		F	REEWA	(WEAV	ING WOF	RKSHEE	Г			
Genera	I Informatio	on			Site Info	rmation				
Analyst Agency/Cor Date Perfor Analysis Tir	npany med ne Period	AECO AM	М		Freeway/Dir Weaving Seg Analysis Yea	Freeway/Dir of Travel I-95 NB Weaving Segment Location Seg 1-Bet Copans & Sampl Analysis Year 2040 Build 2A				
Project Des	cription SW 10th	n Street SIMF	2							
Inputs										
$\begin{array}{llllllllllllllllllllllllllllllllllll$					Segment type Freeway minimum speed, S _{MIN} Freeway maximum capacity, C _{IFL} Terrain type					
Conver	sions to po	:/h Unde	r Base Co	ondition	s		•		-	
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε _Τ	E _R	f _{HV}	fp	v (pc/h)	
V _{FF}	4420	0.95	3	0	1.5	1.2	0.985	1.00	4722	
V _{RF}	420	0.92	2	0	1.5	1.2	0.990	1.00	461	
V _{FR}	980	0.92	2	0	1.5	1.2	0.990	1.00	1076	
V _{RR}	0	0.95	0	0	1.5	1.2	1.000	1.00	0	
V _{NW}	4722		-		-		-	V =	6259	
V _W	1537							-		
VR	0.246									
Configu	iration Cha	aracteris	tics		1					
Minimum m	aneuver lanes, N	N _{WL}		2 lc	Minimum we	aving lane cl	nanges, LC _{MIN}		1537 lc/h	
Interchange	e density, ID			0.7 int/mi	Weaving lane changes, LC _w 19				1972 lc/h	
Minimum R	F lane changes,	LC _{RF}		1 lc/pc	Non-weaving	g lane chang	es, LC _{NW}		1492 lc/h	
Minimum F	R lane changes,	LC_{FR}		1 lc/pc	Total lane ch	nanges, LC _{ALI}	L		3464 lc/h	
Minimum R	R lane changes,	LC_{RR}		lc/pc	Non-weaving	g vehicle inde	ex, I _{NW}		787	
Weavin	g Segment	Speed,	Density, I	_evel of	Service,	and Cap	oacity			
Weaving segment flow rate, v6175 vehWeaving segment capacity, c_w8666 veh					Weaving inte Weaving seg	ensity factor, gment speed	W , S		0.304 52.7 mph	
Weaving se	gment v/c ratio			$_{\rm 2}$ Average weaving speed, S _w 57.2			57.2 mph			
Weaving se	egment density, [C	29	9.7 pc/mi/ln	Average nor	n-weaving sp	eed, S _{NW}		51.4 mph	
Level of Se	rvice, LOS			D	Maximum w	eaving length	i, L _{max}		5007 ft	
Notes										
a. Weaving s Chapter 13, ' b. For volum	egments longer th 'Freeway Merge a es that exceed the	nan the calcula Ind Diverge Se weaving seg	ated maximum le egments". ment capacity, tl	ength should l	be treated as is rvice is "F".	solated merge	and diverge ar	eas using the	procedures of	

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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
Conorol Information			Site Information		
			Highway/Direction of Travel	1 05 NR	
Analysi	AFCOM			Seg 2-B	et Off & On from
Agency or Company	AECOM		From/To	Sample	
Date Performed Analysis Time Period	AM		Jurisdiction Analysis Year	2040 Bu	ild 2A
Project Description SW 10	Oth Street SIMR				
Oper.(LOS	6)		Des.(N)	🗌 Pla	anning Data
Flow Inputs					
Volume, V	4840	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P _T	3	
Peak-Hr Prop. of AADT, K			%RVs, P _R	0	
Peak-Hr Direction Prop, D		vob/b	General Terrain:	Level	
		ven/n	Grade % Length	ΠΙ	
Coloulate Flour Adius					
Calculate Flow Adjust	iments				
f _p	1.00		E _R	1.2	
Ε _Τ	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	S	
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f _{LW}		mph
Number of Lanes, N	3		f _{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	70.0	mph	FFS	70.0	mph
Base free-flow Speed, BFF	S	mph			·
LOS and Performance	e Measures		Design (N)		
Onerstienel (LOC)			<u>Design (N)</u>		
$\frac{\text{Operational}(LOS)}{(LOS)}$			Design LOS		
$v_p = (V \text{ or } DDHV) / (PHF X N)$	N X T _{HV} X T _p) 1724	pc/h/ln	$v_p = (V \text{ or DDHV}) / (PHF x N x)$	f _{HV} x f _n)	pc/h/ln
S	66.8	mph	S	in p	mph
$D = v_p / S$	25.8	pc/mi/ln	$D = v_p / S$		pc/mi/ln
LOS	С		Required Number of Lanes, N		·
Glossary			Factor Location		
N - Number of lanes	S - Speed				
V - Hourly volume	D - Density		E_{R} - Exhibits 11-10, 11-12	40	T _{LW} - Exhibit 11-8
v _n - Flow rate	FFS - Free-flow	speed	E_{T} - Exhibits 11-10, 11-11, 11	-13	t _{LC} - Exhibit 11-9
LOS - Level of service	BFFS - Base fre	ee-flow speed	t _p - Page 11-18		TRD - Page 11-11
DDHV - Directional design h	nour volume		LOS, S, FFS, v _p - Exhibits 11-	2, 11-3	
Ĵ					

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Job: SW 10th Street SIMR Analyst: AECOM



RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Infor	mation			Site Infor	mation					
Analyst			Fr	eeway/Dir of Tr	avel	I-95 N	B			
Agency or Company	AECO	MC	Ju	Inction		Seq 4	-On from Ex	(p		
Date Performed			Ju	irisdiction		0				
Analysis Time Period	MA b		Ar	nalysis Year		2040	Build 2A			
Project Description	SW 10th Stree	t SIMR								
Inputs										
Linstream Adi Ramp		Freeway Num	ber of Lanes, N	4					Downstree	am Adi
		Ramp Numbe	r of Lanes. N	1					Ramp	
🗌 Yes 🛛 🗌 Or	า		ane Length	1500						
				1500					I Yes	∐ On
🗹 No 📃 Of	f	Deceleration	Lane Length L _D						🗌 No	✓ Off
		Freeway Volu	me, V _F	6310						
L _{up} = ft		Ramp Volume	e, V _R	860					L _{down} =	2950 ft
		Freeway Free	-Flow Speed, S _{FF}	70.0					V -	210 h /h
V _u = veh/h		Ramp Free-Fl	low Speed, S _{ED}	50.0					v _D –	310 ven/n
Conversion t	o pc/h Und	der Base	Conditions							
(nc/h)	V	PHE	Terrain	%Truck	%Bv		f	f	v = V/PHF	x f x f
(pc/ii)	(Veh/hr)		Terrain	70 TTUCK	/01.14		'HV	'p	v – v/i i ii	^ ' _{HV} ^ ' _p
Freeway	6310	0.95	Level	3	0	().985	1.00	6	742
Ramp	860	0.92	Level	2	0	().990	1.00	ç	944
UpStream						_				
DownStream	310	0.92	Level	2	0	().990	1.00	3	340
	-	Merge Areas				-	[Diverge Areas		
Estimation of	' v ₁₂				Estimat	ion	of v ₁₂			
	V ₁₂ = V _F	(P _{FM})					V -	V + (V - V))D	
L _{EO} =	(Equa	ation 13-6 o	r 13-7)		_		v 12 ⁻	^v R [·] (^v F ⁻ ^v R	/' FD 40 40 41	2)
P=	0 100	using Equat	tion (Exhibit 13-6)		EQ =			(Equation 13-	12 or 13-1	3)
Г FM	672 p	aling Equa			P _{FD} =			using Equatio	n (Exhibit 13	-7)
v 12 -	2024 V	C/II co/b/Equati	on 12 11 or 12		V ₁₂ =			pc/h		
V ₃ or V _{av34}	3034 17)	pc/n (⊏quau	01113-14 01 13-		$V_3^{}$ or $V_{av34}^{}$			pc/h (Equation 1	3-14 or 13-1	7)
Is V _o or V $\rightarrow > 2.70$	0 pc/h? ☑ ⊻e	s 🗌 No			Is V ₃ or V _{av}	₃₄ > 2,	700 pc/h?	Yes No		
le V or V > 15	* V /2 V				Is V ₂ or V ₂	₂₄ > 1.	5 * V ₁₀ /2	Yes No		
13 v ₃ 01 v _{av34} > 1.5	v ₁₂ /∠ ⊻ res	S ∐INO	10 10 10			34	12 -	pc/h (Equation	n 13-16. 13	3-18. or
If Yes,V _{12a} =	2090 18 or	pc/n (Equau 13₋19)	on 13-16, 13-		if Yes,V _{12a} =	=	1	3-19)	, -	-,
Capacity Che	cks	10 10)			Capacit	v Cł	ecks			
	Actual		anacity	LOS F2		<u>, .</u>	Actual	Car	nacity	LOS F2
	710(001	Ĩ	Japaony	20011	V_		7101000	Exhibit 13-		2001.
						V				-
V _{FO}	7686	Exhibit 13-8		No	V _{FO} – V _F	- v _R		Exhibit 13-0	»	
					V _R			Exhibit 13-	-	
Flow Entering	n Merge In	fluence 4	rea	<u> </u>	Flow En	iteri	na Dive	rae Influen		
	Actual	Max	Desirable	Violation?			Actual	Max Desi	rable	Violation?
V _{P40}	3963	Exhibit 13-8	4600:All	No	V10			Exhibit 13-8		
l evel of Serv	ice Detern	nination (if not F)		l evel of	f Ser	vice De	terminatio	n (if not	F)
$D_{-} = 5.475 \pm 0.00734 v_{-} \pm 0.00627 I_{-}$							- /			
D = 20.0 (mo/m)					D - (^C R	1.202 · 0		.000 LD	
$D_{\rm R} = 20.2 ({\rm pc/m})$	1/11)				P _R = (F		in)			
LOS = D (Exhibit	13-2)				LOS = (E	-xhib	it 13-2)			
Speed Detern	nination				Speed L	Dete	rminatio	on		
M _S = 0.376 (Exi	bit 13-11)				D _s = (E	xhibit	13-12)			
S _R = 59.5 mph	(Exhibit 13-11)				S _R = m	ph (Ex	hibit 13-12)			
$S_{0} = 65.5 \text{ mph} (Exhibit 13-11)$ $S_{0} = \text{mph} (Exhibit 13-12)$										
S = 62.1 mph	(Exhibit 13-13)				S= m	ph (Ex	(hibit 13-13)			
L					I					

RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Infor	mation			Site Infor	mation					
Analyst			Fre	eeway/Dir of Tr	ravel I-95 NB					
Agency or Company	AECO	DM	Ju	nction		Seg 5-0	Off to Exp fr	om GPL		
Date Performed			Ju	risdiction						
Analysis Time Period	AM AM		An	alysis Year		2040 B	uild 2A			
	SW 10th Street	SINK								
inputs								T		
Upstream Adj R	amp	Freeway Nur	nder of Lanes, N	4				1	Downstrea	m Adj
		Ramp Numbe	er of Lanes, N	1					Ramp	
		Acceleration	Lane Length, L _A						Yes	On
□ No □	Off	Deceleration	Lane Length L _D	200					V No	Off
		Freeway Volu	ıme, V _F	7170						
L _{up} = 29	50 ft	Ramp Volum	e, V _R	310				l	-down =	ft
	Freeway Free-Flow Speed, S _{FF} 70.0						voh/h			
$V_u = 86$	0 veh/h	Ramp Free-F	low Speed, S _{ED}	45.0					vD -	ven/n
Conversion t	o nc/h Unc	ler Base	Conditions					I		
	V		- ·	0/ T	0/ D	1	ء	4		
(pc/n)	(Veh/hr)	PHF	Terrain	% I ruck	%RV		ЧV	^I p		х і _{НV} х і _р
Freeway	7170	0.95	Level	3	0	0.	985	1.00	766	51
Ramp	310	0.92	Level	2	0	0.	990	1.00	340	0
UpStream	860	0.92	Level	2	0	0.	990	1.00	944	4
DownStream										
	[[Merge Areas			F ation of		D	verge Areas		
Estimation of	^v 12				Estimat	ion o	^{or v} 12			
	V ₁₂ = V _F	(P _{FM})					V ₁₂ =	V _R + (V _F - V _R)P _{FD}	
L _{EQ} =	(Equa	tion 13-6 or	⁻ 13-7)		L _{EQ} =		(E	quation 13-12	2 or 13-13)	
P _{FM} =	using	Equation (Exhibit 13-6)		P _{FD} =		0.4	36 using Equ	ation (Exhib	it 13-7)
V ₁₂ =	pc/h				V ₁₂ =		353	32 pc/h		
V_3 or V_{av34}	pc/h (I	Equation 13	3-14 or 13-17)		V_3 or V_{av34}		206	64 pc/h (Equa	ation 13-14	or 13-17)
Is V_3 or $V_{av34} > 2,70$	0 pc/h? 🗌 Yes	s 🗌 No			Is V ₃ or V _{av}	₃₄ > 2,7	00 pc/h?	Yes 🗹 No		,
Is V_3 or $V_{av34} > 1.5^{\circ}$	* V ₁₂ /2 Yes	s 🗌 No			Is V ₃ or V ₃	_{عم} > 1.5	* V ₁₂ /2	Yes VNo		
	pc/h (I	Equation 13	8-16, 13-18, or			-	12 pc	:/h (Equation	13-16, 13- ⁻	18, or 13-
11 103, v _{12a} -	13-19)				11 1 C3, V 12a		19)		
Capacity Che	ecks			í.	Capacit	y Ch	ecks	i		
	Actual	(Capacity	LOS F?			Actual	Сар	pacity	LOS F?
					V _F		7661	Exhibit 13-8	9600	No
V _{FO}		Exhibit 13-8			V _{FO} = V _F	- V _R	7321	Exhibit 13-8	9600	No
					V _R		340	Exhibit 13-10	2100	No
Flow Entering	g Merge In	fluence A	Area		Flow Er	nterin	g Diver	ge Influend	ce Area	
•	Actual	Max	Desirable	Violation?			Actual	Max Desirabl	е	Violation?
V _{R12}		Exhibit 13-8			V ₁₂	3	3532	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)					Level of	f Serv	vice Det	ermination	n (if not F	-)
D _R = 5.475 + 0.			D _R = 4	1.252 + 0.0	0086 V ₁₂ - 0.0	09 L _D				
D _p = (pc/mi/ln)	12			$D_{p} = 32$	2.8 (pc	/mi/ln)	12	U	
I OS = (Exhibit	, 13-2)					(Exhil	nit 13-2)			
Speed Determination S							minatio	n		
								1 1		
M _S = (Exibit 1:	3-11)				$s_{s}^{-} = 0.$	JZ9 (⋿		12)		
S _R = mph (Exh	nibit 13-11)				S_R = 60.8 mph (Exhibit 13-12)					
S ₀ = mph (Exh	nibit 13-11)				S ₀ = 72.6 mph (Exhibit 13-12)					
S = mph (Exh	nibit 13-13)				S = 66	6.7 mph	(Exhibit 1	3-13)		

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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	I-95 NB Seg 6-Se	outh of Off to 10th
Analysis Time Period			Analysis Year	2040 Bu	lla ZA
Oper (LOS)			Des (N)	Pla	inning Data
Flow Inputs	,				
Volume, V AADT Peak-Hr Prop. of AADT, K	6860	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T %RVs, P _R	0.95 3 0	
Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	General Terrain: Grade % Length Up/Down %	Level mi	
Calculate Flow Adjustr	nents				
f _p	1.00		E _R	1.2	
Ε _T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	4 70.0	ft ft ramps/mi mph mph	f _{⊥w} f _{LC} TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N S D = v _p / S LOS	x f _{HV} x f _p) 1832 65.4 28.0 D	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v _p = (V or DDHV) / (PHF x N x S D = v _p / S Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base free our volume	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-	-13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	I-95 NB Seg 8-Be	et Off & Off Ramps
Analysis Time Period	AM		Analysis Year	2040 Bu	ild 2A
Project Description SW Tota	n Street Simik				upping Data
Flow Inputs			Jes.(N)		
Volume, V AADT	5620	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	^{°,} General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustn	nents				
f _p	1.00		E _R	1.2	
E _T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free flow Speed BEES	3 70.0	ft ft ramps/mi mph mph	f _{LW} f _{LC} TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Moasuros	трп	Dosian (N)		
$\frac{\text{Operational (LOS)}}{v_p} = (V \text{ or DDHV}) / (PHF x N)$ S D = v_p / S LOS	x f _{HV} x f _p) 2002 62.5 32.0 D	pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x)$ S $D = v_p / S$ Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fre ur volume	speed e-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	.13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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		RAMP	S AND RAM	P JUNCTI	ONS WO	RKS	HEET			
General Infor	rmation			Site Infor	mation					
Analyst			Fr	eeway/Dir of Tr	avel	I-95 NE	3			
Agency or Company	AEC	ОМ	Ju	inction		Seg 9-0	Off to Hillst	ooro EB&WB		
Date Performed	d ^^^		Ju	risdiction		2010 0				
Project Description	SW 10th Stree		AI	lalysis real		2040 B				
Inputs										
		Freeway Num	ber of Lanes. N	3					Durate	A!!
Upstream Adj H	kamp	Ramp Numbe	er of Lanes N	1					Ramp	am Adj
Yes	On		ane Length	I						
	_	Docoloration	Lanc Longth L	200					Ves 🗹	M On
No	Off	Eroowov Volu		200					🗌 No	Off
	ft.		nne, v _F	2020					L =	2100 ft
−up	L.		e, v _R	1370					down	2100 10
V., = v	= veh/h Freeway Free-Flow Speed, S _{FF} 70.								V _D =	1640 veh/h
u		Ramp Free-F	low Speed, S _{FR}	45.0						
Conversion t	o pc/h Un	der Base	Conditions	r	1	_				
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	v = V/PHF	⁻ x f _{HV} x f _p
Freeway	5620	0.95	Level	3	0	0.	985	1.00	6	005
Ramp	1370	0.92	Level	2	0	0.	990	1.00	1	504
UpStream										
DownStream	1640	0.92	Level	2	0	0.	990	1.00	1	800
	<u>,</u>	Merge Areas				•	[Diverge Areas		
Estimation of	r v ₁₂				Estimat	ion o	or v ₁₂			
	V ₁₂ = V _F	(P _{FM})					V ₁₂ =	= V _R + (V _F - V	/ _R)P _{FD}	
L _{EQ} =	(Equa	ation 13-6 or	13-7)		L _{EQ} =		(Equation 13-	12 or 13-13	3)
P _{FM} =	using	Equation (Exhibit 13-6)		P _{FD} =		0.	541 using Ec	quation (Exh	ibit 13-7)
V ₁₂ =	pc/h				V ₁₂ =		39	938 pc/h		
$V_3^{}$ or $V_{av34}^{}$	pc/h (Equation 13	-14 or 13-17)		$V_3^{}$ or $V_{av34}^{}$		20)67 pc/h (Eq	uation 13-1	4 or 13-17)
Is V_3 or $V_{av34} > 2,70$	00 pc/h? 🗌 Ye	s 🗌 No			Is V_3 or V_{av}	₃₄ > 2,7	00 pc/h?	Yes 🗹 No		
Is V_3 or $V_{av34} > 1.5$	* V ₁₂ /2 🗌 Ye	s 🗌 No			Is V ₃ or V _{av}	₃₄ > 1.5	* V ₁₂ /2	Yes 🗹 No		
If Yes.V ₁₀₀ =	pc/h (Equation 13	-16, 13-18, or		If Yes.V ₄₀₂ =	=	, p	c/h (Equatio	n 13-16, 13	-18, or 13-
	13-19))				. Ch	1	9)		
Capacity Che	Actual		Nanaait <i>i</i>			y Ch	ecks		en e citr	
	Actual		Japacity	LUGF?	V		Actual	Evhibit 13		LUG F?
Ň					V F		6005		-0 7200	INO
V _{FO}		Exhibit 13-8			$v_{FO} = v_F$	- v _R	4501	Exhibit 13	-8 /200	NO
					V _R		1504	Exhibit 13-	10 2100	No
Flow Entering	g Merge In	fluence A	Area		Flow En	<u>iterin</u>	g Dive	rge Influei	nce Area	
	Actual	Max	Desirable	Violation?		/	Actual	Max Desira		Violation?
V _{R12}		Exhibit 13-8			V ₁₂		3938	Exhibit 13-8	4400:All	No
Level of Serv	Level of Service Determination (if not F)						vice De	terminatio	on (if not	F)
$D_{R} = 5.475 + 0.000$			D _R = 4	1.252 + 0	.0086 V ₁₂ - 0	0.009 L _D				
D _R = (pc/mi/lr	D _R = (pc/mi/ln)									
LOS = (Exhibit		LOS = E	(Exhib	oit 13-2)						
Speed Deterr	Speed Determination						minatio	on		
M _S = (Exibit 1	₃ = (Exibit 13-11)					433 (E	xhibit 13-	-12)		
S _R = mph (Exh	= mph (Exhibit 13-11)					7.9 mph	(Exhibit	13-12)		
S ₀ = mph (Exh	nibit 13-11)				S ₀ = 72	2.6 mph	(Exhibit	13-12)		
S = mph (Exh	nibit 13-13)				S = 62	2.2 mph	(Exhibit	13-13)		
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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	I-95 NB Seg 10-E	Bet Off & On Ramps
Analysis Time Period	AM		Analysis Year	2040 Bu	ild 2A
Project Description SW 10th	n Street SIMR				
✓ Oper.(LOS)			Des.(N)	Pla	nning Data
Flow inputs					
Volume, V AADT	4250	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P _R General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustn	nents				
f _p	1.00		E _R	1.2	
E _T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width		ft			
Rt-Side Lat. Clearance	2	Ħ	T _{LW}		mpn
Total Ramp Density TRD	3	ramps/mi	^I LC TRD Adjustment		mpn
FES (measured)	70.0	mph		70.0	mph
Base free-flow Speed, BFFS		mph		70.0	трп
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N > S D = v _p / S LOS	(f _{HV} x f _p) 1514 68.9 22.0 C	pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x)$ S $D = v_p / S$ Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fre ur volume	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	-13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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		F	REEWAY	' WEAV	ING WOF	RKSHEE	Т			
Genera	l Informati	on			Site Info	rmation				
Analyst Agency/Co Date Perfo Analysis Ti	mpany med me Period	AECO AM	М		Freeway/Dir of TravelI-95 NBWeaving Segment LocationSeg 11-Bet On & Off to ExpAnalysis Year2040 Build 2A					
Project Des	scription SW 10t	h Street SIM	2							
Inputs					•					
Weaving configurationTwo-SideWeaving number of lanes, N29701Weaving segment length, Ls29701Freeway free-flow speed, FFS70 mp					 Segment type Freeway minimum speed, S_{MIN} Freeway maximum capacity, C_{IFL} Terrain type 					
Conver	sions to p	c/h Unde	r Base Co	ndition	s	0	•	1	-	
	V (veh/h)	PHF	Truck (%)	RV (%)	E _T	E _R	f _{HV}	fp	v (pc/h)	
V _{FF}	3639	0.95	3	0	1.5	1.2	0.985	1.00	3888	
V _{RF}	2551	0.92	2	0	1.5	1.2	0.990	1.00	2801	
V _{FR}	611	0.92	2	0	1.5	1.2	0.990	1.00	671	
V _{RR}	429	0.92	2	0	1.5	1.2	0.990	1.00	471	
V _{NW}	7360			-		-	-	V =	7831	
V _W	471							-		
VR	0.060									
Config	uration Cha	aracteris	tics		•					
Minimum r	naneuver lanes,	N _{WL}		0 lc	Minimum we	eaving lane c	hanges, LC _{MIN}		1413 lc/h	
Interchang	e density, ID			0.7 int/mi	Weaving lan	e changes, L	-C _W		1906 lc/h	
Minimum F	RF lane changes	, LC _{RF}		0 lc/pc	Non-weaving	g lane chang	es, LC _{NW}		2701 lc/h	
Minimum F	R lane changes	, LC _{FR}		0 lc/pc	Total lane ch	nanges, LC _{AL}	L		4607 lc/h	
Minimum F	R lane changes	, LC _{RR}		3 lc/pc	Non-weaving	g vehicle ind	ex, I _{NW}		1530	
Weavin	g Segmen	t Speed,	Density, I	_evel of	Service,	and Cap	oacity			
Weaving segment flow rate, v7734 veh/Weaving segment capacity, c8457 veh/					Weaving inte Weaving sec	ensity factor, gment speed	W , S		0.320 50.8 mph	
Weaving s	egment v/c ratio			0.914	Average wea	aving speed,	S _W		56.7 mph	
Weaving s	egment density,	D	38	3.6 pc/mi/ln	i/In Average non-weaving speed, S _{NW} 50.4 r				50.4 mph	
Level of Se	ervice, LOS			E	Maximum weaving length, L _{MAX} 6289 ft					
Notes a. Weaving Chapter 13, b. For volum	segments longer t "Freeway Merge a les that exceed th	han the calcula and Diverge Se	ated maximum le egments". ment capacity th	ength should l	be treated as is	solated merge	and diverge ar	eas using the	procedures of	

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	BASIC FRE	EWAY SE	GMENTS WORKSHEE	Г	
			1		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To	I-95 NB Seg 12-N	orth of Hillsboro
Analysis Time Period	AM		Analysis Year	2040 Buil	d 2A
Project Description SW 1	0th Street SIM	R			
✓ Oper.(LOS)			es.(N)	🗌 Plann	ing Data
Flow Inputs					
Volume, V AADT	6190	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P _R General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjus	tments				
f _n	1.00		E _R	1.2	
E _T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and F	FS	
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f _{r w}		mph
Number of Lanes, N	4		f _{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	70.0	mph	FFS	70.0	mph
Base free-flow Speed, BFFS		mph			
LOS and Performance	e Measures		Design (N)		
Operational (LOS)	N v f		<u>Design (N)</u> Design LOS		
$r_p = (v \text{ or } D D h v) / (1 h r x h r)$ x f _p)	1653 No. 1653	pc/h/ln	v _p = (V or DDHV) / (PHF x f x f)	N x f _{HV}	pc/h/ln
S	67.6	mph	s		mph
$D = v_p / S$	24.4	pc/mi/ln	$D = v_{\mu} / S$		pc/mi/ln
LOS	С		Required Number of Lanes	, N	P 0, 111, 11
Glossary			Factor Location		
N - Number of lanes	S - Spee	d			
V - Hourly volume	D - Densi	ty	$E_{\rm R}$ - EXHIBITS 11-10, 11-12	11 12 4	I _{LW} - EXHIBIT 11-0
v _n - Flow rate	FFS - Free	- flow speed	$E_{T} = EXIIIDILS + 1 - 10, + 1 - 11,$	11-13	
LOS - Level of service speed	BFFS - Ba	se free-flow	LOS, S, FFS, v_p - Exhibits r	11-2,	ראט - Page 11-11
DDHV - Directional design	hour volume		11-3		

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		ſ	REEWA	Y WEAV	ING WOF	RKSHEE	Т			
Genera	I Informati	on			Site Info	ormation				
Analyst Agency/Co Date Perfo Analysis Ti	mpany rmed me Period	AECO PM	М		Freeway/Dir Weaving Se Analysis Yea	Freeway/Dir of Travel I-95 NB Weaving Segment Location Seg 1-Bet Copans & Sam Analysis Year 2040 Build 2A				
Project Des	scription SW 10t	h Street SIMF	२							
Inputs					1					
Weaving configurationOne-SideWeaving number of lanes, NWeaving segment length, Ls2380Freeway free-flow speed, FFS70 mp					Segment type Free Freeway minimum speed, S _{MIN} Freeway maximum capacity, C _{IFL} Terrain type I				Freewa 1 240 Leve	
Conver	sions to p	c/h Unde	r Base Co	ondition	<u>s</u>	1	•	Ĩ.	-	
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε _Τ	E _R	f _{HV}	fp	v (pc/h)	
V _{FF}	4145	0.95	3	0	1.5	1.2	0.985	1.00	4429	
V _{RF}	495	0.92	2	0	1.5	1.2	0.990	1.00	543	
V _{FR}	1820	0.92	2	0	1.5	1.2	0.990	1.00	1998	
V _{RR}	0	0.95	0	0	1.5	1.2	1.000	1.00	0	
V _{NW}	4429			-	-	•	-	V =	6970	
V _w	2541							-		
VR	0.365									
Config	uration Cha	aracteris	tics							
Minimum r	naneuver lanes,	N _{WI}		2 lc	Minimum we	eaving lane c	hanges, LC _{MIN}		lc/ł	
Interchang	e density, ID			0.7 int/mi	Weaving lan	ie changes, L	.C _w		lc/ł	
Minimum F	RF lane changes	, LC _{RF}		1 lc/pc	Non-weaving	g lane chang	es, LC _{NW}		lc/ł	
Minimum F	R lane changes	, LC _{FR}		1 lc/pc	Total lane ch	nanges, LC _{AL}	L		lc/ł	
Minimum F	RR lane changes	, LC _{RR}		lc/pc	Non-weaving	g vehicle inde	ex, I _{NW}		787	
Weavin	ig Segmen	t Speed,	Density,	Level of	Service,	and Cap	pacity			
Weaving s	egment flow rate	, V		6880 veh/h	Weaving inte	ensity factor,	W			
Weaving segment capacity, c _w 6486 vel					Weaving seg	gment speed	, S		mpł	
Weaving segment v/c ratio 1.0					Average wea	aving speed,	S _w		mpł	
Weaving s	Weaving segment density, D pc/mi					/In Average non-weaving speed, S _{NW}			mpl	
Level of Se	Level of Service, LOS F					F Maximum weaving length, L _{MAX} 6287 ft				
Notes					-					
a. Weaving Chapter 13	segments longer t	han the calcula	ated maximum le	ength should l	pe treated as is	solated merge	and diverge ar	eas using the	procedures of	

Chapter 13, "Freeway Merge and Diverge Segments". b. For volumes that exceed the weaving segment capacity, the level of service is "F".

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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
Conorol Information			Site Information		
			Highway/Direction of Travel		
Analysi Agapay ar Campany	45004			Seg 2-B	et Off & On from
Agency or Company	AECOM		From/To	Sample	
Date Performed Analysis Time Period	PM		Jurisdiction Analysis Year	2040 Bu	ild 2A
Project Description SW 10	Oth Street SIMR				
Oper.(LOS	6)		Des.(N)	Pla	anning Data
Flow Inputs					
Volume, V	4640	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P _T	3	
Peak-Hr Prop. of AADT, K			%RVs, P _R	0	
Peak-Hr Direction Prop, D		vob/b	General Terrain:	Level	
		ven/n	Grade % Length	mi	
Coloulate Flour Adius					
Calculate Flow Adjust	iments				
f _p	1.00		E _R	1.2	
Ε _T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FF	S	
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f _{LW}		mph
Number of Lanes, N	3		f _{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	70.0	mph	FFS	70.0	mph
Base free-flow Speed, BFF	S	mph			·
LOS and Performance	e Measures		Design (N)		
			Design (N)		
Operational (LOS)			Design LOS		
$v_p = (V \text{ or } DDHV) / (PHF X N)$	$1 \times f_{HV} \times f_p$) 1652	pc/h/ln	$v_{p} = (V \text{ or DDHV}) / (PHF x N x)$	(f _{HV} x f _n)	pc/h/ln
S	67.6	mph	S	iiv p	mph
$D = v_p / S$	24.4	pc/mi/ln	$D = v_p / S$		pc/mi/ln
LOS	С		Required Number of Lanes, N		·
Glossary			Factor Location		
N - Number of lanes	S - Speed				
V - Hourly volume	D - Densitv		E _R - Exhibits 11-10, 11-12		t _{LW} - Exhibit 11-8
v _n - Flow rate	FFS - Free-flow	speed	E _T - Exhibits 11-10, 11-11, 11	-13	t _{LC} - Exhibit 11-9
LOS - Level of service	BFFS - Base fre	ee-flow speed	f _p - Page 11-18		TRD - Page 11-11
DDHV - Directional design h	nour volume	1	LOS, S, FFS, v _p - Exhibits 11-	2, 11-3	
ŬŬ					

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Job: SW 10th Street SIMR Analyst: AECOM



RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Info	rmation			Site Infor	mation					
Analyst			Fr	eeway/Dir of Tr	avel	I-95 N	IB			
Agency or Company	AEC	ОМ	Ju	inction		Seg 4	-On from Ex	(p		
Date Performed			Ju	irisdiction		Ū				
Analysis Time Perio	d PM		Ar	nalysis Year		2040	Build 2A			
Project Description	SW 10th Stree	t SIMR								
Inputs										
LInstream Adi Ramn	, ,	Freeway Num	ber of Lanes, N	4					Downstre	am Adi
	, ,	Ramp Numbe	r of Lanes, N	1					Ramp	
Yes O	n	Acceleration I	ane Length L	1500						
		Deceloration	ano Longth L	1000					I Yes	□ On
No O	ff								🗌 No	✓ Off
		Freeway Volu	me, V _F	5800						2050 G
$L_{up} = ft$		Ramp Volume	e, V _R	730					└down [—]	2950 11
	_	Freeway Free	-Flow Speed, S _{FF}	70.0					V_ =	120 veh/h
v _u = ven/n Ramp Free-Flow Speed, S _{⊏P} 50.0							*D	420 Ven/m		
Conversion t	to pc/h Und	der Base	Conditions							
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f _{LN/}	f	v = V/PHF	x f _{uv} x f _n
(i)	(Veh/hr)	0.05			0			р 1.00		HV p
Freeway	5800	0.95	Level	3	0).985	1.00	6	197
Ramp	730	0.92	Level	2	0	().990	1.00	{	301
OpStream Dever Stream	400	0.00	1		0		000	4.00		104
DownStream	winStream 420 0.92 Level 2				0		J.990		2	101
Estimation o	fv	Nerge Areas			Estimat	ion	ofv	nverge Areas		
	12				LStimat		12			
	$V_{12} = V_{F}$	(P _{FM})					$V_{12} = 1$	V _P + (V _F - V _P		
L _{EQ} =	(Equa	ation 13-6 o	r 13-7)		L=0 =		12	(Equation 13-	12 or 13-1	3)
P _{FM} =	0.118	using Equat	tion (Exhibit 13-6)		EQ P =			using Equatio	n (Exhibit 1?	-7)
V ₁₂ =	729 p	c/h			FD			no/h		, , ,
	2734 i	pc/h (Equati	on 13-14 or 13-		v ₁₂ –			pc/n		
v ₃ or v _{av34}	17)				v ₃ or v _{av34}	-		pc/n (Equation 1	13-14 or 13-1	()
Is V_3 or $V_{av34} > 2,70$	00 pc/h? 🗹 Ye	s 🗌 No			Is V ₃ or V _{av}	₃₄ > 2,	700 pc/h?	_Yes _No		
Is V ₃ or V _{av34} > 1.5	* V ₁₂ /2	s 🗌 No			Is V ₃ or V _{av}	₃₄ > 1.	5 * V ₁₂ /2	Yes No		
If Yes V =	2478	pc/h (Equati	on 13-16, 13-		If Yes,V _{12a} =	=	1	pc/h (Equation	n 13-16, 13	3-18, or
11 103, V 12a	18, or	13-19)			120		1.	3-19)		
Capacity Che	ecks				Capacit	y Ch	necks			
	Actual	C	Capacity	LOS F?			Actual	Car	pacity	LOS F?
					V _F			Exhibit 13-8	8	
Vro	6998	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V _R		Exhibit 13-8	8	
FU					V			Exhibit 13	-	
					^V R			10		
Flow Enterin	g Merge In	fluence A	lrea		Flow En	teri	ng Dive	rge Influen	ce Area	
	Actual	Max	Desirable	Violation?		_	Actual	Max Desi	irable	Violation?
V _{R12}	3576	Exhibit 13-8	4600:All	No	V ₁₂			Exhibit 13-8		
Level of Serv	vice Detern	nination (if not F)		Level of	f Ser	vice De	terminatio	n (if not	F)
D _R = 5.475 +	+ 0.00734 v _R + (0.0078 V ₁₂ - 0.	00627 L _A			D _R =	4.252 + 0	.0086 V ₁₂ - 0	.009 L _D	
D _R = 25.1 (pc/mi/ln) D _R = (pc/mi/ln)										
LOS = C (Exhibit	13-2)				LOS = (E	Exhibi	it 13-2)			
Speed Deter	Speed Determination Speed Determination									
$M_{0} = 0.310 / E_{V}$	ihit 13_11)				D,= (E	xhibit	13-12)	· -		
- 0.010 (EX	(Ever: 40.44)				S_= m	nh (Ev	(hibit 13-12)			
$\rho_R = 01.3 \text{ mph}$	(⊏xni0it 13-11)				S =	P'' (∟^ nh (⊏	(hibit 12, 10)			
5 ₀ = 66.0 mph	(Exhibit 13-11)				C₀− m	hıı (⊏x	(1)(13-12)			
S = 63.4 mph	(Exhibit 13-13)				S= m	ph (Ex	(hibit 13-13)			

		RAMP	S AND RAM	P JUNCTI	ONS WO	RKS	HEET			
General Infor	mation			Site Infor	mation					
Analyst			Fr	eeway/Dir of Tr	avel	I-95 NE	}			
Agency or Company	AECO	MC	Ju	inction		Seg 5-0	Off to Exp f	rom GPL		
Date Performed			Ju	risdiction						
Analysis Time Period	M PM		Ar	nalysis Year		2040 B	uild 2A			
Project Description	SW 10th Street	t SIMR								
inputs			shan af Lanaa N							
Upstream Adj R	amp	Freeway Nun	nder of Lanes, N	4					Downstrea	n Adj
Voc. W	2 On	Ramp Numbe	er of Lanes, N	1					Ramp	
		Acceleration	Lane Length, L _A						🗌 Yes	On
□ No □	Off	Deceleration	Lane Length L _D	200					V No	Off
		Freeway Volu	ume, V _F	6530						
L _{up} = 29	50 ft	Ramp Volum	e, V _R	420					L _{down} =	ft
	• • • •	Freeway Free	e-Flow Speed, S _{FF}	70.0					V -	voh/h
$v_u = 73$	0 veh/h	Ramp Free-F	low Speed, S _{ER}	45.0					VD -	VEII/II
Conversion to pc/h Under Base Conditions										
(V		Termelia	0/ T au ala	0/ D		f	f		, f y f
(pc/n)	(Veh/hr)	PHF	Terrain	% I FUCK	%RV		HV	Iр		HV X p
Freeway	6530	0.95	Level	3	0	0.	985	1.00	697	7
Ramp	420	0.92	Level	2	0	0.	990	1.00	46	
UpStream	730	0.92	Level	2	0	0.	990	1.00	80 [.]	
DownStream										
Estimation of	[[]	vierge Areas			Ectimat	ion o	<u> </u>	liverge Areas		
Estimation of	v ₁₂				Estimati		1 v 12			
	$V_{12} = V_{F}$	(P _{FM})					V ₁₂ =	V _R + (V _F - V _F	_R)P _{FD}	
L _{EQ} =	(Equa	tion 13-6 or	· 13-7)		L _{EQ} =		(E	Equation 13-1	2 or 13-13)	
P _{FM} =	using	Equation (Exhibit 13-6)		P _{FD} =		0.4	436 using Eq	uation (Exhib	it 13-7)
V ₁₂ =	pc/h				V ₁₂ =		33	02 pc/h		
V ₃ or V _{av34}	pc/h (l	Equation 13	3-14 or 13-17)		V ₃ or V _{av34}		18	37 pc/h (Equ	ation 13-14	or 13-17)
Is V_3 or $V_{av34} > 2,70$	0 pc/h? 🗌 Yes	s 🗌 No			Is V ₃ or V _{av3}	₃₄ > 2,7	00 pc/h? 🗌	Yes 🗹 No		
Is V_3 or $V_{av34} > 1.5$	* V ₁₂ /2 Yes	s 🗌 No			Is V ₃ or V _{av}	₃₄ > 1.5	* V ₁₂ /2	Yes 🗹 No		
If Yes V.a. =	pc/h (l	Equation 13	3-16, 13-18, or		If Yes V =	:	p	c/h (Equation	13-16, 13-1	8, or 13-
n 100, 1 _{12a}	13-19)				12a		19	9)		
Capacity Che	CKS	1		1	Capacit	y Che	ecks			
	Actual	(Capacity	LOS F?			Actual	Ca	pacity	LOS F?
					V _F		6977	Exhibit 13-8	3 9600	No
V _{FO}		Exhibit 13-8			$V_{FO} = V_{F}$	- V _R	6516	Exhibit 13-8	3 9600	No
					V _R		461	Exhibit 13-1	0 2100	No
Flow Entering	g Merge In	fluence A	Area		Flow En	terin	g Diver	ge Influen	ce Area	
	Actual	Max	Desirable	Violation?		ļ	Actual	Max Desirat	ole	Violation?
V _{R12}		Exhibit 13-8			V ₁₂	3	3302	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 _R + (0.0078 V ₁₂	- 0.00627 L _A			D _R = 4	.252 + 0.	.0086 V ₁₂ - 0.	009 L _D	
D _R = (pc/mi/ln)				D _R = 30).8 (pc/	/mi/ln)			
LOS = (Exhibit	, 13-2)				LOS = D	(Exhit	, pit 13-2)			
Speed Detern	nination				Sneed [)eter	minatio	n		
					D = 0	330 /=-	vhihit 12	12)		
$W_{S} = (Exibit 1)$	3- 11)				S = cc	003 (⊑.) 5 m=⊦		12 10)		
୦ _R = mph (Exh	ubit 13-11)				S	.ompn	(⊏xniDit	10-12)		
S ₀ = mph (Exh	ibit 13-11)				S ₀ = 73	s.5 mph	(Exhibit	13-12)		
S = mph (Exh	iibit 13-13)				S = 66	6.7 mph	(Exhibit	13-13)		

	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	I-95 NB Seg 6-S	outh of Off to 10th
Analysis Time Period	PM th Street SIMP		Analysis Year	2040 Bu	lila 2A
Project Description 31770					anning Data
)		Jes.(III)		
Volume, V AADT	6110	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P _R General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjust	ments				
f _p Ε _τ	1.00 1.5		E _R f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	1.2 0.985	
Speed Inputs			Calc Speed Adi and FFS	6	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	4 70.0	ft ft ramps/mi mph mph	f _{LW} f _{LC} TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N S D = v _p / S LOS	x f _{HV} x f _p) 1632 67.8 24.1 C	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v _p = (V or DDHV) / (PHF x N x S D = v _p / S Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design h	S - Speed D - Density FFS - Free-flow BFFS - Base fre our volume	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	.13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	I-95 NB Seg 8-B	et Off & Off Ramps
Analysis Time Period	PM		Analysis Year	2040 Bu	ild 2A
Project Description SW 10t	n Street SIMR				naina Data
✓ Oper.(LOS))		Jes.(N)		Inning Data
	1010			0.05	
Volume, V AADT	4910	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%Rvs, P _R General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustr	ments				
f _p	1.00		E _R	1.2	
E _T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width		ft			
Rt-Side Lat. Clearance	0	ft	† _{LW}		mph
Number of Lanes, N	3				mph
EES (mossured)	70.0	ramps/mi		70.0	mpn
Rase free-flow Speed BEES	70.0	mph	FFS	70.0	mpn
		трп	–		
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N S D = v _p / S LOS	x f _{HV} x f _p) 1749 66.5 26.3 D	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v _p = (V or DDHV) / (PHF x N x S D = v _p / S Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fre pur volume	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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		RAMP	S AND RAM	P JUNCTI	ONS WO	RKS	HEET			
General Infor	rmation			Site Infor	mation					
Analyst			Fr	eeway/Dir of Tr	avel	I-95 NE	3			
Agency or Company	AEC	OM	Ju	nction		Seg 9-0	Off to Hills	ooro EB&WB		
Date Performed			Ju	risdiction		~ ~ ~ ~ ~				
Analysis Time Perio	d PM		Ar	alysis Year		2040 B	uild 2A			
	SW 10th Stree	et SIMR								
inputs		Erooway Nup	abor of Lanos N	2						
Upstream Adj F	Ramp	Demo Number	ider of Lanes, N	3					Downstre	am Adj
	On		er of Lanes, N	1					катр	
		Acceleration	Lane Length, L _A						🗹 Yes	🗹 On
✓ No	Off	Deceleration	Lane Length L _D	200						Off
	_	Freeway Volu	ıme, V _F	4910						
$L_{up} = 1$	ft	Ramp Volum	e, V _R	1360					L _{down} =	2100 ft
	Freeway Free-Flow Speed, S _{FF} 70.0								V_ =	1800 veh/h
v _u - v	Ramp Free-Flow Speed, S _{FR} 45.0								•0	
Conversion t	to pc/h Un	der Base	Conditions						•	
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f _{un/}	f	v = V/PHF	x f _{uv} x f
	(Veh/hr)	0.05	l e vel	2	0			p 1.00		
Freeway	4910	0.95	Level	3	0	0.	985	1.00	5.	246
Kallip UnStroam	1360	0.92	Level	2	0	0.	990	1.00	1.	493
DownStream	1800	0.92	ا مربوا	2	0	0	990	1 00	1	976
Downoulcam	Merge Areas				0	0.	330	Diverge Areas	<u> </u>	510
Estimation of	f v12				Estimat	ion o	$f V_{12}$			
	<u>12</u> V = V	(P)					<u> </u>	= V + (V - V)	/)P	
	12 F	(' FM)	13 7)		. =		* 12	^e R ⁺ (^e F ⁻	'R/'FD 12 or 13 1'	2)
EQ	(Lque	Equation (10-7		EQ D -		(12 01 10-10	ソ :に:1 1 2 7)
FFM -	using	Equation (EXHIDIT 13-0)		FD -		0.	500 USING EC	Juation (Exr	idit 13-7)
$v_{12} - v_{12} - v$	рс/п				$v_{12} - v_{12} - v$		3:	95 pc/n		
v_3 or v_{av34}	pc/n (Equation 13	3-14 or 13-17)		v ₃ or v _{av34}		16 100 /1- 0 - E	51 pc/h (Equ	uation 13-1	4 or 13-17)
IS V_3 or $V_{av34} > 2,70$	00 pc/n? [] Ye	s 🗌 No			IS V ₃ OF V _{av}	₃₄ > 2,7	00 pc/n?	_Yes ⊻No		
Is V_3 or $V_{av34} > 1.5$	^ V ₁₂ /2 ∐Ye	s ∐No Truction 12	16 12 10		Is V ₃ or V _{av}	₃₄ > 1.5	^ v ₁₂ /2	_Yes ⊻No	- - 10 10 10	10 0 10
lf Yes,V _{12a} =	pc/n (13-19)		-16, 13-18, or		If Yes,V _{12a} =		۲ 1	oc/n (Equatio 9)	n 13-16, 13	-18, of 13-
Capacity Che	ecks				Capacit	v Ch	ecks	- /		
	Actual	(Capacity	LOS F?	· · · · · ·		Actual	C	apacity	LOS F?
					V _F		5246	Exhibit 13	-8 7200	No
VEO		Exhibit 13-8			$V_{EO} = V_{E}$	- V _D	3753	Exhibit 13	-8 7200	No
10							1493	Exhibit 13-	10 2100	No
Elow Entorin	a Morgo In	fluonco	lroa			torin				110
FIOW Entering	Actual	Max	Desirable	Violation?	FIOWEI		Actual	Max Desira	able	Violation?
Vara	/ total	Exhibit 13-8	Doolidbio	violation.	V ₄₀		3595	Exhibit 13-8	4400·All	No
	l vice Deterr	nination ((if not E)			F Sori	vice De	torminatio	n (if not	F)
$D = 5475 \pm 0$	00734 v +	0 0078 V	0.006271		Leveror	D = 4	1252 + 0			• /
$D_R = (n_0/m_i)/m_i$.00704 V R ·	0.0070 12	0.00027 LA		D - 20		/m://m)	.0000 12		
D _R = (pc/m//r	1)				$D_R = 30$	o.4 (pc/	///////////////////////////////////////			
LOS = (Exhibit 13-2)						(Exhit	oit 13-2)			
Speed Deteri	mination				Speed L	Jeter	minatio	on (a)		
M _S = (Exibit 1	3-11)				$D_{s} = 0.0$	432 (E	xhibit 13	-12)		
S _R = mph (Ext	nibit 13-11)				S _R = 57	7.9 mph	(Exhibit	13-12)		
S ₀ = mph (Exh	nibit 13-11)				S ₀ = 74	1.3 mph	(Exhibit	13-12)		
S = mph (Exh	nibit 13-13)				S = 62	2.2 mph	(Exhibit	13-13)		
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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	l-95 NB Seg 10-l	Bet Off & On Ramps
Analysis Time Period	PM		Analysis Year	2040 Bu	ild 2A
Project Description SW 10	th Street SIMR				
✓ Oper.(LOS			Des.(N)	Pla	anning Data
Flow Inputs					
Volume, V AADT	3550	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P _R General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjust	ments				
f _p	1.00		E _R	1.2	
Ε _T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width Rt-Side Lat. Clearance		ft ft	f _{LW}		mph
Number of Lanes, N Total Ramp Density, TRD	3	ramps/mi	f _{LC} TRD Adjustment		mph mph
FFS (measured) Base free-flow Speed, BFFS	70.0	mph mph	FFS	70.0	mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N S D = v _p / S LOS	x f _{HV} x f _p) 1264 70.0 18.1 C	pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x)$ S $D = v_p / S$ Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design h	S - Speed D - Density FFS - Free-flow BFFS - Base fre our volume	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	.13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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		F	REEWAY	' WEAV	ING WOF	RKSHEE	Т			
Genera	I Informati	on			Site Info	rmation				
Analyst Agency/Co Date Perfor Analysis Tir	mpany med me Period	AECOI PM	М		Freeway/Dir of Travel I-95 NB Weaving Segment Location Seg 11-Bet On & Off to Exp Analysis Year 2040 Build 2A					
Project Des	cription SW 10t	h Street SIMF	2							
Inputs					1					
Weaving co Weaving nu Weaving se Freeway fre	onfiguration umber of lanes, N egment length, L ee-flow speed, Fl	1 5 -S		Two-Sided 4 2970ft 70 mph	Segment typ Freeway min Freeway ma: Terrain type	e imum speed ximum capac	, S _{MIN} ity, C _{IFL}		Freeway 15 2400 Level	
Conver	sions to po	c/h Unde	r Base Co	ndition	s	0	•	1	-	
	V (veh/h)	PHF	Truck (%)	RV (%)	E _T	E _R	f _{HV}	fp	v (pc/h)	
V _{FF}	2955	0.95	3	0	1.5	1.2	0.985	1.00	3157	
V _{RF}	2655	0.92	2	0	1.5	1.2	0.990	1.00	2915	
V _{FR}	595	0.92	2	0	1.5	1.2	0.990	1.00	653	
V _{RR}	535	0.92	2	0	1.5	1.2	0.990	1.00	587	
V _{NW}	6725							V =	7312	
V _W	587							-		
VR	0.080									
Configu	uration Cha	aracteris	tics		•					
Minimum n	naneuver lanes,	N _{WL}		0 lc	Minimum we	eaving lane cl	hanges, LC _{MIN}		1761 lc/h	
Interchang	e density, ID			0.7 int/mi	Weaving lan	e changes, L	.C _w		2254 lc/h	
Minimum F	RF lane changes,	$\mathrm{LC}_{\mathrm{RF}}$		0 lc/pc	Non-weaving	g lane chang	es, LC _{NW}		2370 lc/h	
Minimum F	R lane changes,	$\rm LC_{FR}$		0 lc/pc	Total lane ch	nanges, LC _{AL}	L		4624 lc/h	
Minimum F	R lane changes	, LC _{RR}		3 lc/pc	Non-weaving	g vehicle inde	ex, I _{NW}		1398	
Weavin	g Segmen	t Speed,	Density, I	_evel of	Service,	and Cap	oacity			
Weaving set Weaving set	egment flow rate egment capacity,	, V C _w		7225 veh/h 8398 veh/h	Weaving inte Weaving sec	ensity factor, gment speed	W , S		0.320 49.1 mph	
Weaving s	egment v/c ratio			0.860	Average wea	aving speed,	S _W		56.7 mpn	
Weaving s	egment density,	D	37	7.2 pc/mi/ln	Average nor	n-weaving sp	eed, $S_{_{NW}}$		48.5 mph	
Level of Se	ervice, LUS			E	Maximum w	eaving length	n, L _{MAX}		6481 ft	
Notes a. Weaving s Chapter 13, b. For volum	segments longer t "Freeway Merge a les that exceed the	han the calcula and Diverge Se e weaving seg	ated maximum le egments". ment capacity, th	ength should l	be treated as is rvice is "F".	solated merge	and diverge ar	eas using the	procedures of	

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	BASIC FRE	EEWAY SE	GMENTS WORKSHEE	Г	
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	I-95 NB Seg 12-N	orth of Hillsboro
Analysis Time Period	PM		Analysis Year	2040 Buil	d 2A
Project Description SW 1	0th Street SIM	R			
✓ Oper.(LOS)			es.(N)	Plann	ing Data
Flow Inputs					
Volume, V	5610	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P _T	3	
Peak-Hr Prop. of AADT, K			%RVs, P _R	0	
Peak-Hr Direction Prop, D		· · · · · · · · · · · · · · · · · · ·	General Terrain:	Level	
DDHV = AADT X K X D		ven/n	Grade % Length	ті	
Calculate Flow Adjus	tmonts		00,00111,0		
				1.0	
'p	1.00		⊏ _R	1.2	
E _T	1.5		$T_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$]0.985	
Speed Inputs			Calc Speed Adj and F	FS	
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f _{LW}		mph
Number of Lanes, N	4		f _{IC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	70.0	mph	FFS	70.0	mph
Base free-flow Speed,		mph			
BFFS	- M				
LOS and Performance	e Measures		Design (N)		
Operational (LOS)			<u>Design (N)</u>		
v = (V or DDHV) / (PHF x)	N x f		Design LOS		
xf)	1 <i>4</i> 98	pc/h/ln	$v_p = (V \text{ or DDHV}) / (PHF x N)$	N x f _{HV}	nc/h/ln
s	69.0	mph	x f _p)		po/m/m
D = y / S	217	nc/mi/ln	S		mph
	21.7 C	pc/111/11	$D = v_p / S$		pc/mi/ln
200	U		Required Number of Lanes	, N	
Glossary			Factor Location		
N - Number of lanes	S - Spee	d	E Exhibita 11 10 11 12		f Evhibit 11.9
V - Hourly volume	D - Densi	ty	$E_{\rm R}$ - Exhibits 11-10, 11-12	11 12	f Exhibit 11.0
v _n - Flow rate	FFS - Free	-flow speed	$E_{T} = EXIIIDIIS + 1 = 10, + 1 = 11,$	11-13	$I_{LC} = EXHIDIL + 1-9$
LOS - Level of service	BFFS - Ba	se free-flow	p - raye 11-10	11 0	тко - маде 11-11
speed			L_{00} , δ , $rr\delta$, v_p - EXNIDITS 11-3	I I-∠,	
DDHV - Directional design	hour volume				

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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	I-95 SB Seg 1-B 2040 Bu	et Hillsboro & Palmetto
Project Description SW 10	th Street SIMR			2040 Du	
✓ Oper.(LOS)		Des.(N)	Pla	anning Data
Flow Inputs	,				5
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D	4810	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T %RVs, P _R General Terrain:	0.95 3 0 Level	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi	
Calculate Flow Adjust	ments				
fp	1.00		E _R	1.2	
ET	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	3	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	4 70.0	ft ft ramps/mi mph mph	f _{∟w} f _{LC} TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N S D = v _p / S LOS	x f _{HV} x f _p) 1285 69.9 18.4 C	pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x)$ S $D = v_p / S$ Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design he	S - Speed D - Density FFS - Free-flow BFFS - Base free our volume	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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		F	REEWAY	WEAV	ING WOF	RKSHEE	Г			
Genera	I Information	on			Site Info	rmation				
Analyst Agency/Co Date Perfor Analysis Tir	mpany rmed me Period	AECON AM	И		Freeway/Dir of TravelI95/SBWeaving Segment LocationSeg 2-Bet On from Exp & OffAnalysis Year2040 Build 2A					
Project Des	scription SW 10t	h Street SIMF	2							
Inputs					•					
Weaving co Weaving nu Weaving se Freeway fre	onfiguration umber of lanes, N egment length, L _e ee-flow speed, Fl	1 5 =S		Two-Sided 4 3900ft 70 mph	Segment typ Freeway min Freeway ma: Terrain type	e iimum speed, ximum capac	, S _{MIN} ity, C _{IFL}		Freeway 15 2400 Level	
Conver	sions to po	c/h Unde	r Base Co	ondition	S	0	1	1		
	V (veh/h)	PHF	Truck (%)	RV (%)	E _T	E _R	f _{HV}	fp	v (pc/h)	
V _{FF}	3520	0.95	3	0	1.5	1.2	0.985	1.00	3761	
V _{RF}	1140	0.92	2	0	1.5	1.2	0.990	1.00	1252	
V _{FR}	1290	0.92	2	0	1.5	1.2	0.990	1.00	1416	
V _{RR}	130	0.92	2	0	1.5	1.2	0.990	1.00	143	
V _{NW}	6429							V =	6572	
V _W	143									
VR	0.022									
Configu	uration Cha	aracteris	tics		•					
Minimum n	naneuver lanes,	N _{WL}		0 lc	Minimum we	eaving lane cl	nanges, LC _{MIN}		429 lc/h	
Interchang	e density, ID			0.7 int/mi	Weaving lan	e changes, L	.C _w		1001 lc/h	
Minimum F	RF lane changes,	$\mathrm{LC}_{\mathrm{RF}}$		0 lc/pc	Non-weaving	g lane chang	es, LC _{NW}		2986 lc/h	
Minimum F	R lane changes,	$\rm LC_{FR}$		0 lc/pc	Total lane ch	nanges, LC _{ALI}	L		3987 lc/h	
Minimum F	R lane changes	, LC _{RR}		3 lc/pc	Non-weaving	g vehicle inde	ex, I _{NW}		1755	
Weavin	g Segment	t Speed,	Density, I	_evel of	Service,	and Cap	oacity			
Weaving set Weaving set	egment flow rate egment capacity,	, V C _W		6488 veh/h 8847 veh/h	Weaving inte Weaving sec	ensity factor, gment speed	W , S		0.230 59.0 mph	
Weaving s	egment v/c ratio	_		0.733	Average wea	aving speed,	S _W		59.7 mpn	
Weaving s	egment density,	U	27	/.8 pc/mi/ln	Average nor	1-weaving spo	eed, S _{NW}		59.0 mph	
Level of Se	ervice, LUS			C	Maximum w	eaving length	i, L _{max}		5929 ft	
Notes a. Weaving : Chapter 13, b. For volum	segments longer t "Freeway Merge a les that exceed the	han the calcula and Diverge Se e weaving segr	ited maximum le gments". ment capacity, th	ength should l	be treated as is vice is "F".	solated merge	and diverge ar	eas using the	procedures of	

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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	I-95 SB Seg 3-B	et Off & On Ramp
Project Description SW 10t	h Street SIMR		Analysis Teal	2040 Du	liu ZA
✓ Oper.(LOS)			Des.(N)	Pla	anning Data
Flow Inputs			()		5
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop. D	4660	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T %RVs, P _R General Terrain [:]	0.95 3 0 1 evel	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi	
Calculate Flow Adjustr	nents				
f _ρ Ε _τ	1.00 1.5		E _R f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	1.2 0.985	
Speed Inputs			Calc Speed Adi and FFS	3	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	3 70.0	ft ft ramps/mi mph mph	f _{LW} f _{LC} TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N) S D = v _p / S LOS	x f _{HV} x f _p) 1660 67.5 24.6 C	pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x)$ S $D = v_p / S$ Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base free our volume	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	-13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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		RAMF	PS AND RAM	P JUNCTI	ONS WO	RKS	HEET			
General Infor	mation			Site Infor	mation					
Analyst			Fr	eeway/Dir of Tr	avel	I-95 SB	}			
Agency or Company	AECO	DM	Ju	nction		Seg 4-I	Diverge to S	SW 10th St		
Date Performed			Ju	risdiction		0040 5				
Analysis Time Period	AIVI		Ar	ialysis Year		2040 B	uiid 2A			
mputs		Freeway Nur	nher of Lanes N	3					1	
Upstream Adj R	amp	Domn Numb	nder of Lance, N	J					Downstrea	m Adj
	On			1					Капр	
		Acceleration	Lane Length, L _A						🗹 Yes	🗹 On
✓ No	Off	Deceleration	Lane Length L _D	200					□ No	Off
		Freeway Volu	ume, V _F	4660						0400 6
$L_{up} = f$	t	Ramp Volume, V _R 189							L _{down} =	2400 ft
	Freeway Free-Flow Speed, S _{FF} 70.								V _D =	1660 veh/h
v _u v	Ramp Free-Flow Speed, S _{FR} 45								- D	
Conversion to pc/h Under Base Conditions									•	
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	v = V/PHF	x f _{HV} x f _p
Freeway	4660	0.95	Level	3	0	0.	985	1.00	497	79
Ramp	1890	0.92	Level	2	0	0.	990	1.00	207	75
UpStream										
DownStream	1660	0.92	Level	2	0	0.	990	1.00	182	22
	N	Merge Areas					D	iverge Areas		
Estimation of	^F v ₁₂				Estimat	ion o	f v ₁₂			
	V ₁₂ = V _F	(P _{FM})					V ₁₂ =	V _R + (V _F - V	′ _R)P _{FD}	
L _{EQ} =	(Equa	tion 13-6 or	r 13-7)		L _{EQ} =		(E	Equation 13-	12 or 13-13)	
P _{FM} =	using	Equation (Exhibit 13-6)		P _{FD} =		0.5	540 using Eq	uation (Exhib	oit 13-7)
V ₁₂ =	pc/h				V ₁₂ =		36	43 pc/h		
V_3 or $V_{2\sqrt{34}}$	pc/h (l	Equation 13	3-14 or 13-17)		V_3 or $V_{3\sqrt{34}}$		13	36 pc/h (Eau	uation 13-14	or 13-17)
Is V_3 or $V_{2\sqrt{34}} > 2,70$	0 pc/h? Yes	s 🗌 No			Is V ₂ or V _{2V}	34 > 2,7	00 pc/h? 🔽	Yes √ No		,
Is V_2 or $V_{av24} > 1.5$	* V ₁₀ /2 Yes	s 🗌 No			Is V ₂ or V ₂	₂₄ > 1.5	* V ₁₀ /2	Yes Vo		
	pc/h (I	Equation 13	3-16, 13-18, or		If Voc V -	- -	12	c/h (Equation	n 13-16, 13-	18, or 13-
11 1 es, v _{12a} -	13-19)				11 1 CS, V _{12a}		19	9)		
Capacity Che	ecks	r	•		Capacit	y Che	ecks			
	Actual	(Capacity	LOS F?			Actual	Ci	apacity	LOS F?
					V _F		4979	Exhibit 13-	8 7200	No
V _{FO}		Exhibit 13-8			$V_{FO} = V_{F}$	- V _R	2904	Exhibit 13-	·8 7200	No
					V _R		2075	Exhibit 13-	10 2100	No
Flow Entering	g Merge In	fluence A	Area		Flow En	nterin	g Diver	ge Influer	nce Area	
	Actual	Max	Desirable	Violation?		4	Actual	Max Desira	ible	Violation?
V _{R12}		Exhibit 13-8			V ₁₂	3	3643	Exhibit 13-8	4400:All	No
Level of Serv	ice Detern	nination ((if not F)		Level of	f Serv	vice Det	terminatio	on (if not l	-)
D _R = 5.475 + 0.	00734 v _R + (0.0078 V ₁₂	- 0.00627 L _A			D _R = 4	.252 + 0.	0086 V ₁₂ - 0	.009 L _D	
D _R = (pc/mi/ln)					D _R = 33	3.8 (pc/	/mi/ln)			
LOS = (Exhibit 13-2)					LOS = D	(Exhib	oit 13-2)			
Speed Detern	nination				Speed L	Deter	minatio	n		
M _s = (Exibit 13	3-11)				D _s = 0.	485 (E	xhibit 13-	12)		
S _R = mph (Exh	nibit 13-11)				S _R = 56	6.4 mph	(Exhibit	13-12)		
S ₀ = mph (Exh	, nibit 13-11)				S ₀ = 75	5.5 mph	(Exhibit	13-12)		
S = mph (Exh	nibit 13-13)				S = 60).5 mph	(Exhibit	13-13)		
J ; ; ;	- /				I	- ···P···	、 .	-,		

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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM	Highway/Direction of Trave From/To Jurisdiction		l-95 SB Seg 5-Be	et Off & On Ramps
Analysis Time Period	AM		Analysis Year	2040 Bu	ild 2A
Project Description SW 10th	Street SIMR				
Elow Inputs			Jes.(N)		nning Data
	0770	veb/b	Deek Llour Fester, DUF	0.05	
	2770	veh/day	%Trucks and Buses, P _T	0.95 3	
Peak-Hr Prop. of AAD I , K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%Rvs, P _R General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustn	nents				
f _p	1.00		E _R	1.2	
E _T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width		ft			
Rt-Side Lat. Clearance	2	Ħ	T _{LW}		mpn
Total Ramp Density TRD	3	ramps/mi	^I LC TRD Adjustment		mpn
FES (measured)	70.0	mph		70.0	mph
Base free-flow Speed, BFFS	10.0	mph		70.0	mpn
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N x S D = v _p / S LOS	x f _{HV} x f _p) 987 70.0 14.1 B	pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x S)$ $D = v_p / S$ Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fre ur volume	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	-13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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RAMPS AND RAMP JUNCTIONS WORKSHEET											
Genera	al Infor	mation			Site Infor	mation					
Analyst Agency or Date Perfo	Company rmed	AEC	MC	Fr Ju Ju	eeway/Dir of Tra Inction Irisdiction	avel	I-95 S Seg 6	B -Merge from	n Hillsboro E&W		
Analysis Ti	ime Period	AM		Ar	nalysis Year		2040	Build 2A			
Project Des	scription	SW 10th Stree	t SIMR								
Inputs			.							.	
Upstream A	Adj Ramp		Freeway Num Ramp Numbe	ber of Lanes, N r of Lanes. N	3 1					Downstrea Ramp	m Adj
🗹 Yes	🗌 On		Acceleration L	ane Length, L _A	300					☐ Yes	🗌 On
🗌 No	✓ Off	:	Deceleration I Freeway Volu	₋ane Length L _D me, V _⊏	2770					🗹 No	Off
L _{up} =	2400	ft	Ramp Volume	e, V _R	1660					L _{down} =	ft
V _u =	1890 v	reh/h	Freeway Free Ramp Free-Fl	-Flow Speed, S _{FF} ow Speed, S _{FP}	70.0 50.0					V _D =	veh/h
Conver	rsion to	p pc/h Und	der Base	Conditions							
(pc	:/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	v = V/PHF	x f _{HV} x f _p
Freeway		2770	0.95	Level	3	0	0).985	1.00	29	60
Ramp		1660	0.92	Level	2	0).990	1.00	18	322
UpStream		1890	0.92	Level	2	0	C).990	1.00	20)75
DownStrea	ownStream										
			Merge Areas		-			[Diverge Areas	-	
Estima	tion of	v ₁₂				Estimation of v ₁₂					
		$V_{12} = V_{E}$	(P _{EM})					V - 1			
		1369.55	F™/	13-6 or 13-7)				v ₁₂ =	v _R + (v _F - v _R	P _{FD}	
-EQ P =		0 586		ion (Exhibit 13-6)		L _{EQ} =			(Equation 13-	12 or 13-13	3)
'FM V -		1724	using Lyuai			P _{FD} =		I	using Equatio	on (Exhibit 13-	-7)
v 12 ⁻		1006	pu/n oo/b (Equati	on 12 14 or 12		V ₁₂ =		I	pc/h		
V ₃ or V _{av34}	> 2 70	1220 17) 0 po/b2		011 13-14 01 13-		V_3 or V_{av34} Is V_2 or V_{av34}	ou > 2.	700 pc/h? ∏	pc/h (Equation 1	3-14 or 13-17)
	av34 ~ 2,70		s ⊻ino			Is V ₂ or V	₀₄ >1	5*V/2			
If Yes, V_{122}	_{av34} > 1.5 " =	V ₁₂ /2 ⊻ Ye: 1734	s No pc/h (Equatio	on 13-16, 13-		lf Yes,V _{12a} =	=	• • _{12'} - ∟ 1:	pc/h (Equatio 3-19)	n 13-16, 13	-18, or
120	4.04.0	18, or	13-19)			0			,		
Capaci	ty Cne	CKS			1 00 50	Capacit	y Ch	iecks		••	
		Actual		apacity	LOS F?			Actual	Ca	pacity	LOS F?
						V _F			Exhibit 13-	8	
V _F	=0	4782	Exhibit 13-8		No	$V_{FO} = V_F$	- V _R		Exhibit 13- Exhibit 13-	-	
<u> </u>						^r R			10		
Flow E	ntering	Merge In	fluence A	rea		Flow Er	<u>iterii</u>	ng Dive	rge Influen	ce Area	
		Actual	Max	Desirable	Violation?		_	Actual	Max Des	irable	Violation?
V _R	12	3556	Exhibit 13-8	4600:All	No	V ₁₂			Exhibit 13-8		
Level o	of Serv	ice Detern	nination (if not F)		Level of	f Ser	vice De	terminatio	n (if not l	F)
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A							D _R =	4.252 + 0	.0086 V ₁₂ - 0	.009 L _D	
D _R = 3	30.5 (pc/m	i/ln)				D _R = (p	oc/mi/	′ln)			
LOS = [D (Exhibit [·]	13-2)				LOS = (E	Exhibi	it 13-2)			
Speed Determination Speed						Speed L	Dete	rminatio	on		
M _S = (0.428 (Exit	pit 13-11)				D _s = (E	Exhibit	13-12)			
S _R = 5	58.0 mph (Exhibit 13-11)				S _R = m	iph (Ex	(hibit 13-12)			
$S_0 = 6$	67.4 mph (Exhibit 13-11)				S ₀ = m	iph (Ex	(hibit 13-12)			
S = 6	60.2 mph (Exhibit 13-13)				S= m	iph (Ex	(hibit 13-13)			

	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM	Highway/Direction of Trav From/To Jurisdiction		I-95 SB Seg 7-B	et On Ramps
Analysis Time Period			Analysis Year	2040 Bu	IIIO ZA
Qper.(LOS)			Des.(N)	Pla	anning Data
Flow Inputs	,				
Volume, V AADT	4430	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P _R General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustr	ments				
f _p Ε _τ	1.00 1.5		E _R f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	1.2 0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	3 70.0	ft ft ramps/mi mph mph	f _{LW} f _{LC} TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N S D = v _p / S LOS	x f _{HV} x f _p) 1578 68.3 23.1 C	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v _p = (V or DDHV) / (PHF x N x S D = v _p / S Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base free our volume	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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Job: SW 10th Street SIMR Analyst: AECOM

Location:	Seg 8: I-	eg 8: I-95 Southbound On-Ramp from SW 10th Street EB & V									
Analysis Period:	AM Peak	M Peak Hour									
Analysis Year:	2040 Bui	40 Build 2A									
4,430			→ 5,750								
1 320											
1,020											
	PHF =	0.95									
	v _{fr} =	5,750	vph								
	v _r =	1,320	vph								
	v _f =	4,430									
Upstream Freeway	Tr % =	3%									
Ramp	Tr % =	2%									
Downstream Freeway	Tr % =	3%									
Freeway	f _{HV} =	1/(1+P	r(E _⊤ -1)+P _R (E _R -	1)) =	0.985						
Ramp	f _{HV} =	1/(1+P	r(E _T -1)+P _R (E _R -	1)) =	0.9901						
flat terrain	Ε _τ =	1.5									
	RV % =	0									
Driver Population adj.	f _P =	1.000									
	V _{fr} =	=v _{fr} /(PF	$HF)(f_{HV})(f_{P}) =$	6,143	pc/h						
	V _r =	=v _r /(PH	$IF(f_{HV})(f_{P}) =$	1,403	pc/h						
	V _f =	=v _f /(PH	$ F)(f_{HV})(f_P) =$	4,733	pc/h						
No. lanes upstream of ramp	N =	3									

<u>No. Ln</u>	Capacity Check (see Exhibits 25-3 and 25-7):	Maximum	Actual	V/c	LOS F?
4	Fwy downstream of ramp (assume 70 mph free-flow speed) =	9,600	6,143	0.64	No
3	Fwy upstream of ramp (assume 70 mph free-flow speed) =	7,200	4,733	0.66	No
1	Capacity on On-Ramp (assume 45 mph free-flow speed) =	2,100	1,403	0.67	No

	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM	Highway/Direction of Trave From/To Jurisdiction		I-95 SB Seg 9-B	et 10th & Exit to Exp
Analysis Time Period	AM		Analysis Year	2040 Bu	ild 2A
					unning Data
Flow Inputs			Jes.(IV)		
Volume, V AADT	5750	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P _R General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustr	nents				
f _ρ Ε _τ	1.00 1.5		E _R f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	1.2 0.985	
Speed Inputs			Calc Speed Adj and FFS	3	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	4 70.0	ft ft ramps/mi mph mph	f _{⊥w} f _{LC} TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N S D = v _p / S LOS	x f _{HV} x f _p) 1536 68.7 22.4 C	pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x)$ S $D = v_p / S$ Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base free our volume	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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	RAMPS AND RAMP JUNCTIONS WORKSHEET										
Genera	l Infor	mation			Site Infor	mation					
Analyst				Fr	eeway/Dir of Tr	avel	I-95 S	B			
Agency or (Company	AECO	MC	Ju	Inction		Seg 1	0-Merge fro	m Ex to GP		
Date Perfor	rmed			Ju	irisdiction		Ū	Ū			
Analysis Ti	me Period	AM		Ar	nalysis Year		2040	Build 2A			
Project Des	scription	SW 10th Stree	t SIMR								
Inputs											
I Instream 4	Adi Ramo		Freeway Num	ber of Lanes, N	4					Downstre	am Adi
opotroum,	ajranp		Ramp Numbe	r of Lanes, N	1					Ramp	
🗌 Yes	🗌 On		Acceleration I	ane Length L	600						
			Deceloration	and Longth L	000					I ⊻ Yes	∐ On
🗹 No	Off	:								🗌 No	✓ Off
L			Freeway Volu	me, V _F	5750					_	4450 8
Lup =	π		Ramp Volume	e, V _R	400					└down [—]	1150 11
	v a la /la		Freeway Free	-Flow Speed, S _{FF}	70.0					V_ =	760 veb/b
v _u –	ven/n		Ramp Free-Fl	ow Speed, S _{FR}	50.0					*D	700 Ven/m
Conver	rsion to	o pc/h Und	der Base	Conditions							
(pc)	/h)	V	PHF	Terrain	%Truck	%Rv		f _{LN/}	f	v = V/PHF	x f _{uv} x f
()		(Veh/hr)	0.05			0			р 1.00		ΠV p
Freeway		5750	0.95	Level	3	0).985	1.00	6	143
Ramp		400	0.92	Level	2	0	().990	1.00	4	139
OpStream		700	0.00			0		000	4.00		24
DownStream 760 0.92 Level					2	0		J.990		<u> </u>	334
Estima	tion of		werge Areas			Diverge Areas					
LSUIIIa		v 12				LStillat		12			
		V ₁₂ = V _F	(P _{FM})					V ₁₂ =	Vp + (Vr - Vp		
L _{EQ} =		(Equa	ation 13-6 o	⁻ 13-7)		=		12	(Equation 13	.12 or 13_1	3)
P _{FM} =		0.163	using Equat	ion (Exhibit 13-6)	1	FEQ P =			using Equation	n (Evhibit 13	2 7)
$V_{12} =$		1001	oc/h			FD					-1)
		2571	oc/h (Equati	on 13-14 or 13-		v ₁₂ -			pc/n		
V ₃ or V _{av34}		17)				v ₃ or v _{av34}			pc/h (Equation 1	13-14 or 13-1	()
Is V_3 or V_a	_{1v34} > 2,70	0 pc/h? 🗌 Ye	s 🗹 No			Is V ₃ or V _{av}	₃₄ > 2,	700 pc/h? [∐Yes ∐No		
Is V ₃ or V _a	_{w34} > 1.5 *	V ₁₂ /2 Ve	s 🗌 No			Is V ₃ or V _{av}	₃₄ > 1.	5 * V ₁₂ /2	Yes 🗌 No		
If Yes V	=	2457	oc/h (Equati	on 13-16, 13-		If Yes,V _{12a} =	=	1	pc/h (Equatio	n 13-16, 13	3-18, or
11 1 C 3, V 12a		18, or	13-19)			120		1.	3-19)		
Capaci	ty Che	cks				Capacit	y Ch	necks			
		Actual	0	apacity	LOS F?			Actual	Ca	pacity	LOS F?
						V _F			Exhibit 13-	8	
V_		6582	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V _R		Exhibit 13-	8	
· ·	-0	0002			110				Exhibit 13	-	
						v _R			10		
Flow E	ntering	n Merge In	fluence A	rea		Flow En	nterii	ng Dive	rge Influen	ice Area	
		Actual	Max	Desirable	Violation?			Actual	Max Des	irable	Violation?
V _R	12	2896	Exhibit 13-8	4600:All	No	V ₁₂			Exhibit 13-8		
Level o	of Serv	ice Detern	nination (if not F)		Level of	f Ser	vice De	terminatio	n (if not	F)
$D_{R} = 5.475 + 0.00734 v_{R} + 0.0078 V_{12} - 0.00627 L_{A}$							D _R =	4.252 + 0	.0086 V ₁₂ - 0	.009 L _D	
$D_{\rm p} = 2$	24.1 (pc/m	i/ln)				D _p = (r	oc/mi/	′ln)			
10S = 0	C (Exhibit '	13-2)				10S = (F	=xhihi	it 13-2)			
Speed Determination						Speed [rminatio	<u></u>		
Speed						$D = \sqrt{2}$	vhihit	13_12)	///		
w _s = 0	J.332 (Exit	oit 13-11)				⊂s (⊏		10 - 12			
S _R = 6	S_R = 60.7 mph (Exhibit 13-11) S_R = mph (Exhibit 13-12)										
S ₀ = 6	65.2 mph (Exhibit 13-11)				S ₀ = m	ph (Ex	(hibit 13-12)			
S = 6	63.1 mph (Exhibit 13-13)				S = m	ph (Ex	(hibit 13-13)			

		RAMF	S AND RAM	P JUNCTI	ONS WO	RKS	HEET			
General Infor	mation			Site Infor	mation					
Analyst			Fre	eeway/Dir of Tr	ravel I-95 SB					
Agency or Company	AECO	DM	Ju	nction		Seg 11	- Diverge to	Express		
Date Performed			Ju	risdiction						
Analysis Time Period	AM AM		An	alysis Year		2040 B	uild 2A			
	SW 10th Street	SINK								
inputs									-	
Upstream Adj R	amp	Freeway Nur	nder of Lanes, N	4					Downstrea	m Adj
Voc. W		Ramp Numbe	er of Lanes, N	1					Ramp	
		Acceleration	Lane Length, L _A						Ves	On
□ No □	Off	Deceleration	leration Lane Length L _D 200						□ Off	
		Freeway Volu	ıme, V _F	6150						
L _{up} = 11	50 ft	Ramp Volum	e, V _R	760					L _{down} =	ft
	• • •	Freeway Free	e-Flow Speed, S _{FF}	70.0					V -	voh/h
$V_u = 40$	0 veh/h	Ramp Free-F	low Speed, S _{ED}	45.0					vD -	ven/n
Conversion t	o nc/h Unc	ler Base	Conditions							
	V		- ·	0/ T	0/ D		£	£		
(pc/n)	(Veh/hr)	PHF	Terrain	% I ruck	%RV		HV	Гр		x i _{HV} x i _p
Freeway	6150	0.95	Level	3	0	0.	985	1.00	657	'1
Ramp	760	0.92	Level	2	0	0.	990	1.00	83	4
UpStream	400	0.92	Level	2	0	0.	990	1.00	43	9
DownStream										
	[[Merge Areas			Estimation of V					
Estimation of	^v 12				Estimat	ion o	^{or v} 12			
	V ₁₂ = V _F	(P _{FM})					V ₁₂ =	$V_{R} + (V_{F} - V_{F})$	_R)P _{FD}	
L _{EQ} =	(Equa	tion 13-6 or	⁻ 13-7)		L _{EQ} =		(E	Equation 13-1	2 or 13-13)	
P _{FM} =	using	Equation (Exhibit 13-6)		P _{FD} =		0.4	36 using Equ	uation (Exhib	oit 13-7)
V ₁₂ =	pc/h				V ₁₂ =		33	35 pc/h		
V_3 or V_{av34}	pc/h (I	Equation 13	3-14 or 13-17)		V_3 or V_{av34}		16	18 pc/h (Equ	ation 13-14	or 13-17)
Is V_3 or $V_{av34} > 2,70$	0 pc/h? 🗌 Yes	s 🗌 No			Is V ₃ or V _{av}		00 pc/h?	Yes VNO		,
Is V_3 or $V_{av34} > 1.5^{\circ}$	* V ₁₂ /2 Yes	s 🗌 No			Is V ₃ or V ₃	₃₄ > 1.5	* V ₁₂ /2	Yes VNo		
	pc/h (I	Equation 13	8-16, 13-18, or			-	рі рі	c/h (Equation	13-16, 13-	18, or 13-
11 1 es, v _{12a} -	13-19)				11 1 63, V _{12a}		19))		
Capacity Che	ecks			1	Capacit	y Che	ecks			-
	Actual	(Capacity	LOS F?			Actual	Ca	pacity	LOS F?
					V _F		6571	Exhibit 13-8	9600	No
V _{FO}		Exhibit 13-8			$V_{FO} = V_{F}$	- V _R	5737	Exhibit 13-8	9600	No
					V _R		834	Exhibit 13-1	0 2100	No
Flow Entering	a Merge In	fluence A	Area	•	Flow En	nterin	g Diver	ge Influen	ce Area	
· · · · ·	Actual	Max	Desirable	Violation?		ļ	Actual	Max Desirat	le	Violation?
V _{R12}		Exhibit 13-8			V ₁₂	3	3335	Exhibit 13-8	4400:All	No
Level of Serv	ice Detern	ination ((if not F)		Level of	f Serv	vice Det	terminatio	n (if not F	-)
D _R = 5.475 + 0.	00734 v _R + ().0078 V ₁₂	- 0.00627 L			D _R = 4	1.252 + 0.	0086 V ₁₂ - 0.	009 L _D	
D _R = (pc/mi/ln)					$D_{p} = 34$	4.0 (pc/	/mi/ln)	12	D	
LOS = (Exhibit 13-2)						(Exhil	nit 13-2)			
Spood Dotormination					Spood I		minatio	n		
					Speed Determination					
M _S = (Exibit 1:	M _S = (Exibit 13-11)					$\nu_{\rm s} = 0.373$ (Exhibit 13-12)				
S _R = mph (Exh	nibit 13-11)				$S_{R}^{=}$ 59.6 mph (Exhibit 13-12)					
S ₀ = mph (Exh	nibit 13-11)				S ₀ = 75	5.0 mph	(Exhibit	13-12)		
S = mph (Exh	nibit 13-13)				S = 65	5.5 mph	(Exhibit	13-13)		

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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	I-95 SB Seg 13-l	Bet Off & On Ramps
Project Description SW 10t	AM th Street SIMR			2040 Би	liu ZA
✓ Oper (LOS)			Des (N)	Pla	inning Data
Flow Inputs	/	·			
Volume, V AADT Peak-Hr Prop. of AADT, K	4360	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T %RVs, P _R	0.95 3 0	
Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	General Terrain: Grade % Length Up/Down %	Level mi	
Calculate Flow Adjustr	ments				
f _p	1.00		E _R	1.2	
Ε _T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	5	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	3 70.0	ft ft ramps/mi mph mph	f _{⊥w} f _{LC} TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N S D = v _p / S LOS	x f _{HV} x f _p) 1553 68.6 22.7 C	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v _p = (V or DDHV) / (PHF x N x S D = v _p / S Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fre	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-	-13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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		F	REEWA	Y WEAV	ING WOF	RKSHEE	Г				
Genera	I Informati	on		Site Information							
Analyst Agency/Co Date Perfo Analysis Ti	Analyst Agency/Company AECOM Date Performed Analysis Time Period AM					Freeway/Dir of Travel I-95 SB Weaving Segment Location Seg 14- Bet Sample & Copans Analysis Year 2040 Build 2A					
Project Des	scription SW 10t	h Street SIMF	8								
Inputs					,						
Weaving configurationOne-SideWeaving number of lanes, NWeaving segment length, Ls2520Freeway free-flow speed, FFS70 mp				One-Sided 4 2520ft 70 mph	Segment type Freew Freeway minimum speed, S _{MIN} Freeway maximum capacity, C _{IFL} 2 ⁴ Terrain type Le						
Conver	sions to p	<u>c/h Unde</u>	r Base Co	ondition	s						
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε _Τ	E _R	f _{HV}	fp	v (pc/h)		
V _{FF}	3630	0.95	3	0	1.5	1.2	0.985	1.00	3878		
V _{RF}	1960	0.92	2	0	1.5	1.2	0.990	1.00	2152		
V _{FR}	730	0.92	2	0	1.5	1.2	0.990	1.00	801		
V _{RR}	0	0.95	0	0	1.5	1.2	1.000	1.00	0		
V _{NW}	3878		-					V =	6831		
V _w	2953								-		
VR	0.432										
Config	uration Cha	aracteris	tics								
Minimum r	naneuver lanes,	N _{WL}		2 lc	Minimum we	aving lane cl	nanges, LC _{MIN}		lc/h		
Interchang	e density, ID			0.7 int/mi	Weaving lan	e changes, L	C _w		lc/h		
Minimum F	RF lane changes,	, LC _{RF}		1 lc/pc	Non-weaving	g lane chang	es, LC _{NW}		lc/h		
Minimum F	R lane changes,	, LC _{FR}		1 lc/pc	Total lane ch	nanges, LC _{ALI}			lc/h		
Minimum F	R lane changes	, LC _{RR}		lc/pc	Non-weaving	g vehicle inde	ex, I _{NW}				
Weavin	g Segmen	t Speed,	Density,	Level of	Service,	and Cap	acity				
Weaving s	egment flow rate	, V		6745 veh/h	Weaving inte	ensity factor,	W				
Weaving segment capacity, c _w 5470 veh					Weaving seg	gment speed	S		mph		
Weaving segment v/c ratio 1.23					3 Average weaving speed, S _w				mph		
Weaving segment density, D pc/mi/l					In Average non-weaving speed, S _{NW}				mph		
Level of Service, LOS F				F	Maximum weaving length, L _{MAX} 7046 ft						
Notes											
a. Weaving	segments longer t	han the calcula	ited maximum le	ength should l	be treated as is	olated merge	and diverge are	eas using the	procedures of		

Chapter 13, "Freeway Merge and Diverge Segments". b. For volumes that exceed the weaving segment capacity, the level of service is "F".

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	BASIC F	REEWAY SE	GMENTS WORKSHEET				
General Information			Site Information				
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	I-95 SB Seg 1-B	et Hillsboro & Palmetto		
Analysis Time Period	PM		Analysis Year	2040 Build 2A			
Project Description SW 10	th Street SIMR						
✓ Oper.(LOS	5)		Des.(N)	🗌 Pla	anning Data		
Flow Inputs							
Volume, V AADT	4960	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T	0.95 3			
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P _R General Terrain: Grade % Length Up/Down %	0 Level mi			
Calculate Flow Adjust	ments						
f _p	1.00		E _R	1.2			
Έ _Τ	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985			
Speed Inputs			Calc Speed Adj and FFS	3			
Lane Width		ft					
Rt-Side Lat. Clearance		ft	f _{LW}		mph		
Number of Lanes, N	4		f _{LC}		mph		
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph		
FFS (measured)	70.0	mph	FFS	70.0	mph		
Base free-flow Speed, BFFS	6	mph					
LOS and Performance	Measures		Design (N)				
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N S D = v _p / S LOS	l x f _{HV} x f _p) 1325 69.8 19.0 C	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v _p = (V or DDHV) / (PHF x N x S D = v _p / S Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln		
Glossary			Factor Location				
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design h	S - Speed D - Density FFS - Free-flow BFFS - Base fre	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11		

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		F	REEWAY	' WEAV	ING WOF	RKSHEE	Т				
Genera	I Informati	on			Site Info	rmation					
Analyst Agency/Co Date Perfo Analysis Ti	Analyst Agency/Company AECOM Date Performed Analysis Time Period PM					Freeway/Dir of Travel I95/SB Weaving Segment Location Seg 2-Bet On from Exp & Off Analysis Year 2040 Build 2A					
Project Des	scription SW 10t	h Street SIMF	2								
Inputs											
Weaving configuration Two-Sided Weaving number of lanes, N Weaving segment length, Ls Weaving segment length, Ls 39001 Freeway free-flow speed, FFS 70 mpl					Segment type Freeway minimum speed, S _{MIN} Freeway maximum capacity, C _{IFL} Terrain type						
Convei	rsions to p	c/h Unde	r Base Co	ndition	s	I		-	_		
	V (veh/h)	PHF	Truck (%)	RV (%)	E _T	E _R	f _{HV}	fp	v (pc/h)		
V _{FF}	3825	0.95	3	0	1.5	1.2	0.985	1.00	4087		
V _{RF}	1125	0.92	2	0	1.5	1.2	0.990	1.00	1235		
V _{FR}	1135	0.92	2	0	1.5	1.2	0.990	1.00	1246		
V _{RR}	125	0.92	2	0	1.5	1.2	0.990	1.00	137		
V _{NW}	6568							V =	6705		
V _W	137										
VR	0.020										
Config	uration Cha	aracteris	tics		r						
Minimum r	maneuver lanes,	N _{WL}		0 lc	Minimum we	eaving lane c	hanges, LC _{MIN}	1	411 lc/h		
Interchang	je density, ID			0.7 int/mi	i Weaving lane changes, LC _w 983						
Minimum F	RF lane changes,	LC _{RF}		0 lc/pc	\sim Non-weaving lane changes, LC _{NW} 3043						
Minimum F	R lane changes,	LC _{FR}		0 lc/pc	Total lane ch	nanges, LC _{AL}	L		4026 lc/h		
Minimum F	RR lane changes	, LC _{RR}		3 lc/pc	Non-weaving	g vehicle inde	ex, I _{NW}		1793		
Weavin	ng Segmen ⁻	t Speed,	Density, I	_evel of	Service,	and Cap	pacity				
Weaving segment flow rate, v6619 veh/hWeaving segment capacity, c8851 veh/h				6619 veh/h 8851 veh/h	Weaving inte Weaving sec	ensity factor, gment speed	W , S		0.232 59.0 mph		
Weaving segment v/c ratio 0.74					Average wea	aving speed,	S _W		59.7 mph		
Weaving segment density, D 28.4 pc/mi/li					/In Average non-weaving speed, S_{NW} 59				59.0 mph		
Level of Service, LOS D					Maximum weaving length, L _{MAX} 5916 ft						
Notes	a a mana materia de la como de la	han tha!- !					and diverge-		nno o durra f		
a. weaving Chapter 13, b. For volun	"Freeway Merge a nes that exceed the	and Diverge Se weaving segi	egments".	ngun should he level of se	rvice is <u>"F".</u>	solated merge	and diverge ar	eas using the	procedures of		

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BASIC FREEWAY SEGMENTS WORKSHEET										
General Information			Site Information							
Analyst Agency or Company AECOM Date Performed		Highway/Direction of Trav From/To Jurisdiction		I-95 SB Seg 3-B	et Off & On Ramp					
Analysis Time Period	PM th Street SIMP		Analysis Year	2040 Bu	lila 2A					
Project Description 31770					anning Data					
)		Jes.(II)							
Volume, V AADT	4950	veh/h veh/dav	Peak-Hour Factor, PHF %Trucks and Buses, P _T	0.95 3						
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P _R General Terrain: Grade % Length Up/Down %	0 Level mi						
Calculate Flow Adjust	ments									
f _ρ Ε _τ	1.00 1.5		E _R f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	1.2 0.985						
Speed Inputs			Calc Speed Adj and FFS	6						
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	3 70.0	ft ft ramps/mi mph mph	f _{LW} f _{LC} TRD Adjustment FFS	70.0	mph mph mph mph					
LOS and Performance	Measures		Design (N)							
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N S D = v _p / S LOS	x f _{HV} x f _p) 1763 66.3 26.6 D	pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x)$ S $D = v_p / S$ Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln					
Glossary			Factor Location							
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design h	S - Speed D - Density FFS - Free-flow BFFS - Base fre our volume	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	.13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11					

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		RAMF	PS AND RAM	P JUNCTI	ONS WO	RKS	HEET			
General Infor	mation			Site Infor	mation					
Analyst			Fr	eeway/Dir of Tr	avel	I-95 SE	3			
Agency or Company	AECO	MC	Ju	inction		Seg 4-I	Diverge to S	SW 10th St		
Date Performed			Ju	irisdiction						
Analysis Time Period	PM		Ar	nalysis Year		2040 B	uild 2A			
Project Description	SW 10th Street	t SIMR								
inputs		L								
Upstream Adj R	amp	Freeway Nun	nber of Lanes, N	3					Downstrea	m Adj
		Ramp Numbe	er of Lanes, N	1					Ramp	
Yes L	」On	Acceleration	Lane Length, L _A						I Yes	✓ On
	Off	Deceleration	Lane Length L _D	200						
		Freeway Volu	ume, V _r	4950					I NO	∐ Off
L _{up} = fi	t	Ramp Volum	e V _P	1710					L _{down} =	2400 ft
чр 		Freeway Free	-Flow Speed S	70.0						
V _u = ve	eh/h	Down Free F	low Croad C	10.0					V _D =	1740 veh/h
		Ramp Free-F	now Speed, S _{FR}	45.0						
Conversion to	o pc/h Und	der Base	Conditions		1		r			
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	v = V/PHF :	x f _{HV} x f _p
Freeway	4950	0.95	Level	3	0	0.	985	1.00	528	9
Ramp	1710	0.92	Level	2	0	0.	990	1.00	187	7
UpStream										
DownStream	1740	0.92	Level	2	0	0.	990	1.00	191	0
		Merge Areas					D	viverge Areas		
Estimation of	^F V ₁₂				Estimat	ion o	f v ₁₂			
	$V_{12} = V_{F}$	(P _{EM})					V ₁₂ =	V _P + (V _F - V _F	,)P _{ED}	
L _{FO} =	(Equa	tion 13-6 or	r 13-7)		L _{F0} =		·2 (E	Equation 13-1	2 or 13-13)	
P =	usina	Equation (Exhibit 13-6)		EQ P =		0,	541 usina Fau	lation (Exhib	it 13_7)
V _{in} =	nc/h				Y FD V =		37	2^{1} nc/h		
$V_{\rm or} V$	po/h (l	Equation 13	$\frac{14}{10}$ or $\frac{13}{17}$		V or V		15	24 pc/n	ation 12 11	or 12 17)
$v_3 \circ v_{av34}$	pc/n (i		5-14-01-13-17)		v_3 v_{av34}	> 0 7	00 no/h2 🗔		alion 13-14	0113-17)
$15 v_3 01 v_{av34} > 2,70$		S INO				34 ~ 2,1	* V /0			
$15 v_3 \text{ or } v_{av34} > 1.5$	V ₁₂ /2 Yes	S 🔲 NO Equation 13	0 16 12 10 or		pc/h (Equation 13-16, 13-18, or 13- pc/h (Equation 13-16, 13-18, or 13-					
If Yes,V _{12a} =	13-19)		5-10, 13-10, 01		If Yes,V _{12a} =	=	р 19	om (Equation })	13-10, 13-	10, 01 13-
Capacity Che	cks				Capacit	v Ch	ecks			
	Actual	(Capacity	LOS F?			Actual	Ca	pacity	LOS F?
					Vr		5289	Exhibit 13-8	3 7200	No
V=a		Exhibit 13-8			$V_{} = V_{}$	- V_	3412	Exhibit 13-8	3 7200	No
- FO						· · R	4077		0 0100	No
		<u> </u>					10//	EXHIBIT 13-1	2100	NO
Flow Entering	g Merge In	fluence A	Area		Flow En	iterin	g Diver	rge Influen	<u>ce Area</u>	
	Actual	Max	Desirable	Violation?			Actual	Max Desirab		Violation?
V _{R12}		Exhibit 13-8			V ₁₂		3724	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 _R + 0.0078 V ₁₂ - 0.00627 L _A						D _R = 4	.252 + 0.	.0086 V ₁₂ - 0.	009 L _D	
D _R = (pc/mi/ln	D _R = (pc/mi/ln)					4.5 (pc	/mi/ln)			
LOS = (Exhibit 13-2)					LOS = D	(Exhil	oit 13-2)			
Speed Determination					Speed L	Deter	minatio	n		
M _s = (Exibit 13	3-11)				D _s = 0.	467 (E	xhibit 13-	12)		
$S_{p} = mph (Exh$	ibit 13-11)				S _R = 56	6.9 mph	(Exhibit	13-12)		
$S_0 = mph (Exh$, ibit 13-11)				S ₀ = 74	4.6 mph	(Exhibit	13-12)		
S = mph (Exh	ibit 13-13)				S = 6'	1.2 mph	(Exhibit	, 13-13)		
L	/				ľ č		<u>,</u>	/		

	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company AECOM Date Performed			Highway/Direction of Travel From/To Jurisdiction	I-95 SB Seg 5-B	et Off & On Ramps
Analysis Time Period	PM		Analysis Year	2040 Bu	lia 2A
Oper (LOS)			Des (N)	Pla	nning Data
Flow Inputs	,				
Volume, V AADT Peak-Hr Prop. of AADT. K	3240	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T %RVs, P _B	0.95 3 0	
Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	General Terrain: Grade % Length Up/Down %	Level mi	
Calculate Flow Adjustr	nents				
f _ρ Ε _Τ	1.00 1.5		E _R f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	1.2 0.985	
Speed Inputs			Calc Speed Adj and FFS	6	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	3 70.0	ft ft ramps/mi mph mph	f _{LW} f _{LC} TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N S D = v _p / S LOS	x f _{HV} x f _p) 1154 70.0 16.5 B	pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x)$ S $D = v_p / S$ Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base free our volume	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	-13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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RAMPS AND RAMP JUNCTIONS WORKSHEET											
Genera	al Infor	mation			Site Infor	mation					
Analyst Agency or Date Perfo	Company rmed	AEC	ОМ	Fr Ju Ju	eeway/Dir of Tr inction irisdiction	avel	I-95 S Seg 6	B -Merge from	1 Hillsboro E&W		
Analysis Ti	ime Period	PM		Ar	nalysis Year		2040	Build 2A			
Project Des	scription	SW 10th Stree	It SIMR								
inputs			L								
Upstream A	Adj Ramp		Freeway Num Ramp Numbe	iber of Lanes, N r of Lanes, N	3 1					Downstrea Ramp	m Adj
✓ Yes	🗌 On		Acceleration L	ane Length, L _A	300					Yes	🗌 On
🗌 No	✓ Off	:	Deceleration I Freeway Volu	₋ane Length L _D me, V _⊏					🗹 No	Off	
L _{up} =	2400	ft	Ramp Volume	e, V _R	1740					L _{down} =	ft
V _u =	1710 v	reh/h	Freeway Free Ramp Free-Fl	-Flow Speed, S _{FF} ow Speed, S _{FP}	70.0 50.0					V _D =	veh/h
Conver	rsion to	p pc/h Un	der Base	Conditions							
/////	/h)	V		Torroin	0/ Truck	0/ D) /		f	f		vf vf
(pc	<i>,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(Veh/hr) 3240	0.95		70 TTUCK	70FKV		'HV	1 00	v = v/FTTF 3/	• ' _{HV} • ' _p
Ramn		17/0	0.95	Level	2	0		0.903	1.00	10	10
UnStream		1740	0.92	Level	2	0		0.990 1 990	1.00	18	77
DownStre	am	1710	0.32	Level	2	0	+		1.00		
Donnouou			Merge Areas					I)iverge Areas		
Estima	tion of	v ₁₂				Estimation of v ₁₂					
		V ₁₂ = V _F	(P _{FM})					V ₄₀ = '	Vn + (Vr - Vn)P _{ED}	
L _{EQ} =		1495.8	l (Equation	13-6 or 13-7)		I =		• 12	Faultion 13-	/' ⊦∪ .12 or 13_13	3
P _{FM} =		0.586	using Equat	ion (Exhibit 13-6)		EQ P=		, in the second s	Legalion 10-	n (Evhibit 13	7)
$V_{12} =$		2028	pc/h			FD -			using Equatio		()
V _o or V or		1434	pc/h (Equati	on 13-14 or 13-		v ₁₂ = V. or V		i	DC/N pc/b (Equation 1	3-11 or 13-17)
Is V ₃ or V _a	, _{av34} > 2,70	17) 0 pc/h? 🗌 Ye	s 🗹 No			Is V ₃ or V _{av34}	₃₄ > 2,	700 pc/h?	Yes No)
Is V ₃ or V	_{av34} > 1.5 *	V ₁₂ /2 Ve	s 🗌 No			Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ [Yes] No					
lf Yes,V _{12a}	=	2028 18 or	pc/h (Equation 13-19)	on 13-16, 13-		lf Yes,V _{12a} =	=	 1:	oc/h (Equatio 3-19)	n 13-16, 13	-18, or
Capaci	ty Che	cks	10 10)			Capacit	y Ch	necks			
	-	Actual	C	apacity	LOS F?			Actual	Car	pacity	LOS F?
						V _F			Exhibit 13-8	8	
V _F	=0	5372	Exhibit 13-8		No	V _{FO} = V _F	- V _R		Exhibit 13-8	8	
						V _R			Exhibit 13-	-	
Flow E	ntering	Merge In	fluence A	rea	1	Flow Er	nterii	ng Dive	rge Influen	ce Area	
		Actual	Max	Desirable	Violation?		_	Actual	Max Desi	rable	Violation?
V _R	12	3938	Exhibit 13-8	4600:All	No	V ₁₂			Exhibit 13-8		-
Level o	of Serv	ice Detern	nination (if not F)		Level of	f Ser	vice De	terminatio	n (if not l	5)
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A							D _R =	4.252 + 0	.0086 V ₁₂ - 0.	.009 L _D	
$D_{R} = 33.4 (\text{pc/mi/ln})$						D _R = (pc/mi/ln)					
LOS = D(Exhibit 13-2)						LOS = (E		it 13-2)			
Speea Determination						Speed Determination					
M _S = (0.491 (Exik	oit 13-11)				∪ _s -i (E s-		13-12)			
S _R = 5	56.2 mph (Exhibit 13-11)				o _R - m	ipn (Ex	(13-12)			
S ₀ = 6	66.6 mph (Exhibit 13-11)				S₀= m	iph (Ex	(hibit 13-12)			
S = 5	58.7 mph (Exhibit 13-13)				S= m	iph (Ex	(hibit 13-13)			

	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	l-95 SB Seg 7-B	et On Ramps
Analysis Time Period	PM		Analysis Year	2040 Bu	iild 2A
Project Description SW 10t	h Street SIMR				
✓ Oper.(LOS)			Des.(N)		anning Data
	(000			0.05	
	4980	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P _R General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustr	ments				
f _p	1.00		E _R	1.2	
E _T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985	
Speed Inputs			Calc Speed Adj and FFS	3	
Lane Width		ft			
Rt-Side Lat. Clearance	0	ft	t _{LW}		mph
Number of Lanes, N	3	ranan a /mai	ILC		mpn
FES (measured)	70.0	mnh		70.0	mph
Base free-flow Speed, BFFS	70.0	mph		70.0	тірп
LOS and Performance	Measures		Design (N)		
$\frac{\text{Operational (LOS)}}{v_p} = (V \text{ or DDHV}) / (PHF x N)$ S D = v_p / S LOS	x f _{HV} x f _p) 1774 66.2 26.8 D	pc/h/ln mph pc/mi/ln	Design (N) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x)$ S $D = v_p / S$ Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes S - Speed V - Hourly volume D - Density v _p - Flow rate FFS - Free-flow speed LOS - Level of service BFFS - Base free-flow speed DDHV - Directional design hour volume			E_R - Exhibits 11-10, 11-12 f_{LW} - Exhibit 11- E_T - Exhibits 11-10, 11-11, 11-13 f_{LC} - Exhibit 11- f_p - Page 11-18TRD - Page 11-LOS, S, FFS, v_p - Exhibits 11-2, 11-3		

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Job: SW 10th Street SIMR Analyst: AECOM

Location: Se	eg 8: I-9	5 South	bound On-Ram	o from SW 10)th Street E	B & WB
Analysis Period: PI	M Peak	Hour				
Analysis Year: <u>20</u>	040 Buile	d 2A				
4,980			▶ 6,460			
1,480						F
	r					
PI	HF =	0.95				
v _f	/ _{fr} =	6,460	vph			
V	/ _r =	1,480	vph			
Vf	′ _f =	4,980				
Upstream Freeway T	'r % =	3%				
Ramp T	'r % =	2%				
Downstream Freeway T	'r % =	3%				
Freeway f _H	_{HV} =	1/(1+P₁	(E _T -1)+P _R (E _R -	1)) =	0.985	
Ramp f _H	ну =	1/(1+P₁	(E _T -1)+P _R (E _R -	1)) =	0.9901	
flat terrain E	T =	1.5				
R	RV % =	0				
Driver Population adj. f	_Р =	1.000				
V	/ _{fr} =	=v _{fr} /(PF	$IF)(f_{HV})(f_{P}) =$	6,902	pc/h	
V	/ _r =	=v _r /(PH	$F)(f_{HV})(f_{P}) =$	1,573	pc/h	
V	/ _f =	=v _f /(PH	$F)(f_{HV})(f_{P}) =$	5,321	pc/h	

	V _f =	=v _f /(PHF)(f _{HV})(f _P) =
No. lanes upstream of ram	» N =	3

<u>No. Ln</u>	Capacity Check (see Exhibits 25-3 and 25-7):	Maximum	Actual	V/c	LOS F?
4	Fwy downstream of ramp (assume 70 mph free-flow speed) =	9,600	6,902	0.72	No
3	Fwy upstream of ramp (assume 70 mph free-flow speed) =	7,200	5,321	0.74	No
1	Capacity on On-Ramp (assume 45 mph free-flow speed) =	2,100	1,573	0.75	No

	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company AECOM Date Performed			Highway/Direction of Travel From/To Jurisdiction	I-95 SB Seg 9-B	et 10th & Exit to Exp
Project Description SW 10	TM th Street SIMR		Analysis real	2040 Би	liu ZA
Qper (LOS))		Des (N)	Pla	nning Data
Flow Inputs	/	·			in ing Data
Volume, V AADT Peak-Hr Prop. of AADT, K	6460	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T %RVs. P _D	0.95 3 0	
Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	General Terrain: Grade % Length Up/Down %	Level mi	
Calculate Flow Adjust	ments				
f _ρ Ε _Τ	1.00 1.5		E _R f _{HV} = 1/[1+P _T (E _T - 1) + P _R (E _R - 1)]	1.2 0.985	
Speed Inputs			Calc Speed Adj and FFS	3	
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	4 70.0	ft ft ramps/mi mph mph	f _{LW} f _{LC} TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N S D = v _p / S LOS	x f _{HV} x f _p) 1726 66.8 25.8 C	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v _p = (V or DDHV) / (PHF x N x S D = v _p / S Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design he	S - Speed D - Density FFS - Free-flow BFFS - Base fre	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11

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RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Info	rmation			Site Infor	mation					
Analyst Agency or Company Date Performed Analysis Time Perio	/ AEC	ОМ	Fr Ju Ju Ar	eeway/Dir of Tra Inction Irisdiction nalvsis Year	avel	I-95 S Seg 1 2040	B 0-Merge fro Build 2A	m Ex to GP		
Project Description	SW 10th Stree	t SIMR		, , , , , , , , , , , , , , , , , , ,			2 0110 22 1			
Inputs										
Upstream Adj Ramp)	Freeway Num Ramp Numbe	ber of Lanes, N	4					Downstre: Ramp	am Adj
□Yes □O	n	Acceleration I	_ane Length, L _A	600					I Ves	🗌 On
✓ No O	ff	Deceleration Freeway Volu	Lane Length L _D Ime, V _F	6460					🗌 No	✓ Off
L _{up} = ft		Ramp Volume	e, V _R	390 70 0					L _{down} =	1150 ft
V _u = veh/l	า	Ramp Free-F	low Speed, S _{FR}	70.0 50.0					V _D =	750 veh/h
Conversion	to pc/h Un	der Base	Conditions							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	v = V/PHF	x f _{HV} x f _p
Freeway	6460	0.95	Level	3	0	().985	1.00	6	902
Ramp	390	0.92	Level	2	0	(0.990	1.00	· · ·	428
UpStream										
DownStream	750	0.92	Level	2	0	().990	1.00		323
Estimation o	fv	werge Areas			Diverge Areas					
	12				LStimat		12			
	V ₁₂ = V _F	(P _{FM})					$V_{12} = 1$	V _R + (V _F - V _R)P _{ED}	
L _{EQ} =	(Equ	ation 13-6 o	r 13-7)		L _{E0} =		12	(Equation 13-	12 or 13-1	3)
P _{FM} =	0.164	using Equa	tion (Exhibit 13-6))				using Equatio	n (Exhibit 1	3-7)
V ₁₂ =	1134	pc/h			го V =			nc/h		,
V_3 or V_{av34}	2884 17)	pc/h (Equati	on 13-14 or 13-		V_3 or V_{av34}			pc/h (Equation 1	3-14 or 13-1	7)
Is V_3 or $V_{3\sqrt{34}} > 2.7$, 00 pc/h? √Ye	s 🗌 No			Is V_3 or V_{av}	₃₄ > 2,	700 pc/h?	Yes 🗌 No		
$I_{\rm S} V_{2} \text{ or } V_{-24} > 1.5$	* V ₄₀ /2 Ve	s 🗌 No			Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No					
If Yes,V _{12a} =	2760	pc/h (Equati 13-19)	on 13-16, 13-		If Yes, $V_{12a} = pc/h$ (Equation 13-16, 13-18, or 13-19)					
Capacity Ch	ecks				Capacit	v Cł	necks			
	Actual		Capacity	LOS F?		,	Actual	Car	oacity	LOS F?
					V _E			Exhibit 13-8	8	
V _{FO}	7330	Exhibit 13-8		No	V _{FO} = V _F	- V _R		Exhibit 13-8	8	
					V _R			Exhibit 13-	-	
Flow Enterin	<u>g Merge In</u>	fluence A	lrea	<u> </u>	Flow En	<u>iterii</u>	ng Dive	rge Influen	ce Area	
	Actual	Max	Desirable	Violation?		_	Actual	Max Desi	irable	Violation?
V _{R12}	3188	Exhibit 13-8	4600:All	No	V ₁₂			Exhibit 13-8		
Level of Serv	vice Detern	nination (if not F)		Level of	f Ser	rvice De	terminatio	n (if not	<i>F</i>)
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$						D _R =	4.252 + 0	.0086 V ₁₂ - 0.	.009 L _D	
$D_{R} = 26.4 (pc/mi/ln)$					D _R = (p	oc/mi/ =vhihi	′ln) it 13₋2)			
Spood Determination										
Speed Deter		Speed L	Jele		///					
M _S = 0.356 (Ex	ibit 13-11)				⊔ _s = (E	xnibit	13-12)			
S _R = 60.0 mph	(Exhibit 13-11)				S _R = m	ph (Ex	(hibit 13-12)			
S ₀ = 64.3 mph	(Exhibit 13-11)				S ₀ = m	ph (Ex	(hibit 13-12)			
S = 62.4 mph	(Exhibit 13-13)				S= m	ph (Ex	(hibit 13-13)			

RAMPS AND RAMP JUNCTIONS WORKSHEET											
General Infor	mation			Site Infor	mation						
Analyst			Fr	eeway/Dir of Tr	avel	I-95 SE	}				
Agency or Company	AECO	DM	Ju	nction		Seg 11	- Diverge to	Express			
Date Performed			Ju	risdiction							
Analysis Time Period			Ar	alysis Year		2040 B	uild 2A				
	SW 10th Street	(SIMR									
inputs		F N	ub								
Upstream Adj R	amp	Freeway Nur	nder of Lanes, N	4					Downstrea	m Adj	
Veo V		Ramp Numbe	er of Lanes, N	1					Ramp		
		Acceleration	Lane Length, L _A						Yes	🗌 On	
□ No □	Off	Deceleration	Lane Length L _D	200					V No	□ Off	
		Freeway Volume, V _F 6850									
L _{up} = 11	50 ft	Ramp Volum	e, V _R	750					L _{down} =	ft	
		Freeway Free	e-Flow Speed, S _{FF}	70.0					V -	vch/h	
Ramp Free-Flow Speed, S _{FR} 45.				45.0					v _D –	ven/n	
Conversion t	o nc/h Unc	ler Base	Conditions					I			
				ал т .	a/ 5		<i>c</i>				
(pc/h)	(Veh/hr)	PHF	lerrain	% I ruck	%Rv		™HV	т _р	V = V/PHF	x t _{HV} x t _p	
Freeway	6850	0.95	Level	3	0	0.	985	1.00	731	9	
Ramp	750	0.92	Level	2	0	0.	990	1.00	82	3	
UpStream	390	0.92	Level	2	0	0.	990	1.00	42	8	
DownStream											
Merge Areas Diverge Areas											
Estimation of	¹ V ₁₂				Estimat	ion o	^t v ₁₂				
	V ₁₂ = V _F	(P _{FM})					V ₁₂ =	V_{R} + (V_{F} - V_{F}	R)P _{FD}		
L _{EQ} =	(Equa	tion 13-6 or	r 13-7)		L _{EQ} =		(E	Equation 13-1	2 or 13-13)		
P _{FM} =	using	Equation (Exhibit 13-6)		P _{FD} =		0.4	136 using Equ	uation (Exhib	oit 13-7)	
V ₁₂ =	pc/h				$V_{12} =$		36	55 pc/h		,	
V_2 or $V_{0/24}$	pc/h (l	Equation 13	3-14 or 13-17)		V_2 or V_{2}		18	32 pc/h (Equ	ation 13-14	or 13-17)	
$I_{\rm S} V_{2} \text{ or } V_{224} > 2.70$	0 pc/h? □ Yes	s 🗌 No	,		Is V ₂ or V ₂	₂₄ > 2,7	00 pc/h?	Yes VNo		,	
$1 \text{ s } V_{2} \text{ or } V_{24} > 1.5^{3}$	*V/2				Is V _o or V	_م > 1.5	* V/2				
	pc/h (I	Equation 13	3-16. 13-18. or		If Ves V = pc/h (Equation 13-16, 13-18, or 13-						
If Yes,V _{12a} =	13-19)	1	-,,		If Yes,V _{12a} =	-	19)	, -	-, -	
Capacity Che	ecks				Capacity Checks						
	Actual	(Capacity	LOS F?			Actual	Ca	pacity	LOS F?	
					V _F		7319	Exhibit 13-8	9600	No	
V _{FO}		Exhibit 13-8			$V_{FO} = V_{F}$	- V _R	6496	Exhibit 13-8	9600	No	
					Vp		823	Exhibit 13-1	0 2100	No	
Flow Entering	n Merae In	l fluence /	Area			nterin	a Diver	rae Influen	re Area		
	Actual	Max	Desirable	Violation?	/ 10W En		Actual	Max Desirab	le	Violation?	
VELO		Exhibit 13-8			V ₄₀		3655	Exhibit 13-8	4400·All	No	
Level of Serv	ico Dotorn	nination	(if not E)			f Sori	vice De	torminatio	n (if not F	=)	
$D = 5.475 \pm 0$	$\frac{100734}{100734} + 0$		- 0.006271		Leveror		1252 ± 0	$\frac{10086}{10086}$		/	
$D_{\rm R} = (n_2/m_1/m_1)$					D - 0	$D_R = 4$	r.202 ' U.	0000 v ₁₂ - 0.0			
$D_R = (pc/mi/in$)				$D_{\rm R} = 3$	/.0 (pc/	/mi/in)				
LOS = (Exhibit 13-2)						(Exhit	oit 13-2)				
Speed Determination						Deter	minatio	n			
M _s = (Exibit 1	M _s = (Exibit 13-11)						D _s = 0.372 (Exhibit 13-12)				
S _R = mph (Exh	nibit 13-11)				S _R = 59	9.6 mph	(Exhibit	13-12)			
$S_0 = mph (Exh$, nibit 13-11)				S ₀ = 74	4.3 mph	(Exhibit	13-12)			
S = mph (Exh	, ibit 13-13)				S = 65	5.4 mph	(Exhibit	13-13)			
1						•		•			

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BASIC FREEWAY SEGMENTS WORKSHEET										
General Information			Site Information							
Analyst Agency or Company AECOM Date Performed			Highway/Direction of Travel From/To Jurisdiction	Travel I-95 SB Seg 13-Bet Off & On Rai						
Analysis Time Period	PM		Analysis Year	2040 Bu	ild 2A					
Project Description SW 10t	n Street SIMR				un nimer Data					
✓ Oper.(LOS))		Jes.(N)		inning Data					
	1000			0.05						
Volume, V AADT	4800	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P _T	0.95 3						
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P _R General Terrain: Grade % Length Up/Down %	0 Level mi						
Calculate Flow Adjustr	ments									
fp	1.00		E _R	1.2						
E _T	1.5		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.985						
Speed Inputs			Calc Speed Adj and FFS	3						
Lane Width Rt-Side Lat. Clearance Number of Lanes, N Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	3 70.0	ft ft ramps/mi mph mph	f _{LW} f _{LC} TRD Adjustment FFS	70.0	mph mph mph mph					
LOS and Performance	Measures		Design (N)							
<u>Operational (LOS)</u> v _p = (V or DDHV) / (PHF x N S D = v _p / S LOS	x f _{HV} x f _p) 1709 67.0 25.5 C	pc/h/ln mph pc/mi/ln	$\frac{\text{Design (N)}}{\text{Design LOS}}$ $v_p = (V \text{ or DDHV}) / (PHF x N x)$ S $D = v_p / S$ Required Number of Lanes, N	f _{HV} x f _p)	pc/h/ln mph pc/mi/ln					
Glossary			Factor Location							
N - Number of lanes V - Hourly volume v _p - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fre	speed ee-flow speed	E _R - Exhibits 11-10, 11-12 E _T - Exhibits 11-10, 11-11, 11- f _p - Page 11-18 LOS, S, FFS, v _p - Exhibits 11-2	13 2, 11-3	f _{LW} - Exhibit 11-8 f _{LC} - Exhibit 11-9 TRD - Page 11-11					

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			FREEWA	Y WEAV	ING WOF	RKSHEE	Т					
Genera	al Informati	on			Site Info	rmation						
Analyst Agency/Co Date Perfo Analysis Ti	ompany rmed ime Period	AECO PM	М		Freeway/Dir Weaving Seg Analysis Yea	Freeway/Dir of Travel I-95 SB Weaving Segment Location Seg 14- Bet Sample & Copans Analysis Year 2040 Build 2A						
Project De	scription SW 10t	h Street SIM	2		-							
Inputs					1							
Weaving c Weaving n Weaving s Freeway fr	onfiguration umber of lanes, I egment length, L ee-flow speed, F	N s FS		One-Sided 4 2520ft 70 mph	Segment typ Freeway min Freeway maa Terrain type	e imum speed ximum capac	, S _{MIN} sity, C _{IFL}		Freewa 1 240 Leve			
Conve	rsions to p	<u>c/h Unde</u>	r Base Co	ondition	S							
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε _Τ	E _R	f _{HV}	fp	v (pc/h)			
V _{FF}	4035	0.95	3	0	1.5	1.2	0.985	1.00	4311			
V _{RF}	1560	0.92	2	0	1.5	1.00	1713					
V _{FR}	765	0.92	2	0	1.5	1.2	1.00	840				
V _{RR}	0	0.95	0	0	1.5	1.2	1.000	1.00	0			
V _{NW}	4311		•	-	-		-	V =	6864			
V _w	2553							-	-			
VR	0.372											
Config	uration Cha	aracteris	tics									
Minimum r	maneuver lanes,	N _{WI}		2 lc	Minimum we	aving lane c	hanges, LC _{MIN}		lc/ł			
Interchang	je density, ID			0.7 int/mi	Weaving lan	e changes, L	.C _w		lc/ł			
Minimum I	RF lane changes	, LC _{RF}		1 lc/pc	Non-weaving	g lane chang	es, LC _{NW}		lc/ł			
Minimum I	R lane changes	, LC _{FR}		1 lc/pc	Total lane ch	nanges, LC _{AL}	L		lc/h			
Minimum I	RR lane changes	, LC _{RR}		lc/pc	Non-weaving	g vehicle inde	ex, I _{NW}					
Weavir	ng Segmen	t Speed,	Density,	Level of	Service,	and Cap	oacity					
Weaving s	eqment flow rate	. V		6775 veh/h	Weaving inte	ensity factor,	W					
Weaving s	egment capacity	, C _w		6357 veh/h	Weaving seg	gment speed	, S		mph			
Weaving s	egment v/c ratio			1.066	Average wea	aving speed,	S _w		mpł			
Weaving s	egment density,	D		pc/mi/ln	In Average non-weaving speed, S _{NW} n							
Level of S	ervice, LOS			F	Maximum we	eaving length	n, L _{MAX}		6368 f			
Notes					<u>.</u>							
a. Weaving	segments longer t	han the calculation of the calcu	ated maximum le	ength should l	pe treated as is	olated merge	and diverge ar	eas using the	procedures of			

Chapter 13, "Freeway Merge and Diverge Segments". b. For volumes that exceed the weaving segment capacity, the level of service is "F".

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		RAMP	S AND RAM	P JUNCTI	ONS WO	RKS	HEET			
General Infor	mation			Site Infor	mation					
Analyst			Fr	eeway/Dir of Tr	avel	I-95 NE	B Express L	ane		
Agency or Company	AEC	OM	Ju	inction	(Off to S	SW 10th Co	nnector		
Date Performed	4 AM		JU Ar	risdiction Voar		2010 B	uild 2A			
Project Description	SW 10th Stree	et SIMR			· · · · · ·	2040 D				
Inputs										
Linstroam Adi P	amn	Freeway Nun	nber of Lanes, N	2					Downstream	m Adi
	amp	Ramp Numbe	er of Lanes, N	1				F	Ramp	II Auj
Yes	On	Acceleration	Lane Length, L							
	□ _0#	Deceleration	Lane Length L_{p}	345						
		Freeway Volu	ume, V _F	1490					⊻ No	U Off
L _{up} = f	t	Ramp Volum	e, V _P	220				l	-down =	ft
		Freeway Free	e-Flow Speed, S	70.0				l.	. –	la /la
$V_u = v_i$	eh/h	Ramp Free-F	low Speed, SER	60.0					v _D =	ven/n
Conversion t	o pc/h Un	der Base	Conditions							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	/ = V/PHF >	k f _{HV} x f _p
Freeway	1490	0.95	Level	3	0	0.	985	1.00	159	2
Ramp	220	0.95	Level	2	0	0.	990	1.00	234	1
UpStream										
DownStream										
Estimation	F 17	Merge Areas			Ectimoti	iono	D	verge Areas		
Estimation of	v 12				Esumau	0110	12			
	$V_{12} = V_{F}$	(P _{FM})					V ₁₂ =	V _R + (V _F - V _R)P _{FD}	
L _{EQ} =	(Equa	ation 13-6 or	13-7)		L _{EQ} =		(E	equation 13-12	2 or 13-13)	
P _{FM} =	using	Equation (Exhibit 13-6)		P _{FD} =		1.0	00 using Equ	ation (Exhib	it 13-7)
V ₁₂ =	pc/h				V ₁₂ =		159	92 pc/h		
V ₃ or V _{av34}	pc/h (Equation 13	3-14 or 13-17)		V ₃ or V _{av34}		0	pc/h (Equatio	n 13-14 or	13-17)
Is V_3 or $V_{av34} > 2,70$	0 pc/h? Ye	s 🗌 No			Is V_3 or V_{av3}	₃₄ > 2,7	00 pc/h?	Yes 🗹 No		
Is V_3 or $V_{av34} > 1.5$	[°] V ₁₂ /2 ∐Ye	s 🗌 No	16 12 10		Is V_3 or V_{av3}	₃₄ > 1.5	^ V ₁₂ /2	Yes No	10 10 10 1	0
If Yes,V _{12a} =	13-19)	Equation 13)	5-10, 13-18, 01		If Yes,V _{12a} =		рс 19)	13-10, 13-1	18, 01 13-
Capacity Che	ecks	/			Capacity	y Ch	ecks	,		
	Actual	(Capacity	LOS F?	1		Actual	Сар	acity	LOS F?
					V _F		1592	Exhibit 13-8	4800	No
V _{FO}		Exhibit 13-8			$V_{FO} = V_{F}$	- V _R	1358	Exhibit 13-8	4800	No
					V _R		234	Exhibit 13-10	2200	No
Flow Entering	a Merae In	, fluence A	Area		Flow En	terin	a Diver	ae Influenc	e Area	
	Actual	Max	Desirable	Violation?			Actual	Max Desirabl	е	Violation?
V _{R12}		Exhibit 13-8			V ₁₂	1	592	Exhibit 13-8	4400:All	No
Level of Serv	ice Detern	nination	(if not F)		Level of	Serv	vice Det	ermination	n (if not F)
D _R = 5.475 + 0.	00734 v _R +	0.0078 V ₁₂	- 0.00627 L _A			D _R = 4	.252 + 0.	0086 V ₁₂ - 0.0	09 L _D	
D _R = (pc/mi/ln)				D _R = 14	.8 (pc /	/mi/ln)			
LOS = (Exhibit	13-2)				LOS = B	(Exhib	oit 13-2)			
Speed Determination					Speed D	Deter	minatio	n		
M _s = (Exibit 1)	3-11)				D _s = 0.1	124 (E	xhibit 13-	12)		
$S_{R}^{=}$ mph (Exh	nibit 13-11)				S _R = 66.5 mph (Exhibit 13-12)					
$S_0 = mph (Exh$, nibit 13-11)				S ₀ = N/A mph (Exhibit 13-12)					
S = mph (Exh	ibit 13-13)				S = 66.5 mph (Exhibit 13-13)					

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	RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Infor	mation			Site Infor	mation						
Analyst Agency or Company Date Performed	AECO	DM	Fre Ju Ju	eeway/Dir of Tra nction risdiction	avel	I-95 N On fro	B Express L m SW 10th	anes St. Connector			
Analysis Time Period	MA k		An	alysis Year		2040 I	Build 2A				
Project Description	SW 10th Street	t SIMR									
Inputs		1							r		
Upstream Adj Ramp		Freeway Num Ramp Numbe	nber of Lanes, N er of Lanes, N	2 1					Downstrea Ramp	am Adj	
Yes Or	ı	Acceleration I	Lane Length, L _A	1040					Yes	On	
🗹 No 🛛 🗌 Of	f	Deceleration Freeway Volu	Lane Length L _D	1270					🗹 No	Off	
L _{up} = ft		Ramp Volume	e, V _R	1270					L _{down} =	ft	
V = veh/h	I	Freeway Free	-Flow Speed, S _{FF}	70.0					V _D =	veh/h	
u		Ramp Free-F	low Speed, S _{FR}	60.0							
Conversion t	o pc/h Und	der Base	Conditions								
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	v = V/PHF	x f _{HV} x f _p	
Freeway	1270	0.95	Level	3	0	0	.985	1.00	1	357	
Ramp	1490	0.95	Level	2	0	0	.990	1.00	1	584	
UpStream						-					
DownStream	l	Merge Areas					I	iverne Areas			
Estimation of V ₁₂					Estimati	ion d	$\frac{1}{2}$	ivorgo ra ous			
	1 Z	(D)					$\frac{12}{12}$	/ + /\/ \/			
	v ₁₂ - v _F	(^r FM)	r 10 7)		_		v ₁₂ - v	R' (VF - VF	{「FD 12 or 12 1	2)	
E _{EQ} -	(⊏qua 1.000		1 13-7)		EQ -		(Equation 13.	-12 01 13-1	(7)	
FM -	1.000	using Equa	LION (EXHIBIT 13-0)		FD -			ising Equalic		-/)	
$v_{12} - v_{12} - v$	1357)C/N	40 44 40 47)		$v_{12} - v_{12} - v$		4	DC/11	10 14 or 10 1	7)	
$v_3 \cup v_{av34}$	∪ pc/r v0 no/h2 ⊡ v	1 (Equation	13-14 of 13-17)		v_3 or v_{av34}	. ٦·	 700 pc/b2		13-14 01 13-1	/)	
$15V_3 \text{ or } V_{av34} > 2,70$		s ⊻ No			$15 V_3 U V_{av3}$	34 > Z,					
$15 V_3 U V_{av34} > 1.5$	$v_{12}/2$ \Box Yes	S 🔟 NO Equation 1	3-16 13-18 or		IS V ₃ OF V _{av3}	₃₄ > 1.:	o v ₁₂ /∠ ∟	⊥Yes ∟No c/b (Equatio	n 13-16 11	8-18 or	
If Yes,V _{12a} =	13-19)		5-10, 15-10, 01		If Yes,V _{12a} =		13	8-19)	/// 10-10, IX	J-10, 01	
Capacity Che	ecks				Capacity	y Ch	ecks				
	Actual	(Capacity	LOS F?			Actual	Ca	pacity	LOS F?	
					V _F			Exhibit 13-	8		
V _{FO}	2941	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V _R		Exhibit 13-	8		
					V _R			Exhibit 13 10	3-		
Flow Entering	g Merge In	fluence A	Area		Flow En	terii	ng Diver	ge Influer	nce Area		
	Actual	Max	Desirable	Violation?			Actual	Max Des	irable	Violation?	
V _{R12}	3103	Exhibit 13-8	4600:All	No	V ₁₂			Exhibit 13-8			
Level of Serv	ice Detern	nination (ïf not F)		Level of	Ser	vice De	terminatic	on (if not	F)	
D _R = 5.475 +	0.00734 v _R + 0).0078 V ₁₂ - 0.	00627 L _A		[[D _R =	4.252 + 0.	0086 V ₁₂ - 0	.009 L _D		
D _R = 21.2 (pc/m	ii/In)				D _R = (p	c/mi/	ln)				
LOS = C (Exhibit	13-2)				LOS = (E	xhibi	t 13-2)				
Speed Determination					Speed D)etel	rminatio	n			
M _S = 0.283 (Exi	bit 13-11)				D _s = (E	xhibit	13-12)				
S _R = 62.1 mph	(Exhibit 13-11)				S _R = mp	oh (Ex	hibit 13-12)				
$S_0 = N/A mph ($	₀ = N/A mph (Exhibit 13-11)					oh (Ex	hibit 13-12)				
S = 62.1 mph	(Exhibit 13-13)				S = mp	oh (Ex	hibit 13-13)				
-											

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		RAMP	S AND RAM	P JUNCTI	ONS WO	RKS	HEET				
General Infor	rmation			Site Infor	mation						
Analyst			Fr	eeway/Dir of Tr	avel	I-95 SE	BExpress La	ane			
Agency or Company	AEC	OM	Ju	nction		Off to S	SW 10th Co	nnector			
Date Performed	мл <i>Р</i>		Ju Ar	risdiction		2010 D	uild 2A				
Project Description	SW 10th Stree	at SIMR	AI	iaiysis i cai		2040 D	uliu ZA				
Inputs											
	lamn	Freeway Nun	nber of Lanes, N	2					Deuratraeu	n A di	
Upstream Adj R	amp	Ramp Numbe	er of Lanes. N	-				l	Jownstrear Ramp	n Aaj	
☐ Yes □	On	Acceleration	Lane Length, L.								
No	Off	Deceleration	Lane Length L _D	250							
		Freeway Volu	ume, V _F	1430					INO NO	U Off	
L _{up} = f	ť	Ramp Volum	e, V _R	670				l	-down =	ft	
V	- l= //-	Freeway Free	e-Flow Speed, S _{FF}	70.0					/_ =	veh/h	
v _u - v	en/n	Ramp Free-F	low Speed, S _{FR}	60.0					۰D	ven/m	
Conversion t	o pc/h Un	der Base	Conditions								
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	/ = V/PHF	k f _{HV} x f _p	
Freeway	1430	0.95	Level	3	0	0.	985	1.00	152	8	
Ramp	670	0.95	Level	2	0	0.	990	1.00	712	2	
UpStream											
DownStream		Marga Araaa						iverne Arees			
Estimation of	fv	werge Areas			Estimati	ion o	U of v	iverge Areas			
	12	(5.)			LStimat		<u>12</u>				
	V ₁₂ = V _F	(P _{FM})					V ₁₂ =	V _R + (V _F - V _R)P _{FD}		
L _{EQ} =	(Equa	ation 13-6 or	13-7)		L _{EQ} =		(E	quation 13-12	2 or 13-13)		
P _{FM} =	using	Equation (Exhibit 13-6)		P _{FD} =		1.0	00 using Equ	ation (Exhib	it 13-7)	
V ₁₂ =	pc/h				V ₁₂ =		15	28 pc/h			
V_3 or V_{av34}	pc/h (Equation 13	3-14 or 13-17)		V ₃ or V _{av34}		0	pc/h (Equatio	n 13-14 or	13-17)	
IS V_3 or $V_{av34} > 2,70$)0 pc/n? ∐Ye	s 🗌 No			IS V ₃ or V _{av3}	₃₄ > 2,7		Yes 🗹 No			
IS V_3 or $V_{av34} > 1.5$	[″] V ₁₂ /2 ∐Ye	s 🛄 No Equation 12	0 16 12 10 or		Is V_3 or V_{av3}	₃₄ > 1.5	^ V ₁₂ /2	Yes VNo	12 16 12 4	9 or 12	
If Yes,V _{12a} =	13-19)	j⊑qualion is)	5-10, 13-10, 01		If Yes,V _{12a} =		19) (⊏qualion	13-10, 13-	0, 01 13-	
Capacity Che	ecks				Capacity	y Ch	ecks	•			
	Actual	(Capacity	LOS F?			Actual	Cap	acity	LOS F?	
					V _F		1528	Exhibit 13-8	4800	No	
V _{FO}		Exhibit 13-8			$V_{FO} = V_{F}$	- V _R	816	Exhibit 13-8	4800	No	
					V _R		712	Exhibit 13-10	2200	No	
Flow Entering	a Merae In	Influence A	Area	•	Flow En	terin	a Diver	ae Influend	ce Area	•	
	Actual	Max	Desirable	Violation?			Actual	Max Desirabl	е	Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	1	528	Exhibit 13-8	4400:All	No	
Level of Serv	vice Detern	nination ((if not F)		Level of	Ser	vice De	termination	n (if not F)	
D _R = 5.475 + 0.	.00734 v _R +	0.0078 V ₁₂	- 0.00627 L _A		[D _R = 4	.252 + 0.	0086 V ₁₂ - 0.0	09 L _D		
D _R = (pc/mi/In	ı)				D _R = 15	.1 (pc	/mi/ln)				
LOS = (Exhibit	13-2)				LOS = B	(Exhil	oit 13-2)				
Speed Deterr	nination				Speed L	Deter	minatio	n			
M _s = (Exibit 1)	3-11)				D _s = 0.1	167 (E	xhibit 13-	12)			
$S_{p} = mph (Exh$, nibit 13-11)				S _R = 65.3 mph (Exhibit 13-12)						
$S_0 = mph (Exh$	$m_{\rm n}$ = mph (Exhibit 13-11)					S ₀ = N/A mph (Exhibit 13-12)					
S = mph (Exh	nibit 13-13)				S = 65.3 mph (Exhibit 13-13)						
· · ·							•	,			

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	RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Info	rmation			Site Infor	mation						
Analyst			Fre	eway/Dir of Tra	avel	I-95 S	B Express L	anes			
Agency or Company	y AECO	MC	Ju	nction		On fro	m SW 10th	St. Connector			
Date Performed Analysis Time Perio	MA bu		Jui An	alvsis Year		2040 F	Ruild 2A				
Project Description	SW 10th Stree	t SIMR	,			20101					
Inputs											
Upstream Adi Ramr)	Freeway Num	ber of Lanes, N	2					Downstrea	am Adi	
		Ramp Numbe	er of Lanes, N	1					Ramp	·····,	
Yes 0	n	Acceleration I	_ane Length, L _A	1100					□Yes	On	
⊠No □O	ff	Deceleration	Lane Length L _D								
		Freeway Volu	me, V _F	760							
L _{up} = ft		Ramp Volume	e, V _R	430					L _{down} =	ft	
V = veh/	h	Freeway Free	-Flow Speed, S _{FF}	70.0					V _D =	veh/h	
^v u ven/	11	Ramp Free-F	low Speed, S _{FR}	60.0					D		
Conversion	to pc/h Uno	der Base	Conditions		-				-		
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	v = V/PHF	x f _{HV} x f _p	
Freeway	760	0.95	Level	3	0	0	.985	1.00	8	312	
Ramp	430	0.95	Level	2	0	0	.990	1.00	4	157	
UpStream											
DownStream		Aarma Araaa									
Estimation o		Fstimati	ion	of V	iverge Areas						
	<u>12</u>				Louman		× 12				
	$v_{12} = v_F$	(P _{FM})	- 40 7)				v ₁₂ = (/ _R + (v _F - v _R	10 10 1	2)	
L _{EQ} =	(⊏qua		[13-7)		L _{EQ} =		(Equation 13-	- IZ OF 13-1	3) /7)	
FM -	012 n	using ⊑qua ⊳/b			FD -		- U	lsing ⊑qualic .c/b)-7)	
v ₁₂ –	0 pc/l	(Equation	13 11 or 13 17)		V or V		۲	oc/h (Equation 1	3-11 or 13-1	7)	
$V_3 = V_{av34}$			13-14 01 13-17)		Is V. or V	> 2.	۲ ۵۰ rc/h?		13-14-01-13-1	")	
$V_3 \text{ or } V_{av34} > 2,7$					Is V ₂ or V	14 - 2, 	5 * V/2				
15 V ₃ 01 V _{av34} × 1.5	pc/h	Equation 1	3-16, 13-18, or			34 - 1.	p • _{12′} -∠	c/h (Equatio	n 13-16, 13	3-18, or	
11 Yes, V _{12a} =	13-19)				11 Yes, V _{12a} =		13	-19)			
Capacity Ch	ecks	Î.			Capacit	y Ch	ecks				
	Actual	(Capacity	LOS F?			Actual	Ca	pacity	LOS F?	
					V _F			Exhibit 13-	8		
V _{FO}	1269	Exhibit 13-8		No	$v_{FO} = v_F$	- v _R		Exhibit 13-	8		
					V _R			10	-		
Flow Enterin	g Merge In	fluence A	Area	-	Flow En	terii	ng Diver	ge Influer	ice Area	-	
	Actual	Max	Desirable	Violation?			Actual	Max Des	irable	Violation?	
V _{R12}	1366	Exhibit 13-8	4600:All	No	V ₁₂			Exhibit 13-8			
Level of Serv	vice Detern	nination (if not F)		Level of	Ser	vice De	terminatio	n (if not	F)	
D _R = 5.475 ·	+ 0.00734 v _R + 0).0078 V ₁₂ - 0.	00627 L _A		[[D _R = -	4.252 + 0.	0086 V ₁₂ - 0	.009 L _D		
D _R = 8.3 (pc/m	i/ln)				D _R = (p	c/mi/	ln)				
LOS = A (Exhibit 13-2)					LOS = (E	xhibi	t 13-2)				
Speed Determination					Speed D)eter	rminatio	n			
M _S = 0.204 (Ex	ibit 13-11)				D _s = (E	xhibit	13-12)				
S _R = 64.3 mph	(Exhibit 13-11)				S _R = m	oh (Ex	hibit 13-12)				
S ₀ = N/A mph	₀ = N/A mph (Exhibit 13-11)						hibit 13-12)				
S = 64.3 mph	(Exhibit 13-13)				S = m	oh (Ex	hibit 13-13)				

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		RAMP	S AND RAM	P JUNCTI	ONS WO	RKS	HEET			
General Infor	rmation			Site Infor	mation					
Analyst			Fr	eeway/Dir of Tr	avel I	I-95 NB	BExpress L	ane		
Agency or Company	AEC	OM	Ju	nction	(Off to S	SW 10th Co	nnector		
Date Performed	d DM		JU Ar	risdiction Voar		2040 B	uild 2A			
Project Description	SW 10th Stree	t SIMR			2	2040 D				
Inputs	011 1041 04 00									
Linstroam Adi R	amn	Freeway Num	nber of Lanes, N	2				r	Downstream	n Adi
Opsilean Auj N	amp	Ramp Numbe	er of Lanes, N	1				F	Ramp	li Auj
Yes	On	Acceleration	Lane Length, L							
	_ O#	Deceleration	Lane Length L_{p}	345						
		Freeway Volu	ime, V _F	1290					⊻ No	Off
L _{up} = f	ť	Ramp Volum	e, V _P	490				L	-down =	ft
		Freeway Free	-Flow Speed, S _{FF}	70.0					. –	v ob /b
$V_u = V$	eh/h	Ramp Free-F	low Speed, S _{EP}	60.0					v _D -	ven/n
Conversion t	o pc/h Un	der Base	Conditions							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	/ = V/PHF >	c f _{HV} x f _p
Freeway	Freeway 1290 0.95 Level					0.	985	1.00	137	8
Ramp	490	0.95	Level	2	0	0.	990	1.00	521	
UpStream										
DownStream								Liona Arooo		
Estimation of	fv	werge Areas			Fstimati	iono	b f v	iverge Areas		
	<u>12</u>	(D)			Lounda		<u>• • 12</u>		<u>, </u>	
	V ₁₂ = V _F	(P _{FM})					V ₁₂ =	V _R + (V _F - V _R)P _{FD}	
L _{EQ} =	(Equa	ation 13-6 or $-$	13-7)		L _{EQ} =		(E	quation 13-12	2 or 13-13)	
P _{FM} =	using	Equation (Exhibit 13-6)		P _{FD} =		1.0	00 using Equ	ation (Exhib	t 13-7)
V ₁₂ =	pc/n				V ₁₂ =		13	/8 pc/h		
V_3 or V_{av34}	pc/h (Equation 13	-14 or 13-17)		V_3 or V_{av34}	2.7	0	pc/h (Equation	n 13-14 or	13-17)
IS V_3 of $V_{av34} > 2,70$	ν μαναία το ματά ν να μαριστικά το ματά το ματά ν να ματά το μα ν να ματά το ματά	s 🗌 No			IS V_3 OF V_{av3}	4 > 2,7	* V /2	Yes Mo		
$15 V_3 OI V_{av34} > 1.5$	v ₁₂ /2 [] Ye	S IINO	-16 13-18 or		IS V_3 or V_{av3}	4 > 1.5	V ₁₂ /2	Yes ⊻No /h (Equation :	13-16 13-1	8 or 13-
If Yes,V _{12a} =	13-19)		-10, 10-10, 01		If Yes,V _{12a} =		19)	10-10, 10-1	0, 01 10-
Capacity Che	ecks				Capacity	y Che	ecks			
	Actual	(Capacity	LOS F?			Actual	Сар	acity	LOS F?
					V _F		1378	Exhibit 13-8	4800	No
V _{FO}		Exhibit 13-8			$V_{FO} = V_{F}$	- V _R	857	Exhibit 13-8	4800	No
					V _R		521	Exhibit 13-10	2200	No
Flow Entering	g Merge In	fluence A	Area		Flow En	terin	g Diver	ge Influend	ce Area	
	Actual	Max	Desirable	Violation?		ŀ	Actual	Max Desirabl	е	Violation?
V _{R12}		Exhibit 13-8			V ₁₂	1	378	Exhibit 13-8	4400:All	No
Level of Serv	vice Deterr	nination (ïf not F)		Level of	Serv	/ice Det	termination	n (if not F)
D _R = 5.475 + 0.	.00734 v _R +	0.0078 V ₁₂	- 0.00627 L _A			D _R = 4	.252 + 0.	0086 V ₁₂ - 0.0	09 L _D	
D _R = (pc/mi/In	ı)				D _R = 13.	.0 (pc /	/mi/ln)			
LOS = (Exhibit	13-2)				LOS = B	(Exhib	oit 13-2)			
Speed Deterr	nination				Speed D)eter	minatio	n		
M _s = (Exibit 1	3-11)				D _s = 0.1	150 (E :	xhibit 13-	12)		
S _R = mph (Exh	nibit 13-11)				S _R = 65.8 mph (Exhibit 13-12)					
S ₀ = mph (Exh	, nibit 13-11)				S ₀ = N/A mph (Exhibit 13-12)					
S = mph (Exh	nibit 13-13)				S = 65	.8 mph	(Exhibit '	13-13)		

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	RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Infor	mation			Site Infor	mation						
Analyst Agency or Company Date Performed	AECO	DM	Fre Ju	eeway/Dir of Tra nction risdiction	avel	I-95 N On fro	B Express L m SW 10th	anes St. Connector			
Analysis Time Period	d PM		An	alysis Year		2040 I	Build 2A				
Project Description	SW 10th Street	t SIMR									
Inputs											
Upstream Adj Ramp		Freeway Num Ramp Numbe	nber of Lanes, N er of Lanes, N	2 1					Downstrea Ramp	am Adj	
Yes Or	ı	Acceleration I	Lane Length, L _A	1040					Yes	On	
🗹 No 🛛 🗌 Of	f	Deceleration	Lane Length L _D	000					✓ No	Off	
L _{up} = ft		Ramp Volume	ime, v _F e, V _D	800 770					L _{down} =	ft	
V = voh/h		Freeway Free	e-Flow Speed, S _{FF}	70.0					V _D =	veh/h	
v _u – ven/n		Ramp Free-F	low Speed, S _{FR}	60.0					D		
Conversion t	o pc/h Und	der Base	Conditions								
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	v = V/PHF	x f _{HV} x f _p	
Freeway	800	0.95	Level	3	0	0	.985	1.00	3	355	
Ramp	770	0.95	Level	2	0	0	.990	1.00	8	319	
UpStream											
DownStream	<u> </u>	Aargo Arooc						ivorgo Arooc			
Estimation of V to					Fstimati	ion	of V	iverge Areas			
	• 12				Lounau		<u>12</u>		<u>, </u>		
	$V_{12} = V_{F}$	(P _{FM})					V ₁₂ = \	/ _R + (V _F - V _F	_R)P _{FD}	-)	
L _{EQ} =	(Equa	ation 13-6 o	r 13-7)		L _{EQ} =		(Equation 13	-12 or 13-1	3)	
P _{FM} =	1.000	using Equa	tion (Exhibit 13-6)		P _{FD} =		L	ising Equation	on (Exhibit 13	-7)	
V ₁₂ =	855 p	c/h			V ₁₂ =		p	oc/h			
V ₃ or V _{av34}	0 pc/ł	n (Equation	13-14 or 13-17)		V_3 or V_{av34}		k	oc/h (Equation	13-14 or 13-1	7)	
Is V_3 or $V_{av34} > 2,70$	0 pc/h? 🗌 Yes	s 🗹 No			Is V_3 or V_{av3}	₃₄ > 2,	700 pc/h? 🗌	Yes No			
Is V_3 or $V_{av34} > 1.5$	*V ₁₂ /2 Ve s	s 🗹 No			Is V_3 or V_{av3}	₈₄ > 1.!	5 * V ₁₂ /2	Yes 🗌 No			
If Yes,V _{12a} =	pc/h (13_19)	Equation 1	3-16, 13-18, or		If Yes,V _{12a} =		ې 13)c/h (Equatic s₋19)	on 13-16, 13	3-18, or	
Capacity Che					Canacity	v Ch	ecks	-10)			
	Actual	(Capacity	LOS F?			Actual	Са	pacity	LOS F?	
					V _E			Exhibit 13-	8		
V _{FO}	1674	Exhibit 13-8		No	V _{FO} = V _F	- V _R		Exhibit 13-	8		
10					V _R			Exhibit 13 10	i-		
Flow Entering	a Merae In	fluence A	lrea	•	Flow En	terii	na Diver	ae Influer	ice Area		
,	Actual	Max	Desirable	Violation?			Actual	Max Des	irable	Violation?	
V _{R12}	1776	Exhibit 13-8	4600:All	No	V ₁₂			Exhibit 13-8			
Level of Serv	ice Detern	nination (if not F)		Level of	Ser	vice De	terminatio	n (if not	F)	
$D_{p} = 5.475 + 0.00734 v_{p} + 0.0078 V_{12} - 0.00627 L_{A}$					[$D_{p} = 0$	4.252 + 0.	0086 V ₁₂ - 0	.009 L _D		
$D_{\rm p} = 11.6 ({\rm pc/m})$	ni/In)	12	7		D _D = (p	c/mi/	ln)	12	D		
LOS = B (Exhibit	, 13-2)				LOS = (E	xhibi	, t 13-2)				
Speed Determination					Speed D)etel	rminatio	n			
M = 0.210 (Evibit 12.11)					$D_{a} = (F)$	xhihit	13-12)				
S _ (2.0 m t	UIL I J-11)				S _n = mr	nh (Fv	hihit 13-12				
$P_R = 63.9 \text{ mph}$					$S_{-} = mr$	(⊏∧ h (⊑v	hihit $13_{-}12$				
$P_0 = N/A mph ($	0= N/A mph (Exhibit 13-11)						$\frac{1}{10} \frac{1}{10} \frac{1}{10} \frac{1}{10}$				
p = 63.9 mpn	(EXTINUL 13-13)				p= mp	JII (EX	111UIL 13-13)				

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		RAMP	S AND RAM	P JUNCTI	ONS WO	RKS	HEET				
General Infor	rmation			Site Infor	mation						
Analyst			Fr	eeway/Dir of Tr	avel	I-95 SE	BExpress La	ane			
Agency or Company	AEC	OM	Ju	nction		Off to S	SW 10th Co	nnector			
Date Performed			Ju Ar	risdiction		2010 D	uild 2A				
Project Description	SW 10th Stree	at SIMR	AI	iaiysis i cai		2040 D	uliu ZA				
Inputs											
	lomn	Freeway Nun	nber of Lanes, N	2					Dournotroor	n A di	
Upstream Adj R	amp	Ramp Numbe	er of Lanes. N	-				l	Jownstrear Ramp	n Aaj	
Yes	On	Acceleration	Lane Length, L	·							
No	Off	Deceleration	Lane Length L _D	250							
		Freeway Volu	ume, V _F	2450					INO NO	Off	
L _{up} = f	ť	Ramp Volum	e, V _R	980				l	-down =	ft	
V	ah/h	Freeway Free	e-Flow Speed, S _{FF}	70.0					/_ =	veh/h	
v _u - v	en/n	Ramp Free-F	low Speed, S _{FR}	60.0					۰D	ven/m	
Conversion t	o pc/h Un	der Base	Conditions								
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	/ = V/PHF >	k f _{HV} x f _p	
Freeway	2450	0.95	Level	3	0	0.	985	1.00	261	8	
Ramp	980	0.95	Level	2	0	0.	990	1.00	104	2	
UpStream											
DownStream		Marga Araaa						Large Areas			
Estimation of	fv	werge Areas			Estimati	ion o	U of v	iverge Areas			
	12	(5.)			LStimat		<u>12</u>				
	$V_{12} = V_{F}$	(P _{FM})					V ₁₂ =	V _R + (V _F - V _R)P _{FD}		
L _{EQ} =	(Equa	ation 13-6 or	13-7)		L _{EQ} =		(E	quation 13-12	2 or 13-13)		
P _{FM} =	using	Equation (Exhibit 13-6)		P _{FD} =		1.0	00 using Equ	ation (Exhibi	it 13-7)	
V ₁₂ =	pc/h				V ₁₂ =		26	18 pc/h			
V_3 or V_{av34}	pc/h (Equation 13	3-14 or 13-17)		V ₃ or V _{av34}	0.7	0	pc/h (Equatio	n 13-14 or ⁻	13-17)	
IS V_3 or $V_{av34} > 2,70$)0 pc/n? ∐Ye	s 🗌 No			IS V ₃ or V _{av3}	₃₄ > 2,7		Yes 🗹 No			
IS V_3 or $V_{av34} > 1.5$	[″] V ₁₂ /2 ∐Ye	s ∐No Equation 12	0 16 12 10 or		Is V_3 or V_{av3}	₃₄ > 1.5	^ V ₁₂ /2	Yes Mo	10 16 10 1	9 or 12	
If Yes,V _{12a} =	13-19)	,⊑qualion is)	5-10, 13-10, 01		If Yes,V _{12a} =		19))	13-10, 13-1	0, 01 13-	
Capacity Che	ecks				Capacity	y Ch	ecks	,			
	Actual	(Capacity	LOS F?			Actual	Cap	acity	LOS F?	
					V _F		2618	Exhibit 13-8	4800	No	
V _{FO}		Exhibit 13-8			$V_{FO} = V_{F}$	- V _R	1576	Exhibit 13-8	4800	No	
					V _R		1042	Exhibit 13-10	2200	No	
Flow Enterin	a Merae In	Influence A	Area	•	Flow En	terin	a Diver	ae Influend	ce Area	•	
	Actual	Max	Desirable	Violation?			Actual	Max Desirabl	е	Violation?	
V _{R12}		Exhibit 13-8			V ₁₂	2	2618	Exhibit 13-8	4400:All	No	
Level of Serv	vice Detern	nination ((if not F)		Level of	Ser	vice De	termination	n (if not F)	
D _R = 5.475 + 0.	.00734 v _R +	0.0078 V ₁₂	- 0.00627 L _A		[D _R = 4	.252 + 0.	0086 V ₁₂ - 0.0	09 L _D		
D _R = (pc/mi/In	ı)				D _R = 24	.5 (pc	/mi/ln)				
LOS = (Exhibit	13-2)				LOS = C	(Exhil	oit 13-2)				
Speed Deterr	mination				Speed L	Deter	minatio	n			
M _s = (Exibit 1	3-11)				D _s = 0.1	197 (E	xhibit 13-	12)			
S _R = mph (Exh	, nibit 13-11)				S _R = 64.5 mph (Exhibit 13-12)						
$S_0 = mph (Ext)$	mph (Exhibit 13-11)						(Exhibit 1	3-12)			
S = mph (Exh	nibit 13-13)				S = 64.5 mph (Exhibit 13-13)						
,					S = 64.5 mpn (Exhibit 13-13)						

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	RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Infor	mation			Site Infor	mation						
Analyst			Fre	eeway/Dir of Tra	avel	I-95 S	B Express La	anes			
Agency or Company	AECO	MC	Ju	nction		On fro	m SW 10th S	St. Connector			
Date Performed Analysis Time Period	M PM		Jui An	nsoiction alvsis Year		2040 F	Ruild 2A				
Project Description	SW 10th Street	t SIMR	,			20101					
Inputs											
Linstroam Adi Damn		Freeway Num	ber of Lanes, N	2					Downstre	am Adi	
		Ramp Numbe	er of Lanes, N	1					Ramp	ann Aug	
Yes Or	ı	Acceleration I	Lane Length, L	1100							
	£	Deceleration	Lane Length L								
	I	Freeway Volu	ime, V _E	1470					I № No	Off	
L _{up} = ft		Ramp Volume	e, V _P	180					L _{down} =	ft	
		Freeway Free	-Flow Speed, S	70.0						1. //	
V _u = veh/h	l	Ramp Free-F	low Speed, S _{FP}	60.0					v _D =	veh/h	
Conversion t	o nc/h Und	der Base	Conditions								
	V V		Tamaia	0/Truel	0/ Du		£	f		vf vf	
(pc/n)	(Veh/hr)	PHF	Terrain	%Truck	%RV		'HV	Р		· x I _{HV} x I _p	
Freeway	1470	0.95	Level	3	0	0	.985	1.00	1	571	
Ramp	180	0.95	Level	2	0	0	.990	1.00		191	
UpStream DownStream						-					
DownStream	<u>ا</u>	Merge Areas					D	iverge Areas			
Estimation of v ₁₂					Estimati	ion d	of v ₁₂				
	$V_{12} = V_{\Gamma}$	(P _{EM})					$V_{40} = V_{10}$	/_ + (V V_			
L _{FO} =	(Equa	, ⊪ ation 13-6 o	r 13-7)		L _{FO} =		12	Equation 13-	12 or 13-1	3)	
P _{EM} =	1.000	using Equa	tion (Exhibit 13-6)		P _{ED} =		u u	sing Equatio	n (Exhibit 13		
$V_{12} =$	1571 r	3 c/h			V ₁₂ =		a	c/h	(,	
V_2 or V_{2}	0 pc/ł	(Equation	13-14 or 13-17)		V_{2}^{12} or V_{2}^{12}		י נ	c/h (Equation 1	3-14 or 13-1	7)	
Is V_2 or $V_{21/24} > 2.70$	0 pc/h? Ye s	5 🔽 No	,		Is V_2 or V_{2V2}	, > 2,	700 pc/h? 🔽	Yes No		,	
Is V_2 or $V_{2y24} > 1.5$	$V_{12}/2 \square Yes$	s VNo			Is V_2 or V_{av}	, > 1.	5 * V ₁₂ /2 □	Yes No			
If Yes V -	pc/h (Equation 1	3-16, 13-18, or		If Ves V –	94	12	c/h (Equatio	n 13-16, 13	3-18, or	
	13-19)				12a -		13	-19)			
Capacity Che					Capacity	y Ch	ecks				
	Actual	(LOS F?			Actual	Ca		LOS F?	
						¥		EXHIDIC 13-	0		
V _{FO}	1762	Exhibit 13-8		No	$v_{FO} = v_F$	- v _R		EXNIDIT 13-	8		
					V _R			10 Exhibit 13	-		
Flow Enterin	, a Merae In	fluence A	Area		Flow En	terii	na Diver	ae Influer	ice Area		
	Actual	Max	Desirable	Violation?			Actual	Max Desi	irable	Violation?	
V _{R12}	1950	Exhibit 13-8	4600:All	No	V ₁₂			Exhibit 13-8			
Level of Serv	rice Detern	nination (ïf not F)		Level of	Ser	vice Det	terminatio	n (if not	F)	
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					[) _R = 4	4.252 + 0.	0086 V ₁₂ - 0	.009 L _D		
D _R = 12.2 (pc/m	i/ln)				D _R = (p	c/mi/	ln)				
LOS = B (Exhibit	13-2)				LOS = (E	xhibi	t 13-2)				
Speed Determination					Speed D)eter	rminatio	n			
M _s = 0.216 (Fxi	bit 13-11)				D _s = (E	xhibit ⁻	13-12)				
$S_{p} = 63.9 \text{ mph}$	(Exhibit 13-11)				S _R = m	oh (Ex	hibit 13-12)				
$S_0 = N/A mnh ($	$S_0 = N/A \text{ mph}(\text{Exhibit 13-11})$					oh (Ex	hibit 13-12)				
S = 63.9 mph	(Exhibit 13-13)				S = mi	oh (Ex	, hibit 13-13)				
, r	. 7				I '	`	/				

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	RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Int	formation			Site Infor	mation					
Analyst Agency or Comp Date Performed	any AEC	MC	Fre Jui Jui	eeway/Dir of Tranction	avel	I-95 N N. of H	B CD Hillsboro Blvd			
Analysis Time Pe	eriod AM		An	alysis Year		2040 E	Build 2A			
Project Description	on SW 10th Stree	t SIMR								
Inputs		r								
Upstream Adj Ra	imp	Freeway Num Ramp Numbe	ber of Lanes, N r of Lanes, N	2 1					Downstrea Ramp	am Adj
Yes 🗌	On	Acceleration L	ane Length, L _A	890					Yes	On
🗹 No 🗌	Off	Deceleration I	Lane Length L _D	1400					🗹 No	Off
L _{up} = ft		Ramp Volume	, V _P	1433 780					L _{down} =	ft
V. = ve	h/h	Freeway Free	-Flow Speed, S _{FF}	55.0					V _D =	veh/h
^v u ve		Ramp Free-Fl	ow Speed, S _{FR}	40.0					D	
Conversion	n to pc/h Un	der Base	Conditions			_				
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	v = V/PHF	⁼ x f _{HV} x f _p
Freeway	1433	0.95	Level	3	0	0	.985	1.00	1	531
Ramp	780	0.95	Level	2	0	0	.990	1.00		829
UpStream						_				
DownStream		Merge Areas					I Di	verne Areas		
Estimation		Estimati	ion d	of V_{42}	rongo ra ous					
	12 V - V	(P)					$\frac{12}{12}$	+ (\/\/	\P	
=	v ₁₂ – v _F	(' _{FM}) ation 13-6 o	- 13_7)				• 12 - •	$R^{+} (VF^{-} VR$	יי FD 12 or 13-1	3)
с _{ЕО} =	(Equ	using Equat	(Evhibit 12.6)		-EQ - P =		(-	sing Equation	n (Evhibit 1	3) 2-7)
' FM - V =	1.000	using ∟quai nc/h			FD - V =		u. D	sing ∟quaic c/h		5-7)
V_{12}	0 pc/	pc/m	13 11 or 13 17)		^v 12 ⁻		p' n	c/h (Equation 1	3-11 or 13-1	7)
$V_3 V_{av34}$	0 pc/i 2 700 nc/h? □ Vo		13-14 01 13-17)		Is V. or V	> 2.	بې 700 nc/h2		13-14-01-13-1	1)
Is V or V $>$	15*V /2 V				Is V or V	رم م ۱۷	5 * V /2			
If Yes, $V_{12a} =$	pc/h	(Equation 13	3-16, 13-18, or		If Yes, V _{12a} =	4 - 1.	^{12′2} □ 13.	c/h (Equatio	n 13-16, 1	3-18, or
Capacity C	hecks				Capacity	v Ch	ecks	10)		
	Actual	C	apacity	LOS F?			Actual	Са	pacity	LOS F?
					V _F			Exhibit 13-	8	
V _{FO}	2360	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V _R		Exhibit 13-	8	
					V _R			Exhibit 13 10	-	
Flow Enter	ring Merge In	fluence A	rea	-	Flow En	terii	ng Diver	ge Influer	ice Area	
	Actual	Max	Desirable	Violation?			Actual	Max Des	irable	Violation?
V _{R12}	2360	Exhibit 13-8	4600:All	No	V ₁₂			Exhibit 13-8		
Level of Se	ervice Detern	nination (if not F)		Level of	Ser	vice Det	erminatio	n (if not	F)
D _R = 5.475 + 0.00734 v _R + 0.0078 V ₁₂ - 0.00627 L _A					C) _R = 4	4.252 + 0.0	0086 V ₁₂ - 0	.009 L _D	
D _R = 17.9 (p	oc/mi/ln)				D _R = (p	c/mi/	ln)			
LOS = B (Exh	iibit 13-2)				LOS = (E	xhibi	t 13-2)			
Speed Determination					Speed D)eter	rminatio	n		
M _S = 0.291	(Exibit 13-11)				D _s = (E:	xhibit	13-12)			
S _R = 51.2 m	nph (Exhibit 13-11)				S _R = mph (Exhibit 13-12)					
S ₀ = N/A m	S ₀ = N/A mph (Exhibit 13-11)					oh (Ex	hibit 13-12)			
S = 51.2 m	nph (Exhibit 13-13)				S = mp	oh (Ex	hibit 13-13)			

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	RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Infor	rmation			Site Infor	mation						
Analyst Agency or Company Date Performed	AECO	DM	Fre Jui	eeway/Dir of Tra nction risdiction	avel	I-95 N N. of H	B CD Hillsboro Blvc	1.			
Analysis Time Perio	d PM		An	alysis Year		2040 I	Build 2A				
Project Description	SW 10th Stree	t SIMR		,							
Inputs											
Upstream Adj Ramp		Freeway Num Ramp Numbe	nber of Lanes, N er of Lanes, N	2 1					Downstrea Ramp	am Adj	
Yes O	n	Acceleration I	Lane Length, L _A	890					Yes	On	
No Of	ff	Deceleration	Lane Length L _D	1020					✓ No	Off	
L _{up} = ft		Ramp Volume	e, V _P	1830 740					L _{down} =	ft	
V., = veh/ł	ı	Freeway Free	e-Flow Speed, S _{FF}	55.0					V _D =	veh/h	
u		Ramp Free-F	low Speed, S _{FR}	40.0					5		
Conversion t	o pc/h Uno	der Base	Conditions			_					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f _p	v = V/PHF	$ m x~f_{HV}~x~f_{p}$	
Freeway	1830	0.95	Level	3	0	0	.985	1.00	1	955	
Ramp	740	0.95	Level	2	0	0	.990	1.00	7	'87	
UpStream						_					
DownStream	<u> </u>	Morgo Aroac						ivorgo Aroac			
Estimation o		Fstimati	ion	of V.	iverge Areas						
	12	(D)			Loumaa		<u> </u>		<u>\</u> D		
	$v_{12} = v_{F}$	(P _{FM})					v ₁₂ = v	^v _R + (v _F - v _R	P _{FD}	2)	
L _{EQ} =	(Equa	ation 13-6 o	r 13-7)		L _{EQ} =		(1	=quation 13-	12 or 13-1	3)	
P _{FM} =	1.000	using Equa	tion (Exhibit 13-6)		P _{FD} =		u	sing Equatio	n (Exhibit 13	-/)	
V ₁₂ =	1955	oc/h			V ₁₂ =		р	c/h			
V_3 or V_{av34}	0 pc/ł	n (Equation	13-14 or 13-17)		V ₃ or V _{av34}		p mag	c/h (Equation 1	3-14 or 13-1	7)	
Is V_3 or $V_{av34} > 2,70$		s 🗹 No			Is V_3 or V_{av3}	₈₄ > 2,	/00 pc/h?	Yes No			
Is V_3 or $V_{av34} > 1.5$	* V ₁₂ /2 [] Ye	s 🗹 No			Is V_3 or V_{av3}	₈₄ > 1.5	5 * V ₁₂ /2	Yes No	10 10 10	10	
If Yes,V _{12a} =	pc/n (13-19)	Equation 1.	3-16, 13-18, or		If Yes,V _{12a} =		р 13	c/n (Equatio -19)	n 13-16, 13	5-18, Of	
Capacity Che	ecks				Capacit	v Ch	ecks				
	Actual	(Capacity	LOS F?			Actual	Са	pacity	LOS F?	
					V _F			Exhibit 13-	8		
V _{FO}	2742	Exhibit 13-8		No	V _{FO} = V _F	- V _R		Exhibit 13-	8		
					V _R			Exhibit 13 10	-		
Flow Enterin	g Merge In	fluence A	Area	-	Flow En	terii	ng Diver	ge Influer	ice Area		
	Actual	Max	Desirable	Violation?			Actual	Max Des	irable	Violation?	
V _{R12}	2742	Exhibit 13-8	4600:All	No	V ₁₂			Exhibit 13-8			
Level of Serv	vice Detern	nination (ïf not F)		Level of	Ser	vice Det	terminatio	n (if not	F)	
$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$					[[D _R =	4.252 + 0.	0086 V ₁₂ - 0	.009 L _D		
D _R = 20.9 (pc/n	ni/In)				D _R = (p	c/mi/	ln)				
LOS = C (Exhibit	13-2)				LOS = (E	xhibi	t 13-2)				
Speed Determination					Speed D)eter	rminatio	n			
M _s = 0.310 (Fx	ibit 13-11)				D _s = (E	xhibit	13-12)				
$S_{p} = 51.0 \text{ mnh}$	(Exhibit 13-11)				S _R = mp	oh (Ex	hibit 13-12)				
$S_0 = N/A mnh 0$	(Exhibit 13-11)				S ₀ = mr	oh (Ex	hibit 13-12)				
S = 51.0 mph	(Exhibit 13-13)				S = mi	oh (Ex	hibit 13-13)				
	,				Г,	_/					

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