv	vice Detern		if not F)		-			terminatio		
$D_R = 5.475 + 0$								0086 V <sub>12</sub> - 0.	•	,
D <sub>R</sub> = (pc/mi/l		12	-Д			7.7 (pc/		12	ото <b>–</b> Б	
LOS = (Exhibit	,					٠.	oit 13-2)			
Speed Deter					Speed D	•		n		
•					+		xhibit 13-			
M <sub>S</sub> = (Exibit ' S = mmh (Ex	•					-	(Exhibit	-		
	:hibit 13-11) :hibit 13-11)					-	(Exhibit 1			
	hibit 13-11)				1 *	-	(Exhibit	· ·		
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, , , ,	,	J 100011	-		11002010	v CI 510	J.1 U.JU	_	0/2	

		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation		<u> </u>	Site Infor						
Analyst		ey-Horn & Asso		reeway/Dir of Ti	ravel	I-580 W				
Agency or Company	0/4.4	100 4 4		unction		I-580 ar	nd Lamme	rs Road		
Date Performed		/2014		urisdiction		0 1.	r Di F	N		
Analysis Time Period			A	nalysis Year		Cumula	tive Plus F	roject		
	Tracy Hills Sp	ecilic Pian								
Inputs		I N	hfl	•				I		
Upstream Adj R	amp	Ramp Numbe	ber of Lanes, N or of Lanes, N	2 1					Downstrea Ramp	am Adj
Yes	On	I '	ane Length, L <sub>A</sub>	·					Yes	On
☑ No	Off	1	ane Length L <sub>D</sub>	200					✓ No	Off
L <sub>up</sub> = fi	t	Freeway Volu	•	1944 281					L <sub>down</sub> =	ft
ир		1	11						40	
V <sub>u</sub> = ve	eh/h	1	Flow Speed, $S_{FF}$ low Speed, $S_{FR}$	70.0 35.0					$V_D =$	veh/h
Conversion to	o pc/h Un		111							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_{HV}$	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1944	0.92	Level	18	0	0.9	917	1.00	23	303
Ramp	281	0.77	Level	14	0		935	1.00		90
UpStream	201	0.11	2010.	<del>  ''</del>	<del>                                     </del>	+	,,,,	1.00		-
DownStream		1								
		Merge Areas		•				iverge Areas		
Estimation of	V <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P.,, )						V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P	
l =	12 1	ation 13-6 or	13-7)		  =			Equation 13-1		3)
L <sub>EQ</sub> = P =		Equation (I	-		L <sub>EQ</sub> =		-	-		
P <sub>FM</sub> =	_	Equation (	EXTIIDIL 13-0)		P <sub>FD</sub> =			000 using Equ	iation (Exn	IDIL 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =			803 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	-		-14 or 13-17)		$V_3$ or $V_{av34}$			pc/h (Equatio	n 13-14 oi	r 13-17)
Is $V_3$ or $V_{av34} > 2,70$								☐Yes ☑No		
Is $V_3$ or $V_{av34} > 1.5$					Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5		☐Yes ☑No		
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		c/h (Equation	13-16, 13	-18, or 13-
Capacity Che	13-19)	)			Capacit		19	9)		
Capacity Cite	Actual	1 0	'ana aitu	LOS F?	Tapacit	y Cile		Co	no oitu	LOS F?
	Actual		apacity	LUST!	1/		Actual	<del>- i</del>	pacity	1
.,					V <sub>F</sub>	· · ·	2303	Exhibit 13-8	+	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$		1913	Exhibit 13-8	4800	No
					$V_R$		390	Exhibit 13-10	0 2000	No
Flow Entering	g Merge In	fluence A	rea		Flow En	terin	g Dive	rge Influen		
	Actual	T T	Desirable	Violation?	ļ		Actual	Max Desirab	le	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>	2	303	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)		Level of	f Serv	rice De	terminatio	n (if not	F)
$D_R = 5.475 + 0.$	00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	· 0.00627 L <sub>A</sub>			D <sub>R</sub> = 4	.252 + 0	.0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln			, ,		$D_R = 22$	2.3 (pc/	mi/ln)		_	
LOS = (Exhibit	13-2)				1	**	oit 13-2)			
Speed Detern	•				Speed L			nn		
•					<del>                                     </del>		khibit 13-			
$M_S = (Exibit 13)$	· ·					-		•		
	ibit 13-11)					-	(Exhibit	•		
•	ibit 13-11)				$S_0 = N$	/A mph	(Exhibit	13-12)		
S = mph (Exh	ibit 13-13)				S = 57	7.0 mph	(Exhibit	13-13)		
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		RAI	MPS AND	<b>RAMP JUN</b>	CTIONS W	ORKSH	EET				
Genera	l Inforn				Site Infor						
Analyst Agency or ( Date Perfor		Kimle 8/14/	ey-Horn & Asso	J	reeway/Dir of Tr unction urisdiction		I-580 EI I-580/C	B orral Hollo	w Road		
Analysis Tir		6/ 14/. PM P			nalysis Year		Cumula	tive Plus F	Project		
		racy Hills Spe			inaryolo roar		Oumaid	uivo i ido i	Tojoot		
nputs	'	, ,									
Jpstream A	ıdj Ramp		-	ber of Lanes, N	2					Downstre	am Adj
Yes	□On		Ramp Numbe Acceleration L	r of Lanes, N .ane Length, L <sub>A</sub>	1 250					Ramp Yes	On
✓ No	Off			ane Length L <sub>D</sub>	4000					☑ No	Off
_	ft		Freeway Volu		1666					L <sub>down</sub> =	ft
up =	10		Ramp Volume	11	875					down	
/ <sub>u</sub> =	veh/h			-Flow Speed, S <sub>FF</sub>						$V_D =$	veh/h
				ow Speed, S <sub>FR</sub>	55.0						
Conver	sion to	-	der Base	Conditions		r				,	
(pc/	h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	1	f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
Freeway		1666	0.92	Level	18	0		917	1.00		1974
Ramp		875	0.86	Level	6	0	0.9	971	1.00		1048
JpStream						-	_				
DownStrea	irm		Merge Areas						iverge Areas		
stimat	tion of	V <sub>12</sub>	norge Areas			Estimat	ion o	$f v_{12}$	Averge Areas		
		V <sub>12</sub> = V <sub>F</sub>	( D \						V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub>	/D	
=			v' <sub>FM</sub> / ation 13-6 oi	- 13 7\					Equation 13-		13)
EQ =					١	L <sub>EQ</sub> =			-		
FM =				ion (Exhibit 13-6	)	P <sub>FD</sub> =			using Equatio	וו (באווטונ ו	3-1)
12 =		1974		10 11 10 17	`	V <sub>12</sub> =			oc/h	10 11 10	17)
or V <sub>av34</sub>	> 2 700	-		13-14 or 13-17	)	V <sub>3</sub> or V <sub>av34</sub>	> 0.70		oc/h (Equation 1	13-14 01 13-	17)
		pc/h? Yes							Yes □No		
		/ <sub>12</sub> /2		3-16, 13-18, or					☐Yes ☐ No oc/h (Equatio		3_18 or
Yes,V <sub>12a</sub>	=	13-19)	(Equation 13	5-10, 15-10, 01		If Yes,V <sub>12a</sub> =	=		3-19)	11 13-10, 1	J- 10, UI
Capacit	ty Chec	ks				Capacit	y Che	ecks			
		Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
						$V_{F}$			Exhibit 13-	8	
$V_{F}$		3022	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13-	8	
•						V <sub>R</sub>			Exhibit 13	-	
'la	. 4	Managa	<u> </u>				. 4	Di	10	4	<u> </u>
IOW EI	ntering	Actual	fluence A	Desirable	Violation?	FIOW ET		ctual	rge Influer Max Des		Violation
V <sub>R1</sub>		3022	Exhibit 13-8	4600:All	No	V <sub>12</sub>	+-	Cluai	Exhibit 13-8	lable	Violation
			nination (		140		F Son	vico Do	terminatio	n (if not	<u> </u>
			0.0078 V <sub>12</sub> - 0.0			1			.0086 V <sub>12</sub> - 0		1)
		• • •	, v <sub>12</sub> - 0.0	JUUZI LA					.0000 v <sub>12</sub> - 0	.003 LD	
	7.0 (pc/mi/	•					oc/mi/lr				
	(Exhibit 1						Exhibit				
	Determ	ination				Speed L			n		
I <sub>S</sub> = 0	.374 (Exibi	t 13-11)				I * .	Exhibit 13	•			
<sub>R</sub> = 5	9.5 mph (E	xhibit 13-11)				I ''		ibit 13-12)			
0	I/A mph (E	khibit 13-11)				$S_0 = m$	ph (Exh	ibit 13-12)			
	9.5 mph (E	xhibit 13-13)				S = m	ph (Exh	ibit 13-13)			

		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSH	EET				
Genera	l Infori				Site Infor						
Analyst Agency or C	Company	Kimle	ey-Horn & Asso		eeway/Dir of Tr	avel	I-580 EI	B ammers Ro	ad		
ate Perfor		8/14/	2014	Ju	ırisdiction						
nalysis Tin		PM P		Ar	nalysis Year		Cumula	tive Plus P	roject		
	cription	Tracy Hills Spe	ecific Plan								
nputs										1	
lpstream A	dj Ramp			ber of Lanes, N	2					Downstre	am Adj
			Ramp Numbe	r of Lanes, N	1					Ramp	
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	250					□Yes	On
✓No	Off		Deceleration L	ane Length L <sub>D</sub>						✓ No	Off
			Freeway Volu	me, V <sub>F</sub>	1946					INO INO	
<sub>.p</sub> =	ft		Ramp Volume	, V <sub>R</sub>	351					L <sub>down</sub> =	ft
			Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0						uah/h
u =	veh/h			ow Speed, S <sub>FR</sub>	55.0					V <sub>D</sub> =	veh/h
onver	sion to	nc/h Hnd		Conditions						l	
		<del>اری اریم ا</del> ∨			0/ T	0/5	1	<u>. T</u>	<u> </u>	\//D!!	F v. 4
(pc/l	n)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
reeway		1946	0.92	Level	18	0	0.9	917	1.00		2306
Ramp		351	0.86	Level	6	0	0.9	971	1.00		420
JpStream											
)ownStrea	ım		Marga Arasa					<u>_</u>	iverse Arese		
stimat	tion of	V	Merge Areas			Estimat	ion o	f v	iverge Areas		
			<u>/D</u> )			Lotimat	1011 0				
		$V_{12} = V_{F}$							/ <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>		
<sub>=Q</sub> =			ation 13-6 or			L <sub>EQ</sub> =			Equation 13		
FM =		1.000	using Equat	ion (Exhibit 13-6)	)	P <sub>FD</sub> =		U	sing Equation	on (Exhibit 1	3-7)
12 =		2306	oc/h			V <sub>12</sub> =		p	c/h		
<sub>3</sub> or V <sub>av34</sub>		-		13-14 or 13-17)	)	$V_3$ or $V_{av34}$			c/h (Equation		17)
s $V_3$ or $V_{av}$	<sub>v34</sub> > 2,700	) pc/h?	s 🗹 No				· .		]Yes □No		
s V <sub>3</sub> or V <sub>av</sub>	<sub>v34</sub> > 1.5 *	V <sub>12</sub> /2	s 🗹 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5	* V <sub>12</sub> /2 $\square$	]Yes □No		
Yes,V <sub>12a</sub> :	=			3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		c/h (Equatio	n 13-16, 1	3-18, or
Capacit		13-19)				Capacit			-19)		
арасп	y One	Actual		apacity	LOS F?	Dapacit	<del>y 0//</del> (	Actual	Ca	pacity	LOS F?
		Actual	<del>l ĭ</del>	араску	2001:	V <sub>F</sub>		Actual	Exhibit 13-		LOOTE
						$V_{FO} = V_{F}$	\/		Exhibit 13-		-
V <sub>F</sub>	0	2726	Exhibit 13-8		No	v <sub>FO</sub> - v <sub>F</sub>	- v <sub>R</sub>		Exhibit 13		
						$V_R$			10	)-	
low Er	ntering	Merge In	fluence A	rea		Flow Er	terin	g Diver	ge Influer	ice Area	)
	Ĭ	Actual		Desirable	Violation?		_	ctual	Max Des		Violation?
$V_{R1}$	12	2726	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
		ce Detern	nination (	if not F)	<u> </u>		f Serv	ice Det	erminatio	n (if not	: F)
			0.0078 V <sub>12</sub> - 0.0			<del> </del>			0086 V <sub>12</sub> - 0		
	5.0 (pc/mi		12	A			oc/mi/lr		12	U	
	C (Exhibit 1	-				I ''	Exhibit				
		ination				Speed L			n		
•						<del>  '                                   </del>			11		
•	.353 (Exib	•					xhibit 1	,			
11		Exhibit 13-11)				I ''		ibit 13-12)			
•		xhibit 13-11)				$S_0 = m$	ph (Exh	ibit 13-12)			
= 6	0.1 mph (I	Exhibit 13-13)				S = m	ph (Exh	ibit 13-13)			
			II Rights Reserv		<u> </u>	HCS2010	гм		<u> </u>	0	9/2/2014 1:5

		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation		<u> </u>	Site Infor						
Analyst Agency or Company		ey-Horn & Asso		reeway/Dir of Tr	avel	I-580 E		follow Road		
Date Performed	8/14/	/2014		urisdiction		1 000 01	ia conan	IOIIOW I TOUG		
Analysis Time Period	PM F	Peak	А	nalysis Year		Cumula	tive Plus F	Project		
Project Description	Tracy Hills Sp	ecific Plan								
Inputs										
Upstream Adj R	amp	Freeway Num Ramp Numbe	ber of Lanes, N	2 1					Downstrea Ramp	am Adj
Yes	On	1 '	ane Length, L <sub>A</sub>	ı					Yes	☐ On
✓ No	Off	Deceleration I Freeway Volu	_ane Length L <sub>D</sub>	200 2297					✓ No	Off
L <sub>up</sub> = fi	t	Ramp Volume	•	631					L <sub>down</sub> =	ft
V <sub>u</sub> = ve	eh/h	1	-Flow Speed, S <sub>FF</sub> low Speed, S <sub>FR</sub>	70.0 35.0					V <sub>D</sub> =	veh/h
Conversion to	nc/h Hn		. 110	00.0						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_HV$	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	2297	0.92	Level	18	0	0.9	917	1.00	27	21
Ramp	631	0.91	Level	2	0	_	990	1.00		00
UpStream										
DownStream										
		Merge Areas			<u> </u>			iverge Areas		
Estimation of	v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	(P <sub>FM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	R)P <sub>FD</sub>	
L <sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(1	Equation 13-1	2 or 13-13	)
P <sub>FM</sub> =	using	Equation (	Exhibit 13-6)		P <sub>FD</sub> =		1.	000 using Equ	uation (Exhi	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =			'21 pc/h	,	,
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equatio	n 13-14 oı	13-17)
Is $V_3$ or $V_{av34} > 2,70$	-		,			a <sub>4</sub> > 2.7		∃Yes ☑ No		- /
Is $V_3$ or $V_{av34} > 1.5$								Yes ☑ No		
If Yes,V <sub>12a</sub> =		Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub> =	• .		c/h (Equation	13-16, 13	-18, or 13-
Capacity Che	cks				Capacit	y Che	ecks			
-	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
					$V_{F}$	ĺ	2721	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V <sub>R</sub>	2021	Exhibit 13-8	4800	No
10					V <sub>R</sub>		700	Exhibit 13-10	+	No
Flow Entering	Morgo Ir	ofluoneo A	roa		1			rge Influenc		1
TIOW LINETHIS	Actual	i	Desirable Desirable	Violation?	I IOW LI		\ctual	Max Desirab		Violation?
V <sub>R12</sub>	7101001	Exhibit 13-8	Boomabio	Violation:	V <sub>12</sub>		721	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr		if not F)					termination		
$D_R = 5.475 + 0.$								.0086 V <sub>12</sub> - 0.0		' /
		0.0070 V <sub>12</sub>	0.00027 LA					.0000 v <sub>12</sub> 0.0	003 LD	
	•				I ''	5.9 (pc/	,			
LOS = (Exhibit					-		oit 13-2)			
Speed Detern	nination				Speed L					
M <sub>S</sub> = (Exibit 13	3-11)				ľ	•	xhibit 13-	•		
$S_R = mph (Exh$	ibit 13-11)					6.3 mph	(Exhibit	13-12)		
S <sub>0</sub> = mph (Exh	ibit 13-11)				$S_0 = N$	/A mph	(Exhibit	13-12)		
	ibit 13-13)				S = 56	6.3 mph	(Exhibit	13-13)		
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		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation	10 1111	<u> </u>	Site Infor						
Analyst		ey-Horn & Asso		reeway/Dir of Ti	avel	I-580 E		-		
Agency or Company Date Performed	0/4.4	10044		unction		I-580 ar	nd Lamme	rs Road		
Analysis Time Period		/2014 Pook		urisdiction nalysis Year		Cumula	tivo Dluc E	Project		
-	Tracy Hills Sp			inalysis i cal		Cumula	tive Plus F	Toject		
Inputs	Tracy Tillis Op	come i iaii								
		Freeway Num	ber of Lanes, N	2						
Upstream Adj R	amp	Ramp Numbe	•						Downstrea	am Adj
□Yes □	On	1 '		1					Ramp	
		1	ane Length, L <sub>A</sub>						☐ Yes	On
☑ No □	Off	1	_ane Length L <sub>D</sub>	200					✓ No	Off
		Freeway Volu	me, V <sub>F</sub>	2527						
L <sub>up</sub> = fi	t	Ramp Volume	e, V <sub>R</sub>	581					L <sub>down</sub> =	ft
\/ <b>-</b>	- l- /l-	Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
$V_u = V_0$	eh/h	Ramp Free-F	ow Speed, S <sub>FR</sub>	35.0					• D	VO11/11
Conversion to	pc/h Un	der Base	Conditions							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_{HV}$	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	2527	0.92	Level	18	0	0.9	917	1.00	29	194
Ramp	581	0.91	Level	2	0	0.9	990	1.00	6	45
UpStream										
DownStream										
		Merge Areas						Diverge Areas		
Estimation of	<sup>f</sup> V <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>E</sub>	( P <sub>EM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
L <sub>EQ</sub> =		ation 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-1	`	)
P <sub>FM</sub> =		Equation (I	-		P <sub>FD</sub> =		-	000 using Equ		
V <sub>12</sub> =	pc/h	_4(-			V <sub>12</sub> =			994 pc/h	action (Exti	Dit 10 1 j
V <sub>3</sub> or V <sub>av34</sub>	•	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equatio	n 12 14 o	- 12 17\
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	-		-14 01 13-17)			> 2.71		Pc/II (Equalid ∃Yes ☑ No	11 13-14 0	13-17)
Is $V_3$ or $V_{av34} > 1.5$			-16, 13-18, or		1			☐Yes ☑No c/h (Equation	12 16 12	10 or 12
If Yes,V <sub>12a</sub> =	13-19		-10, 13-10, 01		If Yes,V <sub>12a</sub> =	=	19		13-10, 13	-10, 01 13-
Capacity Che					Capacit	v Che		,		
, ,	Actual		apacity	LOS F?	<u> </u>		Actual	Ca	pacity	LOS F?
					$V_{F}$		2994	Exhibit 13-8		No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V <sub>D</sub>	2349	Exhibit 13-8	4800	No
, FO					V <sub>R</sub>		645	Exhibit 13-1	1000	_
	<u> </u>	<u> </u>			1					No
Flow Entering		il .		1 17:1:0:0	Flow En	_	_	rge Influen		1 . /
	Actual	<del>i</del> r	Desirable	Violation?	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		Actual	Max Desirab		Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>		994	Exhibit 13-8	4400:All	No
Level of Serv					<del>                                     </del>			terminatio		F)
$D_R = 5.475 + 0.$	00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	· 0.00627 L <sub>A</sub>			D <sub>R</sub> = 4	.252 + 0	.0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				$D_R = 28$	3.2 (pc/	mi/ln)			
LOS = (Exhibit	13-2)				LOS = D	(Exhib	oit 13-2)			
Speed Detern	nination				Speed L	Deteri	minatio	on		
M <sub>S</sub> = (Exibit 13					<del>                                     </del>		khibit 13-			
-						•	(Exhibit	•		
	ibit 13-11)				1	-	-	-		
•	ibit 13-11)				1	-	(Exhibit			
. ,	ibit 13-13)						(Exhibit	•		
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	RA	MPS AND	RAMP JUNG	CTIONS W	/ORKSHI	EET		
General Inf				Site Infor				
nalyst	Kim	ley-Horn & Asso	ciates Fr	eeway/Dir of Tr	avel	I-580 WB		
gency or Compa	any		Ju	nction		I-580/Corral H	Hollow	
ate Performed		/2014		risdiction				
nalysis Time Pe		Peak	Ar	nalysis Year		Cumulative P	lus Project	
<u> </u>	on Tracy Hills Sp	ecific Plan						
nputs		le v						
pstream Adj Rai	mp	1 '	ber of Lanes, N	2				Downstream Adj
		Ramp Numbe		1				Ramp
Yes 🗌	On	Acceleration L	ane Length, L <sub>A</sub>	400				☐ Yes ☐ On
✓ No	Off	Deceleration L	ane Length L <sub>D</sub>					☑ No ☐ Off
	· · ·	Freeway Volu	me, V <sub>F</sub>	1198				IMO DOII
<sub>ip</sub> = ft		Ramp Volume	, V <sub>D</sub>	411				L <sub>down</sub> = ft
			-Flow Speed, S <sub>FF</sub>	70.0				
<sub>u</sub> = vel	h/h		ow Speed, S <sub>FR</sub>	55.0				V <sub>D</sub> = veh/h
onvorcior	n to pc/h Un		110	33.0				
	T V					1 .	1 .	
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	$f_{HV}$	f <sub>p</sub>	$V = V/PHF \times f_{HV} \times f_{p}$
reeway	1198	0.92	Level	18	0	0.917	1.00	1419
Ramp	411	0.83	Level	7	0	0.966	1.00	513
JpStream								
ownStream								
- 4! 4!	- <b>f</b>	Merge Areas			Fational	·	Diverge Area	as
stimation	of V <sub>12</sub>				Estimati	ion of v <sub>12</sub>	2	
	$V_{12} = V_{F}$	(P <sub>FM</sub> )				$V_{1}$	$_{2} = V_{R} + (V_{F} -$	$V_R)P_{FD}$
EQ =	(Equ	uation 13-6 or	13-7)		L <sub>EQ</sub> =		(Equation	13-12 or 13-13)
FM =	1.000	using Equat	ion (Exhibit 13-6)		P <sub>FD</sub> =		using Equa	ation (Exhibit 13-7)
12 =	1419	pc/h			V <sub>12</sub> =		pc/h	
<sub>3</sub> or V <sub>av34</sub>		•	13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		pc/h (Equation	on 13-14 or 13-17)
	2,700 pc/h?		,			, > 2.700 pc/	h? ☐ Yes ☐ I	·
	1.5 * V <sub>12</sub> /2						2 ☐ Yes ☐ I	
			3-16, 13-18, or		1			ation 13-16, 13-18, or
Yes,V <sub>12a</sub> =	13-19				If Yes,V <sub>12a</sub> =		13-19)	
Capacity C	hecks				Capacit	y Checks	1	
	Actual	C	apacity	LOS F?		Act		Capacity LOS F1
					$V_{F}$		Exhibit	13-8
$V_{FO}$	1932	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>	Exhibit	13-8
					V <sub>R</sub>		Exhibit	
	<u> </u>	<u></u>					10	
low Enteri	ing Merge II			Violetiano	Flow En		verge Influ	
	Actual	Exhibit 13-8	Desirable 4600:All	Violation?	W	Actual	Exhibit 13-	<del></del>
\/		EXHIBIT 19-0		No	V <sub>12</sub>	<u> </u>		
V <sub>R12</sub>	1932				Level of			tion (if not F)
evel of Se	rvice Deteri					_ 4 0 = 0		
<b>D</b> <sub>R</sub> = 5.47	rvice Deteri 5 + 0.00734 v <sub>R</sub> +						+ 0.0086 V <sub>12</sub>	- 0.009 L <sub>D</sub>
D <sub>R</sub> = 5.47 17.8 (p	rvice Deter 5 + 0.00734 v <sub>R</sub> + c/mi/ln)				$D_R = (p$	oc/mi/ln)	-	- 0.009 L <sub>D</sub>
D <sub>R</sub> = 5.47 17.8 (p	rvice Deteri 5 + 0.00734 v <sub>R</sub> +				D <sub>R</sub> = (p LOS = (E	oc/mi/ln) Exhibit 13-2	)	- 0.009 L <sub>D</sub>
evel of Se $D_R = 5.47$ R = 17.8  (p) DS = B  (Exhi)	rvice Deter 5 + 0.00734 v <sub>R</sub> + c/mi/ln)				D <sub>R</sub> = (p LOS = (E	oc/mi/ln)	)	- 0.009 L <sub>D</sub>
Period of Se D <sub>R</sub> = 5.47: R <sub>R</sub> = 17.8 (pr DS = B (Exhi Epeed Dete	strvice Determination  5 + 0.00734 v <sub>R</sub> + c/mi/ln)  ibit 13-2)				D <sub>R</sub> = (p LOS = (E <b>Speed D</b>	oc/mi/ln) Exhibit 13-2	)	- 0.009 L <sub>D</sub>
Property of Se   DR = 5.47:  R = 17.8 (property of 17.8 (property	strvice Determination  5 + 0.00734 v R + c/mi/ln)  ibit 13-2)  ermination  Exibit 13-11)	0.0078 V <sub>12</sub> - 0.0			$D_R = (p)$ $LOS = (E)$ $Speed D$ $D_S = (E)$	oc/mi/ln) Exhibit 13-2 <b>Determina</b> Exhibit 13-12)	) ation	- 0.009 L <sub>D</sub>
Provided to the control of the contr	strvice Determination  Exibit 13-2)  Exibit 13-11)  ph (Exhibit 13-11)	0.0078 V <sub>12</sub> - 0.0			$D_R$ = (p LOS = (E <b>Speed D</b> $D_S$ = (E $S_R$ = m	oc/mi/ln) Exhibit 13-2 Determina Exhibit 13-12) ph (Exhibit 13	) <b>ation</b> -12)	- 0.009 L <sub>D</sub>
D <sub>R</sub> = 5.47:  R = 17.8 (pc) DS = B (Exhi Epeed Detection S = 0.304 (color of the color of the co	strvice Determination  5 + 0.00734 v R + c/mi/ln)  ibit 13-2)  ermination  Exibit 13-11)	0.0078 V <sub>12</sub> - 0.0			$D_R$ = (p LOS = (E <b>Speed D</b> $D_S$ = (E $S_R$ = m $S_0$ = m	oc/mi/ln) Exhibit 13-2 <b>Determina</b> Exhibit 13-12)	nation -12)	- 0.009 L <sub>D</sub>

		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSH	EET				
Genera	l Inforr				Site Infor						
Analyst Agency or C	Company	Kimle	ey-Horn & Asso		eeway/Dir of Tr	avel	I-580 V	VB .ammers Ro	ad		
ate Perfor		8/14/	2014		risdiction						
nalysis Tin	ne Period	PM F	eak eak	Ar	nalysis Year		Cumul	ative Plus P	roject		
	cription	Tracy Hills Spe	ecific Plan								
nputs			T							1	
pstream A	dj Ramp		1	ber of Lanes, N	2					Downstre	am Adj
¬.,			Ramp Numbe	r of Lanes, N	1					Ramp	
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	400					☐Yes	On
✓ No	Off		Deceleration L	ane Length L <sub>D</sub>						☑ No	Off
			Freeway Volu	me, V <sub>F</sub>	1458					1	
<sub>ap</sub> =	ft		Ramp Volume	e, V <sub>R</sub>	595					L <sub>down</sub> =	ft
	la /la		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
_ =	veh/h		Ramp Free-Fl	ow Speed, S <sub>FR</sub>	55.0					V <sub>D</sub>	VCII/II
onver	sion to	pc/h Und	der Base	Conditions							
(pc/l		V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
reeway		1458	0.92	Level	18	0	0.	.917	1.00		1727
Ramp		595	0.83	Level	7	0	0.	.966	1.00		742
JpStream							_			-	
)ownStrea	m		Merge Areas			-		<u> </u>	iverge Areas		
stimat	tion of	V	Weige Aleas			Estimat	ion c	of v	iverge Areas		
			/D )							,,,	
		$V_{12} = V_F$		40.7)					$V_R + (V_F - V_F)$		4.0\
<u>=</u> Q =			ation 13-6 or			L <sub>EQ</sub> =			Equation 13		
FM =				ion (Exhibit 13-6)		P <sub>FD</sub> =			sing Equation	on (Exhibit 1	3-7)
12 =		1727				V <sub>12</sub> =			c/h		
<sub>3</sub> or V <sub>av34</sub>	0.700			13-14 or 13-17)	1	V <sub>3</sub> or V <sub>av34</sub>			c/h (Equation		17)
		pc/h? Ye							Yes No		
		V <sub>12</sub> /2		16 12 10 0					Yes No		0.40
Yes,V <sub>12a</sub> :	=	13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		c/h (Equatio -19)	on 13-16, 1	3-18, or
apacit	y Che					Capacit	y Ch		- /		
		Actual	С	apacity	LOS F?			Actual	Ca	pacity	LOS F?
						$V_{F}$			Exhibit 13	-8	
V <sub>F</sub>	0	2469	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13	-8	
F	O					V <sub>R</sub>			Exhibit 13	3-	
			<u>                                     </u>						10		
low Er	ntering		fluence A		\	Flow En		-	ge Influei		
\/		Actual 2469	Max Exhibit 13-8	Desirable 4600:All	Violation?	\/	+	Actual	Max Des Exhibit 13-8	irabie 	Violation?
V <sub>R1</sub>			nination (		No	V <sub>12</sub>	f Com	vios Da		n /if ===	   <b>   </b>
			•			-			erminatio		( <b>F</b> )
			0.0078 V <sub>12</sub> - 0.0	J0627 L <sub>A</sub>					0086 V <sub>12</sub> - 0	1.009 L <sub>D</sub>	
	1.9 (pc/mi	•				I ''	oc/mi/l				
	(Exhibit 1							13-2)			
peed L	Determ	ination				Speed L			n		
I <sub>S</sub> = 0	.323 (Exib	it 13-11)				I " '	Exhibit 1	,			
<sub>R</sub> = 6	1.0 mph (E	Exhibit 13-11)				I ''		nibit 13-12)			
	I/A mph (E	xhibit 13-11)				$S_0 = m$	iph (Ext	nibit 13-12)			
	1 0 mnh /	Exhibit 13-13)				S = m	nh (Ext	nibit 13-13)			
= 6	i) iiqii U.i	ZATIIDIC 10 10)				<u>                                     </u>	.p (=x.	11011 10 10)			

		RAMP	S AND RAN	IP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation		<u> </u>	Site Infor		<i></i>				
Analyst Agency or Company		ey-Horn & Asso		reeway/Dir of Trunction		I-580 W		Hollow Road		
Date Performed	8/14	/2014		urisdiction		1 000 0	na conan	ionow road		
Analysis Time Period	l PM F	Peak	Д	nalysis Year		Cumula	ative Plus F	Project		
Project Description	Tracy Hills Sp	ecific Plan						•		
Inputs										
Upstream Adj R	amp	Freeway Num Ramp Numbe	ber of Lanes, N	2 1					Downstrea Ramp	am Adj
□Yes □	On	1 '	ane Length, L <sub>A</sub>	ı					Yes	☐ On
✓ No	Off	Deceleration I Freeway Volu	ane Length L <sub>D</sub>	200 1404					✓ No	Off
L <sub>up</sub> = fi	t	Ramp Volume		206					L <sub>down</sub> =	ft
V <sub>u</sub> = ve	eh/h	1	-Flow Speed, S <sub>FF</sub> low Speed, S <sub>FR</sub>	70.0 35.0					V <sub>D</sub> =	veh/h
Conversion to	n nc/h Hn		: 110							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	Τ	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1404	0.92	Level	18	0	0.	917	1.00	16	63
Ramp	206	0.93	Level	4	0	0.	980	1.00	2	26
UpStream										-
DownStream										
		Merge Areas						Diverge Areas		
Estimation of	<sup>r</sup> v <sub>12</sub>				Estimat	tion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )					V <sub>12</sub> =	: V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
L <sub>EQ</sub> =		tion 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-1		)
		Equation (	•		P <sub>FD</sub> =			000 using Equ		
P <sub>FM</sub> =	pc/h	Equation (			V <sub>12</sub> =				Jation (EXII	DIC 13-1)
V <sub>12</sub> =	•	(Fana - 1) and 10	44 - 40 47)					663 pc/h	40.44	40.47)
$V_3$ or $V_{av34}$	-		-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>	. 0.7		pc/h (Equatio	on 13-14 oi	13-17)
Is $V_3$ or $V_{av34} > 2,70$								☐Yes ☑No		
Is $V_3$ or $V_{av34} > 1.5$					Is V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 1.5		☐Yes ☑No		
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> :	=		c/h (Equation	13-16, 13	-18, or 13-
Capacity Che	13-19	)			Capacit		19	9)		
Capacity Cite	Actual		apacity	LOS F?	T	y Circ	Actual	1 Co	pacity	LOS F?
	Actual		apacity	LUSF!	V <sub>F</sub>	1		Exhibit 13-8		
.,						_	1663	_	+	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$		1437	Exhibit 13-8	4800	No
					$V_R$		226	Exhibit 13-1	0 2000	No
Flow Entering	g Merge Ir	ifluence A	rea		Flow Er	nterin	g Dive	rge Influen	ce Area	
	Actual	Max	Desirable	Violation?		I	Actual	Max Desirab	le	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>	1	663	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)		Level o	f Serv	vice De	terminatio	n (if not	F)
$D_R = 5.475 + 0.$	00734 v <sub>p</sub> +	0.0078 V <sub>12</sub> -	· 0.00627 L <sub>A</sub>			D <sub>D</sub> = 4	.252 + 0	.0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	• • • • • • • • • • • • • • • • • • • •	12	^		L	6.8 (pc/		12	D	
LOS = (Exhibit	,						oit 13-2)			
,	,				Speed I			<u> </u>		
Speed Determination					+					
$M_S = (Exibit 13)$						-	xhibit 13-	-		
$S_R^=$ mph (Exh	ibit 13-11)				1	-	(Exhibit	*		
$S_0 = mph (Exh$	ibit 13-11)				$S_0 = N$	I/A mph	(Exhibit	13-12)		
	ibit 13-13)				S = 5	7.4 mph	(Exhibit	13-13)		
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		RAMP	S AND RAI	MP JUNCTI	ONS WO	RKS	HEET			
General Info	rmation	10 1111	<u> </u>	Site Infor						
Analyst Agency or Compan		ey-Horn & Asso		reeway/Dir of Tra Junction		I-580 W I-580 a	/B nd Lammer	s Road		
Date Performed Analysis Time Perio	8/14/ od PM P			Jurisdiction Analysis Year		Cumula	ative Plus P	roiect		
Project Description				, ,				. 0,001		
Inputs										
Upstream Adj	Ramp	Freeway Num Ramp Numbe	ber of Lanes, N	2					Downstrea Ramp	am Adj
□Yes	On	I '	ane Length, $L_{\Delta}$	ı					Yes	□On
✓ No	Off	Deceleration L	ane Length L <sub>D</sub>	200					☑ No	Off
L <sub>up</sub> =	ft	Freeway Volu	•	1609					L <sub>down</sub> =	ft c
_up		Ramp Volume	, v <sub>R</sub> -Flow Speed, S <sub>er</sub>	151					down	
<b>V</b> <sub>u</sub> =	veh/h		ow Speed, S <sub>FR</sub>	<sub>=</sub> 70.0 35.0					$V_D =$	veh/h
Conversion	to pc/h Und		111							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1609	0.92	Level	18	0	0.	917	1.00	19	106
Ramp	151	0.93	Level	4	0	0.	980	1.00	11	66
UpStream DownStream	<del> </del>	$\vdash$		_	ļ	+-				
DownStream	<u> </u>	I I Merge Areas					<u>I</u> D	iverge Areas		
Estimation of		g			Estimati	ion o		ar ar gar ar ar ar		
	V <sub>12</sub> = V <sub>F</sub>	( P )						V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>		
L <sub>EQ</sub> =		ition 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-1		)
P <sub>FM</sub> =		Equation (E			P <sub>FD</sub> =		-	000 using Equ		
V <sub>12</sub> =	pc/h	_400 (-			V <sub>12</sub> =			06 pc/h	adtioii (Exiii	Dit 10 1)
V <sub>3</sub> or V <sub>av34</sub>	•	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equation	on 13-14 or	· 13-17)
Is $V_3$ or $V_{av34} > 2.7$			,			2,7		Yes <b>☑</b> No		- ,
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5								Yes ☑ No		
If Yes,V <sub>12a</sub> =		Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub> =			c/h (Equation	13-16, 13	-18, or 13-
Capacity Ch	ecks				Capacity	y Che	ecks	,		
	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
					V <sub>F</sub>		1906	Exhibit 13-8	3 4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	1740	Exhibit 13-8	4800	No
					V <sub>R</sub>		166	Exhibit 13-1		No
Flow Enterin	<del> </del>	1		1	Flow En	_		ge Influen		T
V <sub>R12</sub>	Actual	Max Exhibit 13-8	Desirable	Violation?	V <sub>12</sub>	1	Actual 906	Max Desirate Exhibit 13-8	4400:All	Violation?
Level of Serv	vice Detern		if not F)		-			terminatio		1
$D_R = 5.475 + 0$								0086 V <sub>12</sub> - 0.	•	,
D <sub>R</sub> = (pc/mi/l		0.0070 112	0.000 <b>2</b> 7				/mi/ln)	112 0.	200 ED	
LOS = (Exhibit	,						oit 13-2)			
Speed Deter					Speed D	•		n		
					+		xhibit 13-			
	hibit 13-11)					-	(Exhibit	-		
	hibit 13-11)						(Exhibit 1	-		
	hibit 13-11)				1 *	-	(Exhibit	-		
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-	- '	-				. 0.01				

9/2/2014

		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKSI	HFFT			
General Infor	mation	1 (7-(14))	O AND IVAN	Site Infor		111101				
Analyst		ey-Horn & Asso	nciates F	reeway/Dir of Ti		I-580 E				
Agency or Company	Millio	by Holli a 71330		unction			nd Lamme	rs Road		
Date Performed	8/14	/2014		urisdiction		1-500 ai	ia Laiiiiie	is itoau		
Analysis Time Period				nalysis Year		Cumula	tive+Proie	ct Mitigated		
	Tracy Hills Sp					Carriala	avo i rojo	ot iviligatou		
Inputs	Tracy Time op	oomo i idii								
		Freeway Num	ber of Lanes, N	2						
Upstream Adj R	amp	1 '							Downstrea	am Adj
□Yes□	On	Ramp Numbe	•	2					Ramp	
□ res □	JOH	Acceleration L	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration I	_ane Length L <sub>D</sub>	200					□ Na	□ o#
	3011	Freeway Volu	me, V <sub>r</sub>	355					✓ No	Off
L <sub>up</sub> = fi	t	Ramp Volume	•	151					L <sub>down</sub> =	ft
ир		1	11							
V,, = ve	eh/h	1	-Flow Speed, S <sub>FF</sub>						$V_D =$	veh/h
			ow Speed, S <sub>FR</sub>	35.0						
Conversion to	o pc/h Un	der Base	Conditions							
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	$f_p$	v = V/PHF	x f x f
, ,	(Veh/hr)	<b>↓</b>	TOTICITI		<u> </u>			r	• • • • • • • • • • • • • • • • • • • •	···HV ····p
Freeway	355	0.92	Level	18	0	0.9	917	1.00	42	21
Ramp	151	0.69	Level	19	0	0.9	913	1.00	24	40
UpStream				ļ						
DownStream		لــــِـــا								
		Merge Areas			<u> </u>			iverge Areas		
Estimation of	' V <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	s)P <sub>ED</sub>	
l =	12 1	tion 13-6 or	13_7)		l =			Equation 13-1		\
L <sub>EQ</sub> =			-		L <sub>EQ</sub> =			-		
P <sub>FM</sub> =	_	Equation (	=XNIDIT 13-6)		P <sub>FD</sub> =			000 using Equ	uation (Exhi	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		42	21 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		$V_3$ or $V_{av34}$		0	pc/h (Equation	n 13-14 or	13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	0 pc/h?	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 2,70	00 pc/h? [	☐Yes ☑No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 '					Is V <sub>3</sub> or V <sub>3V</sub>	<sub>34</sub> > 1.5	* V <sub>12</sub> /2	☐Yes ☑No		
			-16, 13-18, or		1			c/h (Equation	13-16, 13-	-18, or 13-
If Yes,V <sub>12a</sub> =	13-19		, ,		If Yes,V <sub>12a</sub> =	-	19		,	,
Capacity Che	cks				Capacit	y Che	ecks			
	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
					$V_{F}$		421	Exhibit 13-8	4800	No
W		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	1/		Exhibit 13-8	+	
$V_{FO}$		EXHIBIT 13-6					181		1000	No
					$V_R$		240	Exhibit 13-1	0 4000	No
Flow Entering	g Merge In	fluence A	rea		Flow En	terin	g Dive	rge Influen	ce Area	
	Actual	T .	Desirable	Violation?		A	ctual	Max Desirab	ole	Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	4	121	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)	•	_	Serv	rice De	terminatio	n (if not	F)
$D_R = 5.475 + 0.$					+			.0086 V <sub>12</sub> - 0.0	•	' /
	• • • • • • • • • • • • • • • • • • • •	0.0076 V <sub>12</sub>	0.00027 L <sub>A</sub>					.0000 v <sub>12</sub> - 0.	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	,					.2 (pc/r	•			
LOS = (Exhibit	13-2)				LOS = A	(Exhib	it 13-2)			
Speed Detern	nination				Speed D	Deterr	ninatio	on		
•							chibit 13-			
M <sub>S</sub> = (Exibit 13	*				1	-		-		
	ibit 13-11)				1	-	(Exhibit	-		
$S_0^{=}$ mph (Exh	ibit 13-11)				$S_0 = N$	/A mph (	(Exhibit	13-12)		
S = mph (Exh	ibit 13-13)				S = 57	7.4 mph	(Exhibit	13-13)		
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		RAMP	S AND RAI	MP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation	1 27 11111	- / IVAII	Site Infor			· · — ·			
Analyst Agency or Company	Kimle	ey-Horn & Asso	J	reeway/Dir of Tra Junction		I-580 E I-580 a	B nd Lamme	rs Road		
Date Performed Analysis Time Period	8/14/3 PM P			lurisdiction Analysis Year		Cumul	ativo+Projo	ct Mitigated		
Project Description			,	anaryoro roar		Cumul	ative i Toje	ct willigated		
Inputs	,									
Upstream Adj R	amp	Freeway Num Ramp Numbe	nber of Lanes, N	2 2					Downstrea Ramp	am Adj
□Yes □	On		_ane Length, L <sub>A</sub>	-					Yes	On
✓ No	Off	Deceleration   Freeway Volu	Lane Length L <sub>D</sub>	200 2527					✓No	Off
L <sub>up</sub> = fi	t	Ramp Volume	e, V <sub>R</sub>	581					L <sub>down</sub> =	ft
V <sub>u</sub> = ve	eh/h		e-Flow Speed, S <sub>FF</sub> low Speed, S <sub>FR</sub>	70.0 35.0					V <sub>D</sub> =	veh/h
Conversion to	pc/h Und		111							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	2527	0.92	Level	18	0	0.	917	1.00	29	94
Ramp	581	0.91	Level	2	0	0.	990	1.00	6	45
UpStream DownStream					-	+				
DownStream		I I Merge Areas		1				Diverge Areas		
Estimation of		. <b>J</b>			Estimat	ion o		- <b>9</b> -		
	V <sub>12</sub> = V <sub>F</sub>	( P.,, )						V <sub>R</sub> + (V <sub>F</sub> - V	-)P	
L <sub>EQ</sub> =		tion 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-	–	3)
P <sub>FM</sub> =		Equation (	•		P <sub>FD</sub> =			000 using Eq		
V <sub>12</sub> =	pc/h	_400000. (			V <sub>12</sub> =			994 pc/h	addon (Exil	1017
V <sub>3</sub> or V <sub>av34</sub>	•	Equation 13	s-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equati	on 13-14 o	r 13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			<sub>24</sub> > 2,7		Yes ☑ No		,
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *						• .		∃Yes ☑ No		
If Yes,V <sub>12a</sub> =		Equation 13	3-16, 13-18, or		If Yes,V <sub>12a</sub> =			c/h (Equation	า 13-16, 13	-18, or 13-
Capacity Che	cks				Capacit	y Ch	ecks			
	Actual		Capacity	LOS F?			Actual	Ca	apacity	LOS F?
					$V_{F}$		2994	Exhibit 13-	8 4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	2349	Exhibit 13-	8 4800	No
					$V_R$		645	Exhibit 13-1	10 4000	No
Flow Entering	g Merge In	fluence A	\rea		Flow Er	terin	g Dive	rge Influer		
	Actual	1 1	Desirable	Violation?			Actual	Max Desira		Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>		2994	Exhibit 13-8	4400:All	No
Level of Serv					<del></del>			terminatio	•	<i>F</i> )
$D_R = 5.475 + 0.$	• •	0.0078 V <sub>12</sub> ·	- 0.00627 L <sub>A</sub>					.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				$D_R = 2$	1.9 (pc	/mi/ln)			
LOS = (Exhibit						<u> </u>	oit 13-2)			
Speed Determination					Speed L	Deter	minatio	on		
M <sub>S</sub> = (Exibit 13	3-11)				I -	-	xhibit 13-	-		
S <sub>R</sub> = mph (Exh	ibit 13-11)				1	-	(Exhibit			
	ibit 13-11)				$S_0 = N$	/A mph	(Exhibit	13-12)		
S = mph (Exh	ibit 13-13)				S = 56	6.4 mph	(Exhibit	13-13)		
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		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSH	EET				
Genera	l Inforn				Site Infor						
Analyst Agency or C			y-Horn & Asso	Ju	eeway/Dir of Tr inction		I-580 EE	3 orral Hollo	w Road		
Date Perfor		8/14/2			ırisdiction			. 5. 5			
Analysis Tin		AM P		Ar	nalysis Year		Cumulat	tive Plus E	Buildout		
nputs	сприон і	racy milis spe	CIIIC PIAII								
			Freeway Num	ber of Lanes, N	2						
Jpstream A	dj Ramp		Ramp Numbe		1					Downstre Ramp	am Adj
Yes	On		· ·	ane Length, L <sub>A</sub>	250						_
				,,	230					Yes	On
✓ No	Off			ane Length L <sub>D</sub>	07					☑ No	Off
=	ft		Freeway Volu		87					L <sub>down</sub> =	ft
up =			Ramp Volume	11	169					down	
′ <sub>u</sub> =	veh/h			-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
				ow Speed, S <sub>FR</sub>	55.0						
conver	sion to		der Base	Conditions	1	1		Т		ı	
(pc/l	h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f	HV	$f_p$	v = V/PHI	$F x f_{HV} x f_{p}$
reeway		87	0.92	Level	18	0	0.9	17	1.00		103
Ramp		169	0.70	Level	11	0	0.9	-	1.00		255
JpStream											
DownStrea	m		<u> </u>					<u>l</u>			
Ectimot	ion of		Merge Areas			Estimat	ion of	<u> </u>	iverge Areas		
Sumat	ion of					EStillat	ion or				
		$V_{12} = V_{F}$							$V_R + (V_F - V_R)$		
EQ =		(Equa	ation 13-6 o	13-7)		L <sub>EQ</sub> =		(	Equation 13-	12 or 13-1	13)
<sub>FM</sub> =		1.000	using Equat	ion (Exhibit 13-6)	)	P <sub>FD</sub> =		ι	ising Equatio	n (Exhibit 1	3-7)
' <sub>12</sub> =		103 p	c/h			V <sub>12</sub> =		ŗ	oc/h		
$V_3$ or $V_{av34}$		-		13-14 or 13-17)	)	$V_3$ or $V_{av34}$			oc/h (Equation 1	13-14 or 13-	17)
		pc/h? 🗌 Yes							∃Yes □ No		
s V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 1.5 * \	/ <sub>12</sub> /2				Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5 *		∃Yes □ No		
Yes,V <sub>12a</sub> :	=	pc/h ( 13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		oc/h (Equatio 3-19)	n 13-16, 1	3-18, or
Capacit	v Chec					Capacit	v Che		<u> </u>		
		Actual		apacity	LOS F?		<u> </u>	Actual	Car	pacity	LOS F?
				,		V <sub>F</sub>			Exhibit 13-		
V <sub>F</sub>		358	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>D</sub>		Exhibit 13-	8	
V F	0	330	EXHIBIT 13-0		INO				Exhibit 13		
						V <sub>R</sub>			10		
low Er	ntering		fluence A			Flow En			ge Influen		
	$\longrightarrow$	Actual	1	Desirable	Violation?	ļ.,,	A	ctual	Max Des	irable I	Violation'
V <sub>R1</sub>		358	Exhibit 13-8	4600:All	No	V <sub>12</sub>		<del></del>	Exhibit 13-8		
			nination (			<del> </del>			terminatio		(F)
			0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>					.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
	.6 (pc/mi/ln	•					oc/mi/ln				
	(Exhibit 13	-					Exhibit				
Speed L	Determ	ination				Speed L	Detern	ninatio	n		
1 <sub>S</sub> = 0.	.299 (Exibi	13-11)				$D_s = (E$	Exhibit 13	3-12)			
	,	xhibit 13-11)				S <sub>R</sub> = m	ph (Exhil	bit 13-12)			
		(hibit 13-11)				$S_0 = m$	ph (Exhil	bit 13-12)			
		xhibit 13-13)				1 *	nh (Evhil	P:t 10 10/			
= 6	i.o ilipli (⊏	XIIIDIL 13-13)				19 = m	ıpıı (⊏xııı	bit 13-13)			

0		INIPO AND	RAMP JUN						
General Infor				Site Infor					
Analyst		ey-Horn & Asso		eeway/Dir of Tr		I-580 EB			
Agency or Company				inction	I	I-580/Lammers	Road		
Date Performed		/2014		ırisdiction					
Analysis Time Perio			Ar	nalysis Year	(	Cumulative Plus	s Buildout		
Project Description	Tracy Hills Sp	ecific Plan							
nputs								1	
Jpstream Adj Ramp		Freeway Numl	per of Lanes, N	2				Downstre	am Adj
		Ramp Number	of Lanes, N	1				Ramp	,
☐ Yes ☐ Oı	n	Acceleration L	ane Length, L₄	250				☐Yes	On
	••		ane Length L						
☑ No ☐ Of	Π	Freeway Volur	- 0	304				✓ No	Off
- <sub>-un</sub> = ft								L <sub>down</sub> =	ft
<sub>-up</sub> = ft		Ramp Volume	11	90				down	
/ <sub>u</sub> = veh/ł	n	Freeway Free-	Flow Speed, S <sub>FF</sub>	70.0				V <sub>D</sub> =	veh/h
u veiiii		Ramp Free-Flo	ow Speed, S <sub>FR</sub>	55.0					
Conversion t	o pc/h Un	der Base (	Conditions						
(pc/h)	V	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	fp	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
	(Veh/hr)				ļ		<u> </u>	V/! !!!	<u> </u>
Freeway	304	0.92	Level	18	0	0.917	1.00	ļ	360
Ramp	90	0.70	Level	11	0	0.948	1.00		136
UpStream		<del>                                     </del>							
DownStream		<u> </u>					<u> </u>		
<del></del>		Merge Areas			<b>-</b>		Diverge Areas		
Estimation o	t v <sub>12</sub>				Estimati	on of v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	(P <sub>EM</sub> )				V <sub>12</sub> =	= V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	P <sub>ED</sub>	
- <sub>EQ</sub> =		ation 13-6 or	13-7)		L <sub>EQ</sub> =	12	(Equation 13		13)
P <sub>FM</sub> =			on (Exhibit 13-6)		P <sub>FD</sub> =		using Equation		
			OII (EXIIIDIL 13-0)		1			OII (EXIIIDIL I	J-1)
/ <sub>12</sub> =	360 p				V <sub>12</sub> =		pc/h		
$V_3$ or $V_{av34}$	-		13-14 or 13-17)	)	$V_3$ or $V_{av34}$		pc/h (Equation		17)
Is $V_3$ or $V_{av34} > 2,70$	00 pc/h? 🗌 Ye	es 🗹 No			Is V <sub>3</sub> or V <sub>av3</sub>	<sub>4</sub> > 2,700 pc/h?	☐Yes ☐No	)	
Is $V_3$ or $V_{av34} > 1.5$	* V <sub>12</sub> /2	s 🗹 No			Is V <sub>3</sub> or V <sub>av3</sub>	<sub>4</sub> > 1.5 * V <sub>12</sub> /2	☐Yes ☐No	)	
f Yes,V <sub>12a</sub> =	pc/h	(Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub> =		pc/h (Equation	on 13-16, 1	3-18, or
	13-19	)					13-19)		
Capacity Che	1				Capacity	/ Checks			
	Actual	C	apacity	LOS F?	<u> </u>	Actua		pacity	LOS F?
					$V_{F}$		Exhibit 13-	-8	
$V_{FO}$	496	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>	Exhibit 13-	-8	
- FO	100	Eximon 10 0					Exhibit 13	3-	
					V <sub>R</sub>		10		
low Enterin	g Merge Ir	nfluence A	rea		Flow En	tering Div	erge Influei	nce Area	
	Actual	Max I	Desirable	Violation?		Actual	Max Des	sirable	Violation'
$V_{R12}$	496	Exhibit 13-8	4600:AII	No	V <sub>12</sub>		Exhibit 13-8		
Level of Serv	rice Deteri	mination (i	f not F)	-		Service D	eterminatio	n (if not	: F)
		0.0078 V <sub>12</sub> - 0.0			<u> </u>		0.0086 V <sub>12</sub> - 0		
* *		- 12	A		1	c/mi/ln)	12	<u>-</u> ∪	
	-								
.OS = A (Exhibit						xhibit 13-2)			
	mination				+ '	eterminat	ion		
					$D_s = (E)$	xhibit 13-12)			
Speed Deteri	ibit 13-11)								
Speed Deteri M <sub>S</sub> = 0.300 (Ex					S <sub>R</sub> = mp	oh (Exhibit 13-1	2)		
Speed Determine $M_S = 0.300 \text{ (Ex}$ $S_R = 61.6 \text{ mph}$	(Exhibit 13-11)					*	•		
Speed Determine $M_S = 0.300 \text{ (Ex}$ $G_R = 61.6 \text{ mph}$ $G_0 = N/A \text{ mph}$					S <sub>0</sub> = mp	oh (Exhibit 13-12 oh (Exhibit 13-12 oh (Exhibit 13-13	2)		

		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKSI	HEET			
General Infor	mation	1 5 11111	IV III	Site Infor						
Analyst		ey-Horn & Asso	ociates F	reeway/Dir of Ti		I-580 EE	3			
Agency or Company		-,		unction				Hollow Road		
Date Performed	8/14/	/2014	Ju	urisdiction						
Analysis Time Period	AM F	Peak	Α	nalysis Year		Cumulat	tive Plus E	Buildout		
Project Description	Tracy Hills Sp	ecific Plan								
Inputs										
Upstream Adj Ra	amp	1 '	ber of Lanes, N	2					Downstrea	am Adj
□Yes □	] On	Ramp Numbe	•	1					Ramp	
	1011	1	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration I	_ane Length L <sub>D</sub>	200					✓ No	Off
		Freeway Volu	me, V <sub>F</sub>	394						
L <sub>up</sub> = ft		Ramp Volume	e, V <sub>R</sub>	307					L <sub>down</sub> =	ft
		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					\/ -	vab/b
$V_u = ve$	eh/h		low Speed, S <sub>FR</sub>	35.0					V <sub>D</sub> =	veh/h
Conversion to	nc/h Hn		110							
(pc/h)	V	PHF	Terrain	%Truck	%Rv	T f	: HV	f <sub>p</sub>	v = V/PHF	x f x f
" ,	(Veh/hr)	<del>                                     </del>		<u> </u>		_		r		
Freeway	394	0.92	Level	18	0	0.9		1.00		67
Ramp	307	0.69	Level	19	0	0.9	13	1.00	4	87
UpStream		$\vdash$		<u> </u>		+				
DownStream		Merge Areas						Diverge Areas		
Estimation of		merge racus			Estimat	ion of		Averge Aireas		
		<u> </u>						., ., .,	`-	
_	$V_{12} = V_{F}$							$V_R + (V_F - V_F)$		
L <sub>EQ</sub> =		ation 13-6 or	*		L <sub>EQ</sub> =		(	Equation 13-1	2 or 13-13	5)
P <sub>FM</sub> =	using	Equation (	Exhibit 13-6)		P <sub>FD</sub> =		1.	000 using Equ	uation (Exh	ibit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		46	67 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		$V_3$ or $V_{av34}$		0	pc/h (Equation	n 13-14 o	r 13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	0 pc/h? 🗌 Ye	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 2,70	0 pc/h? [	∃Yes ☑No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *								☐Yes ☑No		
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =			c/h (Equation	13-16, 13	-18, or 13-
	13-19	)					19	9)		
Capacity Che	cks				Capacit	y Che	cks			
	Actual	C	apacity	LOS F?			Actual		pacity	LOS F?
					$V_{F}$		467	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	-20	Exhibit 13-8	4800	No
					$V_R$		487	Exhibit 13-1	2000	No
Flow Entering	Morgo Ir	ofluoneo A	roa	<u> </u>	-			rge Influen		
I low Lintering	Actual	i	Desirable Desirable	Violation?	I TOW LIT		ctual	Max Desirab		Violation?
V <sub>R12</sub>	7101441	Exhibit 13-8	Boomabio	Violation:	V <sub>12</sub>	_	67	Exhibit 13-8	4400:All	No
Level of Servi	ica Dotorr		if not E)				-	terminatio		
					+				•	<u>r)                                    </u>
$D_R = 5.475 + 0.0$		0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>		1			.0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln)						5 (pc/m	•			
LOS = (Exhibit 1	•						it 13-2)			
Speed Detern	nination				Speed L	Deterr	ninatio	on		
M <sub>S</sub> = (Exibit 13	3-11)				$D_s = 0.$	472 (Ex	hibit 13-	-12)		
-	ibit 13-11)					6.8 mph	(Exhibit	13-12)		
	-					-	Exhibit	-		
S <sub>s</sub> = mnh/Evh						/ \				
•	-				1	-	(Exhibit	•		

		RAMP	S AND RAI	//P JUNCTI	ONS WOR	RKSHEI	ET			
General Infor	mation			Site Infor						
Analyst		ey-Horn & Asso	ciates F	reeway/Dir of Ti		580 EB				
Agency or Company		,,		lunction		580 and La	ammers F	Road		
Date Performed	8/14/2	2014	J	lurisdiction						
Analysis Time Period	d AM P	eak eak	A	Analysis Year	C	umulative l	Plus Build	dout		
Project Description	Tracy Hills Spe	ecific Plan								
Inputs										
Upstream Adj R		1 1	ber of Lanes, N	2					Oownstrea	m Adj
□v <sub>2</sub> , □		Ramp Numbe		1				F	Ramp	
☐ Yes ☐	On	Acceleration L	ane Length, L <sub>A</sub>					[	Yes	On
☑ No □	Off	Deceleration L	ane Length L <sub>D</sub>	200				l,	✓ No	Off
		Freeway Volu	me, V <sub>F</sub>	475				Į.	<u>▼</u> NO	
L <sub>up</sub> = f	t	Ramp Volume	, V <sub>D</sub>	171				L,	down =	ft
			-Flow Speed, S <sub>FF</sub>	70.0						
V <sub>u</sub> = v	eh/h		ow Speed, S <sub>ER</sub>	35.0				V	/ <sub>D</sub> =	veh/h
Comunacion 4			* 110	33.0						
Conversion t	<i>o pc/ii onc</i> 	ier base (	Sonations	1	T	Ι				
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	$f_{HV}$		f <sub>p</sub> v	= V/PHF	$x f_{HV} x f_{p}$
Freeway	475	0.92	Level	18	0	0.917		1.00	56	3
Ramp	171	0.69	Level	19	0	0.913		1.00	27	1
UpStream				1						
DownStream										
		Merge Areas						erge Areas		
Estimation of	f v <sub>12</sub>				Estimation	on of v <sub>1</sub>	12			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )			1	\	/ <sub>12</sub> = V	<sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub> )	Prp	
L <sub>EQ</sub> =		tion 13-6 or	13-7)		L <sub>EQ</sub> =			uation 13-12		
-EQ P <sub>FM</sub> =		Equation (E	•		P <sub>FD</sub> =			using Equa		
	_	Lquation (L	-Allibit 13-0)						מנוטוו (באווג	nt 13-7)
V <sub>12</sub> =	pc/h	- " 10	44 40 47)		V <sub>12</sub> =		563	•		
V <sub>3</sub> or V <sub>av34</sub>			-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>	0.700		:/h (Equation	1 13-14 or	13-17)
Is $V_3$ or $V_{av34} > 2,70$					Is V <sub>3</sub> or V <sub>av34</sub>					
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5					Is V <sub>3</sub> or V <sub>av34</sub>	> 1.5 * V <sub>12</sub>				
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =			n (Equation 1	13-16, 13-	18, or 13-
Capacity Che	13-19)				Capacity	Chock	19)			
Capacity Cite	T	1 0	on a situ	LOS F?	Tapacity			l Con-	o oitu	LOS F?
	Actual	<del>l ĭ</del>	apacity	LOSF?	\ <u>\</u>		ctual	Capa	· ·	1
					V <sub>F</sub>		563	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$ -	$V_R$ 2	292	Exhibit 13-8	4800	No
					$V_R$	2	271	Exhibit 13-10	2000	No
Flow Entering	g Merge In	fluence A	rea		Flow Ente	ering D	iverg	e Influenc	e Area	
	Actual	ī .	Desirable	Violation?		Actua		Max Desirable		Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	563	E	Exhibit 13-8	4400:All	No
Level of Serv	ice Detern	nination (i	if not F)	•		Service	Dete	rmination	(if not F	=)
$D_R = 5.475 + 0.$					<del>1</del>			86 V <sub>12</sub> - 0.0	•	•
D <sub>R</sub> = (pc/mi/ln	• • •	12	- A		L	(pc/mi/ln		12	U	
	•				1	**	•			
LOS = (Exhibit					`	Exhibit 13				
Speed Deterr	nınatıon				Speed De					
M <sub>S</sub> = (Exibit 1	3-11)				1 *	2 (Exhib		-		
S <sub>R</sub> = mph (Exh	nibit 13-11)				$S_{R} = 57.3$	3 mph (Ex	hibit 13	-12)		
	nibit 13-11)				$S_0 = N/A$	mph (Exh	nibit 13-	12)		
	nibit 13-13)				S = 57.3	B mph (Ex	hibit 13	-13)		
	•	All Rights Reserv	rod.		HCS2010 <sup>™</sup>			-	nerated: 0/2/	2014 2:05 P

		MIPS AND	RAMP JUN			<u> </u>			
General Info	rmation			Site Infor	mation				
Analyst	Kiml	ley-Horn & Asso	ciates Fr	eeway/Dir of Tr	avel	I-580 WB			
Agency or Compar	ıy		Ju	nction	I	I-580/Corral Ho	llow Road		
ate Performed		1/2014	Ju	risdiction					
Analysis Time Peri		Peak	Ar	nalysis Year	(	Cumulative Plu	s Buildout		
Project Description	Tracy Hills Sp	ecific Plan							
nputs		1						i	
Jpstream Adj Ram	p	Freeway Numb	er of Lanes, N	2				Downstre	am Adj
		Ramp Number	of Lanes, N	1				Ramp	
□Yes □C	)n	Acceleration La	ane Length, L <sub>A</sub>	400				Yes	On
☑No □C	)ff	Deceleration L	ane Length L <sub>n</sub>						
¥ NOC	711	Freeway Volur		1262				✓ No	Off
<sub>-up</sub> = ft		Ramp Volume,		802				L <sub>down</sub> =	ft
ир			Flow Speed, S <sub>FF</sub>	70.0					
/u = veh	/h							$V_D =$	veh/h
		Ramp Free-Flo	113	55.0					
Conversion		der Base (	Conditions		1				
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	$f_{HV}$	f <sub>p</sub>	v = V/PH	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1262	0.92	Level	18	0	0.917	1.00	_	1495
Ramp	802	0.92	Level	13	0	0.939	1.00	_	1186
UpStream	002	0.72	Level	13	0	0.333	1.00		1100
DownStream									
	_ !	Merge Areas					Diverge Area	s	
stimation o	of V <sub>12</sub>				Estimati	on of v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	(P )					= V <sub>R</sub> + (V <sub>F</sub> -	\/ \D	
_			10.7)		_	v 12			۵)
EQ =		uation 13-6 or			L <sub>EQ</sub> =		· ·	13-12 or 13-1	
P <sub>FM</sub> =			on (Exhibit 13-6)		P <sub>FD</sub> =			ation (Exhibit 1	3-7)
′ <sub>12</sub> =	1495	pc/h			V <sub>12</sub> =		pc/h		
/ <sub>3</sub> or V <sub>av34</sub>	0 pc/	/h (Equation 1	3-14 or 13-17)		$V_3$ or $V_{av34}$		pc/h (Equatio	on 13-14 or 13-1	7)
Is $V_3$ or $V_{av34} > 2.7$	700 pc/h? 🔲 <b>Y</b> ∈	es 🗹 No			Is V <sub>3</sub> or V <sub>av3</sub>	<sub>4</sub> > 2,700 pc/h?	Yes 🗆 N	No	
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5	5 * V <sub>12</sub> /2	es 🗹 No			Is V <sub>3</sub> or V <sub>av3</sub>	4 > 1.5 * V <sub>12</sub> /2	☐Yes ☐N	No	
f Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =			tion 13-16, 1	3-18, or
	13-19	)					13-19)		
Capacity Ch	_				Capacity	/ Checks			·
	Actual	- Ca	apacity	LOS F?	<del>                                     </del>	Actu		Capacity	LOS F?
					V <sub>F</sub>		Exhibit '	13-8	
17	2681	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>	Exhibit '	13-8	
V <sub>EO</sub>		1 1			V <sub>R</sub>		Exhibit	13-	
$V_{FO}$					1 *R	<b>I</b>	<b>l</b> 10		
	<u> </u>								•
v <sub>FO</sub> Flow Enterin						<del></del>	erge Influ		i
Flow Enterir	Actual	Max [	Desirable	Violation?	Flow En	tering Div	rerge Influ	esirable	Violation
Flow Enterin	Actual 2681	Max Exhibit 13-8	Desirable 4600:All	Violation?	Flow En	Actual	Max D Exhibit 13-	esirable 8	Violation
Flow Enterin V <sub>R12</sub> Level of Ser	Actual 2681 Vice Deteri	Max E Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		Flow En	Actual Service D	Max D Exhibit 13- Determinat	Desirable 8 Sion (if not	Violation
Flow Enterin V <sub>R12</sub> Level of Ser	Actual 2681	Max E Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		Flow En	Actual Service D	Max D Exhibit 13-	Desirable 8 Sion (if not	Violation
V <sub>R12</sub> Level of Ser	Actual 2681 vice Deterr + 0.00734 v <sub>R</sub> +	Max E Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of	Actual Service D	Max D Exhibit 13- Determinat	Desirable 8 Sion (if not	Violation
V <sub>R12</sub> .evel of Ser  D <sub>R</sub> = 5.475  R = 23.3 (pc/	Actual 2681  vice Deterion + 0.00734 v R + (mi/ln)	Max E Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		Flow End	Actual  Service L  O <sub>R</sub> = 4.252 + c/mi/ln)	Max D Exhibit 13- Determinat	Desirable 8 Sion (if not	Violation
Flow Entering $V_{R12}$ Evel of Ser $D_R = 5.475$ $D_R = 23.3 \text{ (pc/OS)} = C \text{ (Exhibit)}$	Actual 2681  vice Detern + 0.00734 v <sub>R</sub> + /mi/ln) it 13-2)	Max E Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		Flow Ensity  V <sub>12</sub> Level of  D <sub>R</sub> = (polyocal polyocal p	Actual  Service L  O <sub>R</sub> = 4.252 +  c/mi/ln)  xhibit 13-2)	Max D Exhibit 13- Determinat 0.0086 V <sub>12</sub>	Desirable 8 Sion (if not	Violation
Flow Entering $V_{R12}$ Level of Ser $D_R = 5.475$ $D_R = 23.3 \text{ (pc/OS} = C \text{ (Exhib)}$ Speed Determine $V_{R12}$	Actual 2681  vice Detern + 0.00734 v <sub>R</sub> + /mi/ln) it 13-2)  rmination	Max E Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		Flow En	Actual  Service L  D <sub>R</sub> = 4.252 +  c/mi/ln)  exhibit 13-2)	Max D Exhibit 13- Determinat 0.0086 V <sub>12</sub>	Desirable 8 Sion (if not	Violation
Flow Entering $V_{R12}$ Level of Ser $D_R = 5.475$ $D_R = 23.3 \text{ (pc/OS} = C \text{ (Exhib)}$ Speed Determine $M_S = 0.334 \text{ (EX)}$	Actual 2681  Vice Detern + 0.00734 v <sub>R</sub> + /mi/ln) it 13-2) rmination xibit 13-11)	Max I Exhibit 13-8 <b>mination (i</b> 0.0078 V <sub>12</sub> - 0.0	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub>   Level of   D <sub>R</sub> = (prince   Cos = (E   Speed D   D <sub>s</sub> = (E)   D <sub>s</sub> = (E)   D <sub>s</sub> = (E)   Cos	Actual  Service E  OR = 4.252 +  c/mi/ln)  xhibit 13-2)  Determination	Max D Exhibit 13- Determinat 0.0086 V <sub>12</sub>	Desirable 8 Sion (if not	Violation
Flow Entering $V_{R12}$ Level of Ser $D_R = 5.475$ $D_R = 23.3 \text{ (pc/}$ $OS = C \text{ (Exhib)}$ Speed Determine $M_S = 0.334 \text{ (Exhib)}$	Actual 2681  vice Detern + 0.00734 v <sub>R</sub> + /mi/ln) it 13-2)  rmination	Max I Exhibit 13-8 <b>mination (i</b> 0.0078 V <sub>12</sub> - 0.0	Desirable 4600:All <b>f not F)</b>		Flow End  V <sub>12</sub> Level of  D <sub>R</sub> = (principle)  LOS = (E)  Speed D  D <sub>S</sub> = (E)  S <sub>R</sub> = mpi	Actual  Service E  O <sub>R</sub> = 4.252 + c/mi/ln) (xhibit 13-2) (xhibit 13-12) (xhibit 13-12) (xhibit 13-12)	Max D  Exhibit 13-  Determinat  0.0086 V <sub>12</sub> tion	Desirable 8 Sion (if not	Violation
Flow Entering $V_{R12}$ Level of Ser $D_R = 5.475$ $D_R = 23.3 \text{ (pc/OS} = C \text{ (Exhib)}$ Speed Deter $M_S = 0.334 \text{ (E)}$ $D_R = 0.6 \text{ mpt}$	Actual 2681  Vice Detern + 0.00734 v <sub>R</sub> + /mi/ln) it 13-2) rmination xibit 13-11)	Max I Exhibit 13-8 <b>mination (i</b> 0.0078 V <sub>12</sub> - 0.0	Desirable 4600:All <b>f not F)</b>		Flow End  V <sub>12</sub> Level of  D <sub>R</sub> = (principle)  LOS = (E)  Speed D  D <sub>S</sub> = (E)  S <sub>R</sub> = mpi	Actual  Service E  OR = 4.252 +  c/mi/ln)  xhibit 13-2)  Determination	Max D  Exhibit 13-  Determinat  0.0086 V <sub>12</sub> tion	Desirable 8 Sion (if not	Violation

	RA	MPS AND	RAMP JUN	CTIONS W	ORKSHI	EET			
General Info				Site Infor					
nalyst gency or Compa		ley-Horn & Asso		eeway/Dir of Tr nction		I-580 WB I-580/Lamme	rs Road		
ate Performed	8/14	/2014	Ju	risdiction					
nalysis Time Per		Peak	Ar	nalysis Year		Cumulative P	lus Buildout		
	n Tracy Hills Sp	ecific Plan							
nputs		<u> </u>							
pstream Adj Rar	np	•	ber of Lanes, N	2				Downstream A	dj
		Ramp Numbe	•	1				Ramp	
Yes 🗆	On	Acceleration L	ane Length, L <sub>A</sub>	400				☐ Yes ☐ 0	On
ZNo □	Off	Deceleration I	ane Length L <sub>D</sub>					☑ No □	Off
		Freeway Volu	me, V <sub>F</sub>	1763				I NO	Oli
<sub>ip</sub> = ft		Ramp Volume	e, V <sub>R</sub>	421				L <sub>down</sub> = ft	
	_	Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0				V <sub>D</sub> = veh	a/b
u = veh	n/h		ow Speed, S <sub>FR</sub>	55.0				V <sub>D</sub> = veh	1/11
Conversion	to pc/h Un		111						
	V	PHF		%Truck	%Rv	f	f	v = V/PHF x f <sub>H</sub>	v f
(pc/h)	(Veh/hr)		Terrain		<b></b>	f <sub>HV</sub>	f <sub>p</sub>		V ^ 'p
reeway	1763	0.92	Level	18	0	0.917	1.00	2089	
Ramp	421	0.72	Level	13	0	0.939	1.00	623	
JpStream DownStream						-			
ownsueam		Merge Areas					Diverge Area		
stimation	of V <sub>42</sub>	morgo / mode			Estimati	ion of v <sub>12</sub>	2.170.907.100		
		(D )					z <sub>2</sub> = V <sub>R</sub> + (V <sub>F</sub> - '	V \D	
_	$V_{12} = V_F$		. 12 7)		_	v <sub>1</sub> :			
≣Q = _		uation 13-6 or			L <sub>EQ</sub> =			13-12 or 13-13)	
<sub>FM</sub> =			ion (Exhibit 13-6)		P <sub>FD</sub> =			ation (Exhibit 13-7)	
12 =	2089	•			V <sub>12</sub> =		pc/h		
<sub>3</sub> or V <sub>av34</sub>	-		13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>	0.700		on 13-14 or 13-17)	
	,700 pc/h?					• .	h? ☐ Yes ☐ N		
s V <sub>3</sub> or V <sub>av34</sub> > 1	.5 * V <sub>12</sub> /2 Ye		10 10 10		Is V <sub>3</sub> or V <sub>av3</sub>	<sub>34</sub> > 1.5 * V <sub>12</sub> /	2 ☐Yes ☐N		
Yes,V <sub>12a</sub> =	pc/n 13-19		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	:	pc/h (Equa 13-19)	tion 13-16, 13-18,	or
apacity Cl		· /			Capacit	v Checks			
	Actual		apacity	LOS F?	<del>†                                    </del>	Act	tual	Capacity L	OS F?
					V <sub>F</sub>		Exhibit 1		
V	2712	Evhihit 12 0		No	$V_{FO} = V_{F}$	- V <sub>D</sub>	Exhibit 1		
$V_{FO}$	2112	Exhibit 13-8		INO		- N	Exhibit		
					V <sub>R</sub>		10		
low Enteri	ng Merge li	nfluence A	rea		Flow En	tering Di	verge Influ		
	Actual		Desirable	Violation?		Actual	<del></del>		olation?
$V_{R12}$	2712	Exhibit 13-8	4600:All	No	V <sub>12</sub>		Exhibit 13-		
	rvice Deteri	mination (	if not F)		Level of	Service	Determinat	tion (if not F)	
evel of Sel	5 + 0.00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>			$D_{R} = 4.252$	+ 0.0086 V <sub>12</sub> -	- 0.009 L <sub>D</sub>	
					$D_R = (p$	oc/mi/ln)			
D <sub>R</sub> = 5.475									
$D_{R} = 5.475$ R = 23.8  (pc)					LOS = (E	Exhibit 13-2	)		
$D_{R} = 5.475$ R = 23.8  (potential Constitution of the Const	c/mi/ln) bit 13-2)								
$D_R = 5.475$ R = 23.8 (pc DS = C (Exhi <b>Speed Dete</b>	c/mi/ln) bit 13-2) crmination				Speed D	Determina			
$D_{R} = 5.475$ $R = 23.8 \text{ (pc}$ $DS = C \text{ (Exhi}$ $Ext{Speed Dete}$ $S = 0.336 \text{ (Fig. 1)}$	c/mi/ln) bit 13-2) rmination Exibit 13-11)				Speed D	<b>Determina</b> Exhibit 13-12)	ation		
$D_{R} = 5.475$ $D_{R} = 23.8 \text{ (pc)}$ $D_{R} = 23.8 \text{ (pc)}$ $D_{R} = 0.336 \text{ (E)}$ $D_{R} = 0.336 \text{ (E)}$ $D_{R} = 0.60 \text{ mp}$	c/mi/ln) bit 13-2) rmination Exibit 13-11) bh (Exhibit 13-11)				Speed D D <sub>s</sub> = (E S <sub>R</sub> = m	Determina Exhibit 13-12) ph (Exhibit 13	-12)		
$D_{R} = 5.475$ $D_{R} = 23.8 \text{ (pc}$ $D_{R} = 23.8 \text{ (pc}$ $D_{R} = 0.336 \text{ (fc}$ $D_{R} = 0.336 \text{ (fc}$ $D_{R} = 0.436 $	c/mi/ln) bit 13-2) rmination Exibit 13-11)				$\begin{array}{ccc} \textbf{Speed L} \\ \textbf{D}_{\text{S}} = & (\textbf{E} \\ \textbf{S}_{\text{R}} = & \textbf{m} \\ \textbf{S}_{0} = & \textbf{m} \end{array}$	<b>Determina</b> Exhibit 13-12)	-12) -12)		

		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation	10 1111	<u> </u>	Site Infor		<i></i>				
Analyst Agency or Company		ey-Horn & Asso		reeway/Dir of Trunction		I-580 W		follow Road		
Date Performed	8/14	/2014	J	urisdiction						
Analysis Time Period	l AM F	Peak	A	nalysis Year		Cumula	tive Plus E	Buildout		
	Tracy Hills Sp	ecific Plan								
Inputs								_		
Upstream Adj R	amp	Freeway Num Ramp Numbe	ber of Lanes, N	2 1					Downstrea Ramp	am Adj
Yes	On	Acceleration L	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration I Freeway Volu	Lane Length L <sub>D</sub>	200 1874					✓ No	Off
L <sub>up</sub> = f1	t	Ramp Volume	e, V <sub>R</sub>	612					L <sub>down</sub> =	ft
V <sub>u</sub> = ve	eh/h	1	-Flow Speed, S <sub>FF</sub> low Speed, S <sub>FR</sub>	70.0 35.0					V <sub>D</sub> =	veh/h
Conversion to	nc/h Un		* 110							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1874	0.92	Level	18	0	0.	917	1.00	22	20
Ramp	612	0.77	Level	14	0	0.	935	1.00	8	50
UpStream										
DownStream										
		Merge Areas						iverge Areas		
Estimation of	<sup>f</sup> v <sub>12</sub>				Estimat	tion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>E</sub>	( P <sub>EM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
L <sub>EQ</sub> =		ation 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-1		)
P <sub>FM</sub> =		Equation (I	•		P <sub>FD</sub> =		-	000 using Equ		
·	pc/h	Equation (	EXHIBIT TO 0)		V <sub>12</sub> =			200 using Eqt 20 pc/h	adion (Exil	DIC 10-1)
	•	(Caucatian 40	(44 - 10 47)					-	40 44	- 40 47\
$V_3$ or $V_{av34}$	-		-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>	. 0.7		pc/h (Equatio	on 13-14 oi	13-17)
Is $V_3$ or $V_{av34} > 2,70$								Yes <b>V</b> No		
Is $V_3$ or $V_{av34} > 1.5$ *					Is V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 1.5		☐Yes ☑No		
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> :	=		c/h (Equation	13-16, 13-	-18, or 13-
Capacity Che	13-19	)			Capacit		19	9)		
Сарасну Спе	Actual	T 7	`anasih.	LOS F?	Capacit	y Circ		J Co	no oite :	LOS F?
	Actual		Capacity	LUST?	\/	-	Actual	Exhibit 13-8	pacity	
.,					V <sub>F</sub>	_	2220		+	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$		1370	Exhibit 13-8	4800	No
					$V_R$		850	Exhibit 13-1	0 2000	No
Flow Entering	g Merge Ir	fluence A	rea		Flow Er	nterin	g Dive	rge Influen	ce Area	
	Actual	Max	Desirable	Violation?		I	\ctual	Max Desirab	le	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>	2	220	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)	•	Level o	f Serv	ice De	terminatio	n (if not	<del>F</del> )
$D_R = 5.475 + 0.1$					<del>-</del>			.0086 V <sub>12</sub> - 0.0	•	
D <sub>R</sub> = (pc/mi/ln	• • • • • • • • • • • • • • • • • • • •	12	A		L	1.5 (pc/		12	Ь	
LOS = (Exhibit '	,						oit 13-2)			
,	,									
Speed Determination					Speed I					
$M_S = (Exibit 13)$	3-11)					-	xhibit 13-	•		
$S_R = mph (Exh$	ibit 13-11)				1	5.9 mph	(Exhibit	13-12)		
S <sub>0</sub> = mph (Exh	ibit 13-11)				$S_0 = N$	I/A mph	(Exhibit	13-12)		
	ibit 13-13)				S = 5	5.9 mph	(Exhibit	13-13)		
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		RAMP	S AND RAI	MP JUNCTI	ONS WOR	KSHEET			
General Info	rmation			Site Infor					
Analyst		ey-Horn & Asso	ciates F	reeway/Dir of Tr		580 WB			
Agency or Company		,		Junction		580 and Lamme	rs Road		
Date Performed	8/14/	2014		Jurisdiction					
Analysis Time Perio	d AM F	Peak	,	Analysis Year	Cu	umulative Plus I	Buildout		
Project Description	Tracy Hills Spe	ecific Plan							
Inputs									
Upstream Adj F	Ramp	I '	ber of Lanes, N	2				Downstrear	n Adj
		Ramp Numbe	r of Lanes, N	1			<b> </b> F	Ramp	
□Yes	On	Acceleration L	ane Length, L <sub>A</sub>				l I	□Yes	On
✓ No	Off	Deceleration L	ane Length L <sub>D</sub>	200					□ o#
	_ 0	Freeway Volu	me, V <sub>F</sub>	2064			- '	☑ No	Off
L <sub>up</sub> = 1	ft	Ramp Volume		301			L	down =	ft
		1	-Flow Speed, S <sub>FF</sub>	70.0					
V <sub>u</sub> = v	/eh/h	1	ow Speed, S <sub>FR</sub>	35.0			\	/ <sub>D</sub> =	veh/h
0	· //- 11		111	35.0					
Conversion t		ger Base (	conditions						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	$f_HV$	f <sub>p</sub> v	' = V/PHF >	$(f_{HV} \times f_{p})$
Freeway	2064	0.92	Level	18	0	0.917	1.00	244	5
Ramp	301	0.77	Level	14	0	0.935	1.00	418	3
UpStream									
DownStream									
		Merge Areas			<u> </u>		Diverge Areas		
Estimation o	f v <sub>12</sub>				Estimatio	n of v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	(P <sub>FM</sub> )				V <sub>12</sub> =	= V <sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub> )	)P <sub>FD</sub>	
L <sub>EQ</sub> =	(Equa	ition 13-6 or	13-7)		L <sub>EQ</sub> =	(	Equation 13-12	or 13-13)	
P <sub>FM</sub> =		Equation (E	•		P <sub>FD</sub> =	,	000 using Equa	•	it 13_7)
V <sub>12</sub> =	pc/h	_qaa (-	2		V <sub>12</sub> =		145 pc/h	ation (Exilib	10 1)
· <del>-</del>	•	Cauction 12	14 or 12 17)		I '-			. 10 11	10 17)
$V_3$ or $V_{av34}$			-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		pc/h (Equation	1 13-14 01	13-17)
Is $V_3$ or $V_{av34} > 2,70$							☐Yes ☑No		
Is $V_3$ or $V_{av34} > 1.5$			10 10 10		Is V <sub>3</sub> or V <sub>av34</sub>		☐Yes ☑No	10 10 10 1	0 10
If Yes,V <sub>12a</sub> =	pc/n ( 13-19)		-16, 13-18, or		If Yes,V <sub>12a</sub> =		oc/h (Equation ´ 9)	13-16, 13-1	8, or 13-
Capacity Che					Capacity		9)		
Capacity One	Actual	1 ^	apacity	LOS F?	Capacity	Actual	Can	acity	LOS F?
	/ totaai	<del>l ĭ</del>	араску	20011	V <sub>F</sub>	2445	Exhibit 13-8	4800	No No
V		F.,h;h;t 40, 0							+
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_F - V_F$	<u> </u>	Exhibit 13-8	4800	No
					V <sub>R</sub>	418	Exhibit 13-10	2000	No
Flow Entering	g Merge In	fluence A	rea		Flow Ente	ering Dive	rge Influenc	e Area	
	Actual	Max	Desirable	Violation?		Actual	Max Desirable	е	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>	2445	Exhibit 13-8	4400:All	No
Level of Serv	rice Detern	nination (	if not F)		Level of S	Service De	termination	(if not F	<u></u>
D <sub>R</sub> = 5.475 + 0					1		.0086 V <sub>12</sub> - 0.0	•	
D <sub>R</sub> = (pc/mi/lr		12	, ,			(pc/mi/ln)		_	
LOS = (Exhibit	•				1	Exhibit 13-2)			
Speed Deteri					Speed De		<u> </u>		
•					+				
$M_S = (Exibit 1)$	•				1 *	6 (Exhibit 13	•		
	nibit 13-11)					mph (Exhibit	•		
	nibit 13-11)				1 *	mph (Exhibit	*		
S = mph (Ext	nibit 13-13)				S = 57.0	mph (Exhibit	13-13)		
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		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSH	EET				
Genera	l Inforn				Site Infor						
Analyst Agency or C Date Perfor		Kimle 8/14/	ey-Horn & Asso	J	reeway/Dir of Tr unction urisdiction	avel	I-580 EI I-580/C	B orral Hollo	w Road		
Analysis Tir		6/ 14/. PM P			ınalysis Year		Cumula	tive Plus E	Ruildout		
		Fracy Hills Spe					Gamaia		Janaoat		
nputs	•	,									
Jpstream A	Adj Ramp		Freeway Num Ramp Numbe	ber of Lanes, N	2 1					Downstre Ramp	am Adj
Yes	On		· ·	ane Length, L <sub>A</sub>	250					Yes	□On
✓ No	Off		Deceleration I Freeway Volu	_ane Length L <sub>D</sub> me. V_	1706					☑ No	Off
- <sub>up</sub> =	ft		Ramp Volume		985					L <sub>down</sub> =	ft
/ <sub>u</sub> =	veh/h			-Flow Speed, $S_{FF}$ ow Speed, $S_{FR}$	70.0 55.0					V <sub>D</sub> =	veh/h
2001/05	oion to	no/h Una	1	. 117	35.0						
<i>onver</i>	SION TO	y pc/n Und		Conditions	1	1		1		1	
(pc/	/h)	v (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHI	x f <sub>HV</sub> x f <sub>p</sub>
Freeway		1706	0.92	Level	18	0	_	917	1.00	<del> </del>	2021
Ramp	-	985	0.86	Level	6	0	0.9	971	1.00		1180
<u>UpStream</u> DownStrea	am										
	•		Merge Areas				_		Diverge Areas	•	
Stimat	tion of	v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
		V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )						V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
. <sub>EQ</sub> =			tion 13-6 o	r 13-7)		L <sub>EQ</sub> =			Equation 13		13)
' <sub>FM</sub> =				ion (Exhibit 13-6	5)	P <sub>FD</sub> =			using Equatio		
′ <sub>12</sub> =		2021	oc/h			V <sub>12</sub> =		ı	oc/h		
<sub>3</sub> or V <sub>av34</sub>		0 pc/h	n (Equation	13-14 or 13-17	)	V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equation	13-14 or 13-	17)
s V <sub>3</sub> or V <sub>av</sub>	<sub>v34</sub> > 2,700	pc/h? Yes	s 🗹 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 2,70	00 pc/h? [	∃Yes □No		
s V <sub>3</sub> or V <sub>av</sub>	<sub>v34</sub> > 1.5 * '	V <sub>12</sub> /2 □ Yes				Is V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 1.5	* V <sub>12</sub> /2	☐Yes ☐ No		
f Yes,V <sub>12a</sub> :	=	pc/h ( 13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		oc/h (Equatio 3-19)	n 13-16, 1	3-18, or
Capacit	ty Chec					Capacit	v Che		J- 1 <i>3)</i>		
	Í	Actual	C	Capacity	LOS F?	<del>                                     </del>		Actual	Ca	pacity	LOS F?
						V <sub>F</sub>			Exhibit 13-		
V <sub>F</sub>	:0	3201	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13-	8	
•	Ŭ					V <sub>R</sub>			Exhibit 13 10	-	
low Er	ntering	Merge In	fluence A	rea		Flow Er	nterin	g Dive	rge Influer	ice Area	<b></b> !
		Actual		Desirable	Violation?		A	ctual	Max Des	irable	Violation
$V_{R1}$	12	3201	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
evel o	f Servi	ce Detern	nination (	if not F)		Level o	f Serv	rice De	terminatio	n (if not	<i>F</i> )
D <sub>R</sub> =	= 5.475 + 0	0.00734 v <sub>R</sub> + 0	0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>			$D_R = 4$	.252 + 0	.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
<sub>R</sub> = 2	28.3 (pc/mi/	ln)				$D_R = (p$	oc/mi/lr	n)			
OS = D	) (Exhibit 1	3-2)				LOS = (E	Exhibit	13-2)			
Speed L	Determ	ination				Speed L	Deteri	ninatio	on		
1 <sub>S</sub> = 0	).389 (Exibi	t 13-11)				$D_s = (E_s)^T$	Exhibit 10	3-12)			
	•	Exhibit 13-11)				S <sub>R</sub> = m	nph (Exhi	ibit 13-12)			
		xhibit 13-11)				$S_0 = m$	nph (Exhi	ibit 13-12)			
	9.1 mph (E	Exhibit 13-13)				S = m	nph (Exh	ibit 13-13)			
pvright © 2	013 Univers	sity of Florida, A	II Rights Reserv	/ed		HCS2010	TM Versi	ion 6.50		Generated:	9/2/2014 1:5

		INIP S AIND	RAMP JUN			:E1				
<u>senerai into</u>	rmation			Site Infor	mation					
nalyst	Kim	ley-Horn & Asso	ciates Fr	eeway/Dir of Tr	avel	I-580 EB				
gency or Compar	ny		Ju	nction	ļ	I-580/Corral	Hollow F	Road		
ate Performed		1/2014	Ju	risdiction						
nalysis Time Peri		Peak	Ar	nalysis Year		Existing				
roject Description	Tracy Hills Sp	pecific Plan								
nputs		1								
Jpstream Adj Ram	пр	Freeway Numb	er of Lanes, N	2					Downstre	am Adj
		Ramp Number	of Lanes, N	1					Ramp	
Yes C	On	Acceleration L	ane Length, L <sub>A</sub>	250					Yes	On
✓ No 🔲 C	∖ff	Deceleration L	ane Length L							
¥ NO L	ווע	Freeway Volur		1433					✓ No	Off
<sub>up</sub> = ft		Ramp Volume	'	333					L <sub>down</sub> =	ft
up -			11						401111	
u = veh	/h		Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
		Ramp Free-Flo	110	55.0						
Conversion	<del></del>	der Base (	Conditions	Y		_				
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	$f_{HV}$		f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>n</sub>
reeway	1433	0.92	Level	18	0	0.917	$\dashv$	1.00		698
Ramp	333	0.92	Level	6	0	0.917	+	1.00		399
UpStream	333	0.00	Level	U	-	0.971	-	1.00	•	שפט
DownStream		+ +				+				
		Merge Areas				•	Dive	erge Areas		
stimation o	of V <sub>12</sub>	•			Estimati	on of v	2	•		
		(D )						± (\/ \/ '	\D	
_	$V_{12} = V_F$		40.7			<b>v</b> 1		+ (V <sub>F</sub> - V <sub>R</sub> )		٥,
EQ =		uation 13-6 or			L <sub>EQ</sub> =			uation 13-		
P <sub>FM</sub> =	1.000	using Equati	on (Exhibit 13-6)		P <sub>FD</sub> =		usi	ng Equatio	n (Exhibit 13	3-7)
′ <sub>12</sub> =	1698	pc/h			V <sub>12</sub> =		pc/	h		
/ <sub>3</sub> or V <sub>av34</sub>	0 pc	/h (Equation 1	3-14 or 13-17)		$V_3$ or $V_{av34}$		pc/l	n (Equation 1	3-14 or 13-1	7)
s V <sub>3</sub> or V <sub>av34</sub> > 2,	700 pc/h? 🗌 \Upsilon e	es 🗹 No			Is V <sub>3</sub> or V <sub>av3</sub>	<sub>34</sub> > 2,700 pc	/h? 🔲 Y	′es 🗌 No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5	5 * V <sub>12</sub> /2   Ye	es 🗸 No			Is V <sub>3</sub> or V <sub>av3</sub>	<sub>M</sub> > 1.5 * V <sub>12</sub>	/2 🗀 Y	′es □No		
f Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =			h (Equatior	n 13-16, 1	3-18, or
	13-19						13-1	9)		
Capacity Ch	_				Capacity					
	Actual	C	apacity	LOS F?	<u> </u>	Ad	tual		pacity	LOS F?
					$V_{F}$			Exhibit 13-8	3	
$V_{FO}$	2097	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13-8	3	
- FO	2001							Exhibit 13-	-	
					V <sub>R</sub>			10		
		<i>CI</i> 4	roa		Elow En	terina D	iverg	e Influen	ce Area	
Flow Enterii	_				FIOW EII					
	Actual	Max [	Desirable	Violation?		Actual	Ĭ	Max Desi	rable	Violation'
V <sub>R12</sub>	Actual 2097	Max [ Exhibit 13-8	Desirable 4600:All	Violation? No	V <sub>12</sub>	Actual	E	xhibit 13-8		
V <sub>R12</sub>	Actual 2097	Max [ Exhibit 13-8	Desirable 4600:All		V <sub>12</sub>	Actual	E			
V <sub>R12</sub> .evel of Ser	Actual 2097 Vice Deter	Max [ Exhibit 13-8	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of	Actual Service	Dete	xhibit 13-8	n (if not	
V <sub>R12</sub> Level of Ser	Actual 2097 2097 4 0.00734 v R +	Max [ Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of	Actual Service D <sub>R</sub> = 4.252	Dete	xhibit 13-8 <b>rminatio</b>	n (if not	
V <sub>R12</sub> .evel of Ser  D <sub>R</sub> = 5.475	Actual 2097 *Vice Deter + 0.00734 v <sub>R</sub> + /mi/ln)	Max [ Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of  D <sub>R</sub> = (p	Actual Service D <sub>R</sub> = 4.252 c/mi/ln)	<b>Dete</b> : + 0.00	xhibit 13-8 <b>rminatio</b>	n (if not	
$V_{R12}$ Level of Ser $D_R = 5.475$ $D_R = 20.1 \text{ (pc.)}$ $D_R = 20.1 \text{ (pc.)}$ $D_R = 20.1 \text{ (pc.)}$	Actual 2097  *Vice Determ + 0.00734 v <sub>R</sub> + /mi/ln)  viit 13-2)	Max [ Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of  D <sub>R</sub> = (p) LOS = (E	Actual Service  D <sub>R</sub> = 4.252 c/mi/ln) Exhibit 13-2	Dete	xhibit 13-8 <b>rminatio</b>	n (if not	
$V_{R12}$ Level of Ser $D_R = 5.475$ $D_R = 20.1 \text{ (pc.)}$ $D_R = C \text{ (Exhib)}$ Speed Determines	Actual 2097  *Vice Determination Actual 2097  *Vice Determination Actual 2097  **Print   Ac	Max [ Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of  D <sub>R</sub> = (p  LOS = (E  Speed D	Actual  Service  D <sub>R</sub> = 4.252  c/mi/ln)  ixhibit 13-2	Dete: + 0.00	xhibit 13-8 <b>rminatio</b>	n (if not	
$V_{R12}$ Level of Ser $D_R = 5.475$ $D_R = 20.1 \text{ (pc.)}$ $D_R = C \text{ (Exhibition of the context)}$	Actual 2097  *Vice Determ + 0.00734 v <sub>R</sub> + /mi/ln)  viit 13-2)	Max [ Exhibit 13-8 <b>mination (i</b>	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of  D <sub>R</sub> = (p  LOS = (E  Speed D  D <sub>s</sub> = (E:	Actual  Service  D <sub>R</sub> = 4.252  c/mi/ln)  exhibit 13-12)	Dete: 2 + 0.00	xhibit 13-8 <b>rminatio</b>	n (if not	
$V_{R12}$ Level of Ser $D_R = 5.475$ $O_R = 20.1 \text{ (pc)}$ $OS = C \text{ (Exhib}$ Speed Determine the properties of the p	Actual 2097  *Vice Determination Actual 2097  *Vice Determination Actual 2097  **Print   Ac	Max I Exhibit 13-8 <b>mination (i</b> 0.0078 V <sub>12</sub> - 0.0	Desirable 4600:All <b>f not F)</b>		V <sub>12</sub> Level of  D <sub>R</sub> = (p) LOS = (E  Speed D  D <sub>s</sub> = (E:	Actual  Service  D <sub>R</sub> = 4.252  c/mi/ln)  ixhibit 13-2	Dete: 2 + 0.00	xhibit 13-8 <b>rminatio</b>	n (if not	
$V_{R12}$ Level of Ser $D_R = 5.475$ $D_R = 20.1 \text{ (pc.)}$ $D_R = 0.325  (Exhibition of the proof of $	Actual 2097  **Vice Determ + 0.00734 v <sub>R</sub> + /mi/ln) bit 13-2)  **rmination  xibit 13-11)	Max I Exhibit 13-8 <b>mination (i</b> 0.0078 V <sub>12</sub> - 0.0	Desirable 4600:All <b>f not F)</b>		$V_{12}$ Level of $D_R = (p)$ LOS = (E  Speed D $D_S = (E)$ $D_S = (E)$ $D_S = (E)$	Actual  Service  D <sub>R</sub> = 4.252  c/mi/ln)  exhibit 13-12)	Deter + 0.00 (2) (3-12)	xhibit 13-8 <b>rminatio</b>	n (if not	

		RAMP	S AND RAN	/P JUNCTI	ONS WO	RKS	HEET			
General Infor	mation		- / IV-III	Site Infori						
Analyst Agency or Company	Kimle	ey-Horn & Asso	J	reeway/Dir of Tra	avel	I-580 E I-580 a		Hollow Road		
Date Performed Analysis Time Period	8/14/ B PM P			lurisdiction Analysis Year		Cumula	ativo Divo E	) uildout		
Project Description				alalysis i cal		Cumula	ative Plus E	bulluout		
Inputs										
Upstream Adj R	amp	Freeway Num Ramp Numbe	ber of Lanes, N	2 1					Downstrea Ramp	am Adj
□Yes □	On		ane Length, L <sub>A</sub>	ı					Yes	On
✓ No	Off	1	ane Length L <sub>D</sub>	200					✓No	Off
L <sub>up</sub> = f	t	Freeway Volu Ramp Volume	•	2547 841					L <sub>down</sub> =	ft
V <sub>11</sub> = v <sub>0</sub>	eh/h		-Flow Speed, S <sub>FF</sub>						V <sub>D</sub> =	veh/h
0	//- 11	· ·	ow Speed, S <sub>FR</sub>	35.0						
Conversion to	o pc/n Und V		Conditions	1	1	<u> </u>			1	
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	_	f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	· ·
Freeway	2547	0.92	Level	18	0		917	1.00		118
Ramp UpStream	841	0.91	Level	2	0	0.	990	1.00	9.	33
DownStream		<del>                                     </del>				+				
		Merge Areas					Ċ	iverge Areas	•	
Estimation of	<sup>F</sup> V <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V	<sub>R</sub> )P <sub>FD</sub>	
L <sub>EQ</sub> =	(Equa	ition 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-	–	)
P <sub>FM</sub> =	using	Equation (	Exhibit 13-6)		P <sub>FD</sub> =		1.0	000 using Eq	uation (Exhi	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		30	18 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		0	pc/h (Equation	on 13-14 or	13-17)
Is $V_3$ or $V_{av34} > 2,70$	0 pc/h?	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 2,7	00 pc/h? [	☐Yes ☑No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *					Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5		]Yes ☑No		
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		c/h (Equation	13-16, 13	-18, or 13-
Capacity Che	13-19)				Capacit		ncks	9)		
Capacity Cite	Actual		apacity	LOS F?	Capacit	y Cir	Actual	Ca	apacity	LOS F?
	7.101.00.1		- apa only		$V_{F}$		3018	Exhibit 13-		No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	V <sub>D</sub>	2085	Exhibit 13-		No
FO					V <sub>R</sub>	K	933	Exhibit 13-1		No
Flow Entering	Merge In	fluence A	rea		Flow En	terin	g Dive	rge Influen	ce Area	
	Actual	1	Desirable	Violation?		,	Actual	Max Desiral	ble	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>	3	3018	Exhibit 13-8	4400:All	No
Level of Serv	ice Detern	nination (	if not F)		Level of	f Serv	vice De	terminatio	n (if not	F)
$D_R = 5.475 + 0.$	00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>			$D_R = 4$	1.252 + 0	.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				$D_R = 28$	8.4 (pc	/mi/ln)			
LOS = (Exhibit	13-2)				LOS = D	(Exhil	oit 13-2)			
Speed Detern	nination				Speed L	Deter	minatic	n		
M <sub>S</sub> = (Exibit 1:	3-11)					.512 (E	xhibit 13-	·12)		
S <sub>R</sub> = mph (Exh	ibit 13-11)					-	(Exhibit	•		
	ibit 13-11)				$S_0 = N$	/A mph	(Exhibit	13-12)		
	ibit 13-13)				S = 55	5.7 mph	(Exhibit	13-13)		
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		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation		<u> </u>	Site Infor						
Analyst		ey-Horn & Asso		reeway/Dir of Ti		I-580 E				
Agency or Company Date Performed	0/4/	/0044		unction urisdiction		1-580 ar	nd Lamme	rs Road		
Date Periormed Analysis Time Period		/2014 Pook		ınalysis Year		Cumula	tive Plus E	uildout		
-	Tracy Hills Sp			ilalysis i eai		Cumula	lilve Flus E	Bulluout		
Inputs	Tracy Tillio Opt	come i ian								
		Freeway Num	ber of Lanes, N	2						
Upstream Adj Ra	amp	Ramp Numbe	•	1					Downstrea Ramp	am Adj
□Yes	On	1 '	ane Length, L <sub>A</sub>	•					□Yes	On
☑ No □	Off	1	ane Length L <sub>D</sub>	200					✓ No	Off
		Freeway Volu		2757					L <sub>down</sub> =	ft
L <sub>up</sub> = ft		Ramp Volume		601					-down	
V,, = ∨€	eh/h		-Flow Speed, S <sub>FF</sub>						V <sub>D</sub> =	veh/h
<u> </u>	/b		ow Speed, S <sub>FR</sub>	35.0						
Conversion to	y pc/n Uno			1	1	$\overline{}$				
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x t <sub>HV</sub> x t <sub>p</sub>
Freeway	2757	0.92	Level	18	0	0.9	917	1.00	32	66
Ramp	601	0.91	Level	2	0	0.9	990	1.00	6	67
UpStream		$\vdash$				_				
DownStream		Merge Areas		<u> </u>	<u> </u>			iverge Areas		
Estimation of		Merge Areas			Estimat	ion o		iverge Areas		
		/ D \						\/ ± (\/ \/	\D	
I –	V <sub>12</sub> = V <sub>F</sub>		10.7\		-			$V_R + (V_F - V_F)$		`
L <sub>EQ</sub> =		ation 13-6 or			L <sub>EQ</sub> =			Equation 13-1		
P <sub>FM</sub> =	_	Equation (E	EXHIBIT 13-0)		P <sub>FD</sub> =			000 using Equ	lation (Exni	DIT 13-1)
V <sub>12</sub> =	pc/h	/F (; 40	44 40 47)		V <sub>12</sub> =			66 pc/h		40.4=
$V_3$ or $V_{av34}$	-		-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>	. 0.7		pc/h (Equatio	n 13-14 oi	13-17)
Is $V_3$ or $V_{av34} > 2,70$								Yes ☑ No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *			40 40 40		Is V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 1.5		Yes ☑ No	10 10 10	40 40
If Yes,V <sub>12a</sub> =	pc/n ( 13-19)		-16, 13-18, or		If Yes,V <sub>12a</sub> =	=	p 19	c/h (Equation	13-16, 13	-18, or 13-
Capacity Che		/			Capacit	y Che		- /		
, ,	Actual	С	apacity	LOS F?	<del>† ′ − −</del>		Actual	Ca	pacity	LOS F?
			•		$V_{F}$		3266	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V <sub>D</sub>	2599	Exhibit 13-8	4800	No
10					V <sub>R</sub>		667	Exhibit 13-10	+	No
Flow Entering	Merae In	fluence A	rea		,		a Dive	ge Influenc		
	Actual	i	Desirable	Violation?	1011		Actual	Max Desirab		Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	3	266	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)	<u>.</u>	+	f Serv	rice De	terminatio	n (if not	<del>.</del> F)
D <sub>R</sub> = 5.475 + 0.0	00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>			D <sub>R</sub> = 4	.252 + 0	.0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	-
D <sub>R</sub> = (pc/mi/ln)	)				$D_R = 30$	0.5 (pc/	mi/ln)			
LOS = (Exhibit 1	13-2)				1	(Exhib	oit 13-2)			
Speed Detern	nination				Speed L			n		
M <sub>S</sub> = (Exibit 13					<del></del>		khibit 13-			
-	ibit 13-11)				1 -	-	(Exhibit	-		
	ibit 13-11)					-	-			
	ibit 13-11)				$S_0$ = N/A mph (Exhibit 13-12) S = 56.3 mph (Exhibit 13-13)					
					HCS2010 <sup>TI</sup>			.5 .5,		

		RAI	MPS AND	RAMP JUN	<b>CTIONS W</b>	ORKSH	EET				
General	Inform				Site Infor						
Analyst Agency or Co Date Perform		Kimle 8/14/	ey-Horn & Asso	J	reeway/Dir of Tr unction urisdiction		I-580 WB I-580/Corra	l Hollow			
nalysis Time		PM P			nalysis Year		Cumulative	Plus Buil	dout		
		racy Hills Spe	ecific Plan		•						
nputs											
Jpstream Ad	dj Ramp		Freeway Num Ramp Numbe	ber of Lanes, N	2 1					Downstre Ramp	am Adj
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	400					Yes	□On
✓ No	Off		Deceleration I Freeway Volu	Lane Length L <sub>D</sub> me, V <sub>E</sub>	1218					☑ No	Off
up =	ft		Ramp Volume	, V <sub>R</sub>	691					L <sub>down</sub> =	ft
/ <sub>u</sub> =	veh/h			-Flow Speed, S <sub>FF</sub>						V <sub>D</sub> =	veh/h
		" "		ow Speed, S <sub>FR</sub>	55.0						
onvers.	sion to	pc/h Und ∨		Conditions		1	1			1	
(pc/h)	1)	v (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>		f <sub>p</sub>	v = V/PHI	x f <sub>HV</sub> x f <sub>p</sub>
Freeway		1218	0.92	Level	18	0	0.917		1.00		1443
Ramp		691	0.83	Level	7	0	0.966	_	1.00		862
JpStream DownStream	<del>_</del>					<u> </u>		+			
JOWII GUI GAII			Merge Areas					Div	erge Areas		
stimati	ion of					Estimat	ion of v	12	<u>-</u>		
		V <sub>12</sub> = V <sub>F</sub>	(P <sub>EM</sub> )						+ (V <sub>F</sub> - V <sub>R</sub>	)P <sub>ED</sub>	
EQ =		.= .	` ™' ation 13-6 o	r 13-7)		L <sub>EQ</sub> =			quation 13-		3)
r <sub>FM</sub> =				ion (Exhibit 13-6	)	P <sub>FD</sub> =			ng Equatio		
/ <sub>12</sub> =		1443			,	V <sub>12</sub> =		pc/		(=/	.,
<sub>3</sub> or V <sub>av34</sub>				13-14 or 13-17	)	V <sub>3</sub> or V <sub>av34</sub>		•	 h (Equation 1	3-14 or 13-1	7)
	., > 2.700	pc/h? Yes		10 11 01 10 17	,		a > 2.700 p		res □No		,
		/ <sub>12</sub> /2 □ Yes							res 🗌 No		
Yes,V <sub>12a</sub> =		pc/h	(Equation 13	3-16, 13-18, or		If Yes,V <sub>12a</sub> =		pc/	h (Equation	n 13-16, 1	3-18, or
Capacity		13-19)	<u> </u>			Capacit		13-1	19)		
	, once	Actual		apacity	LOS F?			Actual	Car	pacity	LOS F?
						V <sub>F</sub>			Exhibit 13-8	1	
$V_{FO}$		2305	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>D</sub>		Exhibit 13-8	8	
*FO		2303	EXHIBIT 10-0		140	V <sub>R</sub>			Exhibit 13-		
low En	terina	Merae In	fluence A	rea			terina I	Divera	<u> </u> 10 e Influen	ce Area	
1011	1011119	Actual		Desirable	Violation?	1 1011 211	Actua		Max Desi		Violation
V <sub>R12</sub>	2	2305	Exhibit 13-8	4600:All	No	V <sub>12</sub>			xhibit 13-8		
		e Detern	nination (	if not F)			Service	e Dete	rminatio	n (if not	F)
.evei ot			0.0078 V <sub>12</sub> - 0.0			1			086 V <sub>12</sub> - 0.		
	5.475 + 0		12	^			oc/mi/ln)		12	D	
D <sub>R</sub> =						PP IL	,0,1111/111/				
D <sub>R</sub> = 20.	).5 (pc/mi/l	n)				1		2)			
$D_{R} = 0$ $O_{R} = 0$ $OS = 0$	).5 (pc/mi/l (Exhibit 13	n) 3-2)				LOS = (E	Exhibit 13-				
D <sub>R</sub> = 20. OS = C (	0.5 (pc/mi/l (Exhibit 13 <b>Determ</b> )	n) 3-2) <b>ination</b>				LOS = (E	Exhibit 13- Determii	nation			
$D_{R} = 0.3$ $D_{R} = 0.3$	0.5 (pc/mi/l (Exhibit 13 <b>Determ</b> 316 (Exibit	n) 3-2) <b>ination</b> : 13-11)				LOS = (E <b>Speed L</b> D <sub>s</sub> = (E	Exhibit 13- Determine Exhibit 13-12	nation			
$D_{R} = 0.00$	0.5 (pc/mi/l (Exhibit 13 <b>Determ</b> 316 (Exibit .1 mph (E	n) 3-2) ination : 13-11) xhibit 13-11)				$LOS = (E$ $Speed L$ $D_s = (E$ $S_R = m$	Exhibit 13- Determine Exhibit 13-12 ph (Exhibit	<b>nation</b> 2) 13-12)			
$D_{R} = 0.00$	0.5 (pc/mi/l (Exhibit 13) <b>Determ</b> 316 (Exibit .1 mph (Exibit)	n) 3-2) <b>ination</b> : 13-11)				$\begin{array}{ccc} & & & & \\ & & & \\ & & & \\ & & \\ & & \\ & & \\ &$	Exhibit 13- Determine Exhibit 13-12	nation 2) 13-12) 13-12)			

		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSH	EET				
General	l Inform				Site Infor						
nalyst gency or C	Company	Kimle	ey-Horn & Asso		eeway/Dir of Tr	avel	I-580 W I-580/La	/B ammers Ro	ad		
ate Perfori		8/14/	2014	Ju	risdiction						
nalysis Tin		PM P		Ar	nalysis Year		Cumula	tive Plus B	uildout		
	cription	Tracy Hills Spe	ecific Plan								
nputs										1	
pstream A	dj Ramp			ber of Lanes, N	2					Downstre	am Adj
<b>-</b>			Ramp Numbe	r of Lanes, N	1					Ramp	
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	400					☐Yes	On
✓No	Off		Deceleration L	ane Length L <sub>D</sub>						✓ No	
			Freeway Volu	me, V <sub>F</sub>	1738					I INO	☐ Off
<sub>.p</sub> =	ft		Ramp Volume	, V <sub>R</sub>	685					L <sub>down</sub> =	ft
			Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0						veh/h
_ =	veh/h			ow Speed, S <sub>FR</sub>	55.0					$V_D =$	ven/n
onver	sion to	nc/h Und		Conditions						1	
(pc/l		V	PHF	Terrain	%Truck	%Rv		f T	f <sub>p</sub>	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
	''/	(Veh/hr)				ļ	_	f <sub>HV</sub>		-	г
reeway		1738	0.92	Level	18	0	_	917	1.00		2059
Ramp		685	0.83	Level	7	0	0.9	966	1.00	<del>                                     </del>	854
JpStream DownStrea	m									<del>                                     </del>	
, own ou ca			Merge Areas					D	iverge Areas	1	
stimat	ion of	V <sub>12</sub>	•			Estimat	ion o	f v <sub>12</sub>	-		
		V <sub>12</sub> = V <sub>F</sub>	(P)						/ <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	-)P	
=		.= .	v: FM / ation 13-6 or	- 13_7)		  =			Equation 13		13)
≣Q = =				ion (Exhibit 13-6)		L <sub>EQ</sub> = P <sub>FD</sub> =			sing Equation		
<sub>FM</sub> = <sub>12</sub> =		2059		IOTT (EXTIIDIT 10-0)		V <sub>12</sub> =			c/h	JII (EXIIIDIL I	J-1)
<sub>3</sub> or V <sub>av34</sub>				13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			c/h (Equation	12 14 or 12	17)
	> 2 700	pc/h? TYe:		13-14 01 13-17)	1		> 2.71		Yes □No		17)
		V <sub>12</sub> /2							ires ⊟ No IYes ⊟ No		
				3-16, 13-18, or					c/h (Equatio		3-18 or
Yes,V <sub>12a</sub> =	=	13-19)		7 10, 10 10, 01		If Yes,V <sub>12a</sub> =	=		-19)	ni 10-10, i	0-10, or
apacit	y Chec	cks				Capacit	y Che	ecks			
		Actual	C	apacity	LOS F?			Actual		pacity	LOS F?
						$V_{F}$			Exhibit 13-	-8	
V <sub>F</sub>	0	2913	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13-	-8	
						V <sub>R</sub>			Exhibit 13	3-	
<del></del>			<u> </u>						10		
low Er	ntering		fluence A		Violeties	Flow En			ge Influer		
\/		Actual 2913	Exhibit 13-8	Desirable 4600:All	Violation? No	V <sub>12</sub>	+	Actual	Max Des Exhibit 13-8	ii abie	Violation?
V <sub>R1</sub>					INU		f Com	rice Det		n (if not	<u>                                     </u>
			nination (			-			erminatio		. <i>F)</i>
			0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>					0086 V <sub>12</sub> - 0	1.009 L <sub>D</sub>	
	5.3 (pc/mi/	•				I ''	oc/mi/lr				
	(Exhibit 1						Exhibit				
peed L	Determ	ination				Speed L			n		
I <sub>S</sub> = 0.	.349 (Exib	t 13-11)				I "	xhibit 1	•			
R= 60	0.2 mph (E	Exhibit 13-11)				S <sub>R</sub> = m	ph (Exh	ibit 13-12)			
	/A mph (E	xhibit 13-11)				$S_0 = m$	ph (Exh	ibit 13-12)			
6 = 60.2 mph (Exhibit 13-11)						S = m	nh (Exh	ibit 13-13)			
= 60	0.2 mpn (L					ľ '''	ν ( <del>-</del> χ	ibit 10-10)			

		RAMP	S AND RAN	IP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation		<u> </u>	Site Infor						
Analyst Agency or Company		ey-Horn & Asso		reeway/Dir of Trunction	avel	I-580 W		Hollow Road		
Date Performed	8/14/	/2014		urisdiction		1 000 01	ia conan	ionow road		
Analysis Time Period	PM F	Peak	А	nalysis Year		Cumula	tive Plus E	Buildout		
Project Description	Tracy Hills Sp	ecific Plan								
Inputs										
Upstream Adj R	amp	Freeway Num Ramp Numbe	ber of Lanes, N	2 1					Downstrea Ramp	am Adj
□Yes	]On	1 '	ane Length, L <sub>A</sub>	,					Yes	☐ On
✓ No	] Off	Deceleration I Freeway Volu	ane Length L <sub>D</sub>	200 1484					✓ No	Off
L <sub>up</sub> = fi		Ramp Volume	•	266					L <sub>down</sub> =	ft
V <sub>u</sub> = ve	eh/h		-Flow Speed, $S_{FF}$ ow Speed, $S_{FR}$	70.0 35.0					V <sub>D</sub> =	veh/h
Conversion to	nc/h Hn		. 117	00.0						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_{HV}$	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	1484	0.92	Level	18	0	0.9	917	1.00	17	:58
Ramp	266	0.93	Level	4	0		980	1.00		92
UpStream										
DownStream										
		Merge Areas						Diverge Areas		
Estimation of	v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	(P <sub>EM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	P <sub>ED</sub>	
L <sub>EQ</sub> =		ation 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-1		)
P <sub>FM</sub> =		Equation (E			P <sub>FD</sub> =			000 using Equ		
V <sub>12</sub> =	pc/h	_4(-			V <sub>12</sub> =			758 pc/h	zacion (Exili	51. 10 17
V <sub>3</sub> or V <sub>av34</sub>	•	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			pc/h (Equatio	n 12 14 o	. 12 17\
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	-		-14 01 13-17)			> 2.7		Pc/II (Equation ☐Yes ☑No	JII 13-14 UI	13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 * If Yes,V <sub>12a</sub> =		Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub> =			Yes VNo c/h (Equation	13-16, 13	-18, or 13-
Capacity Che		/			Capacit	v Che		<i>5)</i>		
	Actual	C	apacity	LOS F?		7 0 111	Actual	Cai	pacity	LOS F?
			arp ar array		V <sub>F</sub>	<u> </u>	1758	Exhibit 13-8		No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V-	1466	Exhibit 13-8		No
* FO		EXHIBIT TO 0			V <sub>R</sub>	_	292	Exhibit 13-10	1000	No
	. 14 1	- fl			1					NO
Flow Entering		i		\/iolotion?	Flow En		_	rge Influend		Violetian
\ <u>/</u>	Actual	<del>1</del> r	Desirable	Violation?	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	_	Actual	Max Desirab		Violation?
V <sub>R12</sub>	. 5 (	Exhibit 13-8	· · · · · · · ·		V <sub>12</sub>		758	Exhibit 13-8	4400:All	No No
Level of Serv								termination		F)
$D_R = 5.475 + 0.$	00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>			$D_R = 4$	.252 + 0	.0086 V <sub>12</sub> - 0.0	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				$D_R = 17$	7.6 (pc/	mi/ln)			
LOS = (Exhibit 1	13-2)				LOS = B	(Exhib	it 13-2)			
Speed Detern	nination				Speed L	Deter	minatio	on		
M <sub>S</sub> = (Exibit 13	3-11)				$D_s = 0$	.454 (E	khibit 13-	-12)		
-	ibit 13-11)					7.3 mph	(Exhibit	13-12)		
	ibit 13-11)				1	-	` (Exhibit	•		
	ibit 13-11)				1	-	(Exhibit	· ·		
\L.\\\_\\\	•	All Rights Reser			HCS2010 <sup>TI</sup>				enerated: 9/2	

		<u>RAMP</u>	S AND RAM			RKS	HEET			
General Info				Site Infor						
nalyst		ey-Horn & Asso		eeway/Dir of Tr		I-580 W				
gency or Compan	•	10044		ınction		I-580 a	nd Lammers	Road		
ate Performed	8/14/			risdiction		<b>0</b> I.	r Die D	L.L. C		
nalysis Time Perion			AI	nalysis Year		Cumula	tive Plus Bui	Idout		
nputs	Tracy Fills Spe	SCIIIC FIAII								
•		Erooway Num	har of Lance N	2						
Upstream Adj	Ramp	1	ber of Lanes, N						Downstrea	am Adj
□Yes	□On	Ramp Number	•	1					Ramp	
□ 1 C3		1	ane Length, L <sub>A</sub>						Yes	$\square$ On
✓ No	Off	Deceleration L	ane Length L <sub>D</sub>	200					✓ No	Off
		Freeway Volur	me, V <sub>F</sub>	1909					INO	
L <sub>up</sub> =	ft	Ramp Volume	$V_{R}$	171					L <sub>down</sub> =	ft
		Freeway Free	Flow Speed, S <sub>FF</sub>	70.0					\	
$V_{u} =$	veh/h	1	ow Speed, S <sub>FR</sub>	35.0					$V_D =$	veh/h
onversion	to nc/h Uni		111							
	T ∨			1	1	_		_		
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	$x t_{HV} x t_{p}$
reeway	1909	0.92	Level	18	0	0.	917	1.00	22	262
lamp	171	0.93	Level	4	0	0.	980	1.00	1	88
lpStream										
ownStream										
		Merge Areas						erge Areas		
stimation o	of V <sub>12</sub>				Estimat	ion o	t v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	(P <sub>FM</sub> )					V <sub>12</sub> = V	' <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	P <sub>FD</sub>	
<sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		 (Ed	uation 13-1	2 or 13-13	3)
-∝ = <sub>M</sub> =		Equation (E	*		P <sub>FD</sub> =		•	0 using Equ		•
-M <sub>12</sub> =	pc/h	_900.000 (-			V <sub>12</sub> =			pc/h	addon (EXII	ion to 1)
· <del>-</del>	•	Equation 12	-14 or 13-17)					•	n 12 11 a	. 10 17\
or V <sub>av34</sub>			-14 01 13-17)		V <sub>3</sub> or V <sub>av34</sub>	. 0.7		c/h (Equatio	011 13-14 0	13-17)
$V_3 \text{ or } V_{av34} > 2,7$								Yes ☑ No		
$V_3 \text{ or } V_{av34} > 1.5$			40 40 40		is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5		Yes ☑ No	10 10 10	40 40
Yes,V <sub>12a</sub> =	pc/n ( 13-19)		-16, 13-18, or		If Yes,V <sub>12a</sub> =	=	рс/ 19)	h (Equation	13-16, 13	-18, OF 13
apacity Ch		<u>'</u>			Capacit	v Ch				
upuoney on	Actual	С	apacity	LOS F?	Capaon	<i>)</i>	Actual	Ca	pacity	LOS F
	7 totaar	<del>†                                      </del>	аравку	1 2001.	V <sub>F</sub>		2262	Exhibit 13-8	<b>'</b>	No
$V_{FO}$		Evhibit 12.0				\/		<del></del>		
V <sub>EO</sub>		Exhibit 13-8			$V_{FO} = V_{F}$	- <b>v</b> <sub>R</sub>	2074	Exhibit 13-8	+	No
10					V <sub>R</sub>		188	Exhibit 13-1		No
		fluonoo A	rea		Flow En	iterin	g Diverg	e Influen		
low Enterin				1		_				■ \/iolotion¹
low Enterin	ng Merge In Actual	Max I	Desirable	Violation?		, A	Actual	Max Desirab		Violation
V <sub>R12</sub>	Actual	Max I Exhibit 13-8	Desirable	Violation?	V <sub>12</sub>	, A	<del></del>	Max Desirab Exhibit 13-8	le 4400:All	No
V <sub>R12</sub>	Actual	Max I Exhibit 13-8	Desirable	Violation?	V <sub>12</sub>	2	262		4400:All	No
V <sub>R12</sub>	Actual  vice Determ	Max I Exhibit 13-8 mination (i	Desirable	Violation?	V <sub>12</sub> Level of	2 f Serv	262 vice Dete	Exhibit 13-8	4400:All <b>n (if not</b>	No
V <sub>R12</sub> evel of Service D <sub>R</sub> = 5.475 + 0	Actual  vice Determ 0.00734 v <sub>R</sub> +	Max I Exhibit 13-8 mination (i	Desirable	Violation?	V <sub>12</sub> Level of	2 f <b>Serv</b> D <sub>R</sub> = 4	262 vice Dete	Exhibit 13-8 Erminatio	4400:All <b>n (if not</b>	No
V <sub>R12</sub> evel of Ser D <sub>R</sub> = $5.475 + 0$ R = $(pc/mi/l)$	Actual  vice Determ  0.00734 v <sub>R</sub> +  n)	Max I Exhibit 13-8 mination (i	Desirable	Violation?	$V_{12}$ Level of $D_R = 2^{c}$	2 <b>F Serv</b> D <sub>R</sub> = 4 1.9 (pc/	262 vice Dete .252 + 0.00 (mi/ln)	Exhibit 13-8 Erminatio	4400:All <b>n (if not</b>	No
V <sub>R12</sub> evel of Service $D_R = 5.475 + C_R = (pc/mi/l)$ OS = (Exhibit	Actual  vice Determ 0.00734 v <sub>R</sub> + n) t 13-2)	Max I Exhibit 13-8 mination (i	Desirable	Violation?	$V_{12}$ Level of $D_R = 2^{\circ}$ LOS = C	2 <b>F Serv</b> D <sub>R</sub> = 4 1.9 (pc/	// // // // // // // // // // // // //	Exhibit 13-8 Ermination 086 V <sub>12</sub> - 0.	4400:All <b>n (if not</b>	No
V <sub>R12</sub> evel of Ser D <sub>R</sub> = 5.475 + 0 R <sub>R</sub> = (pc/mi/l) DS = (Exhibit)	Actual  vice Determ 0.00734 v <sub>R</sub> + n) t 13-2)  mination	Max I Exhibit 13-8 mination (i	Desirable	Violation?	V <sub>12</sub> <b>Level of</b> D <sub>R</sub> = 2°  LOS = C <b>Speed L</b>	22  F Serv  D <sub>R</sub> = 4  1.9 (pc/	2262 vice Dete .252 + 0.00 vimi/ln) bit 13-2) mination	Exhibit 13-8 <b>erminatio</b> 086 V <sub>12</sub> - 0.	4400:All <b>n (if not</b>	No
Flow Entering $V_{R12}$ evel of Serve $D_R = 5.475 + 0$ $R = (pc/mi/l)$ $DS = (Exhibit)$ $R = (pc/mi/l)$ $R =$	Actual  vice Determ 0.00734 v <sub>R</sub> + n) t 13-2)  mination	Max I Exhibit 13-8 mination (i	Desirable	Violation?	V <sub>12</sub> Level of D <sub>R</sub> = 2° LOS = C  Speed L D <sub>S</sub> = 0.	2 <b>F Serv</b> D <sub>R</sub> = 4 1.9 (pc/ (Exhibit) <b>Deterr</b> 445 (E:	262 vice Dete .252 + 0.00 /mi/ln) bit 13-2) mination xhibit 13-12	Exhibit 13-8  Exmination  086 V <sub>12</sub> - 0.	4400:All <b>n (if not</b>	No
V <sub>R12</sub> evel of Service D <sub>R</sub> = 5.475 + 0 Q <sub>R</sub> = (pc/mi/los) = (Exhibit of peed Detertion of the peed Detertion	Actual  vice Determ 0.00734 v <sub>R</sub> + n) t 13-2)  mination	Max I Exhibit 13-8 mination (i	Desirable	Violation?	$V_{12}$ Level of $D_R = 2^{\circ}$ LOS = C Speed $E_{S}$ $E_{S} = 0$ $E_{S} = 0$	2 F Serv D <sub>R</sub> = 4 1.9 (pc/ (Exhibit) Deterror 445 (E: 7.5 mph	262  vice Dete .252 + 0.00  vini/ln)  oit 13-2)  mination  xhibit 13-12  (Exhibit 13	Exhibit 13-8 <b>ermination</b> 086 V <sub>12</sub> - 0.	4400:All <b>n (if not</b>	No
Flow Entering $V_{R12}$ evel of Service $D_R = 5.475 + C$ $C_R = (pc/mi/l)$ $C_R = (Exhibit)$	Actual  Vice Determ  0.00734 v <sub>R</sub> +  n)  t 13-2)  rmination  13-11)	Max I Exhibit 13-8 mination (i	Desirable	Violation?	$V_{12}$ Level of $D_R = 2^{\circ}$ LOS = C Speed L $D_S = 0.5$ $S_R = 57$	2 F Serv D <sub>R</sub> = 4 1.9 (pc/ (Exhibit) Deterror 445 (E: 7.5 mph	262 vice Dete .252 + 0.00 /mi/ln) bit 13-2) mination xhibit 13-12	Exhibit 13-8 <b>ermination</b> 086 V <sub>12</sub> - 0.	4400:All <b>n (if not</b>	No

		RAI	MPS AND	RAMP JUN	CTIONS W	ORKSHI	EET				
General	Inform				Site Infor						
Analyst		Kimle	y-Horn & Asso	ociates Fr	eeway/Dir of Tr	avel	I-580 EB				
gency or Co	ompany			Ju	nction		I-580/Co	rral Hollow	Road		
ate Perform		8/14/			risdiction						
nalysis Tim		AM P		Ar	nalysis Year		Cumulati	ve+Buildo	ut Mitigated		
	ription	Tracy Hills Spe	ecific Plan								
nputs			l							1	
lpstream Ad	lj Ramp		1	ber of Lanes, N	2					Downstre	am Adj
			Ramp Numbe		2					Ramp	
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	250					☐Yes	On
✓ No	Off		Deceleration L	ane Length L <sub>D</sub>						☑ No	□ o#
			Freeway Volu	me, V <sub>F</sub>	87					INO	Off
<sub>.p</sub> =	ft		Ramp Volume	e, V <sub>D</sub>	169					L <sub>down</sub> =	ft
				-Flow Speed, S <sub>FF</sub>	70.0					L	
_ =	veh/h			ow Speed, S <sub>FR</sub>	55.0					V <sub>D</sub> =	veh/h
<b>`</b>	.i 4.			111	33.0						
onvers	ion to	γραπ υπα V		Conditions	l	1	1	Т		1	
(pc/h	)	v (Veh/hr)	PHF	Terrain	%Truck	%Rv	f⊦	١٧	$f_p$	v = V/PH	$F \times f_{HV} \times f_{p}$
reeway		87	0.92	Level	18	0	0.91	17	1.00		103
Ramp		169	0.70	Level	11	0	0.94		1.00		255
JpStream											
ownStrean	n										
			Merge Areas					Di	verge Areas		
stimati	on of	v <sub>12</sub>				Estimati	ion of	V <sub>12</sub>			
		V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )					V <sub>12</sub> = V	<sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub>	)P <sub>ED</sub>	
EQ =			ation 13-6 or	r 13-7)		L <sub>EQ</sub> =		.=	Equation 13-		13)
=Q FM =				ion (Exhibit 13-6)		P <sub>FD</sub> =			sing Equatio		
нм <sub>12</sub> =		103 p		ion (Exhibit 10-0)		V <sub>12</sub> =			ong Equation c/h	AT (EXTIDIC I	0-1)
		•		40 44 40 47)				•		10 11 10	17)
<sub>3</sub> or V <sub>av34</sub>	. 0 700	-		13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>	. 0.700		c/h (Equation 1	13-14 01 13-	17)
		pc/h? Yes							Yes No		
		V <sub>12</sub> /2		10 40 40		1			Yes ☐ No	. 40 40 4	0.40
Yes,V <sub>12a</sub> =		pc/n ( 13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	:		c/h (Equatio -19)	n 13-16, 1	3-18, or
Capacity	/ Chec		<u>'</u>			Capacit	v Che		10)		
.,		Actual	С	apacity	LOS F?			Actual	Car	pacity	LOS F?
	ĺ		<u> </u>	,		V <sub>F</sub>			Exhibit 13-		
		050			<b>1</b>	V <sub>FO</sub> = V <sub>F</sub>	- V-		Exhibit 13-		+
$V_{FC}$	)	358	Exhibit 13-8		No		*R		Exhibit 13		+
						V <sub>R</sub>			10		
low En	tering	Merge In	fluence A	rea	•	Flow En	tering	Diver	ge Influen	ce Area	1
	Ĭ	Actual		Desirable	Violation?		_	tual	Max Des		Violation?
V <sub>R12</sub>	2	358	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
		ce Detern	nination (	if not F)			Servi	ce Det	erminatio	n (if not	<i>F</i> )
			).0078 V <sub>12</sub> - 0.0						0086 V <sub>12</sub> - 0		,
	9 (pc/mi/lr		12	- A			c/mi/ln)		12	υ - Z - D	
	•					I					
	(Exhibit 1						xhibit 1				
peed D	eterm	ination				Speed D			<u>n</u>		
I <sub>S</sub> = 0.2	217 (Exibi	t 13-11)				$D_s = (E$	xhibit 13-	-12)			
	.9 mph (E	Exhibit 13-11)				S <sub>R</sub> = m	ph (Exhib	it 13-12)			
		,				$S_0 = m$	ph (Exhib	it 13-12)			
S <sub>0</sub> = N/A mph (Exhibit 13-11) S = 63.9 mph (Exhibit 13-13)											
						S = m	ph (Exhib	it 13-13)			

		RAI	<u>MPS A</u> ND	RAMP JUN	<u>CTIONS</u> W	<u>ORK</u> SHI	EET				
General	Inform				Site Infor						
Analyst		Kimle	ey-Horn & Asso	ciates Fr	eeway/Dir of Tr	avel	I-580 EB				
gency or C	ompany			Ju	nction		I-580/Corra	al Hollow	Road		
ate Perforr		8/14/			risdiction						
nalysis Tim		PM P		Ar	nalysis Year		Cumulative	+Buildou	t Mitigated		
	cription	Tracy Hills Spe	ecific Plan								
nputs			l								
lpstream A	dj Ramp		1	ber of Lanes, N	2					Downstre	am Adj
¬			Ramp Numbe	r of Lanes, N	2					Ramp	
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	250					☐Yes	On
✓No	Off		Deceleration L	ane Length L <sub>D</sub>						✓ No	□ o#
			Freeway Volui	me, V <sub>F</sub>	1706					<b>™</b> NO	Off
<sub>.p</sub> =	ft		Ramp Volume	, V <sub>D</sub>	985					L <sub>down</sub> =	ft
				-Flow Speed, S <sub>FF</sub>	70.0						
_ =	veh/h			ow Speed, S <sub>FR</sub>	55.0					V <sub>D</sub> =	veh/h
`~ ~ ~ ~ ~	-i t-			110	33.0						
onvers	sion to	pc/n und		Conditions	I	T	1				
(pc/h	1)	v (Veh/hr)	PHF	Terrain	%Truck	%Rv	f <sub>H∨</sub>	·	$f_p$	v = V/PHI	$F \times f_{HV} \times f_{p}$
reeway		1706	0.92	Level	18	0	0.917		1.00	:	2021
Ramp		985	0.86	Level	6	0	0.971	-+	1.00		1180
JpStream											
DownStrear	m										
			Merge Areas					Div	erge Areas		
stimat	ion of	v <sub>12</sub>				Estimati	ion of v	12			
		V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )				,	/ <sub>12</sub> = V <sub>E</sub>	+ (V <sub>F</sub> - V <sub>R</sub>	)P <sub>ED</sub>	
EQ =		.= .	ation 13-6 or	13-7)		L <sub>EQ</sub> =			quation 13-		13)
=Q FM =				ion (Exhibit 13-6)		P <sub>FD</sub> =			ing Equatio		
гм <sub>12</sub> =		2021		IOTT (EXHIBIT 10-0)		V <sub>12</sub> =		pc		II (EXIIIDIC I	0-1)
				10 11 10 17)				•		2 11 12	17)
<sub>3</sub> or V <sub>av34</sub>	. 0.700			13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>	. 0 700 .		/h (Equation 1	3-14 OF 13-	17)
		pc/h? Ye							Yes No		
		V <sub>12</sub> /2		10 10 10					Yes No	. 10 10 1	0.40
Yes,V <sub>12a</sub> =	=	pc/n 13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	:	рс 13-	/h (Equatioi 19)	n 13-16, 1	3-18, or
apacit	v Ched		<u>'</u>			Capacit	v Chec		10)		
		Actual	С	apacity	LOS F?			Actual	Car	acity	LOS F?
				, ,		V <sub>F</sub>			Exhibit 13-8		
		2224			l	$V_{FO} = V_{F}$	<b>-</b> V-		Exhibit 13-8		
V <sub>F</sub> (	)	3201	Exhibit 13-8		No		*R		Exhibit 13-		-
						V <sub>R</sub>			10		
low En	tering	Merge In	fluence A	rea	•	Flow En	tering	Diverg	e Influen	ce Area	
	Ĭ	Actual		Desirable	Violation?		Actu		Max Desi		Violation?
V <sub>R1</sub>	2	3201	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
			nination (i		1		Servic		rminatio	n (if not	<i>F</i> )
			).0078 V <sub>12</sub> - 0.0			<del></del>			086 V <sub>12</sub> - 0.		/
	3.6 (pc/mi/		12	-A		L	oc/mi/ln)	_ 5.5	12 0.	D	
	**	•						2)			
	(Exhibit 1						xhibit 13				
peed L	eterm	ination				Speed D					
I <sub>S</sub> = 0.	307 (Exib	t 13-11)				$D_s = (E$	xhibit 13-1	2)			
	1.4 mph (E	Exhibit 13-11)				S <sub>R</sub> = m	ph (Exhibit	13-12)			
		,				S <sub>0</sub> = m	ph (Exhibit	13-12)			
S <sub>0</sub> = N/A mph (Exhibit 13-11) S = 61.4 mph (Exhibit 13-13)											
= 61		xhibit 13-13)			I .	ph (Exhibit	13-13)				

		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKSI	HEET			
General Infor	mation	T CANTI	O AITO ITAII	Site Infor		111101				
Analyst		ey-Horn & Asso	nciates F	reeway/Dir of Ti		I-580 EI	 R			
Agency or Company	Millio	by Holli a 71330		unction				Hollow Road		
Date Performed	8/14	/2014		urisdiction		1 000 ai	ia contan	TOILOW TYOUG		
Analysis Time Period				nalysis Year		Cumula	tive+Ruild	out Mitigated		
	Tracy Hills Sp			, 6.6 . 64.		Odinala	uvo - Balla	out willigatou		
Inputs	Tracy Time op	oomo i idii								
•		Freeway Num	ber of Lanes, N	2						
Upstream Adj R	amp	1 '							Downstrea	am Adj
□Yes □	On	Ramp Numbe	•	2					Ramp	
□ res □	JOH	Acceleration I	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration I	_ane Length L <sub>D</sub>	200					- Na	□ o#
	3011	Freeway Volu	me, V <sub>r</sub>	394					✓ No	Off
L <sub>up</sub> = f1	t	Ramp Volume	•	307					L <sub>down</sub> =	ft
ир		1	11							
V,, = V6	eh/h	1	-Flow Speed, S <sub>FF</sub>						$V_D =$	veh/h
			ow Speed, S <sub>FR</sub>	35.0						
Conversion to	o pc/h Un	der Base	Conditions							
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>in</sub> , x f
.,	(Veh/hr)	<b>↓</b>	10114111	<u> </u>		_		r		· ·
Freeway	394	0.92	Level	18	0	0.9	917	1.00	41	67
Ramp	307	0.69	Level	19	0	0.9	913	1.00	4	37
UpStream				<u> </u>						
DownStream		لــــِـــا								
		Merge Areas						iverge Areas		
Estimation of	v <sub>12</sub>				Estimation of v <sub>12</sub>					
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
l =	12 1	tion 13-6 or	13_7)		l =			Equation 13-1		1
L <sub>EQ</sub> =			*		L <sub>EQ</sub> =			-		
P <sub>FM</sub> =	_	Equation (I	EXHIBIT 19-0)		P <sub>FD</sub> =			000 using Equ	lation (Exni	DIT 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =			67 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	-		-14 or 13-17)		$V_3$ or $V_{av34}$		0	pc/h (Equatio	n 13-14 oı	13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	0 pc/h?	s 🗌 No			Is V <sub>3</sub> or V <sub>av3</sub>	<sub>34</sub> > 2,70	00 pc/h? [	∃Yes ☑No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *	V <sub>12</sub> /2 ☐ Ye	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	34 > 1.5	* V <sub>12</sub> /2	☐Yes ☑No		
			-16, 13-18, or		If Yes,V <sub>12a</sub> =	-		c/h (Equation	13-16, 13	-18, or 13-
If Yes,V <sub>12a</sub> =	13-19	)					19	9)		
Capacity Che	cks				Capacit	y Che	ecks			
	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
					$V_{F}$		467	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V-	-20	Exhibit 13-8	4800	No
* FO		EXHIBIT TO 0				*R			+	
					V <sub>R</sub>		487	Exhibit 13-10		No
Flow Entering	g Merge In	fluence A	rea		Flow En	terin	g Dive	rge Influen		
	Actual	Max	Desirable	Violation?		Α	Actual	Max Desirab	le	Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	4	167	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)	•	Level of	Serv	ice De	terminatio	n (if not	F)
$D_R = 5.475 + 0.1$					+			.0086 V <sub>12</sub> - 0.0	•	,
	• • • • • • • • • • • • • • • • • • • •	0.0070 112	0.00027 L <sub>A</sub>		1			12 0.0	<b>500 L</b> D	
D <sub>R</sub> = (pc/mi/ln	,					2 (pc/n	•			
LOS = (Exhibit '	•				LOS = A	(Exhib	it 13-2)			
Speed Detern	nination				Speed L	Deteri	minatio	on		
M <sub>S</sub> = (Exibit 13	3-11)				D <sub>s</sub> = 0.	472 (E)	chibit 13-	-12)		
-	*					-	(Exhibit	•		
	ibit 13-11)					-	•	•		
	ibit 13-11)				S <sub>0</sub> = N/A mph (Exhibit 13-12)					
S = mph (Exh	ibit 13-13)				S = 56	6.8 mph	(Exhibit	13-13)		
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		RAMP	S AND RAI	MP JUNCTION	ONS WC	RKS	HEET			
General Infor	mation	7 W WHI	- / IVA	Site Infori			· · — • ·			
Analyst Agency or Company	Kimle	ey-Horn & Asso		reeway/Dir of Tra Junction		I-580 E I-580 a		Hollow Road		
Date Performed Analysis Time Period	8/14/2 I PM P			Jurisdiction Analysis Year		Cumul	ativo i Duilde	out Mitigated		
Project Description			r	Allalysis i Gai		Cumula	alive+Dullu	out Mitigated		
Inputs	Tracey Transcope									
Upstream Adj R	amp	Freeway Num Ramp Numbe	ber of Lanes, N	2 2					Downstrea Ramp	am Adj
□Yes	On	I '	ane Length, L <sub>A</sub>	2					Yes	□On
✓ No	Off	1	ane Length L <sub>D</sub>	200					✓ No	Off
L <sub>up</sub> = f	t	Freeway Volu Ramp Volume		2547 841					L <sub>down</sub> =	ft
V <sub>11</sub> = ve	V <sub></sub> = veh/h								V <sub>D</sub> =	veh/h
0	//- 11		• 110	35.0						
Conversion to	o pc/n Und V	ger Base (	Conditions	1	ı		ı		1	
(pc/h)	(Veh/hr)	Terrain	%Truck	%Rv	_	f <sub>HV</sub>		v = V/PHF	· · · · · ·	
Freeway	2547	0.92	Level	18	0	_	917	1.00		118
Ramp UpStream	841	0.91	Level	2	0	0.	990	1.00	9,	33
DownStream		<del>                                     </del>				+				
		Merge Areas		•			Ď	iverge Areas	•	
Estimation of	<sup>F</sup> V <sub>12</sub>				Estimat	tion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V	R)P <sub>ED</sub>	
L <sub>EQ</sub> =	(Equa	ition 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-1		)
P <sub>FM</sub> =	using	Equation (E	Exhibit 13-6)		P <sub>FD</sub> =		1.0	000 using Eq	uation (Exhi	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		30	18 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		0	pc/h (Equation	on 13-14 or	13-17)
Is $V_3$ or $V_{av34} > 2,70$	0 pc/h?	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>/34</sub> > 2,7	00 pc/h? [	☐Yes ☑No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *					Is V <sub>3</sub> or V <sub>av</sub>	, <sub>34</sub> > 1.5		]Yes ☑No		
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		c/h (Equation	13-16, 13-	-18, or 13-
Capacity Che	13-19)				Capacit		19 ocks	9)		
Capacity Cite	Actual		apacity	LOS F?	Lapacit	y Cir	Actual	Ca	pacity	LOS F?
	7101001	† Ť	араону	20011	$V_{F}$		3018	Exhibit 13-	<u> </u>	No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	V <sub>D</sub>	2085	Exhibit 13-		No
FO					V <sub>R</sub>	R	933	Exhibit 13-1		No
Flow Entering	g Merge In	fluence A	rea		Flow Er	nterin	g Diver	ge Influen	ce Area	-
	Actual	Max	Desirable	Violation?		,	Actual	Max Desiral	ole	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>	3	3018	Exhibit 13-8	4400:All	No
Level of Serv	ice Detern	nination (	if not F)		Level of	f Serv	∕ice De	terminatio	n (if not	F)
$D_R = 5.475 + 0.$	00734 v <sub>R</sub> + (	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>			$D_R = 4$	.252 + 0.	.0086 V <sub>12</sub> - 0.	.009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				$D_R = 2$	2.1 (pc	/mi/ln)			
LOS = (Exhibit	13-2)				LOS = C	(Exhil	oit 13-2)			
Speed Detern	nination				Speed L	Deter	minatio	n		
M <sub>S</sub> = (Exibit 1	3-11)					.512 (E	xhibit 13-	12)		
-	ibit 13-11)				S <sub>R</sub> = 5	5.7 mph	(Exhibit	13-12)		
S <sub>0</sub> = mph (Exhibit 13-11)					$S_0 = N$	/A mph	(Exhibit '	13-12)		
	ibit 13-13)				S = 5	5.7 mph	(Exhibit	13-13)		
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		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation	I C/-CIVII	O AND IVAN	Site Infor		1110				
Analyst		ey-Horn & Asso	nciates F	reeway/Dir of Ti		I-580 EI	 R			
Agency or Company	Millio	cy Hom a 71330		unction			nd Lamme	rs Road		
Date Performed	8/14	/2014		urisdiction		1 000 ai	ia Laiiiiio	13 11000		
Analysis Time Period				nalysis Year		Cumula	tive+Ruild	out Mitigated		
	Tracy Hills Sp					Carriaia	uvo - Balla	out willigatou		
Inputs	Tracy Time op	oomo r iair								
•		Freeway Num	ber of Lanes, N	2						
Upstream Adj R	amp	1 '	•						Downstrea	am Adj
□Yes□	On	Ramp Numbe	•	2					Ramp	
□ res □	JOH	Acceleration L	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration I	_ane Length L <sub>D</sub>	200					□ Na	□ o#
	3011	Freeway Volu	me, V <sub>r</sub>	475					✓ No	Off
L <sub>up</sub> = fi	t	Ramp Volume	•	171					L <sub>down</sub> =	ft
ир		1	11							
V,, = ve	eh/h	1	-Flow Speed, S <sub>FF</sub>						$V_D =$	veh/h
			ow Speed, S <sub>FR</sub>	35.0						
Conversion to	o pc/h Un	der Base	Conditions							
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	$f_p$	v = V/PHF	x f x f
, ,	(Veh/hr)	<del>                                     </del>	10114111	<u> </u>	ļ			r		ı.
Freeway	475	0.92	Level	18	0	0.0	917	1.00	56	63
Ramp	171	0.69	Level	19	0	9.0	913	1.00	2	71
UpStream		<b>└</b>								
DownStream										
		Merge Areas						iverge Areas		
Estimation of	' V <sub>12</sub>				Estimat	ion o	t v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
l =	12 1	tion 13-6 or	13_7)		l =			Equation 13-1		1
L <sub>EQ</sub> =			-		L <sub>EQ</sub> =			-		•
P <sub>FM</sub> =	_	Equation (	=XNIDIT 13-6)		P <sub>FD</sub> =			000 using Equ	uation (Exhi	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		56	33 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		$V_3$ or $V_{av34}$		0	pc/h (Equation	n 13-14 or	13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	0 pc/h?	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 2,70	00 pc/h? [	☐Yes ☑No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 '					Is V <sub>3</sub> or V <sub>3V</sub>	<sub>34</sub> > 1.5	* V <sub>12</sub> /2	☐Yes ☑No		
			-16, 13-18, or					c/h (Equation	13-16, 13-	-18, or 13-
If Yes,V <sub>12a</sub> =	13-19		, ,		If Yes,V <sub>12a</sub> =	-	19		,	,
Capacity Che	cks				Capacit	y Che	ecks			
	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
					$V_{F}$		563	Exhibit 13-8	4800	No
W		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	\/		Exhibit 13-8	+	
$V_{FO}$		EXHIBIT 13-0					292		1000	No
					$V_R$		271	Exhibit 13-1	0 4000	No
Flow Entering	g Merge In	ifluence A	rea		Flow En	terin	g Dive	rge Influen	ce Area	
	Actual	Max	Desirable	Violation?		P	ctual	Max Desirab	le	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>		563	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)	1		Serv	rice De	terminatio	n (if not	F)
$D_R = 5.475 + 0.$					+			.0086 V <sub>12</sub> - 0.0	_	
	• • • • • • • • • • • • • • • • • • • •	0.0070 V <sub>12</sub>	0.00027 LA			• •		.0000 12 0.	003 LD	
D <sub>R</sub> = (pc/mi/ln	,					0 (pc/n	•			
LOS = (Exhibit	13-2)				LOS = A	(Exhib	it 13-2)			
Speed Detern	nination				Speed L	Deteri	minatio	on		
M - (Evibit 1	2 11)				D <sub>s</sub> = 0.	452 (F)	chibit 13-	-12)		
M <sub>S</sub> = (Exibit 13	*					-		-		
	ibit 13-11)				1	-	(Exhibit	-		
$S_0^{=}$ mph (Exh	ibit 13-11)				$S_0 = N_0$	A mph	(Exhibit	13-12)		
S = mph (Exh	ibit 13-13)				S = 57	7.3 mph	(Exhibit	13-13)		
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		RAMP	S AND RAI	/P JUNCTI	ONS WC	RKS	HEET			
General Infor	mation		- / IVAII	Site Infori						
Analyst Agency or Company	Kimle	ey-Horn & Asso	J	reeway/Dir of Tra		I-580 E I-580 a	B nd Lamme	rs Road		
Date Performed Analysis Time Period	8/14/3 PM P			lurisdiction Analysis Year		Cumul	ativo i Duildi	out Mitigated		
Project Description			<i>F</i>	alalysis i cal		Cumula	ative+Dullui	out Mitigated		
Inputs										
Upstream Adj R	amp	Freeway Num Ramp Numbe	nber of Lanes, N	2 2					Downstrea Ramp	am Adj
□Yes	On		ane Length, L <sub>A</sub>	2					Yes	On
✓ No	Off	1	Lane Length L <sub>D</sub>	200					✓No	Off
L <sub>up</sub> = f	t	Freeway Volu Ramp Volume		2757 601					L <sub>down</sub> =	ft
V <sub>11</sub> = v <sub>0</sub>	V., = veh/h								V <sub>D</sub> =	veh/h
,		· ·	* 111	35.0						
Conversion to	o pc/h Und │   ∨	der Base	Conditions	1	1				<u> </u>	
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	_	$f_{HV}$	f <sub>p</sub>	v = V/PHF	· ·
Freeway	2757	0.92	Level	18	0	_	917	1.00	·	266
Ramp UpStream	601	0.91	Level	2	0	0.	990	1.00	6	67
DownStream						+				
		Merge Areas					C	iverge Areas		
Estimation of	F V <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )						V <sub>R</sub> + (V <sub>F</sub> - V	<sub>R</sub> )P <sub>ED</sub>	
L <sub>EQ</sub> =		tion 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13-	–	)
P <sub>FM</sub> =		Equation (	*		P <sub>FD</sub> =			000 using Eq		-
V <sub>12</sub> =	pc/h				V <sub>12</sub> =					•
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		0	pc/h (Equation	on 13-14 o	· 13-17)
Is $V_3$ or $V_{av34} > 2,70$	0 pc/h?	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	, <sub>34</sub> > 2,7	00 pc/h? [	∃Yes <b>☑</b> No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 '	'V <sub>12</sub> /2	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	, <sub>34</sub> > 1.5		∃Yes <b>☑</b> No		
If Yes,V <sub>12a</sub> =			-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		c/h (Equation	13-16, 13	-18, or 13-
Capacity Che	13-19)	1			Capacit		ocks	9)		
	Actual		apacity	LOS F?	l	.y O.	Actual	Ca	apacity	LOS F?
			-		$V_{F}$		3266	Exhibit 13-	<del></del>	No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- V <sub>D</sub>	2599	Exhibit 13-		No
10					V <sub>R</sub>	IX	667	Exhibit 13-1	_	No
Flow Entering	g Merge In	fluence A	\rea		Flow Er	nterin	g Dive	rge Influen	ce Area	
	Actual	<del>T</del>	Desirable	Violation?		_	Actual	Max Desira	ľ	Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>		3266	Exhibit 13-8	4400:All	No
Level of Serv		<b>`</b>						terminatio	•	<i>F</i> )
$D_R = 5.475 + 0.$	00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	- 0.00627 L <sub>A</sub>			$D_R = 4$	1.252 + 0	.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				$D_R = 24$	4.2 (pc	/mi/ln)			
LOS = (Exhibit	13-2)				LOS = C	(Exhil	oit 13-2)			
Speed Detern	nination				Speed L	Deter	minatic	n		
M <sub>S</sub> = (Exibit 1:	3-11)					-	xhibit 13-	-		
S <sub>R</sub> = mph (Exh	ibit 13-11)					-	(Exhibit	•		
S <sub>0</sub> = mph (Exhibit 13-11)					$S_0 = N$	/A mph	(Exhibit	13-12)		
S = mph (Exh	ibit 13-13)				S = 50	6.3 mph	(Exhibit	13-13)		
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			MPS AND	RAMP JUN			<u>: E I                                  </u>				
General	Inforn	nation			Site Infor	mation					
Analyst		Kimle	ey-Horn & Assoc	ciates Fr	eeway/Dir of Tr	avel	I-580 EB				
Agency or Co	mpany			Ju	nction		I-580/Corra	l Hollow l	Road		
Date Perform	ied	8/14/	2014	Ju	risdiction						
Analysis Time		AM F		Ar	nalysis Year		Existing Plu	ıs Phase	IA		
	ription	Tracy Hills Spe	ecific Plan								
nputs										1	
Jpstream Adj	i Ramp		Freeway Numb	er of Lanes, N	2					Downstre	am Adi
	,		Ramp Number	of Lanes, N	1					Ramp	,
Yes	On		Acceleration La	ane Length, L	250					☐Yes	On
AL.			Deceleration L	71							
✓ No	Off		Freeway Volun		178					✓ No	Off
<sub>-up</sub> =	ft									L <sub>down</sub> =	ft
up			Ramp Volume,	11	74					down	
/ <sub>u</sub> =	veh/h			Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
u			Ramp Free-Flo	w Speed, S <sub>FR</sub>	55.0						
Convers	ion to	pc/h Und	der Base (	Conditions							
(pc/h)	$\int$	() (a b /b r)	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>		fp	v = V/PHI	x f <sub>HV</sub> x f <sub>p</sub>
	-	(Veh/hr)	0.00	Laval	40		_		P		г
Freeway		178	0.92	Level	18	0	0.917	-	1.00		211
Ramp		74	0.70	Level	11	0	0.948		1.00		112
<u>UpStream</u> DownStream	, +		-			<u> </u>	1	-+			
Jownoueam	<u> </u>		Merge Areas			<del>                                     </del>		 Div	erge Areas		
Stimation	on of	V	merge Areas			Estimati	on of v		cigo Aicao		
			/D \								
		$V_{12} = V_{F}$					\		+ (V <sub>F</sub> - V <sub>R</sub>		
EQ =		(Equ	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(E	quation 13-	12 or 13-1	3)
P <sub>FM</sub> =		1.000	using Equati	on (Exhibit 13-6)		P <sub>FD</sub> =		us	ing Equatio	n (Exhibit 1	3-7)
′ <sub>12</sub> =		211 p	c/h			V <sub>12</sub> =		рс	/h		
/ <sub>3</sub> or V <sub>av34</sub>		0 pc/l	h (Equation 1	3-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		pc	h (Equation 1	3-14 or 13-1	7)
	, > 2.700	pc/h? Ye		,			a > 2.700 p		Yes □ No		,
0 4.0	•	V <sub>12</sub> /2 □ Ye							Yes □No		
	-			-16, 13-18, or		1			/h (Equatio	n 13-16 1	3-18 or
Yes,V <sub>12a</sub> =		13-19)		10, 10 10, 01		If Yes,V <sub>12a</sub> =		13-		1 10 10, 1	0 10, 01
Capacity	Chec	cks				Capacity	y Check	(S			
		Actual	Ca	apacity	LOS F?		F	Actual	Car	acity	LOS F?
						V <sub>F</sub>			Exhibit 13-8	3	
\/		202	Evhibit 12 0		Ma	$V_{FO} = V_{F}$	- V <sub>D</sub>		Exhibit 13-8	3	1
$V_{FO}$		323	Exhibit 13-8		No		K		Exhibit 13-		+
						$V_R$			10		
low Ent	tering	Merge In	fluence A	rea		Flow En	tering L	Diverg	e Influen	ce Area	
	Ĭ	Actual		)esirable	Violation?		Actu		Max Desi		Violation'
V <sub>R12</sub>		323	Exhibit 13-8	4600:All	No	V <sub>12</sub>		-	Exhibit 13-8		
		ce Detern	nination (i		<u> </u>		Service		rminatio	n (if not	<i>F</i> )
			0.0078 V <sub>12</sub> - 0.0			<del></del>			086 V <sub>12</sub> - 0.		,
	(pc/mi/lr		112 0.0	<b>-</b> A		1	• •	_ 0.0	12	<sub>-</sub> D	
		•				''	c/mi/ln)	0)			
	Exhibit 1						xhibit 13-				
Speed D	eterm	ination				Speed D	etermii	nation			
M <sub>S</sub> = 0.2	99 (Exibi	it 13-11)				$D_s = (E$	xhibit 13-12	2)			
.5 0.2	,	xhibit 13-11)				S <sub>R</sub> = mp	oh (Exhibit	13-12)			
	.b mpn (F										
S <sub>R</sub> = 61.		•				S <sub>o</sub> = mi	oh (Exhibit	13-12)			
$S_R = 61.0$ $S_0 = N/A$	A mph (E	xhibit 13-11) Exhibit 13-13)				ľ	oh (Exhibit oh (Exhibit o				

		RAMP	S AND RAM	MP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation	i AFAIVII	- / IVAII	Site Infor						
Analyst		ey-Horn & Asso	nciates F	reeway/Dir of Ti		I-580 EI	 R			
Agency or Company	Millio	by-Holli & Asso		unction				Hollow Road		
Date Performed	8/14/	/2014		urisdiction		1-300 ai	iu Conan	TOILOW TYORU		
Analysis Time Period				nalysis Year		Existino	Plus Pha	se l		
	Tracy Hills Spe					LXIOTHIS	11 100 1 110	00 1		
Inputs	Tracy Time op	oomo i idii								
		Freeway Num	ber of Lanes, N	2						
Upstream Adj R	amp	1 '							Downstrea	am Adj
□Yes□	On	Ramp Numbe		1					Ramp	
□ res □	JOH	Acceleration I	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration I	_ane Length L <sub>D</sub>	200					- Na	□ o#
	3011	Freeway Volu	me, V <sub>r</sub>	339					✓ No	Off
L <sub>up</sub> = fi	t	Ramp Volume	•	161					L <sub>down</sub> =	ft
ир		1	11							
V,, = V6	eh/h	1	-Flow Speed, S <sub>FF</sub>						$V_D =$	veh/h
			ow Speed, S <sub>FR</sub>	35.0						
Conversion to	pc/h Un	der Base	Conditions							
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	$f_p$	v = V/PHF	x f x f
.,	(Veh/hr)	<b>↓</b>	TOTICITI		<u> </u>			r		·
Freeway	339	0.92	Level	18	0	0.9	917	1.00	40	02
Ramp	161	0.69	Level	19	0	9.0	913	1.00	2	56
UpStream										
DownStream										
		Merge Areas				_		Diverge Areas		
Estimation of	v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	(P.,,)					V40 =	· V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P_p	
ı <u>-</u>		ation 13-6 or	12 7)		l <u>-</u>			Equation 13-1		\
L <sub>EQ</sub> =			-		L <sub>EQ</sub> =			-		
P <sub>FM</sub> =	_	Equation (I	=XNIDIT 13-6)		P <sub>FD</sub> =			000 using Equ	uation (Exhi	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		4(	)2 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		$V_3$ or $V_{av34}$		0	pc/h (Equatio	n 13-14 or	13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	0 pc/h?	s 🗆 No			Is V <sub>3</sub> or V <sub>av</sub>	,34 > 2,70	00 pc/h?	☐Yes ☑No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *								Yes <b>☑</b> No		
			-16, 13-18, or		1 " "	• .		c/h (Equation	13-16, 13-	-18. or 13-
If Yes,V <sub>12a</sub> =	13-19		,,,		If Yes,V <sub>12a</sub> =	=	19		,,	,
Capacity Che	cks				Capacit	y Che	ecks			
	Actual		apacity	LOS F?			Actual	Ca	pacity	LOS F?
			, ,	1	$V_{F}$		402	Exhibit 13-8	_	No
W		Fykikit 12 0						Exhibit 13-8	+	
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$		146		1000	No
					$V_R$		256	Exhibit 13-10	2000	No
Flow Entering	Merge In	fluence A	rea		Flow Er	nterin	g Dive	rge Influen	ce Area	
	Actual	T .	Desirable	Violation?		A	ctual	Max Desirab	le	Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	4	102	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr		if not F)	1	-	f Sorv	rice De	termination		
$D_R = 5.475 + 0.1$								.0086 V <sub>12</sub> - 0.0	•	,
	• •	0.0076 V <sub>12</sub>	0.00027 L <sub>A</sub>					.0000 v <sub>12</sub> - 0.0	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	•				$D_R = 5$	.9 (pc/n	ni/ln)			
LOS = (Exhibit '	13-2)				LOS = A	(Exhib	it 13-2)			
Speed Detern	nination				Speed L	Deteri	minatio	on		
•					1		chibit 13-			
$M_S = (Exibit 13)$	-				1			· ·		
	ibit 13-11)					-	(Exhibit	•		
$S_0^{=}$ mph (Exh	ibit 13-11)				$S_0 = N$	/A mph	(Exhibit	13-12)		
	ibit 13-13)				S = 5	7.4 mph	(Exhibit	13-13)		
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			WP3 AND	INAMIF JUN	CTIONS W						
General	Infor	nation			Site Infor	mation					
Analyst		Kimle	ey-Horn & Asso	ciates Fr	eeway/Dir of Tr	avel	I-580 W	/B			
Agency or Co				Ju	nction		I-580/C	orral Hollow	Road		
ate Perform			/2014		risdiction						
Analysis Time		AM F		Ar	nalysis Year		Existing	g Plus Phase	e IA		
	ription	Tracy Hills Sp	ecific Plan								
nputs			1								
Jpstream Ad	j Ramp		Freeway Numb	er of Lanes, N	2					Downstre	am Adj
_	_		Ramp Number	of Lanes, N	1					Ramp	-
Yes	On		Acceleration La	ane Length, L <sub>A</sub>	400					☐Yes	On
✓ No	Off		Deceleration L	ane Length L <sub>D</sub>							
INU			Freeway Volun		1689					✓ No	Off
- <sub>up</sub> =	ft		Ramp Volume,		650					L <sub>down</sub> =	ft
ир				*R Flow Speed, S <sub>FF</sub>							
√ <sub>u</sub> =	veh/h				70.0					$V_D =$	veh/h
			Ramp Free-Flo	111	55.0						
Convers	ion to		der Base (	Conditions	Y						
(pc/h)	)	(\/ob/br\	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	$f_p$	v = V/PHI	x f <sub>HV</sub> x f <sub>p</sub>
Freeway		(Veh/hr) 1689	0.92	Lovel	18	0	_	917	1.00		2001
Ramp		650	0.92	Level	13	0		939	1.00	<del>                                     </del>	961
UpStream		000	0.12	Level	13	0	0.9	308 	1.00	<del> </del>	30 I
DownStream	$\overline{}$		<del>                                     </del>				_				
Downouloun	<u> </u>		Merge Areas					Di	verge Areas		
Estimati	on of	V <sub>42</sub>				Estimati	ion o	$f v_{42}$			
			/ D \						07 - 17	\D	
		V <sub>12</sub> = V <sub>F</sub>							<sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub>		
- <sub>EQ</sub> =			ation 13-6 or			L <sub>EQ</sub> =		(E	Equation 13-	·12 or 13-1	3)
P <sub>FM</sub> =		1.000	using Equati	on (Exhibit 13-6)		P <sub>FD</sub> =		U:	sing Equatio	n (Exhibit 1	3-7)
/ <sub>12</sub> =		2001	pc/h			V <sub>12</sub> =		p	c/h		
V <sub>3</sub> or V <sub>av34</sub>		0 pc/	h (Equation 1	3-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		p	c/h (Equation 1	13-14 or 13-1	17)
	<sub>4</sub> > 2,700	) pc/h?					3, > 2,7	00 pc/h?	Yes No		
0 4.0		V <sub>12</sub> /2					٠.		Yes No		
				-16, 13-18, or					c/h (Equatio	n 13-16. 1	3-18. or
f Yes,V <sub>12a</sub> =		13-19				If Yes,V <sub>12a</sub> =	:		-19)	, .	,
Capacity	/ Che	cks				Capacity	y Che	ecks			
		Actual	Ca	apacity	LOS F?			Actual	Cap	pacity	LOS F
						$V_{F}$			Exhibit 13-	8	
W		2962	Exhibit 13-8		No	$V_{FO} = V_{F}$	- Vp		Exhibit 13-	8	
$V_{FO}$	)	2902	EXIIIDIL 13-0		INO		- N		Exhibit 13		
						$V_R$			10		
Flow En	tering	Merge In	fluence A	rea		Flow En	terin	g Diver	ge Influen	ce Area	
		Actual		)esirable	Violation?		ŀ	Actual	Max Desi	irable	Violation
V <sub>R12</sub>		2962	Exhibit 13-8	4600:AII	No	V <sub>12</sub>			Exhibit 13-8		
		ce Deterr	nination (i	f not F)			Serv	ice Det	erminatio	n (if not	F)
			0.0078 V <sub>12</sub> - 0.0			<del></del>			0086 V <sub>12</sub> - 0		
	.6 (pc/mi		12	A		1	c/mi/lr		12	ט– יי	
**	**	•									
	(Exhibit 1						xhibit	-			
Speed D	eterm	ination				Speed D	)eteri	minatio	า		
M <sub>S</sub> = 0.3	352 (Exib	it 13-11)				$D_s = (E$	xhibit 1	3-12)			
	•	xhibit 13-11)				S <sub>R</sub> = m <sub>l</sub>	ph (Exh	ibit 13-12)			
κ 50.							ph (Exh	ibit 13-12)			
3.= N//	∆mnh/∟										
0		Exhibit 13-11)				ľ		ibit 13-13)			

		RAMP	S AND RAI	MP JUNCTI	ONS WOR	KSHEET	<del>-</del>		
General Info	rmation		-=	Site Infor					
Analyst		ey-Horn & Asso	ciates	Freeway/Dir of Tr		580 WB			
Agency or Company		o, a. / 1000		Junction			al Hollow Road		
Date Performed	8/14/	2014		Jurisdiction					
Analysis Time Perio	d AM F	Peak	,	Analysis Year	E	xisting Plus P	hase IA		
Project Description	Tracy Hills Spe	ecific Plan							
Inputs									
Upstream Adj F	Ramp	Freeway Num	ber of Lanes, N	2				Downstrea	ım Adj
		Ramp Number of Lanes, N 1						Ramp	-
☐ Yes [	On	Acceleration L	ane Length, L <sub>A</sub>					□Yes	On
✓ No	Off	Deceleration Lane Length L <sub>D</sub> 200						✓No	Off
		Freeway Volu	me, V <sub>F</sub>	1921					
L <sub>up</sub> =	ft	Ramp Volume	, V <sub>R</sub>	232				L <sub>down</sub> =	ft
V -		Freeway Free	-Flow Speed, S <sub>FI</sub>	F 70.0				V <sub>D</sub> =	veh/h
V <sub>u</sub> = ν	/eh/h	Ramp Free-Fl	ow Speed, S <sub>FR</sub>	35.0				V <sub>D</sub> -	VCII/II
Conversion	to pc/h Und	der Base (	Conditions						
(pc/h)	V	PHF	Terrain	%Truck	%Rv	f <sub>HV</sub>	fp	v = V/PHF	x f <sub>un</sub> , x f <sub>-</sub>
Freeway	(Veh/hr) 1921	0.92		18	0	0.917	1.00	22	г
Ramp	232	0.92	Level Level	14	0	0.935	1.00	32	-
UpStream	232	0.11	Level	14	0	0.333	1.00	32	
DownStream									
		Merge Areas		•			Diverge Areas	•	
Estimation o	f v <sub>12</sub>				Estimatio	n of V <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P )					= V <sub>R</sub> + (V <sub>F</sub> - V	'_)P	
l =		ation 13-6 or	13_7)		  =	* 12	(Equation 13-		١
L <sub>EQ</sub> = P =		Equation (E	•		L <sub>EQ</sub> =				
P <sub>FM</sub> =	_	Equation (	EXHIBIT 13-0)		P <sub>FD</sub> =		1.000 using Ed	Juation (Exni	oil 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		2276 pc/h		
V <sub>3</sub> or V <sub>av34</sub>			-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>		0 pc/h (Equati		13-17)
Is $V_3$ or $V_{av34} > 2.7$							? ☐ Yes ☑ No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5					Is V <sub>3</sub> or V <sub>av34</sub>	> 1.5 * V <sub>12</sub> /2	☐ Yes ☑ No	40.40.40	
If Yes,V <sub>12a</sub> =	pc/h ( 13-19)		-16, 13-18, or		If Yes,V <sub>12a</sub> =		pc/h (Equation 19)	า 13-16, 13-	18, or 13-
Capacity Ch					Capacity	Chacks	19)		
Capacity On	Actual	I ^	apacity	LOS F?	Joupacity	Actu	ıal C	apacity	LOS F?
	7 lottati	<del>l ĭ</del>	араску	20011	V <sub>F</sub>	2276	i		No
V		Exhibit 13-8						_	+ -
$V_{FO}$		EXHIDIT 19-0			$V_{FO} = V_F -$				No
					V <sub>R</sub>	322			No
Flow Enterin	1	T .		_	Flow Ente		erge Influer		
	Actual	<del>i</del> r	Desirable	Violation?		Actual	Max Desira	1	Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	2276	Exhibit 13-8	4400:All	No
Level of Serv							<u> Determinatio</u>		F)
$D_R = 5.475 + 0$	.00734 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>		D <sub>F</sub>	<sub>R</sub> = 4.252 +	· 0.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/lı	٦)				$D_{R} = 22.0$	(pc/mi/ln)			
LOS = (Exhibit	13-2)				LOS = C (E	Exhibit 13-2	2)		
Speed Deter	mination				Speed De	etermina	tion		
$M_S = (Exibit 1)$					<del>†                                    </del>	7 (Exhibit 1			
-	hibit 13-11)					mph (Exhib	•		
	-					mph (Exhib	•		
	hibit 13-11) hibit 13-13)				1 -		•		
	· · · · · · · · · · · · · · · · · · ·	*** B =			07.2	mph (Exhib			
Copyright © 2013 Univ	ersity of Florida, A	All Rights Resen	/ed		HCS2010 <sup>TM</sup> Vei	rsion 6.50	Gen	erated: 10/10/2	.'U14 10:06 A

		RAI	MPS AND	RAMP JUN	<b>CTIONS W</b>	ORKSH	EET			
General	Inform				Site Infor					
Analyst Agency or Co			ey-Horn & Asso	Jı	reeway/Dir of Tr unction urisdiction		I-580 EB I-580/Corral H	Hollow Road		
ate Performo Inalysis Time		8/14/2 PM P			nalysis Year		Existing Plus	Phase IΔ		
		racy Hills Spe			naryolo roar		Exioting 1 ldo	1 11000 17 (		
nputs	•	'								
Jpstream Adj	j Ramp		Freeway Num	ber of Lanes, N	2				Downstre	am Adj
Yes	On		Ramp Numbe	r of Lanes, N ane Length, L <sub>a</sub>	1 250				Ramp	
✓ No	Off			Lane Length, L <sub>A</sub>	250				Yes	On
			Freeway Volu	me, V <sub>F</sub>	1433				☑ No	Off
up =	ft		Ramp Volume	e, V <sub>R</sub>	397				L <sub>down</sub> =	ft
/ <sub>u</sub> =	veh/h		Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0				V <sub>D</sub> =	veh/h
u	VCII/II		Ramp Free-Fl	ow Speed, S <sub>FR</sub>	55.0				U U	
onvers	ion to	pc/h Und	der Base	Conditions						
(pc/h)	)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	$f_{HV}$	fp	v = V/PH	F x f <sub>HV</sub> x f <sub>p</sub>
reeway		1433	0.92	Level	18	0	0.917	1.00		1698
Ramp		397	0.86	Level	6	0	0.971	1.00		475
JpStream Down Stream	+									
DownStream	<u> </u>		I I Merge Areas					Diverge Area	s	
stimatio	on of v	12	g			Estimat	ion of v <sub>12</sub>	2	-	
		V <sub>12</sub> = V <sub>F</sub>	(P.,.)					$_{2} = V_{R} + (V_{F} - V_{R})$	V_)P	
EQ =			ation 13-6 o	r 13-7)		L <sub>EQ</sub> =	- 1.		13-12 or 13-1	13)
FM =				ion (Exhibit 13-6	)	P <sub>FD</sub> =			ation (Exhibit 1	
' <sub>12</sub> =		1698		,	,	V <sub>12</sub> =		pc/h	,	,
or V <sub>av34</sub>		0 pc/h	h (Equation	13-14 or 13-17	)	V <sub>3</sub> or V <sub>av34</sub>		pc/h (Equatio	on 13-14 or 13-	17)
s V <sub>3</sub> or V <sub>av34</sub>	4 > 2,700	pc/h? 🗌 Yes	s 🗹 No				<sub>34</sub> > 2,700 pc/	h? ☐ Yes ☐ N	No	
s V <sub>3</sub> or V <sub>av34</sub>	<sub>4</sub> > 1.5 * \	′ <sub>12</sub> /2 □ Yes				Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5 * V <sub>12</sub> /	2 □Yes □N		
Yes,V <sub>12a</sub> =		pc/h ( 13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=	pc/h (Equa 13-19)	tion 13-16, 1	3-18, or
Capacity	/ Chec					Capacit	y Checks			
		Actual		Capacity	LOS F?		Act	tual	Capacity	LOS F?
						V <sub>F</sub>		Exhibit '	13-8	
$V_{FO}$	,	2173	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>	Exhibit '	13-8	
						V <sub>R</sub>		Exhibit 10	13-	
low Ent	tering	Merge In	fluence A	rea	•	Flow En	tering Di	verge Influ	ence Area	<u>'</u>
		Actual	1 1	Desirable	Violation?		Actual	Max D	esirable	Violation
V <sub>R12</sub>		2173	Exhibit 13-8	4600:All	No	V <sub>12</sub>		Exhibit 13-		
			nination (			1		Determinat		t <b>F</b> )
D = F			0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>				+ 0.0086 V <sub>12</sub> -	- 0.009 L <sub>D</sub>	
• • • • • • • • • • • • • • • • • • • •		n)				1	oc/mi/ln)			
R = 20.0	.6 (pc/mi/l	•					Evhihit 12 2	)		
OS = C (I	(Exhibit 13	3-2)					Exhibit 13-2			
) <sub>R</sub> = 20.0	(Exhibit 13	3-2)				Speed L	Determina			
OS = C (I Speed De	(Exhibit 13	ination				Speed D <sub>s</sub> = (E	<b>Determina</b> Exhibit 13-12)	ation		
$R_{R} = 20.0$ $R_{R} = 20.0$ $R_{R} = 0.3$ $R_{R} = 0.3$	Exhibit 13 E <b>eterm</b> 328 (Exibit	ination				$\begin{array}{ccc} \textbf{Speed L} \\ \textbf{D}_{\text{S}} = & \textbf{(E} \\ \textbf{S}_{\text{R}} = & \textbf{m} \end{array}$	Determina Exhibit 13-12) ph (Exhibit 13	-12)		
$I_{R} = 20.0$ $I_{R} = 20.0$ $I_{S} = 0.3$ $I_{S} = 0.3$ $I_{R} = 60.4$ $I_{R} = 0.4$	Exhibit 13 Petermi 328 (Exibit .8 mph (Example (Example )	ination 13-11)				$\begin{array}{lll} \textbf{Speed L} \\ \textbf{D}_{\text{S}} = & (\textbf{E} \\ \textbf{S}_{\text{R}} = & \textbf{m} \\ \textbf{S}_{\text{0}} = & \textbf{m} \end{array}$	<b>Determina</b> Exhibit 13-12)	-12) -12)		

		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation	T CANTI	O AND IVAN	Site Infor		11110				
Analyst		ey-Horn & Asso	nciates F	reeway/Dir of Ti		I-580 E	 R			
Agency or Company	IXIIIII	cy-Holli & Asso		unction				Iollow Road		
Date Performed	8/14	/2014		urisdiction		1 000 and containion read				
Analysis Time Period				nalysis Year		Existing	Plus Pha	se IA		
	Tracy Hills Sp					LXIOting	j 1 100 1 110	50 17 (		
Inputs	Tracy Time op	oomo i ian								
		Freeway Num	ber of Lanes, N	2						
Upstream Adj R	amp	1							Downstrea	am Adj
□Yes □	On	Ramp Numbe		1					Ramp	
□ res □	JOH	Acceleration I	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration I	_ane Length L <sub>D</sub>	200					□ N -	□ o"
	1011	Freeway Volu	me, V <sub>r</sub>	2074					✓ No	Off
L <sub>up</sub> = f1	t	Ramp Volume	•	641					L <sub>down</sub> =	ft
ир		1								
V,, = V6	eh/h	1	-Flow Speed, S <sub>FF</sub>						$V_D =$	veh/h
			ow Speed, S <sub>FR</sub>	35.0						
Conversion to	pc/h Un	der Base	Conditions							
(pc/h)	V	PHF	Terrain	%Truck	%Rv		$f_HV$	fp	v = V/PHF	x f x f
, ,	(Veh/hr)	<b></b>	TOTICHT		Ļ	_		Р		
Freeway	2074	0.92	Level	18	0	0.9	917	1.00	24	57
Ramp	641	0.91	Level	8	0	0.9	962	1.00	7	33
UpStream				<u> </u>						
DownStream		لـــل								
		Merge Areas						iverge Areas		
Estimation of	V <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>EM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P <sub>ED</sub>	
l =	12 1	tion 13-6 or	13_7)		l =			Equation 13-1	`	١
L <sub>EQ</sub> =					L <sub>EQ</sub> =		-	-		
P <sub>FM</sub> =	_	Equation (I	=XNIDIT 13-6)		P <sub>FD</sub> =			000 using Equ	lation (Exh	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =			57 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		$V_3$ or $V_{av34}$		0	pc/h (Equatio	n 13-14 o	<sup>-</sup> 13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	0 pc/h? 🗌 Ye	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 2,70	00 pc/h? [	∃Yes ☑No		
Is V <sub>3</sub> or V <sub>av34</sub> > 1.5 *					Is V <sub>3</sub> or V <sub>3V</sub>	<sub>34</sub> > 1.5	* V <sub>12</sub> /2	Yes <b>☑</b> No		
			-16, 13-18, or		" "	• .		c/h (Equation	13-16, 13	-18, or 13-
If Yes,V <sub>12a</sub> =	13-19				If Yes,V <sub>12a</sub> =	-	19			•
Capacity Che	cks				Capacit	y Che	ecks			
	Actual	C	apacity	LOS F?			Actual	Ca	pacity	LOS F?
			•		$V_{F}$		2457	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			V <sub>FO</sub> = V <sub>F</sub>	- \/	1724	Exhibit 13-8		No
▼ FO		Exhibit 13-0							1000	
					$V_R$		733	Exhibit 13-10	2000	No
Flow Entering	g Merge In	fluence A	rea		Flow En	terin	g Dive	rge Influen		
	Actual	Max	Desirable	Violation?		ļ	Actual	Max Desirab	le	Violation?
$V_{R12}$		Exhibit 13-8			V <sub>12</sub>	2	457	Exhibit 13-8	4400:All	No
Level of Serv	ice Deterr	nination (	if not F)	•	Level of	f Serv	rice De	terminatio	n (if not	<del>.</del> F)
$D_R = 5.475 + 0.1$					+			.0086 V <sub>12</sub> - 0.0		,
		0.0070 12	0.00027 LA					10000 112 0.0	000 <b>-</b> D	
D <sub>R</sub> = (pc/mi/ln	•				1 ''	3.6 (pc/	,			
LOS = (Exhibit '	13-2)						oit 13-2)			
Speed Detern	nination				Speed L	Deteri	minatio	n		
M <sub>S</sub> = (Exibit 13	R_11)				$D_s = 0$ .	494 (E)	khibit 13-	·12)		
-	•					-	(Exhibit	•		
	ibit 13-11)					-	-	•		
S <sub>0</sub> = mph (Exhibit 13-11)					1 -	-	(Exhibit	· ·		
S = mph (Exh	ibit 13-13)				S = 56	6.2 mph	(Exhibit	13-13)		
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10/10/2014

		RAI	<u>MPS A</u> ND	RAMP JUN	<u>CTIONS</u> W	<u>/ORK</u> SH	EET				
General	I Inform				Site Infor						
nalyst		Kimle	ey-Horn & Asso	ciates Fr	eeway/Dir of Tr	avel	I-580 W	/B			
gency or C				Ju	ınction		I-580/C	orral Hollov	v Road		
ate Perforr		8/14/			ırisdiction						
nalysis Tin		PM P		Ar	nalysis Year		Existing	Plus Phas	e IA		
	cription	Tracy Hills Spe	ecific Plan								
nputs			l							1	
pstream A	dj Ramp			ber of Lanes, N	2					Downstre	am Adj
¬			Ramp Numbe	•	1					Ramp	
Yes	On		Acceleration L	ane Length, L <sub>A</sub>	400					☐Yes	On
✓ No	Off		Deceleration L	ane Length L <sub>D</sub>							□ <b>0</b> "
			Freeway Volu	me, V <sub>F</sub>	967					✓ No	Off
ıp =	ft		Ramp Volume	, V <sub>D</sub>	663					L <sub>down</sub> =	ft
				-Flow Speed, S <sub>FF</sub>	70.0					<b>.</b>	
_ =	veh/h			ow Speed, S <sub>FR</sub>	55.0					$V_D =$	veh/h
`o ni (o r	oion to	no/h Une		111	33.0						
onvers	Sion to	y peril one		Conditions	1	I	1			1	
(pc/h	n)	v (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	$f_p$	v = V/PH	$F x f_{HV} x f_{p}$
reeway		967	0.92	Level	18	0	0.9	917	1.00		1146
Ramp		663	0.83	Level	5	0	_	976	1.00		819
JpStream											
ownStrea	m										
			Merge Areas					D	iverge Areas		
stimat	ion of	v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
		V <sub>12</sub> = V <sub>F</sub>	(P <sub>FM</sub> )					V <sub>12</sub> = \	/ <sub>R</sub> + (V <sub>F</sub> - V <sub>I</sub>	R)P <sub>ED</sub>	
EQ =			ation 13-6 or	13-7)		L <sub>EQ</sub> =			Equation 13		13)
-Q FM =				ion (Exhibit 13-6)		P <sub>FD</sub> =			sing Equati		
12 =		1146		(=/		V <sub>12</sub> =			c/h	o (=/o	• . ,
<sub>3</sub> or V <sub>av34</sub>				13-14 or 13-17)		V <sub>3</sub> or V <sub>av34</sub>			c/h (Equation	13 1/Lor 13	17\
	> 2.700	-		13-14 01 13-17)	)		> 0.71				17)
		pc/h? Yes							Yes No		
		V <sub>12</sub> /2 ☐ Yes		) 16 12 19 or		1			Yes No		2 10
Yes,V <sub>12a</sub> =	=	pc/n ( 13-19)		3-16, 13-18, or		If Yes,V <sub>12a</sub> =	=		c/h (Equatio -19)	on 13-16, 1	3-18, or
apacit	v Ched		'			Capacit	v Che		,		
		Actual	С	apacity	LOS F?	1	Ť	Actual	Ca	apacity	LOS F?
			i i	•		V <sub>F</sub>			Exhibit 13		
\/		4005	Fb.:L:440.0		N-	$V_{FO} = V_{F}$	- Vp		Exhibit 13	-8	
V <sub>F</sub>	0	1965	Exhibit 13-8		No		·R		Exhibit 13		
						V <sub>R</sub>			10		
low Er	ntering	Merge In	fluence A	rea		Flow En	terin	g Diver	ge Influe	nce Area	)
		Actual	Max	Desirable	Violation?		_	Actual	Max Des		Violation?
$V_{R1}$	2	1965	Exhibit 13-8	4600:AII	No	V <sub>12</sub>			Exhibit 13-8		
		ce Detern	nination (	if not F)		Level of	Serv	rice Det	erminatio	on (if not	: <b>F</b> )
D <sub>R</sub> =	5.475 + (	0.00734 v <sub>R</sub> + 0	0.0078 V <sub>12</sub> - 0.0	00627 L <sub>A</sub>		1			0086 V <sub>12</sub> - 0		
	7.9 (pc/mi/		12	,,		1	oc/mi/lr		12	D	
	(Exhibit 1	*					Exhibit				
						Speed L			n		
•		ination				<del>' '                                  </del>			11		
s = 0.	.305 (Exib	t 13-11)					xhibit 1	•			
<sub>R</sub> = 6'	1.5 mph (E	Exhibit 13-11)				I ''		ibit 13-12)			
	/A mph (E	xhibit 13-11)				$S_0 = m$	ph (Exh	ibit 13-12)			
						lo	مارت) مامد	:L:40 40\			
	1.5 mph (E	Exhibit 13-13)				S = m	ıpıı (⊏xıı	ibit 13-13)			

		RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HEET			
General Infor	mation	1 APAIVII	- / 1D IVAII	Site Infor			· I			
Analyst		ey-Horn & Asso	nciates F	reeway/Dir of Ti		I-580 W	/R			
Agency or Company	Millio	cy Hom a 71330		unction				Hollow Road		
Date Performed	8/14/	/2014		urisdiction						
Analysis Time Period	l PM F	Peak	А	nalysis Year		Existing	Plus Pha	se IA		
	Tracy Hills Sp	ecific Plan		•			,			
Inputs										
Upstream Adj R	amp	1 '	ber of Lanes, N	2					Downstrea	am Adj
□v □	70-	Ramp Numbe	r of Lanes, N	1					Ramp	
☐ Yes ☐	On	Acceleration L	ane Length, L <sub>A</sub>						Yes	On
✓ No	Off	Deceleration I	ane Length L <sub>D</sub>	200					✓ No	□ o#
		Freeway Volu	me, V <sub>F</sub>	1199					IVO	Off
L <sub>up</sub> = fi	t	Ramp Volume	, V <sub>D</sub>	232					L <sub>down</sub> =	ft
·		1	-Flow Speed, S <sub>FF</sub>	70.0					. ,	
$V_u = V_0$	eh/h	1	ow Speed, S <sub>FR</sub>	35.0					$V_D =$	veh/h
Comversion t	- n a /b   l l n		. 117	33.0						
Conversion to	y <del>pc/n one</del>	uer base	Conditions	1	T	_				
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	1	$f_{HV}$	f <sub>p</sub>	v = V/PHF	$x f_{HV} x f_{p}$
Freeway	1199	0.92	Level	18	0	0.9	917	1.00	14	21
Ramp	232	0.93	Level	4	0		980	1.00		<u></u> 54
UpStream		0.00	2010.	•		<del>  ``</del>				· ·
DownStream						1				
		Merge Areas						Diverge Areas		
Estimation of	V <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P )						V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	)P	
ı –	12 1		12.7\		l -			Equation 13-1		`
L <sub>EQ</sub> =		ation 13-6 or			L <sub>EQ</sub> =		-	-		
P <sub>FM</sub> =	_	Equation (	=XNIDIT 13-6)		P <sub>FD</sub> =			000 using Equ	uation (Exhi	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =			l21 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	-		-14 or 13-17)		$V_3$ or $V_{av34}$		0	pc/h (Equation	n 13-14 oı	13-17)
Is $V_3$ or $V_{av34} > 2,70$	0 pc/h? 🗌 Ye	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 2,70	00 pc/h? 🛚	☐Yes ☑No		
Is $V_3$ or $V_{av34} > 1.5$	V <sub>12</sub> /2 ∏ Ye	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5	* V <sub>12</sub> /2	∃Yes ☑No		
If Yes,V <sub>12a</sub> =	pc/h (	Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub> =	=	р	c/h (Equation	13-16, 13	-18, or 13-
	13-19	)					19	9)		
Capacity Che	cks				Capacit	y Che	ecks			
	Actual	C	apacity	LOS F?			Actual		pacity	LOS F?
					$V_{F}$		1421	Exhibit 13-8	4800	No
$V_{FO}$		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	1167	Exhibit 13-8	4800	No
					V <sub>R</sub>		254	Exhibit 13-1	2000	No
Flow Entering	Morgo Ir	fluonoo A	roo	<u> </u>				rge Influen		
Flow Entering	Actual	i	Desirable	Violation?	FIOW EI	_	Actual	Max Desirab		Violation?
V	Actual	Exhibit 13-8	Desirable	violation:	\/	_	421	Exhibit 13-8	4400:All	No
V <sub>R12</sub>	: D-1		:£ 4 <b></b> \		V <sub>12</sub>					
Level of Serv								termination	•	<del>-)</del>
$D_R = 5.475 + 0.$	00/34 v <sub>R</sub> +	0.0078 V <sub>12</sub> -	0.00627 L <sub>A</sub>			D <sub>R</sub> = 4	.252 + 0	.0086 V <sub>12</sub> - 0.	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln	)				$D_R = 14$	4.7 (pc/	mi/ln)			
LOS = (Exhibit	13-2)				LOS = B	(Exhib	it 13-2)			
Speed Detern	nination				Speed L	Deteri	minatio	on		
•					<del></del>		khibit 13-			
M <sub>S</sub> = (Exibit 13	*				1 -	-	(Exhibit	-		
	ibit 13-11)				1	-	-	-		
S <sub>0</sub> = mph (Exhibit 13-11)					1 -	-	(Exhibit			
S = mph (Exh	ibit 13-13)				S = 57	7.4 mph	(Exhibit	13-13)		
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