APPENDIX C: CALCULATION WORKSHEETS FOR FREEWAY SEGMENTS AND FREEWAY **WEAVE ANALYSIS**

SIA PLAN UPDATE

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Basic Freeway Segment Analysis

FREEWAY LEVEL OF SERVICE ANALYSIS (HCM 2010) SR-65 - NB WEEKDAY MORNING PEAK HOUR

									WEEND	AT WOR	INING PEAN	JUUK																	
Segment No.	From	То	Miles	Ramp Density (per mile)	Number of Lanes in One Direction		X HOV Lane?				Measured Free Flow Speed (mph)	F _{LW} F Adj A	LC TRI Adj Ad	Base Free D Flow j Speed (mph)		Base Capacity (pc/h/ln)	Total PHV (vph)	HOV Lane Utilization (%)	HOV Lane PHV (vph)	Mixed Flow + HOV PHV (vph)	Peak Hour Factor	% Trucks and Buses	% RV	Driver Population Factor F _P	F	Flow Rate V _P (pc/h/ln)	CAF Default = 1	Segment Speed (mi/h)	Density (pc/mi/ln)
Existing																													
2 Blue Oaks Off-Ramp)	Blue Oaks On-Ramp	0.43	1	2	12 0	0	10	R	No	70	0.00	00 1.00	72.2	70.0	2,400	2,162	0.0%	0	2,162	0.85	12.9%	2.0%	1	0.825	1,537	1.00	68.68	22.4
4 Blue Oaks		Sunset	0.62	1	2	12 0	0	10	R	No	70	0.00	00 1.00	72.2	70.0	2,400	2,435	0.0%	0	2,435	0.85	12.9%	2.0%	1	0.825	1,731	1.00	66.73	25.9
6 Sunset Off-Ramp		Sunset Loop On-Ramp	0.33	1	2	12 0	0	10	R	No	70	0.00	00 1.00	72.2	70.0	2,400	1,250	0.0%	0	1,250	0.85	12.9%	2.0%	1	0.825	889	1.00	70.00	12.7
9 Sunset		Twelve Bridges	1.25	1	2	12 0	0	10	R	No	70	0.00 0.	00 1.00	72.2	70.0	2,400	1,490	0.0%	0	1,490	0.85	12.9%	2.0%	1	0.825	1,059	1.00	70.00	15.1
11 Twelve Bridges Off-F	Ramp	Twelve Bridges On-Ramp	0.57	1	2	12 0	0	10	R	No	70	0.00	00 1.00	72.2	70.0	2,400	1,221	0.0%	0	1,221	0.85	12.9%	2.0%	1	0.825	868	1.00	70.00	12.4
13 Old Hwy 65		Ferrari Ranch	0.27	1	2	12 0	0	10	R	No	70	0.00	00 1.00	72.2	70.0	2,400	929	0.0%	0	929	0.85	12.9%	2.0%	1	0.825	660	1.00	70.00	9.4
								1																		/ /	4		4

FREEWAY LEVEL OF SERVICE ANALYSIS (HCM 2010) SR-65 - NB WEEKDAY EVENING PEAK HOUR

Segmen No.	t From	То	Miles	Ramp Density (per mile)	Number of Lanes in One Direction	idth	Aux I	HOV Right- Late Cleran	eral Ter			Measured Free Flow Speed (mph)	F _{LW} Adj	F _{LC} Adj	TRD Adj	ase Free Flow Speed (mph)	FFS Curve	Base Capacity (pc/h/ln)	Total PHV (vph)	HOV Lane Utilization (%)	HOV Lane PHV (vph)	Mixed Flow PHV (vph)	Peak Hour Factor	% Trucks and Buses	% RV	Driver Population Factor F _P Adi	F _{HV} Adj	Flow Rate V _P (pc/h/ln)	CAF Default = 1	Segment Speed (mi/h)	Density (pc/mi/ln)	.os
	Existing																															
2	Blue Oaks Off-Ramp	Blue Oaks On-Ramp	0.43	1	2	12	0	0 10	0	R	No	70	0.00	0.00	1.00	72.2	70.0	2,400	2,618	0.0%	0	2,618	0.94	12.9%	2.0%	1	0.825	1,693	1.00	67.18	25.2	С
4	Blue Oaks	Sunset	0.62	1	2	12	0	0 10	0	R	No	70	0.00	0.00	1.00	72.2	70.0	2,400	3,097	0.0%	0	3,097	0.94	12.9%	2.0%	1	0.825	2,003	1.00	62.52	32.0	D
6	Sunset Off-Ramp	Sunset Loop On-Ramp	0.33	1	2 .	12	0	0 10	0	R	No	70	0.00	0.00	1.00	72.2	70.0	2,400	2,388	0.0%	0	2,388	0.94	12.9%	2.0%	1	0.825	1,544	1.00	68.62	22.5	С
9	Sunset	Twelve Bridges	1.25	1	2 .	12	0	0 10	0	R	No	70	0.00	0.00	1.00	72.2	70.0	2,400	2,715	0.0%	0	2,715	0.94	12.9%	2.0%	1	0.825	1,756	1.00	66.42	26.4	D
11	Twelve Bridges Off-Ramp	Twelve Bridges On-Ramp	0.57	1	2	12	0	0 10	0	R	No	70	0.00	0.00	1.00	72.2	70.0	2,400	2,150	0.0%	0	2,150	0.94	12.9%	2.0%	1	0.825	1,390	1.00	69.58	20.0	С
13	Old Hwy 65	Ferrari Ranch	0.27	1	2 .	12	0	0 10	0	R	No	70	0.00	0.00	1.00	72.2	70.0	2,400	1,521	0.0%	0	1,521	0.94	12.9%	2.0%	1	0.825	984	1.00	70.00	14.1	В

FREEWAY LEVEL OF SERVICE ANALYSIS (HCM 2010) SR-65 - SB WEEKDAY MORNING PEAK HOUR

												THING I BAIL																	
Segment No.	From	То	Miles	Ramp Density (per mile)	Number of Lanes in One Direction	Width	Aux	Lanas	Right-side Lateral Clerance (ft)	Terrain	Use Measured FFS?	Measured Free Flow Speed (mph)		F _{LC} TRD Adj Adj	Base Free Flow Speed (mph)		Base Capacity (pc/h/ln)	Total PHV (vph)	HOV Lane Utilization (%)	HOV Lane PHV (vph)	Mixed Flow PHV (vph)	Peak Hour Factor	% Trucks and Buses	% RV F	opulation actor F _P	F _{HV} R	Flow ate V _P oc/h/ln)	Segmer Speed (mi/h)	
	Existing																												
14	Ferrari Ranch	Old Hwy 65	0.21	1	2	12	0	0	10	R	No	70	0.00	0.00 1.00	72.2	70.0	2,400	2,218	0.0%	0	2,218	0.94	12.9%	2.0%	1 (0.825	1,437 1.00	69.35	20.7 C
16	Twelve Bridges Off-Ramp	Twelve Bridges On-Ramp	0.31	1	2	12	0	0	10	R	No	70	0.00	0.00 1.00	72.2	70.0	2,400	2,672	0.0%	0	2,672	0.94	12.9%	2.0%	1 (0.825	1,731 1.00	66.73	25.9 C
18	Twelve Bridges	Sunset	1.46	1	2	12	0	0	10	R	No	70	0.00	0.00 1.00	72.2	70.0	2,400	3,263	0.0%	0	3,263	0.94	12.9%	2.0%	1 (0.825	2,114 1.00	60.31	35.0 E
20	Sunset Off-Ramp	Sunset On-Ramp	0.32	1	2	12	0	0	10	R	No	70	0.00	0.00 1.00	72.2	70.0	2,400	2,891	0.0%	0	2,891	0.94	12.9%	2.0%	1 (0.825	1,873 1.00	64.75	28.9 C
23	Sunset	Blue Oaks	0.19	1	2	12	0	0	10	R	No	70	0.00	0.00 1.00	72.2	70.0	2,400	3,600	0.0%	0	3,600	0.94	12.9%	2.0%	1 (0.825	2,332 1.00	55.13	42.3 E
25	Blue Oaks Off-Ramp	Blue Oaks Loop On-Ramp	0.31	1	2	12	0	0	10	R	No	70	0.00	0.00 1.00	72.2	70.0	2,400	3,055	0.0%	0	3,055	0.94	12.9%	2.0%	1 (0.825	1,979 1.00	62.96	31.4 C

FREEWAY LEVEL OF SERVICE ANALYSIS (HCM 2010) SR-65 - SB WEEKDAY EVENING PEAK HOUR

Segment No.	From	То	Miles	Density (per	Number of Lanes in One Direction	Width		HOV Lane?		Terrain	Use Measured FFS?	Measured Free Flow Speed (mph)	F _{LW} Adj	F _{LC} TR Adj Ad	Base D Flo dj Spe (m)	ow _		Base Capacity (pc/h/ln)	Total PHV (vph)	HOV Lane Utilization (%)	HOV Lane PHV (vph)	Mixed Flow PHV (vph)	Peak Hour Factor	% Trucks and Buses	% RV	Population Factor F _P	F _{HV} Adj	Flow Rate V _P (pc/h/ln)	CAF Default = 1	Segment Speed (mi/h)	Density (pc/mi/ln)	Los
	Existing																												ļ!		4	
14	Ferrari Ranch	Old Hwy 65	0.21	1	2	12	0	0	10	R	No	70	0.00	0.00 1.0	10 72	2.2	70.0	2,400	1,703	0.0%	0	1,703	0.90	12.9%	2.0%	1	0.825	1,141	1.00	70.00	16.3	В
16	Twelve Bridges Off-Ramp	Twelve Bridges On-Ramp	0.31	1	2	12	0	0	10	R	No	70	0.00	0.00 1.0	10 72	2.2	70.0	2,400	2,141	0.0%	0	2,141	0.90	12.9%	2.0%	1	0.825	1,435	1.00	69.36	20.7	С
18	Twelve Bridges	Sunset	1.46	1	2	12	0	0	10	R	No	70	0.00	0.00 1.0	10 72	2.2	70.0	2,400	2,530	0.0%	0	2,530	0.90	12.9%	2.0%	1	0.825	1,695	1.00	67.15	25.2	С
20	Sunset Off-Ramp	Sunset On-Ramp	0.32	1	2	12	0	0	10	R	No	70	0.00	0.00 1.0	10 72	2.2	70.0	2,400	2,263	0.0%	0	2,263	0.90	12.9%	2.0%	1	0.825	1,516	1.00	68.84	22.0	С
23	Sunset	Blue Oaks	0.19	1	2	12	0	0	10	R	No	70	0.00	0.00 1.0	10 72	2.2	70.0	2,400	3,452	0.0%	0	3,452	0.90	12.9%	2.0%	1	0.825	2,313	1.00	55.62	41.6	E
25	Blue Oaks Off-Ramp	Blue Oaks Loop On-Ramp	0.31	1	2	12	0	0	10	R	No	70	0.00	0.00 1.0	10 72	2.2	70.0	2,400	2,835	0.0%	0	2,835	0.90	12.9%	2.0%	1	0.825	1,900	1.00	64.32	29.5	D

Freeway Merge-Diverge Analysis

Freeway Merge Analysis - AM Peak Hour

On-Ramp AM Peak																																													Ex. 13-8	Ex 13-8				Ex
				Freew	au Data	-		eway-Ramp C		and Characte	ristics	3.0	lacent Ramp	Done		_	V	olome Con		-	Terrain			_	_	_		_	Vol	lume Adju	stment	Malama	a Campaddau	_			_				-	_		-		1			Disaste.	of Morne Area
10 Interch	ange (NB	irection B at SB)	Ramp Type (On or Off)	Number of Lanes on Freeway (Each Direction),	Flow ed. Sar (v)	ne, V Ramp (L or Righ	f Free-Flow eft Speed, d) See (mph)	Volume, L. Vg (vph) fi	ames on Acr Ramp. H Li	ngth of fat coleration ans. LA1 (N.)	Exist A Yes of No. (Up Dox	edition of discent Ramp stream or visite am	Type of Dir Adjacent Ramp Ad (On or F	stance Vo to ljacent Adj Ramp Ra (ft.)	fume on acent amp /phi	Va Fran	way Ran	Adjace Ram PHF	ent V _{13 (F6}	Visions	Type (Level, Rolling Mountain us, Grad Cemposi		Es days	Percent Recreational Vehicles on Freeway (%)	En (fwy)	Percent Trucks and E _f (Suses on Ramp (%)	(ramp) Recre Vehi Ras	rcent patienal clea on in np (%)	Fa Truck and ramp) Buses Adjace Ramp	ont E _T (adjacont rom)	Percent Recreative ent Vehicles p) Adjacen Ramp (%	nal Es on (adjace t samp)	Driver Populatio Adjustmen	for they	for gramp)	fig Adjacent (amp)	L _{EQ} Pri	e (I- Pre e On- Lane imp) Rár	(Z- V _G (On-Lane (np) Rám	1- V _Q <u>Q</u> Ou- Lane O Ramp	V ₁₂₂ (for some 8) lone freeways (1-lone On Ramp)	6 V ₍₂₎ (for 6 and 8 lane s freeways , Z-lane On Ramp)	Vie	V _{RN2} on V _{RN2} or V _{RN4}	Maic Powestinam Frankay Flow, v (pc/h)	Max Desirable Flow Entering Influence Area, Varz (pch)	Capacity Cap Check: Che V _{f0} > V _{f0} Max. Ma	ck: Compt k 2 pc/ml	udo 64,	Compute S _E (mph)
Existing Blue Caks Sunset (Lot Sunset (Dia Twelve Brid Sunset (Uo Sunset (Dia Blue Caks	g.) ges (p)	NB NB SB SB SB SB	On On On On On On On	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	70 21 70 12 70 12 70 26 70 28 70 32 70 30	52 Right 90 Right 87 Right 72 Right 91 Right 90 Right 55 Right	36 36 35 36 36 36 36	273 37 203 591 389 320 332	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	500 500 1320 700 575 1500 590	Yes Do Yes U Yes U Yes Do Yes Do	wristream wristream pstream pstream wristream pstream wristream wristream	Off 6 On 7 On On 7 On On On On On On	6450 1 1600 2 1600 3 1625 3 1900 3 1750 8	165 13 203 2 37 4 505 3 520 3 889 4 572 9	325 0.65 227 0.66 41 0.65 84 0.93 88 0.93 135 0.93 175 0.93	3083 0.90 3083 0.90 3083 0.90 5021 0.90 5021 0.90 5021 0.90	2 0.92 2 0.92 2 0.92 2 0.92 2 0.92 2 0.92 2 0.92 2 0.92	2 2707 2 1565 2 1612 2 3049 2 3299 2 3743 2 3487	7 306 5 41 2 227 8 661 8 435 8 358 7 371	Level Level Level Level Level Level Level	13% 13% 13% 13% 13% 13%	15 15 15 15 15 15	2% 2% 2% 2% 2% 2% 2% 2%	12 12 12 12 12 12 12 12	5% 5% 5% 5% 5% 5%	1.5 1.5 1.5 1.5 1.5 1.5 1.5	2% 2% 2% 2% 2% 2% 2% 2%	12 5% 12 5% 12 5% 12 5% 12 5% 12 5% 12 5% 12 5%	1.5 1.5 1.5 1.5 1.5 1.5 1.5	2% 2% 2% 2% 2% 2% 2% 2%	12 12 12 12 12 12 12	1 2 3 1 1 7	0.936 0.936 0.936 0.936 0.936 0.936 0.936	0.972 0.972 0.972 0.972 0.972 0.972 0.972	0.972 8 0.972 0.972 0.972 5 0.972 0.972 0.972	23.86 1 1 32.94 1	000 1.0 000 1.0 000 1.0 000 1.0 000 1.0 000 1.0	00 2707 00 1567 00 1612 00 3045 00 3296 00 3743 00 3467	7 2707 6 1566 2 1612 9 3049 9 3299 3 3743 7 3487	2707 1965 2 1612 3 3049 3 3299 3 3743 3 3487	2707 1965 1612 3049 3299 3743 3407	3012 1606 1839 3710 3734 4101 3850	8012 1606 1839 3710 3734 4101 9050	4800 4800 4800 4800 4900 4900 4900	4600 4600 4600 4600 4600 4600 4600	No N	a 25.7 o 14.0 d 11.4 in 29.7 le 30.8 to 27.4 to 31.7	7 04 0 03 4 03 7 04 3 04 9 05 9 05	60 61 63 58 58 57

Freeway Merge Analysis - PM Peak Hour

p PM Peak							Fi	eeway Ram	p Compone	ents and Ch	aracteristic	1																			Volume	Adjustment																					
4			- 1	seeway Dat	4			On-Ramp D	ata	1		-	Adjace	nt Ramp D	lata	- 1	_	_ V	olome Cor	npenents	-	Terr	ein	- 1	-1		-	-		1 1		-		Volume Cor	nposition		- 1	- 1	- 1	- 1	- 1	- 1	- 1			-	100	M.	ax.			Results o	of Merge Area
Interchange	Direction (NB or SB)	Ramp Type (On or Off)	Number of Lanes on Freeway (Each Direction).	Free Flow Speed, Sa- (mph)	Volume, V (vph)	Side of Ramp (Left or Right)	Free Flow Speed, Srp (mph)	Volume, Vg (vph)	Lanes on Ramp: H	Length of Accelera Lane, L (R)	(1st Exit flon (Yes No)	Positi Adjo Ras (Upstre Downs	on of Type cent Adj- np Ra ann or (O ream) C	e of Dist. icont t mp Adja i or Ra ff) (f	ance Volu o or cent Adja- imp Rai t.) (vp	me cont Vo	Free	vay Ran F PH	Adjac Ram PHF	P Visin	Wayn	Rolli Mount us. Gr Cempo	el. True ng, an aino Bose	cent cks id E: ffw is on way	Perce Recreat Vehicle Freewa	ent fonal es on es (%)	Perces Truck and Buses Ramp (E _f (ramp)	Percent Recreations Vehicles or Ramp (%)	oi En i (ramp)	Percent Trucks and Buses on Adjacent Ramp (%)	E _T Redidjacent Veriamp)	Percent occessional chicles on Adjacent Ramp (%)	Es (adjacent (amp)	Driver Sepulation aljustment In	hos (fersy)	for tramp)	firy adjacent ramp)	Liq	Pre (I- ane On- I. Ramp)	Pre (Z- V ane On- La Ramp) R	V _G (1- V ine Ou- La Ramp) R	ne On- tres (amp) , 1	in (for 6 V _{12s}) and 8 — an lone — la reways free 1-lone — 2-l On — C Lamp) — Rai	(far 6 id 8 ine ways Vic lane In imp)	V _{R12} 6 V _{R23} 6 V _{R34}	Max. Downstri Finnw Flow, (pc/h	Desir nam Fic ay Ente y Influ- ty Area,	able Cap ow Chi ence Ma Verz	occity Capo occic Che oc.> Vis. lax. Ma	city ck: Compto x. (pc/mi/	46- 16-	Compute S _E (mph)
Blue Caks Sunset (Loop) Sunset (Disg.) Twelve Bridges Sunset (Loop) Sunset (Disg.) Blue Caks (Loop)	NB NB SB SB SB SB	On On On On On On	2 7 7 7 7 7 7 7	70 70 70 70 70 70 70	2618 2309 2452 2141 2263 2841 2895	Right Right Right Right Right Right Right	36 36 35 35 36 36 36	479 64 263 388 578 611 376	1 1 1 1 1	500 900 1320 700 576 1500 550	Yes Yes Yes Yes Yes Yes	Downs Downs Upstr Upstr Downs Upstr Downs	tream in tre	Off 64 No. 16 No. 16 Off 16 No. 16 No. 16 No. 17	150 70 200 26 200 64 225 19 200 61 200 57	9 790 3 290 1 72 6 211 1 680 8 641 9 103	0.9 0.9 0.9 0.9 0.9	4 0.9 4 0.9 4 0.9 0 0.9 0 0.9 0 0.9	2 0.90 2 0.90 2 0.90 2 0.90 2 0.90 2 0.90 2 0.90 2 0.90	2 2963 2 2721 2 2794 2 2526 2 2673 3 354 2 3347	536 72 4 294 5 435 2 646 4 683 7 423	Les Les Les Les	el 13 el 13 el 13 el 13 el 13 el 13 el 13	% 15 % 15 % 15 % 15 % 15 % 15	2% 2% 2% 2% 2% 2% 2% 2%	1,2 1,2 1,2 1,2 1,2 1,2 1,2 1,2	5% 5% 5% 5% 5% 5% 5% 5%	15 15 15 15 15 15	2% 2% 2% 2% 2% 2% 2% 2%	12 12 12 12 12 12 12 12	5% 5% 5% 5% 5% 5%	1.5 1.5 1.5 1.5 1.5 1.5 1.5	2% 2% 2% 2% 2% 2% 2% 2%	12 12 12 12 12 12 12 12	3 2 3 1 1 7	0.936 0.936 0.936 0.936 0.936 0.936 0.936	0 972 0 972 0 972 0 972 0 972 0 972 0 972	0.972 0.972 0.972 0.972 0.972 0.972 0.972	4862.06 373.08	1,000 1,000 1,000 1,000 1,000 1,000 1,000	1,000 1,000 1,000 1,000 1,000 1,000 1,000	2963 2721 2794 2528 2672 3354 3347	2963 2 2721 2 2794 2 2526 2 2672 2 3954 3 3347 3	2963 25 2721 27 2794 27 2526 26 2672 26 3364 33 3347 33	963 351 721 279 794 308 526 296 572 331 54 403 947 377	9 8519 9 2790 8 3068 3 2963 8 3318 7 4037 0 3770	4800 4800 4800 4800 4900 4800 4800	464 464 464 464 464 464 464 464	00 N 000 N 000 N 000 N 000 N	No	29.5 24.1 21.1 24.0 27.5 27.2 31.2	0.4 0.3 0.3 0.3 0.4 0.4	58 60 61 80 59 58

Freeway Diverge Analysis - AM Peak Hour

Off-Ramp AM Peak			-								-																															E	Ex. 13-8 E	Ex. 13-8 Ex.	c. 13-10						Ex. 13
ID interchar	ge Direction	Ramp Type (On or Off)	Number of Lanes on Freeway (Each Direction).	See (mph)	Volume (vph)	Side of lamp (Left S	ice (mph)	Off-Ram		ength of fat eccleration Lane, LD1	Low	Exist (Yes or No) (U	Adja osition of T Adjacent Ac Ramp I ostream or (ype of Dist ljacent Samp Adja On or Ra	ata nuce Volum on cent Adjace mp Ram	ne ent V _U or V _B	Freeway PHF	Ramp Ad PHF	Components Gacent Ramp Vss	Veson	Tetrain Type (Level, Rolling, Mountain- us, Grade	Percent Trucks and o Buses on	E _T (fwy) Re	Percent ecreational chicles on reeway (%)	Pen Tru ar Buse	cent icks nd Er (rain	Percent Recreation Vehicles o	al E _R	Percent Trucks and Buses on Adjacent	Perc Recre E ₁ on djacent Vehi- ramp) or	Votor cent eati of En icles (adjace	Driver Population Adjustment	t _{no} (fwy)	t _{en} Lan Ra	n (I- Pro	2- V ₁₂ (1- Off- Lane Off ρ) Ramp)	V ₁₂ (2. Lane Off- Ramp)	V ₁ V ₁₂ Ir	V _F V _{ID} (to for fi and me lam ways freewo	r 6 V ₃ = V ₂ - I V ₁₂ (for 6- lane sys freeways a , Z-Lane	V _{12s} (for 6 and 8 tane freeways (as , 2-lane	Upst to Dow djacent Fr ramp) Flo	Max. tream, V _F Dr 1, or wastream E reeway Ir low, V _F d	Max. Jestrable Flow Entering Influence Area, Vs:	Max. Ca apocity Chr Ramps (pc/h)	ipacity Eapa ick: V _{IS} Cher amp > V _F Max. Ma	city Capacit ck: Check > V ₁₂ > x, Max.	ty Capacity Check: V _{FQ} > Max.	Compute Da (pc/mi/h)	D _i Con	npute (mph)
Existing AUX Blue Oaks Sunset Twelve Brid Sunset Blue Oaks	SB	Off Off Off Off	N 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	70 70 70 70 70 70	2621 2435 1490 3263 3600	Right Right Right Right	36 36 36 36 36	459 1185 269 372 545	2 2 1 2 1	1500 1700 500 1500 200	3000 3400 1000 3000 400	Yes D Yes D Yes D Yes D Yes D	ownstream ownstream ownstream ownstream ownstream	On 22 On 17 On 30 On 15 On 16	50 273 50 37 00 236 00 389 50 332	305 41 264 435 371	0.85 0.85 0.85 0.94 0.94	0,92 0,92 0,92 0,92 0,92 0,92	0.92 32 0.92 30 0.92 18 0.92 37 0.92 41	82 513 49 1326 66 301 24 416 09 610	Level Level Level Level Level Level Level	13% 13% 13% 13% 13% 13%	1.5 1.5 1.5 1.5 1.5	2% 2% 2% 2% 2% 2%	1.2 55 1.2 55 1.2 55 1.2 55 1.2 55 1.2 55	% 1.5 % 1.5 % 1.5 % 1.5 % 1.5	2% 2% 2% 2% 2% 2%	12 12 13 13 12 12	5% 5% 5% 5% 5%	1.5 29 1.5 29 1.5 29 1.5 29 1.5 29 1.5 29	% 12 % 12 % 12 % 12 % 12	1	0 936 0 936 0 936 0 936 0 936	0.972 0/ 0.972 1/ 0.972 1/ 0.972 1/ 0.972 1/	654 0.45 000 1.00 000 1.00 000 1.00 000 1.00	0 2325 0 3049 0 1866 0 3724 0 4109	1759 3049 1886 3724 4109		57 2325 3045 1966 3724 4106	Pamp)	1759 3049 1866 3724 4109	0 972 0 972 0 972 0 972 0 972 0 972	5700 4800 4800 4800 4800 4800	4400 44 4400 44 4400 29 4400 44 4400 21	4000 4000 2000 4000 2000 2000	No N	No No No No No No No	No No No No	-7.6 -0.1 15.6 9.3 37.8	0.5 5 0.5 5 0.5 5 0.5 5	67 A 47 A 73 B 70 A 65 E

Freeway Diverge Analysis - PM Peak Hour

-								Free	way-Ramp	Components a	nd Charac	teristics																	Volume /	djustment																				
4				Freeway)ata			Off	Ramp Data	1				Adjaces	t Ramp Data			V	/alume Comp	ponents	1	Tecrain	-					-	, ,		Velu	me Compositio	on										Max.	Max.				L	Resu	alts of Diverge Are
Interchange	Direction (NB or SB)	Ramp Type (Or or Off)	Numbe Lanes Freew (Encl Direction	of on ay See (mp	Volume (vph)	Side of Ramp (L or Righ	f eff S∉é (mp	h) Volume	n, Lanes a) Ramp.	Length of on Decelerat N Lane, Li	fat tion D1 Lo	Exi (Yes No	Positi ist Adja or Ra (Upstre Downs	on of Typ cent Adja up Ran am or (On tream) Of	p Distance to Adjaces or Ramp	e Volume on Adjacent \ Ramp (vph)	/u or Vo Fre	eway Ran PHF PH	Adjacer Ramp PHF	Visiteer	Vestranori Mo us Cor	Type (Level, To Rolling, ountains Grade, mposite)	ercent nucks and ses on eeway (%)	Percent Recreation Vehicles Freeway	nal E _R (fwy)	Percent Trucks and E Buses on Ramp (%)	Pe (ramp) Recre Vehi Rai	eational Each ides on (ram mp (%)	Percent Trucks and buses on Adjacent Ramp (%)	E ₁ Pe Re- (adjacent Vel (amp) Adj Ran	rcent creati enal Ea hicles (adjace on ramp jacent np (%)	Driver Population Adjustmen fy	Inc (fwy)	t _{iny} (ramp)	Pro (I - Pr ane Off Lan Ramp) Ra	n Q- Vsz (e Off. Lane (unp) Ram	1. V ₁₂ (2. Off- Lane Off- p) Ramp)	Ven. fr	V ₁ = V _F . V ₁₂₁ (for fi. am lane lane lane lane lane lane) T-Lane land Off ORamp) Ran	for 6 V ₁ = V d fl V ₁₂ (for no lane ways freewa ane , 2 Lar ff Off np) Ramp	V ₁₂ , (for 6 6 and 8 lane 193 freeways ne , 2-lane Off Ramp)	I _{lev} Do (adjacent ramp) F	itream, V _F De i. or I winstream Er reeway Inf Inw, V _{FO} Ar (pch) (litable low carriering of I luence (pc.h)	lax. Cap pacity Chec tamps political M	acity Eapar k: V _{IS} Cher v _P : v _S : Max	ity Capacity k: Check: V ₁₂ > Max.	Capacity Check: V _{EQ} > Max.	ompute Da pc'mi/h)	D _i Compute S _R (inpli
ue Oaks Inset velve Bridges Inset ue Oaks	NB NB NB SB SB	Off Off Off Off	3 2 7 7 7 7	70 70 70 70 70	3122 3097 2715 2530 3452	Right Right Right Right Right	36 36 36 36 36	504 709 565 267 617	2 2 1 2 1	1500 1700 500 1500 260	301 341 101 301 40	00 Ye 00 Ye 00 Ye 00 Ye 00 Ye	s Downs s Downs s Downs s Downs s Downs	tream O tream O tream O tream O tream O	2250 1750 3000 1700 1650	479 64 311 578 378	536 0.93 72 0.93 348 0.93 646 0.90 423 0.90	37636 0.90 37636 0.90 37636 0.90 04881 0.90 04881 0.90	12 0.92 12 0.92 12 0.92 12 0.92 12 0.92 12 0.92	9667 9528 9093 2967 4075	564 793 632 299 690	Level Level Level Level Level	13% 1.1 13% 1.1 13% 1.1 13% 1.1	2% 2% 2% 2% 2%	12 12 12 12 12	5% 5% 5% 5% 5%	1.5 1.5 1.5 1.5 1.5	2% 1.2 2% 1.2 2% 1.2 2% 1.2 2% 1.2	5% 5% 5% 5%	1.5 1.5 1.5 1.5 1.5	2% 12 2% 12 2% 12 2% 12 2% 12	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.936 0.936 0.936 0.936 0.936	0.972 0.972 0.972 0.972 0.972	0.645 0 1.000 1 1.000 1 1.000 1 1.000 1	450 2499 000 3520 000 3090 000 2980 000 4079	5 1911 8 3528 3 3093 7 2987 5 4075	2993 2736 2461 2688 3385	30 29	95 1646 28 93 87 75	1911 3528 3093 2987 4075	0 972 0 972 0 972 0 972 0 972 0 972	4800 4800 4800	4400 4 4400 4 4400 2 4400 4 4400 2	000 h	lo Na lo Na lo Na lo Na lo Na	No No No No	No No No No No	6.3 40 26.4 29 37.5	0.5 58.6 0.5 58.0 0.5 58.4 0.5 57.3 0.5 56.3

		F	REEWAY	/ WEAV	NG WOF	RKSHEE	T		
Genera	l Informati	on			Site Info	rmation			
Analyst Agency/Cor Date Perfor Analysis Tir	med	5/13/20 AM Pe	ak		Freeway/Dir Weaving Seg Analysis Yea	gment Locati	SR-65 on Twelv 2015	5 NB e Bridges to	Old Hwy 65
Inputs	cription ouriset	industrial Are	a i iaii opuate						
Weaving se Freeway fre	imber of lanes, Name	s FS		1700ft 70 mph	Freeway max Terrain type	imum speed	******		Freeway 35 2400 Leve
Conver	sions to po	1	1	1	1	_		 	1 (")
	V (veh/h)	PHF	Truck (%)	RV (%)	E _T	E _R	f _{HV}	fp	v (pc/h)
V _{FF}	705	0.85	13	2	1.5	1.2	0.935	1.00	887
V_{RF}	224	0.92	5	2	1.5	1.2	0.972	1.00	251
V_{FR}	516	0.92	5	2	1.5	1.2	0.972	1.00	577
V_{RR}	12	0.92	5	2	1.5	1.2	0.972	1.00	13
V_{NW}	900							V =	1728
V_W	828								
VR	0.479								
Configu	ration Cha	aracteris	tics						
Minimum m	naneuver lanes,	N_{WL}		2 lc	Minimum we	eaving lane c	hanges, LC _{MIN}		828 lc/h
Interchange	e density, ID			1.0 int/mi	Weaving lan	e changes, L	$-C_{W}$		1057 lc/h
Minimum R	F lane changes,	, LC _{RF}		1 lc/pc	Non-weaving	g lane chang	es, LC _{NW}		529 lc/h
Minimum F	R lane changes,	, LC _{FR}		1 lc/pc	Total lane ch	nanges, LC _{AL}	L		1586 lc/h
Minimum R	R lane changes	, LC _{RR}		lc/pc	Non-weaving	g vehicle inde	ex, I _{NW}		153
Weavin	g Segmen	t Speed,	Density, I	Level of	Service,	and Cap	pacity		
Weaving se	egment flow rate			1647 veh/h 4685 veh/h	_	ensity factor, gment speed	, S		0.214 62.5 mph 63.8 mph
	egment v/c ratio egment density,	n	(0.352 9.2 pc/mi/ln	Average nor	•	VV		61.3 mph
Level of Se	•	U	•	9.2 pc/m/m A	Maximum w				7584 ft
					iviaxiiiluiii W	caving length	ı, ∟ _{MAX}		7 304 II
Chapter 13, '	segments longer t "Freeway Merge a es that exceed the	and Diverge Se	egments".			solated merge	and diverge ar	eas using the	procedures of

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		F	REEWAY	/ WEAV	ING WOF	RKSHEE	T		
Genera	Informati	on			Site Info	rmation			
Analyst Agency/Con Date Perfori Analysis Tin	med ne Period	5/13/20 PM Pe	ak		Freeway/Dir Weaving Seg Analysis Yea	gment Locati	SR-65 on Twelv 2015	i NB e Bridges to	Old Hwy 65
Project Desi Inputs	cription Sunset	Industrial Are	a Plan Update						
Weaving co Weaving nu Weaving se Freeway fre	mber of lanes, N gment length, L e-flow speed, Fl	S FS		One-Sided 3 1700ft 70 mph	Segment typ Freeway min Freeway max Terrain type	imum speed			Freeway 35 2400 Level
Conver	sions to po	c/h Unde	r Base Co	ndition	s	_			_
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε _T	E _R	f_{HV}	fp	v (pc/h)
V_{FF}	1226	0.94	13	2	1.5	1.2	0.935	1.00	1394
V_{RF}	295	0.92	5	2	1.5	1.2	0.972	1.00	330
V_{FR}	924	0.92	5	2	1.5	1.2	0.972	1.00	1033
V_{RR}	16	0.92	5	2	1.5	1.2	0.972	1.00	18
V _{NW}	1412		•					V =	2775
V_{W}	1363								•
VR	0.491								
Configu	ration Cha	aracteris	tics						
Minimum m	aneuver lanes,	N _{WL}		2 lc	Minimum we	aving lane c	hanges, LC _{MIN}		1363 lc/h
Interchange	e density, ID			1.0 int/mi	Weaving lan	e changes, L	_C _w		1592 lc/h
Minimum R	F lane changes,	LC_RF		1 lc/pc	Non-weaving	g lane chang	es, LC _{NW}		634 lc/h
Minimum Fl	R lane changes,	LC_{FR}		1 lc/pc	Total lane ch	nanges, LC	I		2226 lc/h
Minimum R	R lane changes	, LC _{RR}		lc/pc	Non-weaving	,			240
Weaving	g Segmen	t Speed,	Density, I						
Weaving se	gment flow rate	, V		2647 veh/h	Weaving inte	ensity factor,	W		0.280
Weaving se	gment capacity	, C _w		4571 veh/h	Weaving seg				58.8 mph
Weaving se	egment v/c ratio			0.579	Average wea	aving speed,	S_W		62.4 mph
	egment density,	D	1	5.7 pc/mi/ln	Average nor	n-weaving sp	eed, S _{NW}		55.7 mph
Level of Se	rvice, LOS			В	Maximum we	eaving length	n, L _{MAX}		7723 ft
Notes									
Chapter 13, '	egments longer to Freeway Merge a es that exceed the	and Diverge Se	egments".			solated merge	and diverge are	eas using the	procedures of

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		F	REEWAY	/ WEAV	NG WOF	RKSHEE	T		
General	Information	on			Site Info	rmation			
	ned	5/13/20 AM Pea	ak		Freeway/Dir Weaving Seç Analysis Yea	gment Location	SR-69 on Old H 2015	5 SB wy 65 to Twe	elve Bridges
Inputs									
Weaving seg	nfiguration mber of lanes, N gment length, L _S e-flow speed, FF	3		One-Sided 3 2000ft 70 mph	Segment typ Freeway min Freeway ma: Terrain type	imum speed			Freeway 35 2400 Leve
Convers	ions to po	/h Unde	r Base Co	ndition	<u> </u>				
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε _T	E _R	f_{HV}	fp	v (pc/h)
V_{FF}	1932	0.94	13	2	1.5	1.2	0.935	1.00	2197
V_{RF}	740	0.92	5	2	1.5	1.2	0.972	1.00	828
V_{FR}	286	0.92	5	2	1.5	1.2	0.972	1.00	320
V_RR	39	0.92	5	2	1.5	1.2	0.972	1.00	44
V_{NW}	2241							V =	3389
V_{W}	1148								
VR	0.339								
Configu	ration Cha	aracterist	tics		1				
Minimum ma	aneuver lanes, N	N_{WL}		2 lc	Minimum we	eaving lane cl	hanges, LC _{MIN}		1148 lc/h
Interchange	density, ID			1.0 int/mi	Weaving lan	ie changes, L	.C _w		1400 lc/h
Minimum RF	ane changes,	LC_{RF}		1 lc/pc	Non-weaving	g lane chang	es, LC _{NW}		968 lc/h
Minimum FF	R lane changes,	LC_FR		1 lc/pc	Total lane ch	nanges, LC _{AL}	L		2368 lc/h
Minimum RF	R lane changes,	LC_RR		lc/pc	Non-weaving	g vehicle inde	ex, I _{NW}		448
Weaving	Segment	Speed,	Density, I	_evel of	Service,	and Cap	acity		
Weaving seg	gment flow rate, gment capacity, gment v/c ratio			3213 veh/h 5877 veh/h 0.547	Weaving seg	ensity factor, gment speed aving speed,	, S		0.258 58.4 mph 62.8 mph
"	gment density, [)	19	0.547 9.4 pc/mi/ln		n-weaving sp	••		56.3 mph
Level of Ser	•			В	_	eaving length	1111		6003 ft
Notes					<u> </u>	<u> </u>	· IVIAA		
a. Weaving se Chapter 13, "I	egments longer the Freeway Merge a ss that exceed the	ind Diverge Se	gments".	_		solated merge	and diverge ar	eas using the	procedures of

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		F	REEWAY	/ WEAV	ING WOF	RKSHEE	Т		
Genera	I Informati	on			Site Info	rmation			
Analyst Agency/Cor Date Perfor Analysis Tin	med	5/13/20 PM Pe	ak		Freeway/Dir Weaving Seg Analysis Yea	gment Locati	SR-65 on Old H 2015	5 SB wy 65 to Twe	lve Bridges
Inputs	cription ouriset	industrial Arc	a i iaii opuate						
Weaving se Freeway fre	mber of lanes, N gment length, L e-flow speed, Fl	s FS		One-Sided 3 2000ft 70 mph	Segment typ Freeway min Freeway max Terrain type	imum speed			Freeway 35 2400 Leve
Conver	sions to po		1			1			
	V (veh/h)	PHF	Truck (%)	RV (%)	E _T	E _R	f_{HV}	fp	v (pc/h)
V_{FF}	1539	0.90	13	2	1.5	1.2	0.935	1.00	1828
V_{RF}	602	0.92	5	2	1.5	1.2	0.972	1.00	673
V_{FR}	164	0.92	5	2	1.5	1.2	0.972	1.00	183
V_RR	32	0.92	5	2	1.5	1.2	0.972	1.00	36
V_{NW}	1864							V =	2720
V_{W}	856								
VR	0.315								
Configu	ration Cha	aracteris	tics						
Minimum m	aneuver lanes,	N _{WL}		2 lc	Minimum we	eaving lane c	hanges, LC _{MIN}		856 lc/h
Interchange	e density, ID			1.0 int/mi	Weaving lan	e changes, l	_C _w		1108 lc/h
Minimum R	F lane changes,	LC _{RF}		1 lc/pc	Non-weaving	g lane chang	es, LC _{NW}		890 lc/h
Minimum F	R lane changes,	LC _{FR}		1 lc/pc	Total lane ch	nanges, LC _{AL}	L		1998 lc/h
Minimum R	R lane changes	, LC _{RR}		lc/pc	Non-weaving	g vehicle ind	ex, I _{NW}		373
Weavin	g Segmen	t Speed,	Density, I	_evel of	Service,	and Ca	oacity		
ŭ	egment flow rate			2578 veh/h 5933 veh/h	Weaving into	gment speed	, S		0.226 60.7 mph
•	egment v/c ratio			0.434	Average wea		**		63.6 mph
•	egment density,	D	14	4.9 pc/mi/ln	Average nor				59.5 mph
Level of Se	rvice, LOS			В	Maximum we	eaving length	n, L _{MAX}		5742 ft
Chapter 13, '	segments longer to "Freeway Merge a es that exceed the	and Diverge Se	egments".			solated merge	and diverge ar	eas using the	procedures of

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		F	REEWAY	/ WEAV	ING WOF	RKSHEE	Т			
General Information					Site Information					
Analyst VK Agency/Company Kittelson & Associ Date Performed 5/13/2015 Analysis Time Period AM Peak Project Description Sunset Industrial Area Plan Upo)15 ak		Freeway/Dir of Travel SR-65 SB Weaving Segment Location Blue Oaks to Pleasant Grove Analysis Year 2015				ant Grove	
Inputs	cription Sunset	industrial Are	a Pian Opdate							
$\begin{array}{ccc} & & & & \\ \text{Weaving configuration} & & & \text{One-Sided} \\ \text{Weaving number of lanes, N} & & & 3 \\ \text{Weaving segment length, L}_{\text{S}} & & 2400\text{ft} \\ \text{Freeway free-flow speed, FFS} & & 70 \text{ mph} \\ \end{array}$					Freeway minimum speed, S _{MIN} Freeway maximum capacity, C _{IFL} Terrain type				Freeway 35 2400 Level	
Conver	sions to po		1		ii .	I _	1 .		1	
	V (veh/h)	PHF	Truck (%)	RV (%)	E _T	E _R	f _{HV}	fp	v (pc/h)	
V_{FF}	2829	0.94	13	2	1.5	1.2	0.935	1.00	3217	
V_{RF}	828	0.92	5	2	1.5	1.2	0.972	1.00	926	
V_{FR}	558	0.92	5	2	1.5	1.2	0.972	1.00	624	
V_RR	44	0.92	5	2	1.5	1.2	0.972	1.00	49	
V_{NW}	3266							V =	4816	
V_W	1550									
VR	0.322									
Configu	ration Cha	aracteris	tics		_					
Minimum maneuver lanes, N _{WI} 2 Ic				Minimum we	1550 lc/h					
Interchange density, ID			1.0 int/mi	Weaving lane changes, LC _W				1830 lc/h		
Minimum RF lane changes, LC _{RF}				1 lc/pc	Non-weaving lane changes, LC _{NW}				1396 lc/h	
Minimum FR lane changes, LC _{FR} 1 lc/				1 lc/pc	Total lane changes, LC _{ALL}				3226 lc/h	
Minimum RR lane changes, LC _{RR} Ic/pc				Non-weaving vehicle index, I _{NW}				784		
Weavin	g Segmen	t Speed,	Density, I		1					
Weaving segment flow rate, v 4564 veh/h				4564 veh/h 6000 veh/h	Weaving intensity factor, W Weaving segment speed, S				0.285 54.2 mph	
Weaving segment v/c ratio				0.761	Average weaving speed, S _w				62.2 mph	
			9.6 pc/mi/ln					51.1 mph		
				D	Maximum weaving length, L _{MAX} 581					
Chapter 13,	segments longer t "Freeway Merge a es that exceed the	and Diverge Se	egments".			solated merge	and diverge ar	eas using the	procedures of	

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FREEWAY WEAVING WORKSHEET										
General Information					Site Information					
Analyst VK Agency/Company Kittelson & Associates Date Performed 5/13/2015 Analysis Time Period PM Peak Project Description Sunset Industrial Area Plan Update				Freeway/Dir of Travel SR-65 SB Weaving Segment Location Blue Oaks to Pleasant Grove Analysis Year 2015						
Inputs	onpuon cunoc	madourar / we	a rian opaato							
$\begin{array}{lll} & & & & \\ \text{Weaving configuration} & & & & \\ \text{Weaving number of lanes, N} & & & & \\ \text{Weaving segment length, L}_{\text{S}} & & & \\ \text{Freeway free-flow speed, FFS} & & & 70 \text{ mph} \\ \end{array}$					Freeway minimum speed, S _{MIN} Freeway maximum capacity, C _{IFL} Terrain type				Freeway 35 2400 Leve	
Conver	sions to po	1				1				
	V (veh/h)	PHF	Truck (%)	RV (%)	E _T	E _R	f_{HV}	fp	v (pc/h)	
V_{FF}	2695	0.90	13	2	1.5	1.2	0.935	1.00	3201	
V_{RF}	883	0.92	5	2	1.5	1.2	0.972	1.00	988	
V_{FR}	518	0.92	5	2	1.5	1.2	0.972	1.00	579	
V_RR	46	0.92	5	2	1.5	1.2	0.972	1.00	51	
V_{NW}	3252							V =	4819	
V_W	1567									
VR	0.325									
Configu	ration Cha	aracteris	tics		_					
Minimum maneuver lanes, N _{WL}				2 lc	Minimum we	1567 lc/h				
Interchange density, ID				1.0 int/mi	Weaving lane changes, LC _w				1847 lc/h	
Minimum RF lane changes, LC _{RF}				1 lc/pc	Non-weaving lane changes, LC _{NW}				1393 lc/h	
Minimum FR lane changes, LC _{FR}				1 lc/pc	Total lane changes, LC _{ALL}				3240 lc/h	
Minimum RR lane changes, LC _{RR} Ic/p				lc/pc	Non-weaving vehicle index, I _{NW}				780	
Weavin	g Segment	t Speed,	Density, I							
Weaving segment flow rate, v 4568 veh/h				Weaving intensity factor, W 0						
1				5994 veh/h	Weaving segment speed, S				54.2 mph	
Weaving segment v/c ratio				0.762	Average weaving speed, S_{W}				62.2 mph	
				9.6 pc/mi/ln	Average non-weaving speed, S_{NW}				51.0 mph	
Level of Service, LOS				D	Maximum weaving length, $L_{\rm MAX}$				5855 ft	
Notes										
Chapter 13,	segments longer to "Freeway Merge a es that exceed the	and Diverge Se	egments".			solated merge	and diverge ar	eas using the	procedures of	

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