		F	REEWAY	WEAV	ING WOF	RKSHEE	Т			
Genera	I Information	on			Site Information					
Analyst Agency/Co Date Perfoi Analysis Tii	mpany rmed me Period	AECO AM	М		Freeway/Dir of Travel I-95 NB Weaving Segment Location Seg 1-Bet Copans & Sample Analysis Year 2040 Build 1					
Project Des	scription SW 10t	h Street SIMF	2							
Inputs										
Weaving configuration     One-Side       Weaving number of lanes, N     2380       Weaving segment length, L <sub>s</sub> 2380       Freeway free-flow speed, FFS     70 mpl					Segment typ Freeway min Freeway ma: Terrain type		Freeway 15 2400 Level			
Conver	sions to po	c/h Unde	r Base Co	ondition	s			1	-	
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε <sub>Τ</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/h)	
V <sub>FF</sub>	4755	0.95	3	0	1.5	1.2	0.985	1.00	5080	
V <sub>RF</sub>	405	0.92	2	0	1.5	1.2	0.990	1.00	445	
V <sub>FR</sub>	970	0.92	2	0	1.5	1.2	0.990	1.00	1065	
V <sub>RR</sub>	0	0.95	0	0	1.5	1.2	1.000	1.00	0	
V <sub>NW</sub>	5080							V =	6590	
V <sub>w</sub>	1510							-		
VR	0.229									
Configu	uration Cha	aracteris	tics		•					
Minimum n	naneuver lanes, l	N <sub>WL</sub>		2 lc	Minimum we	aving lane cl	hanges, LC <sub>MIN</sub>		1510 lc/h	
Interchang	e density, ID			0.7 int/mi	Weaving lan	1945 lc/h				
Minimum F	RF lane changes,	$\mathrm{LC}_{\mathrm{RF}}$		1 lc/pc	Non-weaving	1566 lc/h				
Minimum F	R lane changes,	$LC_{FR}$		1 lc/pc	Total lane ch	nanges, LC <sub>AL</sub>	L		3511 lc/h	
Minimum F	RR lane changes,	, LC <sub>RR</sub>		lc/pc	Non-weaving	g vehicle inde	ex, I <sub>NW</sub>		846	
Weavin	g Segment	t Speed,	Density, I	_evel of	Service,	and Cap	oacity			
Weaving s	egment flow rate	, V		6500 veh/h	Weaving inte	ensity factor,	W		0.307	
Weaving s	egment capacity,	Cw		8717 veh/h	Weaving seg	gment speed	, S		52.5 mph	
Weaving s	egment v/c ratio	_		0.746	Average wea	aving speed,	Sw		57.1 mph	
Weaving s	Veaving segment density, D 31.4 pc/n					n-weaving sp	eed, S <sub>NW</sub>		51.2 mph	
Level of Se	ervice, LUS			D	Maximum we	eaving length	n, L <sub>MAX</sub>		4836 ft	
Notes a. Weaving : Chapter 13, b. For volum	segments longer th "Freeway Merge a les that exceed the	han the calcula and Diverge Se e weaving segi	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 F	REEWAY SE	GMENTS WORKSHEET		
			Site information		
Analyst			Highway/Direction of Travel	I-95 NB Sea 2-B	et Off & On from
Agency or Company	AECOM		From/Io	Sample	
Date Performed Analysis Time Period	AM		Jurisdiction Analysis Year	2040 Bu	iild 1
Project Description SW 10	th Street SIMR				
✓ Oper.(LOS	)		Des.(N)	🗌 Pla	anning Data
Flow Inputs					
Volume, V	5160	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>	3	
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>	0	
Peak-Hr Direction Prop, D		voh/h	General Terrain:	Level	
		ven/n	Grade % Length	ΠΙ	
Coloulato Flour Adiust			Op/Down //		
Calculate Flow Adjust	ments				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	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		ft			
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>		mph
Number of Lanes, N	3		f <sub>LC</sub>		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	70.0	mph	FFS	70.0	mph
Base free-flow Speed, BFFS	5	mph			·
LOS and Performance	Measures		Design (N)		
			Design (N)		
			Design LOS		
$v_p = (V \text{ or } DDHV) / (PHF X N)$	x f <sub>HV</sub> x f <sub>p</sub> ) 1838	pc/h/ln	$v_{p} = (V \text{ or DDHV}) / (PHF x N x)$	f <sub>HV</sub> x f <sub>n</sub> )	pc/h/ln
S	65.3	mph	S	nv p	mph
$D = v_p / S$	28.2	pc/mi/ln	$D = v_p / S$		pc/mi/ln
LOS	D		Required Number of Lanes, N		·
Glossary			Factor Location		
N - Number of lanes	S - Speed				
V - Hourly volume	D - Densitv		E <sub>R</sub> - Exhibits 11-10, 11-12		t <sub>LW</sub> - Exhibit 11-8
v <sub>n</sub> - Flow rate	FFS - Free-flow	speed	$E_{T}$ - Exhibits 11-10, 11-11, 11	-13	t <sub>LC</sub> - Exhibit 11-9
LOS - Level of service	BFFS - Base fre	ee-flow speed	f <sub>p</sub> - Page 11-18		TRD - Page 11-11
DDHV - Directional design h	our volume	-1	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-	2, 11-3	

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Job: SW 10th Street SIMR Analyst: AECOM



<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	7,073	0.74	No
3	Fwy upstream of ramp (assume 70 mph free-flow speed) =	7,200	5,513	0.77	No
1	Capacity on On-Ramp (assume 45 mph free-flow speed) =	2,100	1,552	0.74	No

	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst			Highway/Direction of Travel	1-95 NB	t On from Sompla 8
Agency or Company	AECOM		From/To	Exp	et On nom Sample &
Date Performed Analysis Time Period	AM		Jurisdiction Analysis Year	2040 Bui	ild 1
Project Description SW 10th	Street SIMR				
✓ Oper.(LOS)			Des.(N)	Pla	nning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K	6620	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub>	0.95 3 0	
Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	General Terrain: Grade 0.00% Length Up/Down %	Grade 0.00mi 0.00	
Calculate Flow Adjustme	ents				
fp	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	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 <sub>LW</sub>		mph
Number of Lanes, N	4		f <sub>LC</sub>		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 M	leasures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x t S D = v <sub>p</sub> / S LOS	f <sub>HV</sub> x f <sub>p</sub> ) 1768 66.3 26.7 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design hour	S - Speed D - Density FFS - Free-flow BFFS - Base fre r volume	speed e-flow speed	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-	-13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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	RAMPS AND RAMP JUNCTIONS WORKSHEET									
General Infor	mation			Site Infor	mation					
Analyst Agency or Company Date Performed Analysis Time Period	AEC d AM	ОМ	Fr Ju Ju Ar	eeway/Dir of Tra inction irisdiction nalysis Year	avel	I-95 N Seg 5 2040 I	IB -On from Ex Build 1	p		
Project Description	SW 10th Stree	t SIMR		· <b>)</b> · · · ·						
Inputs										
Upstream Adj Ramp		Freeway Num Ramp Numbe	ber of Lanes, N	4					Downstrea	am Adj
🗌 Yes 🛛 🗌 Or	ı	Acceleration L	ane Length, L <sub>A</sub>	1500					I vamp I Yes	🗌 On
🗹 No 🛛 🗌 Of	f	Deceleration I Freeway Volu	Lane Length L <sub>D</sub> me, V <sub>F</sub>	6620					🗌 No	✓ Off
L <sub>up</sub> = ft		Ramp Volume	e, V <sub>R</sub>	920					L <sub>down</sub> =	6200 ft
V <sub>u</sub> = veh/h	1	Freeway Free Ramp Free-Fl	low Speed, S <sub>FF</sub>	70.0 50.0					V <sub>D</sub> =	1320 veh/h
Conversion t	o pc/h Un	der Base	Conditions						•	
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	<sup>F</sup> x f <sub>HV</sub> x f <sub>p</sub>
Freeway	6620	0.95	Level	3	0	C	).985	1.00	7	073
Ramp	920	0.92	Level	2	0	0	).990	1.00	1	010
UpStream										
DownStream	1320	0.92	Level	2	0	0	).990	1.00	1	449
Estimation of	F	Merge Areas			Ectimot	ion		liverge Areas		
Estimation of	<sup>12</sup>				Estimat		or v <sub>12</sub>			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V <sub>10</sub> = '	Vn + (Vr - Vn	)P <sub>ED</sub>	
L <sub>EQ</sub> =	(Equ	ation 13-6 o	r 13-7)				12	Fountion 13-	√ FD 12 or 13-1	3)
P <sub>FM</sub> =	0.092	using Equat	tion (Exhibit 13-6)	)	-EQ P =		· · · ·	using Equation	n (Evhibit 1	3-7)
V <sub>12</sub> =	648 p	c/h			'FD V -			oo/b		5-1)
	3212	pc/h (Equati	on 13-14 or 13-		$v_{12} - v_{12} - v$		I	)C/II //- / 🗖	10 44 40 4	7)
$V_3$ or $V_{av34}$	17) 0 pc/h? 🔽 Ye	s 🗌 No			$V_3$ or $V_{av34}$ Is $V_3$ or $V_{av3}$	<sub>34</sub> > 2, <sup>-</sup>	700 pc/h? [	Yes No	13-14 Of 13-1	()
$1 \text{ s V}_{av34} = 1.5$	* V/2 🔽 Vo				Is V <sub>3</sub> or V <sub>2V</sub>	<sub>34</sub> > 1.5	5 * V <sub>12</sub> /2	Yes No		
If Yes,V <sub>12a</sub> =	2829	pc/h (Equati	on 13-16, 13-		If Yes,V <sub>12a</sub> =	:	12 13	oc/h (Equatio 3-19)	n 13-16, 1	3-18, or
Capacity Che	ecks	10 10)			Capacit	v Ch	ecks			
	Actual		apacity	LOS F?		<b>,</b>	Actual	Car	nacity	LOS F?
	/ lotadi		Japaony	20011	V_		71010101	Exhibit 13-	8	20011
V <sub>EO</sub>	8083	Exhibit 13-8		No	V <sub>FO</sub> = V <sub>F</sub>	- V <sub>R</sub>		Exhibit 13-	8	
					V <sub>R</sub>			Exhibit 13 10	-	
Flow Entering	g Merge In	fluence A	rea		Flow En	terii	ng Dive	rge Influen	ice Area	
	Actual	Max	Desirable	Violation?			Actual	Max Desi	irable	Violation?
V <sub>R12</sub>	4178	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
Level of Serv	rice Detern	nination (	if not F)		Level of	<sup>r</sup> Ser	vice De	terminatio	n (if not	<b>F</b> )
D <sub>R</sub> = 5.475 +	0.00734 v <sub>R</sub> + (	0.0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>			D <sub>R</sub> =	4.252 + 0	.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
D <sub>R</sub> = 30.0 (pc/m	ni/ln)				D <sub>R</sub> = (p	oc/mi/	ln)			
LOS = D (Exhibit	13-2)				LOS = (E	Exhibi	it 13-2)			
Speed Determination					Speed L	Deter	rminatic	n		
M <sub>S</sub> = 0.425 (Exi	bit 13-11)				D <sub>s</sub> = (E	xhibit	13-12)			
S <sub>R</sub> = 58.1 mph	(Exhibit 13-11)				S <sub>R</sub> = m	ph (Ex	hibit 13-12)			
S <sub>0</sub> = 65.2 mph	(Exhibit 13-11)				S <sub>0</sub> = m	ph (Ex	hibit 13-12)			
S = 61.2 mph	(Exhibit 13-13)				S = m	ph (Ex	hibit 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 6-Be	et Exp On & Off to 10th
Project Description SW 10th	Street SIMR		Analysis Teal	2040 Bu	
Oper.(LOS)			Des.(N)	Pla	nning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop. D	7540	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain:	0.95 3 0 1 evel	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi	
Calculate Flow Adjustn	nents				
f <sub>p</sub> Ε <sub>τ</sub>	1.00 1.5		E <sub>R</sub> f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 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	3 70.0	ft ft ramps/mi mph mph	f <sub>⊥w</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 2685 44.4 60.4 F	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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	-13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - 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-Bet Off & Off Ramp	
Analysis Time Period	AM h Street SIMR		Analysis Year	2040 BU	lia 1
			Des (N)	Pla	nning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D	6220	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain:	0.95 3 0 Level	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	ті	
Calculate Flow Adjustn	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	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	3 70.0	ft ft ramps/mi mph mph	f <sub>LW</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 2215 58.0 38.2 E	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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	-13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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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	Fravel I-95 NB					
Agency or Company	AEC	OM	Ju	nction		Seg 9-0	Off to Hillsb	oro EB&WB		
Date Performed	1 A A A		Ju	risdiction		0040 0				
Project Description			AI	lalysis real		2040 B	ulia I			
Inputs										
		Freeway Num	ber of Lanes N	3						
Upstream Adj R	amp	Ramp Numbe	ar of Lanes N	1					Downstre	am Adj
Yes	On	Accoloration I		I						
				000					Ves 🗹	l ✓ On
I No □	Off			200					🗆 No	Off
f	+	Freeway volu	ime, v <sub>F</sub>	6220					. =	2800 ft
	L	Ramp Volume	e, V <sub>R</sub>	1450					down	2000 11
V = V	eh/h	70.0					V <sub>D</sub> =	1660 veh/h		
u	••••	Ramp Free-F	low Speed, S <sub>FR</sub>	45.0						
Conversion t	o pc/h Un	der Base	Conditions		,					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	6220	0.95	Level	3	0	0.	985	1.00	66	646
Ramp	1450	0.92	Level	2	0	0.	990	1.00	1:	592
UpStream										
DownStream	1660	0.92	Level	2	0	0.	990	1.00	18	322
<b>F</b> atimatian at	<b>c</b>	Merge Areas			<b>F</b> ation of		<u> </u>	verge Areas		
Estimation of	<sup>v</sup> 12				Estimat		<sup>r v</sup> 12			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V	/ <sub>R</sub> )P <sub>FD</sub>	
L <sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(	Equation 13-	12 or 13-13	3)
P <sub>FM</sub> =	using	Equation (	Exhibit 13-6)		P <sub>FD</sub> =		0.	521 using Ec	quation (Exh	ibit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		42	23 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		$V_3^{}$ or $V_{av34}^{}$		24	23 pc/h (Equ	uation 13-1	4 or 13-17)
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	0 pc/h? 🗌 Ye	s 🗌 No			Is $V_3$ or $V_{av}$	<sub>34</sub> > 2,7	00 pc/h? [	Yes 🗹 No		
Is $V_3$ or $V_{av34} > 1.5$	* V <sub>12</sub> /2 🗌 Ye	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	3 <sub>4</sub> > 1.5	* V <sub>12</sub> /2	Yes 🗹 No		
lf Yes,V <sub>12a</sub> =	pc/h (	Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13- 19)					-18, or 13-
Capacity Che	ecks	/			Capacity Checks					
	Actual	(	Capacity	LOS F?			Actual	C	apacity	LOS F?
					V <sub>F</sub>		6646	Exhibit 13-	-8 7200	No
Vro		Exhibit 13-8			$V_{ro} = V_{r}$	- V_	5054	Exhibit 13-	-8 7200	No
FO					F0 F	R	1502	Exhibit 13-	10 2100	No
Elow Entoring	l Morgo In	fluonoo	1.500			torin				NO
FIOW Entering	Actual	Max	Nesirable	Violation?	FIOW EI		Actual	Max Desira		Violation?
Vera	Actual	Exhibit 13-8	Desirable	VIOIATION	Vie		1223	Exhibit 13-8	4400·AII	No
R12	l vico Dotorr	nination (	(if not E)			F Sori	vice De	torminatic	$\frac{1}{1}$	<b>F</b> )
$D = 5475 \pm 0$	00734 v +	0 0078 V	- 0 00627		Leveror	D = 4	252 + 0	0086 V = 0		• /
$D_{\rm R} = (n_0/m_1)/m_1$	N N N N N N N N N N N N N N N N N N N	0.0010 12	0.00027 LA		D - 20	R	/mi/ln)	12		
$P_R = (pc/m/m)$	12.2)				$D_R = 30$	o.o (pc/	(1111/111)			
EUS - (Exhibit	13-2)				LUS - E		Dit 13-2)			
Speed Detern	nination				Speea L		minatic	<u>on</u>		
M <sub>S</sub> = (Exibit 1:	3-11)				$U_{\rm s} = 0.441$ (Exhibit 13-12)					
S <sub>R</sub> = mph (Exh	nibit 13-11)				ວ <sub>R</sub> = 57	.6 mph	(Exhibit	13-12)		
S <sub>0</sub> = mph (Exh	nibit 13-11)				S₀= 71	1.2 mph	(Exhibit	13-12)		
S = mph (Exh	nbit 13-13)				S = 62	2.0 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 Trav From/To Jurisdiction		l-95 NB Seg 10-E	Bet Off & On Ramps
Analysis Time Period	AM		Analysis Year	ild 1	
Project Description SW 10th	Street SIMR				nning Data
Flow Inputs			Jes.(N)		
Volume. V	4770	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>	3	
Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	General Terrain: Grade % Length Up/Down %	U Level mi	
Calculate Flow Adjustm	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
Ε <sub>T</sub>	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	3	ft ft	f <sub>LW</sub> f <sub>LC</sub>		mph mph
Total Ramp Density, TRD FFS (measured) Base free-flow Speed, BFFS	70.0	ramps/mi mph mph	TRD Adjustment	70.0	mph mph
LOS and Performance I	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	f <sub>HV</sub> x f <sub>p</sub> ) 1699 67.1 25.3 C	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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design hor	S - Speed D - Density FFS - Free-flow BFFS - Base fre ur volume	speed e-flow speed	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-	-13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Infor	mation			Site Infor	mation					
Analyst			Fr	eeway/Dir of Tr	avel	I-95 N	В			
Agency or Company	AECO	MC	Ju	nction		Seg 1	1-On Ramp 1	0th St EB & W	B	
Date Performed			Ju	risdiction						
Analysis Time Period	AM		Ar	nalysis Year		2040	Build 1			
Project Description	SW 10th Stree	t SIMR								
mputs			abay of Lance N						1	
Upstream Adj Ramp		Freeway Nun Ramp Numbe	nder of Lanes, N	3					Downstrea Ramn	m Adj
🗹 Yes 🛛 🗌 Or	ı	Acceleration	Lane Length, L	1200						
No Of	f	Deceleration	Lane Length L <sub>D</sub>							
	-	Freeway Volu	ıme, V <sub>F</sub>	4770						
L <sub>up</sub> = 2800	ft	Ramp Volum	e, V <sub>R</sub>	1660					L <sub>down</sub> =	π
V., = 1450 v	/eh/h	Freeway Free	e-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
		Ramp Free-F	low Speed, S <sub>FR</sub>	50.0						
Conversion t	opc/nUnd	der Base	Conditions		r				1	
(pc/h)	v (Veh/hr)	PHF	Terrain	%Truck	%Rv		$f_{HV}$	f <sub>p</sub>	v = V/PHF :	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	4770	0.95	Level	3	0	0	.985	1.00	50	96
Ramp	1660	0.92	Level	2	0	0	.990	1.00	18	22
UpStream	1450	0.92	Level	2	0	0	.990	1.00	15	92
DownStream		Merge Areas					 	verge Areas		
Estimation of	۷ <sub>12</sub>	nerge Areas			Estimat	ion d	of $v_{12}$	Alge Aleus		
	$V_{10} = V_{\Gamma}$	(P <sub>EM</sub> )					12	· () ( ) (		
L <sub>E0</sub> =	2226.25	€ (Equation	13-6 or 13-7)				v <sub>12</sub> = v <sub>1</sub>	R + (V <sub>F</sub> - V <sub>R</sub>	)P <sub>FD</sub>	<b>`</b>
	0.611	using Equa	tion (Exhibit 13-6)		L <sub>EQ</sub> –		(E	quation 13-	12 OF 13-13	) 7)
V <sub>12</sub> =	3114	pc/h	( , , , , , , , , , , , , , , , , , , ,		r <sub>fD</sub> –		us	ang Equatio	n (Exhidit 13-	()
$V_2$ or $V_{224}$	1982	pc/h (Equat	ion 13-14 or 13-		$V_{12}$ – V <sub>2</sub> or V <sub>2</sub>		ρι	//i :/h (Equation 1	3-14 or 13-17	)
$1 \text{ s V}_{0} \text{ or V}_{0} > 270$	17) 0.nc/h? ⊡ Vo				Is $V_3$ or $V_{av}$	<sub>34</sub> > 2,	700 pc/h? 🕅	Yes No		
$V_3 \text{ or } V_{av34} > 2.73$	* V <sub>40</sub> /2 🔽 Yee				Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.5	5 * V <sub>12</sub> /2	Yes No		
If Yes V. =	3114	pc/h (Equati	ion 13-16, 13-		If Yes,V <sub>12a</sub> =	-	- pc 13	/h (Equatio	n 13-16, 13-	-18, or
	18, or	13-19)			Canacit			19)		
			Canacity	LOS F2	Capacit <u></u>	y Ch	Actual	Car	hacity	LOS F2
	7101001	<u>`</u>		20011	V <sub>E</sub>		7101001	Exhibit 13-	8	20011
V .	6018	Exhibit 13.8		No	$V_{EO} = V_{E}$	- V <sub>P</sub>		Exhibit 13-	8	
* FO	0310				V_			Exhibit 13	-	
		<u> </u>	<u> </u>				<b>D</b> :	10		
Flow Entering	g Merge In	Max	A <b>rea</b> Desirable	Violation?	Flow En		Actual	le Influen May Desi	ice Area	Violation?
V <sub>P12</sub>	4936	Exhibit 13-8	4600:All	Yes	V <sub>12</sub>	+	Actual	Exhibit 13-8		VIOIALIOITE
Level of Serv	ice Detern	nination (	(if not F)		Level of	<sup>r</sup> Ser	vice Dete	erminatio	n (if not l	=)
D <sub>p</sub> = 5.475 +	0.00734 v <sub>P</sub> + 0	).0078 V <sub>12</sub> - 0.	.00627 L <sub>A</sub>			D <sub>P</sub> =	4.252 + 0.0	086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	/
D <sub>R</sub> = 35.6 (pc/mi/ln)					D <sub>R</sub> = (p	oc/mi/	ln)	12	D	
LOS = E (Exhibit	13-2)				LOS = (E	Exhibi	t 13-2)			
Speed Detern	Speed Determination					Deter	rminatior	1		
M <sub>S</sub> = 0.744 (Exi	bit 13-11)				D <sub>s</sub> = (Exhibit 13-12)					
S <sub>R</sub> = 49.2 mph	(Exhibit 13-11)				S <sub>R</sub> = m	ph (Ex	hibit 13-12)			
S <sub>0</sub> = 64.7 mph	(Exhibit 13-11)				S <sub>0</sub> = m	ph (Ex	hibit 13-12)			
S = 52.8 mph	(Exhibit 13-13)				S = m	ph (Ex	hibit 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 12-	Bet On Ramps
Analysis Time Period	AM		Analysis Year	2040 Bu	uild 1
Project Description SW 10tr	Street SIMR				anning Data
Flow Inputs			Des.(IN)		anning Data
Volume, V AADT	6430	veh/h veh/dav	Peak-Hour Factor, PHF %Trucks and Buses. P <sub>T</sub>	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustn	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
Ε <sub>T</sub>	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	3	ft ft ramps/mi	f <sub>LW</sub> f <sub>LC</sub> TRD Adjustment		mph mph mph
Base free-flow Speed, BFFS	70.0	mph mph	FFS	70.0	mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N > S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 2290 56.2 40.7 E	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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	-13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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		F	REEWA	Y WEAV	ING WOF	RKSHEE	Т		
Genera	al Informati	on			Site Info	ormation			
Analyst Agency/Co Date Perfo Analysis T	ompany ormed ime Period	AECON AM	И		Freeway/Dir of Travel I-95 NB Weaving Segment Location Seg 13-Bet On & Off to Exp Analysis Year 2040 Build 1				
Project De	scription SW 10t	h Street SIMF	R						
Inputs									
Weaving configuration       Two-Side         Weaving number of lanes, N       Weaving segment length, L <sub>s</sub> Weaving segment length, L <sub>s</sub> 4600         Freeway free-flow speed, FFS       70 mp         Conversions to pa/b Under Base Condition					<sup>I</sup> Segment type Freeway minimum speed, S <sub>MIN</sub> Freeway maximum capacity, C <sub>IFL</sub> Terrain type				
Conve	rsions to p	<u>c/h Unde</u>	r Base Co	ondition	s	1	1	<b></b>	
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε <sub>Τ</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/h)
V <sub>FF</sub>	5010	0.95	3	0	1.5	1.2	0.985	1.00	5353
V <sub>RF</sub>	1150	0.92	2	0	1.5	1.2	0.990	1.00	1263
V <sub>FR</sub>	1420	0.92	2	0	1.5	1.2	0.990	1.00	1559
V <sub>RR</sub>	320	0.92	2	0	1.5	1.2	0.990	1.00	351
V <sub>NW</sub>	8175						-	V =	8526
V <sub>W</sub>	351								
VR	0.041								
Config	uration Cha	aracterist	tics		-				
Minimum I	maneuver lanes,	N <sub>WL</sub>		0 lc	Minimum we	eaving lane c	hanges, LC <sub>MIN</sub>		1053 lc/h
Interchang	ge density, ID			0.7 int/mi	Weaving lan	ie changes, L	-C <sub>w</sub>		1679 lc/h
Minimum	RF lane changes	, LC <sub>RF</sub>		0 lc/pc	Non-weaving	g lane chang	es, LC <sub>NW</sub>		3512 lc/h
Minimum	FR lane changes	, LC <sub>FR</sub>		0 lc/pc	Total lane ch	nanges, LC <sub>AL</sub>	L		5191 lc/h
Minimum I	RR lane changes	, LC <sub>RR</sub>		3 lc/pc	Non-weaving	g vehicle inde	ex, I <sub>NW</sub>		2632
Weavir	ng Segmen	t Speed,	Density,	Level of	Service,	and Cap	pacity		
Weaving s	segment flow rate	, V		8415 veh/h	Weaving inte	ensity factor,	W		0.249
Weaving segment capacity, c <sub>w</sub> 9001 veh/r					Weaving seg	gment speed	, S		52.4 mph
Weaving segment v/c ratio 0.935					Average weaving speed, $S_{W}$				59.0 mpł
Weaving s	Weaving segment density, D 40.6 pc/mi/lr					Average non-weaving speed, S <sub>NW</sub>			
Level of S	ervice, LOS			E	Maximum weaving length, L <sub>MAX</sub> 6110 f				
Notes									
a. Weaving	segments longer t	han the calcula	ited maximum le	ength should I	be 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		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	l-95 NB Seg 14-l	North of Hillsboro
Analysis Time Period	AM		Analysis Year	2040 Bu	ild 1
Project Description SW 10th	Street SIMR				nning Data
Flow Inputs			Jes.(N)		
Volume, V AADT	6160	veh/h veh/dav	Peak-Hour Factor, PHF %Trucks and Buses. P <sub>T</sub>	0.95 4	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustm	nents				
f <sub>p</sub> F	1.00 1.5		E <sub>R</sub> f = 1/(1+P (F - 1) + P (F - 1))	1.2 0.980	
-⊺ Spood Inpute	1.0			0.000	
				)	
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 <sub>∟w</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance I	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1653 67.6 24.4 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design hou	S - Speed D - Density FFS - Free-flow BFFS - Base fre ur volume	speed e-flow speed	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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		F	REEWA	( WEAV	ING WOI	RESHEE			
Genera	I Informatio	on			Site Info	ormation			
Analyst Agency/Cor Date Perfor Analysis Tir	mpany med me Period	AECON PM	1		Freeway/Dir Weaving Se Analysis Yea	of Travel gment Locati ar	I-95 N on Seg 1 2040	NB I-Bet Copans Build 1	& Sample
Project Des	cription SW 10th	n Street SIMR							
Inputs									
Weaving cc Weaving nu Weaving se Freeway fre	onfiguration umber of lanes, N egment length, L <sub>s</sub> ee-flow speed, FF	S		One-Sided 4 2380ft 70 mph	Segment typ Freeway mir Freeway ma Terrain type	e nimum speed ximum capad	l, S <sub>MIN</sub> city, C <sub>IFL</sub>		Fre
Conver	sions to po	/h Undei	r Base Co	ondition	s		-		1
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε <sub>Τ</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/
V <sub>FF</sub>	4770	0.95	3	0	1.5	1.2	0.985	1.00	5096
V <sub>RF</sub>	480	0.92	2	0	1.5	1.2	0.990	1.00	527
V <sub>FR</sub>	1810	0.92	2	0	1.5	1.2	0.990	1.00	1987
V <sub>RR</sub>	0	0.95	0	0	1.5	1.2	1.000	1.00	0
V <sub>NW</sub>	5096							V =	7610
V <sub>w</sub>	2514								
VR	0.330								
Configu	uration Cha	racterist	ics						
Minimum m	naneuver lanes, N	N <sub>WL</sub>		2 lc	Minimum we	eaving lane c	hanges, LC <sub>MIN</sub>	ı	
Interchange	e density, ID			0.7 int/mi	Weaving lar	ne changes, l	_C <sub>w</sub>		
Minimum R	RF lane changes,	LC <sub>RF</sub>		1 lc/pc	Non-weavin	g lane chang	jes, LC <sub>NW</sub>		
Minimum F	R lane changes,	LC <sub>FR</sub>		1 lc/pc	Total lane c	hanges, LC <sub>AL</sub>	L		
Minimum R	RR lane changes,	$LC_{RR}$		lc/pc	Non-weavin	g vehicle ind	ex, I <sub>NW</sub>		
Weavin	g Segment	Speed,	Density, l	Level of	Service,	and Ca	pacity		
Weaving se Weaving se	egment flow rate, egment capacity,	v c <sub>w</sub>		7511 veh/h 7158 veh/h	Weaving int Weaving se	ensity factor, gment speed	W I, S		
Weaving se	egment v/c ratio			1.049	Average we	aving speed,	3 <sub>W</sub>		
Weaving se	egment density, [	J		pc/mi/ln	Average no	n-weaving sp	eea, S <sub>NW</sub>		
	INCE, LUS			F	Maximum w	eaving lengtl	n, L <sub>MAX</sub>		59
NOTES	segments longer th	an the colouis	ted maximum k	anoth chould	he treated as it	colated morac	and divorce of	oge using the	procedure
Chapter 13,	"Freeway Merge a	nd Diverge Se	gments".		nvice is "F"	solateu merge	anu uiveige al	ะสร บรแบ่ง เทย	procedure
			inchi capacity, li			.TM		Canar	

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	BASIC F	REEWAY SE	GMENTS WORKSHEET		
Concret Information			Site Information		
			Site Information		
Analyst			Highway/Direction of Travel	I-95 NB Sea 2-B	et On & On from
Agency or Company	AECOM		From/Io	Sample	
Date Performed Analysis Time Period	PM		Jurisdiction Analysis Year	2040 Bu	iild 1
Project Description SW 10	th Street SIMR				
Oper.(LOS	5)		Des.(N)	🗌 Pla	anning Data
Flow Inputs					
Volume, V	5250	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>	3	
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>	0	
Peak-Hr Direction Prop, D		voh/h	General Terrain:	Level	
		Venin	Up/Down %	1111	
Calculato Elow Adjust	monte				
	interits				
r <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	1.5		f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)]	0.985	
Speed Inputs			Calc Speed Adj and FFS	5	
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>		mph
Number of Lanes, N	3		f <sub>LC</sub>		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	e Measures		Design (N)		
			Design (N)		
$\frac{\text{Operational}(LOS)}{(LOS)}$			Design LOS		
$v_p = (V \text{ or } D D H V) / (P H F X N)$	I X T <sub>HV</sub> X T <sub>p</sub> ) 1870	pc/n/in	v <sub>p</sub> = (V or DDHV) / (PHF x N x	f <sub>HV</sub> x f <sub>n</sub> )	pc/h/ln
S / C	64.8	mph	S	p	mph
$D = v_p / S$	28.9	pc/mi/ln	$D = v_p / S$		pc/mi/ln
LOS	D		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 <sub>LW</sub> - Exhibit 11-8
v <sub>n</sub> - Flow rate	FFS - Free-flow	speed	$E_{T}$ - Exhibits 11-10, 11-11, 11-	-13	t <sub>LC</sub> - Exhibit 11-9
LOS - Level of service	BFFS - Base fre	ee-flow speed	t <sub>p</sub> - Page 11-18		TRD - Page 11-11
DDHV - Directional design h	our volume		LOS, S, FFS, v <sub>p</sub> - Exhibits 11-	2, 11-3	

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Job: SW 10th Street SIMR Analyst: AECOM



<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	6,838	0.71	No
3	Fwy upstream of ramp (assume 70 mph free-flow speed) =	7,200	5,609	0.78	No
1	Capacity on On-Ramp (assume 45 mph free-flow speed) =	2,100	1,223	0.58	No

	BASIC FR	EEWAY SEC	GMENT	S WORK	SHEET		
General Information			Site In	formatio	n		
Analyst			Highway	/Direction of	of Travel	I-95 NB	
Agency or Company A	ECOM		From/To			Seg 4-Be Exp	t On from Sample &
Date Performed Analysis Time Period	РМ		Jurisdicti Analysis	on Year		2040 Buil	'd 1
Project Description SW 10th Stre	eet SIMR						
✓ Oper.(LOS)		D	es.(N)			Plar	nning Data
Flow Inputs							
Volume, V 64 AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop. D	400	veh/h veh/day	Peak-Ho %Trucks %RVs, P General	ur Factor, l and Buses R Terrain <sup>:</sup>	PHF s, P <sub>T</sub>	0.95 3 0 Grade	
DDHV = AADT x K x D		veh/h	Grade	0.00% Up/Do	Length wn %	0.00mi 0.00	
Calculate Flow Adjustment	ts						
f <sub>p</sub> 1.	.00		E <sub>R</sub>			1.2	
Е <sub>Т</sub> 1.	.5		f <sub>HV</sub> = 1/[1	+P <sub>T</sub> (E <sub>T</sub> - 1) +	P <sub>R</sub> (E <sub>R</sub> - 1)]	0.985	
Speed Inputs			Calc S	peed Ad	j and FFS		
Lane Width		ft					
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>				mph
Number of Lanes, N 4			f <sub>LC</sub>				mph
Total Ramp Density, TRD		ramps/mi	TRD Ad	justment			mph
FFS (measured) 70	0.0	mph	FFS			70.0	mph
Base free-flow Speed, BFFS		mph					r
LOS and Performance Mea	asures		Design	1 (N)			
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> S D = v <sub>p</sub> / S LOS	x f <sub>p</sub> ) 1709 67.0 25.5 C	pc/h/ln mph pc/mi/ln	Design ( Design L v <sub>p</sub> = (V o S D = v <sub>p</sub> / S Required	<u>N)</u> .OS r DDHV) / / S d Number c	(PHF x N x f	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor	Locatio	า		
N - Number of lanes S V - Hourly volume D v <sub>p</sub> - Flow rate FFS LOS - Level of service BF DDHV - Directional design hour vo	- Speed - Density S - Free-flow s FS - Base free plume	beed flow speed	E <sub>R</sub> - Exh E <sub>T</sub> - Exh f <sub>p</sub> - Page LOS, S,	ibits 11-10 ibits 11-10, e 11-18 FFS, v <sub>p</sub> - E	, 11-12 , 11-11, 11-1 Exhibits 11-2	13 , 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Infor	mation			Site Infor	mation					
Analyst			Fr	eeway/Dir of Tra	avel	I-95 N	В			
Agency or Company	AEC	OM	Ju	Inction		Seg 5-	On from Ex	p		
Date Performed			Ju	irisdiction						
Analysis Time Period	d PM		Ar	nalysis Year		2040 E	Build 1			
Project Description	SW 10th Stree	t SIMR								
Inputs		1								
Upstream Adi Ramp		Freeway Num	ber of Lanes, N	4					Downstrea	am Adi
		Ramp Numbe	r of Lanes, N	1					Ramp	,
Yes Or	ו	Acceleration L	ane Length, L	1500					Voc	
	~	Deceleration I	ane Length L						165	
No Of	Ť	Freeway Volu	me V	6400					🗌 No	✓ Off
l = ft			NIE, V <sub>F</sub>	770					L <sub>down</sub> =	6200 ft
Lup IC			, v <sub>R</sub>	//0					down	0200 11
V., = veh/h	ı	Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	1590 veh/h
u	-	Ramp Free-Fl	ow Speed, S <sub>FR</sub>	50.0					5	
Conversion t	o pc/h Un	der Base	Conditions	u	-					
(pc/h)	V () ( = h /h = r)	PHF	Terrain	%Truck	%Rv		f <sub>u\/</sub>	f	v = V/PHF	x f <sub>HV</sub> x f <sub>n</sub>
(P)	(Veh/hr)	0.05					005	μ		Ην p
Freeway	6400	0.95	Level	3	0	0	.985	1.00	6	838
Ramp	//0	0.92	Level	2	0	0	.990	1.00	5	345
DownStream	1500	0.00	Level		0		000	1.00	4	740
DownStream	1090	U.92 Morgo Aroas	Level	Ζ	0	0	.990			/40
Estimation of	Fv	werge Areas			Estimation of V <sub>10</sub>					
	<b>v</b> 12				LSumau		12			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V <sub>12</sub> = '	V <sub>P</sub> + (V <sub>F</sub> - V <sub>P</sub>	)P <sub>ED</sub>	
L <sub>EQ</sub> =	(Equ	ation 13-6 o	r 13-7)		L <sub>F0</sub> =		12	Fouation 13-	12 or 13-1	3)
P <sub>FM</sub> =	0.112	using Equat	ion (Exhibit 13-6)		EQ P =			using Equatio	n (Exhibit 13	-7)
V <sub>12</sub> =	767 p	c/h			( FD V =			oollig Equatio		, , ,
	3035	pc/h (Equati	on 13-14 or 13-		$v_{12}^{-}$		I	50/11 //- / E	0 44 40 4	7)
v <sub>3</sub> 01 v <sub>av34</sub>	17)				v <sub>3</sub> 01 v <sub>av34</sub>		700 // 0 5	pc/n (Equation 1	3-14 Of 13-1	()
Is V <sub>3</sub> or V <sub>av34</sub> > 2,70	)0 pc/h? 🗹 Ye	s 🗌 No			$ s _{3} or V_{av34} > 2,700 pc/n? Yes No$					
Is $V_3$ or $V_{av34} > 1.5$	* V <sub>12</sub> /2 🗹 Ye	s 🗌 No			Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes No					
If Yes V., =	2735	pc/h (Equati	on 13-16, 13-		If Yes,V <sub>12a</sub> =	:	1	oc/h (Equation	n 13-16, 13	3-18, or
11 1 00, 1 12a	18, or	13-19)						5-19)		
Capacity Che	ecks	•		•	Capacity Checks					
	Actual	0	Capacity	LOS F?			Actual	Cap	pacity	LOS F?
					V <sub>F</sub>			Exhibit 13-8	3	
V <sub>EO</sub>	7683	Exhibit 13-8		No	$V_{FO} = V_{F}$	- V <sub>R</sub>		Exhibit 13-8	3	
10					V.			Exhibit 13-	-	
					*R			10		
Flow Entering	g Merge In	fluence A	rea		Flow En	terir	ng Dive	rge Influen	ce Area	
	Actual	Max	Desirable	Violation?		_	Actual	Max Desi	rable	Violation?
V <sub>R12</sub>	3908	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8		
Level of Serv	ice Detern	nination (	if not F)		Level of	<sup>r</sup> Ser	vice De	terminatio	n (if not	F)
D <sub>R</sub> = 5.475 + 0.00734 v <sub>R</sub> + 0.0078 V <sub>12</sub> - 0.00627 L <sub>A</sub>					(	D <sub>R</sub> = 4	4.252 + 0	.0086 V <sub>12</sub> - 0.	.009 L <sub>D</sub>	
D <sub>R</sub> = 27.9 (pc/m	ıi/ln)				D <sub>R</sub> = (p	c/mi/l	n)			
OS = C (Exhibit)	13-2)				10S = (F	xhibi	, t 13-2)			
		Spood C	Dotor	minatic	<u></u>					
					Speed Determination					
$M_{\rm s} = 0.365$ (Exibit 13-11) $D_{\rm s} = (Exhibit 13-12)$										
S <sub>R</sub> = 59.8 mph	(Exhibit 13-11)				S <sub>R</sub> = m	ph (Ex	nibit 13-12)			
S <sub>0</sub> = 65.4 mph	(Exhibit 13-11)				S <sub>0</sub> = m	ph (Ex	hibit 13-12)			
S = 62.3 mph	(Exhibit 13-13)				S =	ph (Ex	hibit 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 6-Be	et Exp On & Off to 10th
Analysis Time Period	PM		Analysis Year	2040 Bu	ild 1
Project Description SW 10th	n Street SIMR				unning Data
			Des.(N)		
	7170	u a la /la	Deals Hours Frankers DUF	0.05	
	7170	ven/n veh/day	Peak-Hour Factor, PHF       %Trucks and Buses, P <sub>T</sub>	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustr	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
Έ <sub>Τ</sub>	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 <sub>LW</sub>		mph
Number of Lanes, N	3				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 <sub>p</sub> = (V or DDHV) / (PHF x N ) S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 2554 48.7 52.4 F	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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-	-13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - 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
Project Description SW 10th	h Street SIMR			20 <del>4</del> 0 Bul	
✓ Oper.(LOS)			Des.(N)	Pla	nning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K	5580	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub>	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 Adjustn	nents				
f <sub>p</sub> Ε <sub>T</sub>	1.00 1.5		E <sub>R</sub> f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 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 <sub>LW</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	k f <sub>HV</sub> x f <sub>p</sub> ) 1987 62.8 31.6 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	-13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Infor	rmation			Site Infor	mation					
Analyst			Fr	eeway/Dir of Tr	avel	I-95 NE	3			
Agency or Company	AEC	OM	Ju	Inction		Seg 9-	Off to Hillst	oro EB&WB		
Date Performed			JL	Irisdiction		0040 0				
Analysis Time Period	Q PIN		AI	nalysis Year		2040 B	ulid 1			
Innuts	300 1001 3086									
mputs		Freeway Num	ber of Lanes N	3						
Upstream Adj R	Ramp	Ramo Numbe	ar of Lanes N	1					Downstre	am Adj
Yes	On			I						_
			Lane Lengin, L <sub>A</sub>						🗹 Yes	🗹 On
✓ No	Off	Deceleration	Lane Length L <sub>D</sub>	200					🗌 No	Off
	<b>r</b> ,	Freeway Volu	ime, V <sub>F</sub>	5580						2000 <del>f</del>
$L_{up} = t$	t	Ramp Volume	e, V <sub>R</sub>	1440					Ldown	2000 IL
V = v	eh/h	Freeway Free	e-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	1320 veh/h
vu v	CIMI	Ramp Free-F	low Speed, S <sub>FR</sub>	45.0						
Conversion t	o pc/h Un	der Base	Conditions							
(pc/h)	V () (ala /lan)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f	v = V/PH	x f <sub>HV</sub> x f <sub>n</sub>
Frooway		0.05	Laval	2	0		0.95	1.00	5	
Pamp	0000	0.95	Level	3	0	0.	900	1.00	) ) )	90Z
UnStream	1440	0.92	Level	2	0	- 0.	990	1.00		001
DownStream	1320	0.92	level	2	0	0.	990	1.00	1	449
		Merge Areas					[	Diverge Areas		
Estimation of	f v <sub>12</sub>				Estimat	tion o	of v <sub>12</sub>			
	$V_{10} = V_{r}$	(P=+,)					V =	: V <sub>2</sub> + (V <sub>2</sub> - )	/_)P	
   =	(Equa	(1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	13-7)		l =		• 12	Fountion 13.	' R/' FD .12 or 13_1'	3)
EQ =		Equation (I	$\frac{10}{13}$		EQ P =		0	529 Uning E	nuation (Eve	) .ibit 12 7)
FM -	using				'FD -		0.	000 using ⊏0		libit 13-7)
$v_{12}$	pc/n	Equation 40	(14 on 10 17)		$v_{12} - v_{12} - v$		35			4 40 47
$v_3 \text{ or } v_{av34}$	pc/n ( ⊃0 ===/h0 □== \		-14 01 13-17)		v <sub>3</sub> 01 v <sub>av34</sub>	. 0 7	2U 2U	23 pc/n (Eq	uation 13-1	4 or 13-17)
$15 V_3 \text{ of } V_{av34} > 2,70$	10 pc/n? ∐ Ye	s No			$ s_{v_3} \circ v_{av_34} - 2,700 \text{ pcm}  = \text{Yes}  \text{No}$					
Is $V_3$ or $V_{av34} > 1.5$	<sup>°</sup> V <sub>12</sub> /2 ∐Ye	S NO	16 12 19 or		Is $v_3$ or $v_{av34} > 1.5 " v_{12}/2$ Yes V No					
If Yes,V <sub>12a</sub> =	13-19)	j⊑qualion is )	-10, 13-10, 01		If Yes, $V_{12a}$ = pc/h (Equation 13-16, 13-18, or 13- 19)					
Capacity Che	ecks	,			Capacity Checks					
	Actual	C	Capacity	LOS F?			Actual	C	apacity	LOS F?
					V <sub>F</sub>		5962	Exhibit 13	-8 7200	No
Vro		Exhibit 13-8			$V_{ro} = V_r$	V <sub>D</sub>	4381	Exhibit 13	-8 7200	No
FO						- <u>R</u>	1581	Exhibit 13	10 2100	No
Elow Entoring	a Morgo In	fluonoo	Iroa			atorin				110
FIOW Entering	Actual	Max	Nesirable	Violation?	FIOWEI		Actual	Max Desira	ahle	Violation?
V	Actual	Exhibit 13-8	Desirable	VIOIALIOITE	V.,		2020	Evhibit 13-8		No
V <sub>R12</sub> Exhibit 13-0						f Sor	vico Do	torminatio	$\frac{1}{1}$	<b>F</b> )
$D_{-} = 5.475 \pm 0.00734 \text{ y}_{-} \pm 0.0078 \text{ V}_{-} = 0.00627 \text{ J}_{-}$					Lever		1 252 + 0			r)
$D_{-} = (nc/mi/ln)$					D - 2	$D_R = -$	+.202 + 0	.0000 v <sub>12</sub> - 0		
$D_R = (pc/mi/in)$	1)				$D_R = 3$	6.3 (pc	/mi/in)			
LOS = (Exhibit	13-2)				LOS = E	(Exhil	oit 13-2)			
Speed Determination						Deter	minatic	on		
M <sub>S</sub> = (Exibit 1	3-11)				D <sub>s</sub> = 0.440 (Exhibit 13-12)					
S <sub>R</sub> = mph (Exh	nibit 13-11)				S <sub>R</sub> = 5	7.7 mph	(Exhibit	13-12)		
S <sub>0</sub> = mph (Exh	nibit 13-11)				S <sub>0</sub> = 7	2.8 mph	(Exhibit	13-12)		
S = mph (Exh	nibit 13-13)				S = 6	2.0 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 1
Project Description SW 10t	h Street SIMR				
✓ Oper.(LOS)	)		Des.(N)	Pla	nning Data
Flow Inputs					
Volume, V AADT	4140	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub>	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustr	ments				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	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			mah
Rt-Side Lat. Clearance	2	π	l <sub>LW</sub>		mph
Total Ramp Density TRD	5	ramps/mi	<sup>I</sup> LC TRD Adjustment		mph
FES (measured)	70.0	mnh		70.0	mph
Base free-flow Speed, BFFS	70.0	mph	110	70.0	прп
I OS and Performance	Moasuros		Design (N)		
$\frac{\text{Operational (LOS)}}{v_p} = (V \text{ or DDHV}) / (PHF x N)$ S D = $v_p / S$ LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1474 69.1 21.3 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Infor	mation			Site Infor	mation					
Analyst			Fre	eeway/Dir of Tra	avel	I-95 N	В			
Agency or Company	AEC	ОМ	Ju	nction		Seg 1	1-On Ramp 1	0th St EB & W	Β	
Date Performed			Ju	risdiction						
Analysis Time Period	PM		An	alysis Year		2040 I	Build 1			
Project Description	SW 10th Stree	t SIMR								
inputs			han aft an an Ni						1	
Upstream Adj Ramp		Freeway Num	iber of Lanes, N	3					Downstrea Ramp	m Adj
🗹 Yes 🗌 On	ı	Acceleration I	Lane Length, L	1200						
No VOf	f	Deceleration	Lane Length L <sub>D</sub>							
		Freeway Volu	ime, V <sub>F</sub>	4140					M NO	
L <sub>up</sub> = 2800	ft	Ramp Volum	e, V <sub>R</sub>	1320					L <sub>down</sub> =	π
V <sub>u</sub> = 1440 v	/eh/h	Freeway Free	e-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
Conversion t	o nc/h Un	Ramp Free-F	low Speed, S <sub>FR</sub>	50.0						
Conversion	V V		conditions				_			
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	4140	0.95	Level	3	0	0	.985	1.00	44	23
Ramp	1320	0.92	Level	2	0	0	.990	1.00	14	49
UpStream	1440	0.92	Level	2	0	0	.990	1.00	15	81
DownStream		Merge Areas						verge Areas		
Estimation of	V <sub>12</sub>	merge Areas			Estimat	ion d	of $v_{12}$	Verge Areas		
	$V_{40} = V_{F}$	(P <sub>FM</sub> )					12		\ <b>D</b>	
L <sub>FO</sub> =	2002.4	、 FM / I (Equation	13-6 or 13-7)				v <sub>12</sub> = v	<sub>R</sub> + (V <sub>F</sub> - V <sub>R</sub>	)P <sub>FD</sub>	<b>、</b>
	0.611	using Foua	tion (Exhibit 13-6)		L <sub>EQ</sub> =		(E	equation 13-	12 or 13-13	) ->
$V_{12} =$	2703	pc/h			P <sub>FD</sub> =		U:	sing Equatio	n (Exhibit 13-	()
Valor V ar	1720	pc/h (Equati	on 13-14 or 13-		v <sub>12</sub> = V or V		p	C/h c/h (Equation 1	3-11 or 13-17	)
$13^{\circ}$ $13^{\circ}$ $13^{\circ}$ $13^{\circ}$	17) 0 pc/b2 ⊡ Xa				Is V <sub>2</sub> or V <sub>2</sub>	_ <sub>4</sub> > 2,	بم 100 pc/h?	Yes No	0-14-01-10-17	)
$15V_3 01V_{av34} > 2,70$	<sup>v</sup> µ∪/11? ∐ Ye	s ⊠ No			Is V <sub>2</sub> or V <sub>2</sub>	34 ₀₄ > 1.5	5 * V <sub>1</sub> /2	Yes No		
$15 v_3 01 v_{av34} > 1.5$	v <sub>12</sub> /∠ ⊻ Ye 2703	S 🛄 NO nc/h (Equati	on 13-16 13-		lf Ves V -	34 -	p	c/h (Equatio	n 13-16, 13	-18, or
If Yes,V <sub>12a</sub> =	18, or	13-19)	01113-10, 13-		12a -	-	13-	-19)		
Capacity Che	cks			1	Capacit	y Ch	ecks			
	Actual	(	Capacity	LOS F?			Actual	Ca	pacity	LOS F?
						V		Exhibit 13-	8	
V <sub>FO</sub>	5872	Exhibit 13-8		No	$v_{FO} = v_F$	- v <sub>R</sub>		Exhibit 13-	8	
					V <sub>R</sub>			10		
Flow Entering	g Merge In	fluence A	Area		Flow En	terii	ng Diver	ge Influen	ce Area	
V	Actual	Max		Violation?	V	+	Actual	Max Desi	rable	Violation?
V <sub>R12</sub> 4152 Exhibit 13-8 4600:All No						F Sor	vice Det	orminatio	n (if not l	=)
$D_{\rm p} = 5.475 \pm 0.00734  \text{v}_{\rm p} \pm 0.0078  \text{V}_{\rm p} = 0.00627  \text{J}_{\rm p}$					Leveror	D =	4 252 + 0 (	0.086  V = 0	0091	/
$D_{-} = 29.7 (nc/m)$	ii/In)	12 0.			D = (r	R R	In)	12		
LOS = D(Exhibit)	13-2)				PR (F	zyhihi	11) t 13_2)			
Speed Detern	nination				Speed [	Deter	rminatio	n		
$M_{0} = 0.449 (Fvil)$	hit 13-11)				D <sub>s</sub> = (E	xhibit	13-12)	-		
$S_{p} = 57.4 \text{ mph}$	(Fxhibit 13-11)				S <sub>R</sub> = m	ph (Ex	, hibit 13-12)			
$S_{a} = 65.6 \text{ mph}$	(Exhibit 13-11)				 S₀= m	, ph (Ex	, hibit 13-12)			
S = 59.6 mph	(Exhibit 13-13)				S = m	, ( <u>–</u> ^ ph (Ex	hibit 13-13)			
L					Ľ	r <b>/ E/</b>				

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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 12-i	Bet On Ramps
Analysis Time Period	PM		Analysis Year	2040 Bu	iild 1
Project Description SW 10th	h Street SIMR				uning Data
Elow Inputs			Des.(N)	Pla	anning Data
	5460	vob/b	Dook Hour Easter, DHE	0.05	
AADT	5460	veh/day	%Trucks and Buses, P <sub>T</sub>	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustr	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	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			and b
Rt-Side Lat. Clearance	2	Ħ	T <sub>LW</sub>		mpn
Total Ramp Density TRD	3	ramps/mi	<sup>I</sup> LC TRD Adjustment		mph
FES (measured)	70.0	mnh		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 <sub>p</sub> = (V or DDHV) / (PHF x N ) S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1945 63.6 30.6 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base fre our volume	speed ee-flow speed	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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		F	REEWA	Y WEAV	ING WOF	RKSHEE	Т		
Genera	al Informati	on			Site Info	ormation			
Analyst Agency/Co Date Perfo Analysis Ti	Analyst Agency/Company AECOM Date Performed Analysis Time Period PM				Freeway/Dir of Travel I-95 NB Weaving Segment Location Seg 13-Bet On & Off to Exp Analysis Year 2040 Build 1				
Project De	scription SW 10t	h Street SIMF	R						
Inputs					1				
Weaving c Weaving n Weaving s Freeway fr	onfiguration umber of lanes, N egment length, L ee-flow speed, F	N s FS	Two-Sided 4 4600ft 70 mph	Segment type Free Freeway minimum speed, S <sub>MIN</sub> Freeway maximum capacity, C <sub>IFL</sub>					
Conve	rsions to p	<u>c/h Unde</u>	r Base Co	ondition	s				
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε <sub>Τ</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/h)
V <sub>FF</sub>	4440	0.95	3	0	1.5	1.2	0.985	1.00	4744
V <sub>RF</sub>	1210	0.92	2	0	1.5	1.2	0.990	1.00	1328
V <sub>FR</sub>	1020	0.92	2	0	1.5	1.2	0.990	1.00	1120
V <sub>RR</sub>	260	0.92	2	0	1.5	1.2	0.990	1.00	285
V <sub>NW</sub>	7192							V =	7477
V <sub>w</sub>	285								
VR	0.038								
Config	uration Cha	aracteris	tics						
Minimum r	maneuver lanes,	N <sub>WI</sub>		0 lc	Minimum we	eaving lane c	hanges, LC <sub>MIN</sub>		855 lc/h
Interchang	je density, ID			0.7 int/mi	Weaving lane changes, LC <sub>w</sub>				1481 lc/ł
Minimum I	RF lane changes	, LC <sub>RF</sub>		0 lc/pc	Non-weaving	g lane chang	es, LC <sub>NW</sub>		3293 lc/h
Minimum I	FR lane changes	, LC <sub>FR</sub>		0 lc/pc	Total lane ch	nanges, LC <sub>AL</sub>	L		4774 lc/h
Minimum I	RR lane changes	, LC <sub>RR</sub>		3 lc/pc	Non-weaving	g vehicle inde	ex, I <sub>NW</sub>		2316
Weavir	ng Segmen	t Speed,	Density,	Level of	Service,	and Cap	pacity		
Weaving s	segment flow rate	. V		7381 veh/h	Weaving inte	ensity factor,	W		0.233
Weaving segment capacity, c <sub>w</sub> 9013 veh/h					Weaving seg	gment speed	, S		55.0 mph
Weaving segment v/c ratio 0.819					Average weaving speed, $S_{W}$				59.6 mph
Weaving s	Weaving segment density, D 34.0 pc/mi/ln			4.0 pc/mi/ln	Average non-weaving speed, $S_{_{\sf NW}}$				54.9 mpł
Level of Service, LOS D				Maximum weaving length, L <sub>MAX</sub> 6081 ft					
Notes									
a. Weaving	segments longer t	han the calcula	ited maximum le	ength should I	be 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		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	I-95 NB Seg 14-I	North of Hillsboro
Analysis Time Period	PM		Analysis Year	2040 Bu	110 T
Oper (LOS)			Des (N)	Pla	nning Data
Flow Inputs	,				
Volume, V AADT Peak-Hr Prop. of AADT. K	5650	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>D</sub>	0.95 4 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 <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
	1.5		$I_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.980	
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	4 70.0	ft ft ramps/mi mph mph	f <sub>LW</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1517 68.8 22.0 C	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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	-13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - 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 Analysis Time Period	AECOM AM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	I-95 SB Seg 1-B 2040 Bu	et Hillsboro & Palmetto iild 1
Project Description SW 10th	Street SIMR			2040 Du	
✓ Oper.(LOS)		[	Des.(N)	Pla	anning Data
Flow Inputs					<u> </u>
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D	4870	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain:	0.95 3 0 Level	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi	
Calculate Flow Adjustm	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
Ε <sub>T</sub>	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)	4 70.0	ft ft ramps/mi mph	f <sub>LW</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
Base free-flow Speed, BFFS	Magaa	mph	Decise (N)		
$\frac{\text{Operational (LOS)}}{v_p} = (V \text{ or DDHV}) / (PHF x N x)$ S D = $v_p / S$ LOS	s f <sub>HV</sub> x f <sub>p</sub> ) 1301 69.9 18.6 C	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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design hol	S - Speed D - Density FFS - Free-flow BFFS - Base fre ur volume	speed e-flow speed	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-	-13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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		F	REEWA	Y 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 AM				Freeway/Dir of Travel I95/SB Weaving Segment Location Seg 2-Bet On from Exp & O Analysis Year 2040 Build 1				
Project De	scription SW 10t	h Street SIMF	R						
Inputs					•				
Weaving co Weaving n Weaving so Freeway fr	onfiguration umber of lanes, N egment length, L ee-flow speed, F	N s FS	Two-Sided 4 5200ft 70 mph	Segment type Fre Freeway minimum speed, S <sub>MIN</sub> Freeway maximum capacity, C <sub>IFL</sub> Terrain type					
Conver	sions to p	<u>c/h Unde</u>	r Base Co	ondition	S				
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε <sub>Τ</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/h)
V <sub>FF</sub>	3585	0.95	3	0	1.5	1.2	0.985	1.00	3830
V <sub>RF</sub>	1265	0.92	2	0	1.5	1.2	0.990	1.00	1389
V <sub>FR</sub>	1285	0.92	2	0	1.5	1.2	0.990	1.00	1411
V <sub>RR</sub>	145	0.92	2	0	1.5	1.2	0.990	1.00	159
V <sub>NW</sub>	6630							V =	6789
V <sub>w</sub>	159								
VR	0.023								
Config	uration Cha	aracteris	tics						
Minimum r	naneuver lanes,	N <sub>WI</sub>		0 lc	Minimum we	aving lane cl	hanges, LC <sub>MIN</sub>		477 lc/h
Interchang	e density, ID			0.7 int/mi	Weaving lane changes, LC <sub>w</sub>				1145 lc/h
Minimum F	RF lane changes	, LC <sub>rf</sub>		0 lc/pc	Non-weaving	g lane chang	es, LC <sub>NW</sub>		3167 lc/h
Minimum F	R lane changes	, LC <sub>FR</sub>		0 lc/pc	Total lane ch	nanges, LC <sub>AL</sub>	L		4312 lc/h
Minimum F	RR lane changes	, LC <sub>RR</sub>		3 lc/pc	Non-weaving	g vehicle inde	ex, I <sub>NW</sub>		2413
Weavin	ig Segmen	t Speed,	Density,	Level of	Service,	and Cap	oacity		
Weaving s	egment flow rate	. V		6704 veh/h	Weaving inte	ensity factor,	W		0.195
Weaving segment capacity, c <sub>w</sub> 9233 veh/h					Weaving seg	gment speed	, S		58.5 mph
Weaving segment v/c ratio 0.726					Average weaving speed, $S_w$				61.0 mph
Weaving s	Weaving segment density, D 29.0 pc/mi/ln			9.0 pc/mi/ln	Average non-weaving speed, $S_{_{NW}}$				58.4 mpł
Level of Se	ervice, LOS			D	Maximum weaving length, L <sub>MAX</sub> 5944				
Notes					<u>.</u>				
a. Weaving	segments longer t	han the calcula	ited maximum le	ength should I	be 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		
General Information			Site Information		
Analyst Agency or Company Date Performed	AECOM		Highway/Direction of Travel From/To Jurisdiction	I-95 SB Seg 3-Be	et Off & On Ramp
Analysis Time Period	AM		Analysis Year	2040 Bu	ild 1
Project Description SW Tota	n Street SIMR				nning Data
Flow Inputs			Jes.(N)		
Volume, V	4850	veh/h veh/dav	Peak-Hour Factor, PHF %Trucks and Buses, P-	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustr	nents				
f <sub>p</sub>	1.00 1.5			1.2	
	1.5		$H_{\rm HV} = 1/[1+P_{\rm T}(E_{\rm T}-1) + P_{\rm R}(E_{\rm R}-1)]$	0.965	
Speed inputs			Calc Speed Adj and FFS		
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 <sub>LW</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N : S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1727 66.8 25.9 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base freeur volume	speed ee-flow speed	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	.13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Infor	rmation			Site Infor	mation					
Analyst			Fr	eeway/Dir of Tr	avel	I-95 SE	3			
Agency or Company	AEC	OM	Ju	inction		Seg 4-	Diverge to	SW 10th St		
Date Performed	۸M		Ju	irisdiction		2040 0	uild 1			
Project Description	SW 10th Stree	t SIMR	AI	lalysis i eal		2040 6				
Inputs										
		Freeway Num	ber of Lanes N	3						
Upstream Adj R	lamp	Ramn Numbe	er of Lanes N	1					Downstre	am Adj
Yes	On		and Longth	I						_
		Deceleration	Lane Length, LA	200					I ✓ Yes	🗹 On
I No □	Off			200					🗆 No	Off
	<del>1</del>	Freeway volu	ime, v <sub>F</sub>	4850					I. =	1200 ft
L I	l	Ramp Volume	e, V <sub>R</sub>	1420					down	1200 11
V = v	eh/h	Freeway Free	-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	1640 veh/h
		Ramp Free-F	low Speed, S <sub>FR</sub>	45.0					5	
Conversion t	o pc/h Un	der Base	Conditions							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	<sup>=</sup> x f <sub>HV</sub> x f <sub>p</sub>
Freeway	4850	0.95	Level	3	0	0.	985	1.00	5	182
Ramp	1420	0.92	Level	2	0	0.	990	1.00	1	559
UpStream										
DownStream	1640	0.92	Level	2	0	0.	990	1.00	1	800
	<b>f</b>	Merge Areas			<b>F</b> atimat		<u>[</u>	iverge Areas		
Estimation of	r v <sub>12</sub>				Estimat		<sup>or v</sup> 12			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V	/ <sub>R</sub> )P <sub>FD</sub>	
L <sub>EQ</sub> =	(Equa	ation 13-6 or	13-7)		L <sub>EQ</sub> =		(	Equation 13	-12 or 13-13	3)
P <sub>FM</sub> =	using	Equation (I	Exhibit 13-6)		P <sub>FD</sub> =		0.	559 using E	quation (Exh	nibit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		35	583 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		$V_3^{}$ or $V_{av34}^{}$		15	599 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 $V_{av}$	, <sub>34</sub> > 2,7	00 pc/h?	Yes 🗹 No	)	
Is $V_3$ or $V_{av34} > 1.5$	* V <sub>12</sub> /2 🗌 Ye	s 🗌 No			Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ Yes  No					
If Yes,V <sub>12a</sub> =	pc/h (	Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub> = pc/h (Equation 13-16, 13-18, or 13-					
Capacity Cho	13-19)	)			Capacity Checks					
	Actual		anacity	LOS F2	Actual Capacity LOS E2					
	/ totala	Ť	Jupuolity	20011	V_		5182	Exhibit 13	-8 7200	No
V		Evhibit 13.8			V = V	- V	3672	Exhibit 13	8 7200	No
* FO					FO F	• • R	3023		10 0100	NU
					V <sub>R</sub>		1559	Exhibit 13	10 2100	NO
Flow Entering	g Merge In	fluence A	lrea	Violetian	Flow Er	nterin	g Dive	rge Influe	nce Area	Violation
V	Actual	IVIAX	Desirable	violation?	V			Evhibit 12.9		Violation?
	iaa Datawa		·····		v 12				4400.All	
Level of Serv		nination (			Level of	r Ser				F)
$D_{\rm R} = 5.475 \pm 0.00734$ V $_{\rm R} \pm 0.0078$ V $_{12} = 0.00627$ L <sub>A</sub>						υ <sub>R</sub> = 4	F.252 + U	.0086 v <sub>12</sub> - (	0.009 L <sub>D</sub>	
$\nu_{\rm R} = (po(m/m))$						D <sub>R</sub> = 33.3 (pc/mi/ln)				
LOS = (Exhibit	LOS = D	(Exhi	oit 13-2)							
Speed Deterr	Speed Determination						minatic	on		
M <sub>S</sub> = (Exibit 1	3-11)				D <sub>s</sub> = 0.	.438 (E	xhibit 13-	·12)		
S <sub>R</sub> = mph (Exh	nibit 13-11)				S <sub>R</sub> = 5	7.7 mph	(Exhibit	13-12)		
S <sub>0</sub> = mph (Exh	nibit 13-11)				S <sub>0</sub> = 74	4.5 mph	(Exhibit	13-12)		
S = mph (Exh	nibit 13-13)				S = 62	2.0 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 5-Be	et Off & On Ramps
Analysis Time Period	AM Street SIMR		Analysis rear	2040 Bu	
			Des (N)	Pla	nning Data
Flow Inputs			500.(17)		
Volume, V AADT	3430	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub>	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustm	nents				
f <sub>p</sub> F_	1.00 1.5		$E_{R}$ f, = 1/(1+P(F 1) + P(F 1))	1.2 0.985	
-r Speed Inpute	1.0		$R_{\rm HV}$ $R_{\rm C}$ $R_{\rm C}$ $R_{\rm C}$ $R_{\rm C}$ $R_{\rm C}$		
			Calc Speed Auj allu 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 <sub>⊥w</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance I	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1222 70.0 17.5 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	-13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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		RAI	MPS AND	RAMP JUN	CTIONS W	<b>ORKSH</b>	EET					
General	Infor	mation			Site Infor	mation						
Analyst Agency or C Date Perforr Analysis Tirr	company ned ne Period	AEC AM	ЭМ	F Ji Ji A	reeway/Dir of Tr unction urisdiction nalysis Year	avel	I-95 S Seg 6 2040 I	B -Merge from Build 1	n Hillsboro E&W			
Project Desc	cription	SW 10th Stree	t SIMR									
Inputs												
Upstream Ad	dj Ramp		Freeway Num Ramp Numbe	ber of Lanes, N r of Lanes, N	3 1					Downstrea Ramp	ım Adj	
🗹 Yes	On		Acceleration I	ane Length, L <sub>A</sub>	1100					Yes	🗌 On	
🗌 No	✓ Off		Freeway Volu	me, V <sub>F</sub>	3430					✓ No	Off	
L <sub>up</sub> =	1200 1	ft	Ramp Volume Freewav Free	e, V <sub>R</sub> e-Flow Speed. S <sub>⊏⊏</sub>	1640 70.0					L <sub>down</sub> =	π	
V <sub>u</sub> =	1420 v	reh/h	Ramp Free-Fl	low Speed, S <sub>FR</sub>	50.0					v <sub>D</sub> =	veh/h	
Convers	sion to	p pc/h Und	der Base	Conditions								
(pc/h	1)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>	
Freeway		3430	0.95	Level	3	0	0	).985	1.00	36	65	
Ramp		1640	0.92	Level	2	0	0	).990	1.00	18	300	
UpStream DownStream	~	1420	0.92	Level	2	0	0	).990	1.00	1:	59	
DownStream	11		Merge Areas					Г	)iverge Areas			
Estimat	ion of	v <sub>12</sub>				Estimation of v <sub>12</sub>						
		V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V=	V_ + (V V_	\P		
L <sub>FO</sub> =		1870.91	(Equation	13-6 or 13-7)		-		<b>*</b> 12	<sup>v</sup> R <sup>·</sup> ( <sup>v</sup> F <sup>·</sup> R) (Equation 13)	12 or 13 1	2)	
P <sub>EM</sub> =		0.566	using Equat	tion (Exhibit 13-6	;)	EQ -			(Equation 13-	· 12 UI 13-1	) 7)	
V <sub>12</sub> =		2074	oc/h	,	,	FD			using Equatio		-7)	
$V_2$ or $V_{au24}$		1591	pc/h (Equati	on 13-14 or 13	-	v <sub>12</sub> – V <sub>2</sub> or V			pc/n pc/h (Equation 1	13-14 or 13-17	7)	
Is $V_3$ or $V_{av}$	<sub>34</sub> > 2,70	17) 0 pc/h? 🗌 Ye:	s 🗸 No			Is V <sub>3</sub> or V <sub>av</sub>	, <sub>34</sub> > 2,	700 pc/h?	Yes No		/	
Is V <sub>2</sub> or V <sub>2</sub>	₀₄ > 1.5 *	V <sub>10</sub> /2 Ve	s 🗌 No			Is $V_3$ or $V_{av34} > 1.5 * V_{12}/2$ [Yes ] No						
If Yes,V <sub>12a</sub> =		2094   18 or	pc/h (Equati	on 13-16, 13-		lf Yes,V <sub>12a</sub> =	=	 1;	pc/h (Equatio 3-19)	n 13-16, 13	-18, or	
Capacit	v Che	cks	10 10)			Capacit	v Ch	necks				
	,	Actual		Capacity	LOS F?		<u>, , , , , , , , , , , , , , , , , , , </u>	Actual	Car	pacity	LOS F?	
						V <sub>F</sub>			Exhibit 13-	8		
V <sub>FC</sub>	C	5465	Exhibit 13-8		No	V <sub>FO</sub> = V <sub>F</sub>	- V <sub>R</sub>		Exhibit 13-	8		
						V <sub>R</sub>			Exhibit 13 10	-		
Flow En	ntering	Merge In	fluence A	rea		Flow En	nterii	ng Dive	rge Influen	ice Area		
		Actual	Max	Desirable	Violation?		—	Actual	Max Des	irable	Violation?	
V <sub>R1</sub>	2	3894	Exhibit 13-8	4600:All	No	V <sub>12</sub>			Exhibit 13-8			
Level of	f Servi	ice Detern	nination (	if not F)		Level of	f Ser	vice De	terminatio	n (if not	F)	
D <sub>R</sub> =	5.475 +	0.00734 v <sub>R</sub> + (	).0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>			D <sub>R</sub> =	4.252 + 0	.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>		
D <sub>R</sub> = 28		D <sub>R</sub> = (p	oc/mi/	ln)								
LOS = D (Exhibit 13-2)						LUS = (E		u 13-2)				
Speed L	Speed Determination							Speed Determination				
M <sub>S</sub> = 0.4	403 (Exit	oit 13-11)				D <sub>s</sub> = (Exhibit 13-12)						
S <sub>R</sub> = 58	3.7 mph (	Exhibit 13-11)				o <sub>R</sub> − m	ipn (Ex	midit 13-12)				
S <sub>0</sub> = 66	6.1 mph (	Exhibit 13-11)				S₀= m	ipn (Ex	(nibit 13-12)				
S = 60	).7 mph (	Exhibit 13-13)				S= m	iph (Ex	hibit 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 7-B	et On Ramps
Analysis Time Period	AM		Analysis Year	2040 Bu	iild 1
Project Description SW 10th	h Street SIMR				·
✓ Oper.(LOS)			Des.(N)	Pla	anning Data
	5070			0.05	
Volume, V AADT	5070	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub>	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 <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
É <sub>T</sub>	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		ft	f <sub>LW</sub>		mph
Number of Lanes, N	3		f <sub>LC</sub>		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	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1806 65.7 27.5 D	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design ho	S - Speed D - Density FFS - Free-flow BFFS - Base freeur volume	speed e-flow speed	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - 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 El M Peak Hour								
Analysis Year:	2040 Buil	d 1								
,										
5,070			→ 6,620							
1,550						F				
	PHF =	0.95								
	v <sub>fr</sub> =	6,620	vph							
	v <sub>r</sub> =	1,550	vph							
	v <sub>f</sub> =	5,070								
Upstream Freeway	Tr % =	3%								
Ramp	Tr % =	2%								
Downstream Freeway	Tr % =	3%								
Freeway	f <sub>HV</sub> =	1/(1+P	<sub>r</sub> (E <sub>r</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -	1)) =	0.985					
Ramp	f <sub>HV</sub> =	1/(1+P	r(E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -	1)) =	0.9901					
flat terrain	<b>Ε</b> <sub>τ</sub> =	1.5								
	RV % =	0								
Driver Population adj.	f <sub>P</sub> =	1.000								
	V <sub>fr</sub> =	=v <sub>fr</sub> /(PH	HF)(f <sub>H∨</sub> )(f <sub>P</sub> ) =	7,073	pc/h					
	V <sub>r</sub> =	=v <sub>r</sub> /(PH	$IF$ )( $f_{HV}$ )( $f_{P}$ ) =	1,648	pc/h					
	V <sub>f</sub> =	=v <sub>f</sub> /(PH	$ F(f_{HV})(f_{P}) =$	5,417	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	7,073	0.74	No
3	Fwy upstream of ramp (assume 70 mph free-flow speed) =	7,200	5,417	0.75	No
1	Capacity on On-Ramp (assume 45 mph free-flow speed) =	2,100	1,648	0.78	No

	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 9-B 2040 Bu	et 10th & Exit to Exp
Project Description SW 10t	th Street SIMR			2040 Du	
✓ Oper.(LOS)	)		Des.(N)	Pla	nning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D	6620	veh/h veh/day veh/h	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length	0.95 3 0 Level mi	
Coloulate Flow Adjust			Up/Down %		
	1.00 1.5		E <sub>R</sub> f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 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	4 70.0	ft ft ramps/mi mph mph	f <sub>∟w</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1768 66.3 26.7 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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RAMPS AND RAMP JUNCTIONS WORKSHEET										
General Infor	mation			Site Infor	mation					
Analyst			Fre	eeway/Dir of Tra	avel I-95 SB					
Agency or Company	AECO	DM	Ju	nction		Seg 10	- Diverge to	o Express		
Date Performed			Ju	risdiction		-	-			
Analysis Time Period	d AM		An	alysis Year		2040 B	uild 1			
Project Description	SW 10th Street	t SIMR								
Inputs		1								
Upstream Adj R	lamp	Freeway Num	ber of Lanes, N	4					Downstrea	m Adj
	_	Ramp Numbe	er of Lanes, N	1					Ramp	,
Yes 🛛	Z On	Acceleration I	ane Length, L							
	Deceleration Lane Length L 300									
NO L	Eropway Volume V								🗹 No	Off
1 = 45	4500 ft Bown Volume V								L. =	ft
Lup 45	<sup>p</sup> - 4500 R Ramp Volume, V <sub>R</sub> 950								down	
V = 15	50 veh/h	Freeway Free	e-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> =	veh/h
		Ramp Free-F	low Speed, S <sub>FR</sub>	45.0						
Conversion t	o pc/h Und	ler Base	Conditions							
(nc/h)	V	PHF	Terrain	%Truck	%Rv		f	f	v = V/PHF	x fx f
(po/ii)	(Veh/hr)		Terrain	7011UCK	/0111	_	'HV	'p	• •/1 111	Λ'HV Λ'p
Freeway	6620	0.95	Level	3	0	0.	985	1.00	707	73
Ramp	950	0.92	Level	2	0	0.	990	1.00	104	13
UpStream	1550	0.92	Level	2	0	0.	990	1.00	17(	)2
DownStream										
	<u> </u>	Merge Areas			<b>F</b> = 4 <sup>2</sup> 4		<u> </u>	liverge Areas		
Estimation of	r v <sub>12</sub>				Estimat	ion o	<sup>r v</sup> <sub>12</sub>			
	$V_{12} = V_{F}$	(P <sub>FM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V	′ <sub>R</sub> )P <sub>FD</sub>	
L <sub>EO</sub> =	(Equa	tion 13-6 or	13-7)		L <sub>EO</sub> =		(	Equation 13-	12 or 13-13)	
	usina	Equation (	Exhibit 13-6)				0.4	436 usina Ec	uation (Exhib	oit 13-7)
V <sub>40</sub> =	nc/h	(			гл V., =		36	72 nc/h	1000001 (	
V or V	po/h (l	Equation 13	14  or  13 17		V or V		17	//2 po/n	untion 12 14	or 12 17)
$v_3 v_{av34}$	) pc/ii (i مراجع 0		-14 01 13-17)		<sup>v</sup> 3 <sup>OI</sup> <sup>v</sup> av 34	× 0 7	/ ا ⊐ 2 م// م	uu po/n (Equ	Jalion 13-14	0113-17)
$15 v_3 01 v_{av34} - 2,70$						34 ~ 2,1				
Is $V_3$ or $V_{av34} > 1.5$	<sup>•</sup> V <sub>12</sub> /2 ∐Yes	S∐NO	10 10 10		is v <sub>3</sub> or v <sub>av</sub>	<sub>34</sub> > 1.5	° v <sub>12</sub> /2 ∟	JYes ⊻No	10 10 10	10 10
If Yes,V <sub>12a</sub> =	pc/n (I 13_19)	Equation 13	-16, 13-18, or		If Yes,V <sub>12a</sub> =	:	p ۱۵	c/n (Equatioi	n 13-16, 13-	18, or 13-
Canacity Che	<u>ic ic,</u>				Canacit	v Ch	ecks	,		
			anacity	1.0S F2		<u>, on</u>	Actual	0	anacity	1.0S E2
	Actual		Japacity	LOOT:	v		7072	Evhibit 13		No
N/					°F	<u> </u>	1013		-0 9000	INU
v <sub>FO</sub>		Exhibit 13-8			$v_{FO} = v_F$	- v <sub>R</sub>	6030	Exhibit 13-	-8 9600	No
					V <sub>R</sub>		1043	Exhibit 13-	10 2100	No
Flow Entering	g Merge In	fluence A	lrea		Flow En	terin	g Diver	ge Influer	nce Area	
	Actual	Max	Desirable	Violation?			Actual	Max Desira	ible	Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	3	3672	Exhibit 13-8	4400:All	No
Level of Serv	vice Detern	nination (	if not F)		Level of	Serv	/ice De	terminatio	n (if not l	-)
$D_{p} = 5.475 + 0.$	.00734 v <sub>D</sub> + (	0.0078 V <sub>10</sub>	- 0.00627 L			$D_{\rm D} = 4$	.252 + 0	.0086 V <sub>10</sub> - 0	.009 L <sub>D</sub>	/
$D = (n_0/m_1/m_1)$					D = 36	к 3 (по	/mi/ln)	12	D	
$D_{R} = (point/in)$						.5 (pc)				
					LUS = E		olt 13-2)			
Speed Deterr	mination				Speed L	)eter	minatio	n		
M <sub>S</sub> = (Exibit 1)	3-11)				D <sub>s</sub> = 0.1	392 (E	xhibit 13-	12)		
S <sub>R</sub> = mph (Exh	nibit 13-11)				S <sub>R</sub> = 59	.0 mph	(Exhibit	13-12)		
$S_0 = mph (Exh$	nibit 13-11)				S <sub>0</sub> = 74	.8 mph	(Exhibit	13-12)		
S = mph (Exh	nibit 13-13)				S = 64	.9 mph	(Exhibit	13-13)		
ہے۔ ovright © 2016 Universit	y of Florida. All R	ights Reserved			HCS2010 <sup>TN</sup>	1 Verei	on 6 90	- /	Generated: 5	/26/2019 1:1

	BASIC F	REEWAY SE	GMENTS WORKSHEET		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM AM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	l-95 SB Seg 11-l 2040 Bu	Bet Off Exp Off Sample ild 1
Project Description SW 10	th Street SIMR				
✓ Oper.(LOS)	)		Des.(N)	Pla	anning Data
Flow Inputs					
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D	5670	veh/h veh/day veh/h	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0.95 3 0 Level mi	
Calculate Flow Adjusti	ments				
f <sub>p</sub> E <sub>T</sub>	1.00 1.5		E <sub>R</sub> f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 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	4 70.0	ft ft ramps/mi mph mph	f <sub>⊥w</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1514 68.9 22.0 C	pc/h/ln mph pc/mi/ln	Design (N) Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-	-13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - 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	l-95 SB Seg 13-l	Bet Off & On Ramps
Analysis Time Period	AM		Analysis Year	2040 Bu	ild 1
Project Description SW 10	th Street SIMR		- 4.5		
✓ Oper.(LOS	)		Des.(N)	Pla	anning Data
Flow inputs					
Volume, V AADT	4620	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub>	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjust	ments				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
Ε <sub>T</sub>	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	f		mph
Number of Lanes, N	3	ramps/mi	f <sub>LC</sub> TRD Adjustment		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 <sub>p</sub> = (V or DDHV) / (PHF x N S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1645 67.7 24.3 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design he	S - Speed D - Density FFS - Free-flow BFFS - Base fre our volume	speed ee-flow speed	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-	13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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		F	REEWA	Y WEAV	ING WOF	RKSHEE	Т		
Gener	al Informatio	on			Site Info	ormation			
Analyst Agency/C Date Perfe Analysis T	ompany ormed Time Period		Freeway/Dir Weaving Sey Analysis Yea	of Travel gment Locati ar	I-95 S on Seg 1 2040	SB I4- Bet Sampl Build 1	e & Copa		
Project De	escription SW 10th	n Street SIMF	2						
Inputs					1				
Weaving o Weaving r Weaving s Freeway f	/eaving configuration       One-Sided         /eaving number of lanes, N       4         /eaving segment length, L <sub>s</sub> 2520fi         reeway free-flow speed, FFS       70 mph         Conversions to pc/h Under Base Condition				d Segment type Freeway minimum speed, S <sub>MIN</sub> Freeway maximum capacity, C <sub>IFL</sub> Terrain type				Fre
Conve	ersions to po	/h Unde	r Base Co	ondition	s				
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε <sub>Τ</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc
V <sub>FF</sub>	3915	0.95	3	0	1.5	1.2	0.985	1.00	4183
V <sub>RF</sub>	1970	0.92	2	0	1.5	1.2	0.990	1.00	216
V <sub>FR</sub>	705	0.92	2	0	1.5	1.2	0.990	1.00	774
V <sub>RR</sub>	0	0.95	0	0	1.5	1.2	1.000	1.00	0
V <sub>NW</sub>	4183							V =	712
V <sub>W</sub>	2937								
VR	0.412								
Config	guration Cha	racteris	tics		<b></b>				
Minimum	maneuver lanes, N	N <sub>WL</sub>		2 lc	Minimum we	eaving lane c	hanges, LC <sub>MIN</sub>	1	
Interchan	ige density, ID			0.7 int/mi	Weaving lar	ie changes, l	_C <sub>w</sub>		
Minimum	RF lane changes,	LC <sub>RF</sub>		1 lc/pc	Non-weavin	g lane chang	jes, LC <sub>NW</sub>		
Minimum	FR lane changes,	LC <sub>FR</sub>		1 lc/pc	Total lane cl	hanges, LC <sub>Al</sub>	L		
Minimum	RR lane changes,	LC <sub>RR</sub>		lc/pc	Non-weavin	g vehicle ind	ex, I <sub>NW</sub>		
Weavi	ng Segment	Speed,	Density,	Level of	Service,	and Ca	pacity		
Weaving Weaving	segment flow rate, segment capacity,	v c <sub>w</sub>		7029 veh/h 5732 veh/h	Weaving interving set	ensity factor, gment speed	W I, S		
Weaving	segment v/c ratio	<b>`</b>		1.226	Average we	aving speed,	S <sub>W</sub>		
	segment density, L	J		pc/mi/ln ⊏	Average nor	i-weaving sp	eea, S <sub>NW</sub>		~
				Г	iviaximum w	eaving lengt	n, L <sub>MAX</sub>		6
NOTES a. Weaving	g segments longer th	an the calcula	ated maximum le	ength should	be treated as is	solated merge	and diverge ar	eas using the	procedure
Chapter 13 b. For volu	3, "Freeway Merge a mes that exceed the	nd Diverge Se weaving seg	egments". ment capacity, t	he level of se	rvice 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 Bu	ild 1
Project Description SW 10th	h Street SIMR				
Oper.(LOS)			Des.(N)	Pla	anning Data
Flow Inputs					
Volume, V AADT	5150	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub>	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustr	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
É <sub>T</sub>	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 <sub>LW</sub>		mph
Number of Lanes, N	4		f <sub>LC</sub>		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	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N : S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1376 69.6 19.8 C	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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		F	REEWA	Y WEAV	ING WOF	RKSHEE	Т		
General Information						ormation			
Analyst Agency/Company AECOM Date Performed Analysis Time Period PM					Freeway/Dir Weaving Seg Analysis Yea	of Travel gment Location ar	195/Sl on Seg 2 2040	B 2-Bet On from Build 1	Exp & Off
Project Des	scription SW 10t	h Street SIMF	R						
Inputs					1				
Weaving configurationTwo-SidedWeaving number of lanes, N4Weaving segment length, Ls5200ftFreeway free-flow speed, FFS70 mph					Segment type     Freev       Freeway minimum speed, S <sub>MIN</sub> Freeway maximum capacity, C <sub>IFL</sub> 24     Z4       Terrain type     Le				
Conver	sions to p	<u>c/h Unde</u>	r Base Co	ondition	s				
	V (veh/h)	PHF	Truck (%)	RV (%)	Ε <sub>Τ</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (pc/h)
V <sub>FF</sub>	4010	0.95	3	0	1.5	1.2	0.985	1.00	4284
V <sub>RF</sub>	1460	0.92	2	0	1.5	1.2	0.990	1.00	1603
V <sub>FR</sub>	1140	0.92	2	0	1.5	1.2	0.990	1.00	1252
V <sub>RR</sub>	130	0.92	2	0	1.5	1.2	0.990	1.00	143
V <sub>NW</sub>	7139							V =	7282
V <sub>w</sub>	143								
VR	0.020								
Config	uration Cha	aracteris	tics						
Minimum r	naneuver lanes,	N <sub>WI</sub>		0 lc	Minimum we	eaving lane c	hanges, LC <sub>MIN</sub>		429 lc/ł
Interchang	e density, ID			0.7 int/mi	Weaving lane changes, LC <sub>w</sub> 109				1097 lc/ł
Minimum F	RF lane changes	, LC <sub>rf</sub>		0 lc/pc	Non-weaving	g lane chang	es, LC <sub>NW</sub>		3281 lc/h
Minimum F	R lane changes	, LC <sub>FR</sub>		0 lc/pc	Total lane ch	nanges, LC <sub>AL</sub>	L		4378 lc/h
Minimum F	RR lane changes	, LC <sub>RR</sub>		3 lc/pc	Non-weaving	g vehicle inde	ex, I <sub>NW</sub>		2599
Weavin	ig Segmen	t Speed,	Density,	Level of	Service,	and Cap	oacity		
Weaving s	egment flow rate	•. V		7189 veh/h	Weaving inte	ensity factor,	W		0.197
Weaving s	egment capacity	, c <sub>w</sub>		9245 veh/h	Weaving seg	gment speed	, S		58.2 mph
Weaving segment v/c ratio 0.778					Average wea	aving speed,	S <sub>w</sub>		60.9 mpł
Weaving s	egment density,	D	3	1.3 pc/mi/ln	Average nor	n-weaving sp	eed, S <sub>NW</sub>		58.2 mph
Level of Se	ervice, LOS			D	Maximum w	eaving length	n, L <sub>MAX</sub>		5909 f
Notes									
a. Weaving	segments longer t	han the calcula	ited maximum le	ength should I	be 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		
General Information			Site Information		
Analyst Agency or Company Date Performed Analysis Time Period	AECOM PM		Highway/Direction of Travel From/To Jurisdiction Analysis Year	l-95 SB Seg 3-B 2040 Bu	et Off & On Ramp illd 1
Project Description SW 10t	h Street SIMR			2010 Du	
Oper.(LOS)	)		Des.(N)	Pla	anning Data
Flow Inputs					-
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D	5470	veh/h veh/day veh/h	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade % Length	0.95 3 0 Level mi	
			Up/Down %		
Calculate Flow Adjustr	nents				
f <sub>p</sub> E <sub>T</sub>	1.00 1.5		E <sub>R</sub> f <sub>LV/</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>P</sub> (E <sub>P</sub> - 1)]	1.2 0.985	
Speed Inputs			Calc Speed Adi and FES	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 <sub>LW</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1948 63.5 30.7 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	-13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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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 SB					
Agency or Company	AECO	MC	Ju	inction		Seg 4-I	Diverge to S	SW 10th St		
Date Performed			Ju	irisdiction						
Analysis Time Period	d PM		Ar	nalysis Year		2040 B	uild 1			
Project Description	SW 10th Stree	t SIMR								
Inputs		1								
Upstream Adj R	amp	Freeway Nun	nber of Lanes, N	3					Downstrean	n Adj
	-	Ramp Numbe	er of Lanes, N	1					Ramp	,
Yes	On	Acceleration	Lane Length, L						Voc	V On
	7.04	Deceleration	Lane Length L	200					<u> </u>	
I INO L	JOπ	Freeway Volu	ime V	5470					🗌 No	Off
= f	Ŧ	Down Molum	anio, v <sub>F</sub>	4500					L <sub>down</sub> = 1	200 ft
-up	L C C C C C C C C C C C C C C C C C C C		e, v <sub>R</sub>	1500					down	
V = ve	eh/h	Freeway Free	e-Flow Speed, S <sub>FF</sub>	70.0					V <sub>D</sub> = 1	720 veh/h
u		Ramp Free-F	low Speed, S <sub>FR</sub>	45.0					5	
Conversion to	o pc/h Und	der Base	Conditions							
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f <sub>uv</sub>	f	v = V/PHF x	f <sub>uv</sub> x f <sub>n</sub>
Frooway	(Ven/nr)	0.05		2	0		0.005	p 1.00	E9/	
Bomp	3470	0.95	Level	ა ე	0	0.	900	1.00	1044	7
LinStroom	1500	0.92	Levei	2	0	0.	990	1.00	104	
DownStroom	1720	0.02	Loval	n	0		000	1.00	100	>
DownStream	1720	0.32 Merge Δreas	Level	2	0	0.	<u>990</u> D	iverge Areas	1000	)
Estimation of	fv	nerge Areas			Fstimat	ion o	fv	iverge Areas		
	• 12	<u> </u>			Lotimat		12			
	V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V <sub>12</sub> =	V <sub>R</sub> + (V <sub>F</sub> - V <sub>F</sub>	<sub>R</sub> )P <sub>FD</sub>	
L <sub>EQ</sub> =	(Equa	ition 13-6 or	13-7)		L <sub>EQ</sub> =		(E	Equation 13-1	2 or 13-13)	
P <sub>FM</sub> =	using	Equation (	Exhibit 13-6)		P <sub>FD</sub> =		0.5	538 using Eq	uation (Exhibi	13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		39	06 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	8-14 or 13-17)		$V_3$ or $V_{av34}$		19	38 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 $V_{av}$	, <sub>34</sub> > 2,7	00 pc/h?	Yes 🗹 No		
Is $V_2$ or $V_{au24} > 1.5^3$	* V <sub>10</sub> /2 Yes	s 🗌 No			Is V <sub>2</sub> or V <sub>2</sub>	ەم مر > 1.5	* V <sub>10</sub> /2	Yes Vo		
	pc/h (	Equation 13	8-16, 13-18, or		J av	-	12 L	c/h (Equation	13-16, 13-1	8, or 13-
n res,v <sub>12a</sub> –	13-19)	•			n res,v <sub>12a</sub> -	-	19	)		•
Capacity Che	ecks				Capacit	y Ch	ecks			
	Actual	(	Capacity	LOS F?			Actual	Ca	pacity	LOS F?
					V <sub>F</sub>		5844	Exhibit 13-8	3 7200	No
V <sub>FO</sub>		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	4197	Exhibit 13-8	3 7200	No
10							1647	Exhibit 13-1	0 2100	No
Elow Entoring	l n Morgo In	fluonoo	1100			torin		an Influon		110
FIOW Entering		Max	Ned Desirable	Violation?	FIOW EI		Actual	<u>Ye muen</u> Max Dosirat		Violation?
V	Actual	IVIAA	Desilable	VIOIALION	V			Evhibit 12.0		Ne
<sup>V</sup> R12	L. Determ	EXHIBIT 13-0			v 12				4400.All	
Level of Serv	ice Detern	nination (	If not F)		Level of	r Serv	vice Det		n (IT not F	
D <sub>R</sub> = 5.475 + 0.	00734 v <sub>R</sub> + (	0.0078 V <sub>12</sub>	- 0.00627 L <sub>A</sub>			$D_R = 4$	1.252 + 0.	0086 V <sub>12</sub> - 0.	009 L <sub>D</sub>	
D <sub>R</sub> = (pc/mi/ln)					D <sub>R</sub> = 36	6.0 (pc	/mi/ln)			
LOS = (Exhibit 13-2)					LOS = E	(Exhil	oit 13-2)			
Speed Detern	nination				Speed L	Deter	minatio	n		
$M_{o} = (Fxibit 1)^{2}$	3-11)				$D_{s} = 0.$	.446 (E	xhibit 13-	12)		
$S_{=}$ mph (Eyh	- · · / nihit 13_11)				S <sub>p</sub> = 5	7.5 mnh	(Exhibit '	13-12)		
	$\frac{101110-11}{10110}$				S_= 7	3.1 mnh		13-12)		
$S_0$ - mph (Exh	iiDit 13-11)					4.0		10-12)		
ວ= mpn (⊨xn	iidil 13-13)				S = 6'	1.9 mph	(Exhibit '	13-13)		

	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	l-95 SB Seg 5-Be 2040 Bu	et Off & On Ramps
Project Description SW 10t	h Street SIMR			2040 Du	
✓ Oper.(LOS)			Des.(N)	Pla	nning Data
Flow Inputs					0
Volume, V AADT Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop. D	3970	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain:	0.95 3 0	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi	
Calculate Flow Adjustr	nents				
f <sub>p</sub> E <sub>T</sub>	1.00 1.5		E <sub>R</sub> f <sub>LN/</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>B</sub> (E <sub>B</sub> - 1)]	1.2 0.985	
Speed Inputs			Calc Speed Adi and FES	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 <sub>LW</sub> f <sub>LC</sub> TRD Adjustment FFS	70.0	mph mph mph mph
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1414 69.5 20.4 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	-13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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RAMPS AND RAMP JUNCTIONS WORKSHEET											
Genera	l Infor	mation			Site Infor	mation					
Analyst Agency or Date Perfor Analysis Ti	Company rmed me Period	AEC PM	ЭМ	F Ji Ji A	reeway/Dir of Tr unction urisdiction nalysis Year	avel	I-95 S Seg 6 2040 I	B -Merge from Build 1	n Hillsboro E&W		
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	ım Adj
✓ Yes	On		Acceleration L	ane Length, L <sub>A</sub>	1100					🗌 Yes	On
No No	✓ Off	:	Freeway Volu	me, V <sub>F</sub>	3970					🗹 No	Off
L <sub>up</sub> =	1200 1	ft	Ramp Volume Freeway Free	e, V <sub>R</sub> e-Flow Speed, S <sub>E-F</sub>	1720 70 0					L <sub>down</sub> =	π
V <sub>u</sub> =	1500 v	reh/h	Ramp Free-Fl	low Speed, S <sub>FR</sub>	50.0					V <sub>D</sub> =	veh/h
Conver	rsion to	o pc/h Uno	der Base	Conditions	1	r		1		1	
(pc	/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway		3970	0.95	Level	3	0	0	).985	1.00	42	242
Ramp		1720	0.92	Level	2	0	0	).990	1.00	18	388
UpStream		1500	0.92	Level	2	0	0	).990	1.00	16	647
DownStrea	am		Marga Araas						)iverge Areas		
Estimation of v <sub>12</sub>						Estimat	ion d	of v <sub>12</sub>	Jiverge Aleas		
		V <sub>12</sub> = V <sub>F</sub>	( P <sub>FM</sub> )					V -			
L <sub>EO</sub> =		2013.22	2 (Equation	13-6 or 13-7)		-		v 12 -	<sup>v</sup> R ' ( <sup>v</sup> F <sup>- v</sup> R (Faulation 12	パ FD	2)
		0.557	using Equat	tion (Exhibit 13-6	)	EQ -			(Equation 13-		) 
$V_{12} =$		2363	oc/h	(	/	FD -			using Equatio	on (Exhibit 13	-7)
12		1879	oc/h (Equati	on 13-14 or 13	-	V <sub>12</sub> =		I	pc/n		
$V_3$ or $V_{av34}$ Is $V_2$ or $V_2$	> 2.70	17) 0 pc/h? 🗌 Ye	s 🔽 No			$V_3$ or $V_{av34}$ Is $V_3$ or $V_{av}$	<sub>34</sub> > 2,	700 pc/h? [	pc/h (Equation 1	13-14 or 13-17	7)
ls V. or V	>15*					Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 1.	5 * V <sub>12</sub> /2	Yes No		
lf Yes,V <sub>12a</sub>	=	2424	pc/h (Equati	on 13-16, 13-		lf Yes,V <sub>12a</sub> =	=	1	pc/h (Equatio 3-19)	n 13-16, 13	-18, or
Canaci	ty Cho	10, 01	13-19)			Canacit	v Ch	ocks			
	ty one	Actual		anacity	LOS E2	Actual Canacity LOS F2					
L		Actual		Japacity	LOOT	V_		Actual	Evhibit 13-	8	
V <sub>F</sub>	Ō	6130	Exhibit 13-8		No	V <sub>FO</sub> = V <sub>F</sub>	- V <sub>R</sub>		Exhibit 13-	8	
						V <sub>R</sub>			Exhibit 13 10	-	
Flow E	ntering	n Merge In	fluence A	lrea		Flow En	nterii	ng Dive	rge Influen	ice Area	
		Actual	Max	Desirable	Violation?			Actual	Max Des	irable	Violation?
V <sub>R</sub>	12	4312	Exhibit 13-8	4600:All	No	V <sub>12</sub>			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 <sub>R</sub>	= 5.475 +	0.00734 v <sub>R</sub> + (	0.0078 V <sub>12</sub> - 0.	00627 L <sub>A</sub>			D <sub>R</sub> =	4.252 + 0	.0086 V <sub>12</sub> - 0	.009 L <sub>D</sub>	
D <sub>R</sub> = 3	31.3 (pc/m	i/ln) 12 2)				D <sub>R</sub> = (p	oc/mi/	'In) i+ 12 2)			
		13-2)				LUS - (L		it 13-2)			
speed	Detern	ination				Speea L	Jetel		חו		
M <sub>S</sub> = 0	0.502 (Exit	oit 13-11)				υ <sub>s</sub> = (Ε	xhibit	13-12)			
S <sub>R</sub> = 5	55.9 mph (	Exhibit 13-11)				S <sub>R</sub> = m	iph (Ex	(nibit 13-12)			
S <sub>0</sub> = 6	65.3 mph (	Exhibit 13-11)				S <sub>0</sub> = m	iph (Ex	hibit 13-12)			
S = 5	58.4 mph (	Exhibit 13-13)				S= m	iph (Ex	hibit 13-13)			

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BASIC FREEWAY SEGMENTS 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	ild 1				
Project Description SW 10th	h Street SIMR								
Oper.(LOS)			Des.(N)	🗌 Pla	nning Data				
Flow Inputs									
Volume, V AADT	5690	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub>	0.95 3					
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi					
Calculate Flow Adjustr	nents								
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2					
Έ <sub>Τ</sub>	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	\$					
Lane Width		ft							
Rt-Side Lat. Clearance		ft	f <sub>LW</sub>		mph				
Number of Lanes, N	3		f <sub>LC</sub>		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	Measures		Design (N)						
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N ) S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 2026 62.1 32.6 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln				
Glossary			Factor Location						
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11				

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Job: SW 10th Street SIMR Analyst: AECOM

Location: Analysis Period:	Seg 8: I- PM Peak	Seg 8: I-95 Southbound On-Ramp from SW 10th Street EB & PM Peak Hour								
Analysis Year:	2040 Bui	40 Build 1								
-										
5,690			→ 7,250							
1 560										
1,500-										
	PHF =	0.95								
	v <sub>fr</sub> =	7,250	vph							
	v <sub>r</sub> =	1,560	vph							
	v <sub>f</sub> =	5,690								
Upstream Freeway	Tr % =	3%								
Ramp	Tr % =	2%								
Downstream Freeway	Tr % =	3%								
Freeway	f <sub>HV</sub> =	1/(1+P	r(E <sub>⊤</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -	·1)) =	0.985					
Ramp	f <sub>HV</sub> =	1/(1+P	r(E <sub>⊺</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -	·1)) =	0.9901					
flat terrain	<b>Ε</b> <sub>τ</sub> =	1.5								
	RV % =	0								
Driver Population adj.	f <sub>P</sub> =	1.000								
	V <sub>fr</sub> =	=v <sub>fr</sub> /(PH	$(f_{HV})(f_{P}) =$	7,746	pc/h					
	V <sub>r</sub> =	=v <sub>r</sub> /(PH	$IF$ )( $f_{HV}$ )( $f_{P}$ ) =	1,659	pc/h					
	V <sub>f</sub> =	=v <sub>f</sub> /(PH	$ F)(f_{HV})(f_{P}) =$	6,079	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	7,746	0.81	No
3	Fwy upstream of ramp (assume 70 mph free-flow speed) =	7,200	6,079	0.84	No
1	Capacity on On-Ramp (assume 45 mph free-flow speed) =	2,100	1,659	0.79	No

	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 9-B	et 10th & Exit to Exp
Analysis Time Period	PM		Analysis Year	2040 Bu	ild 1
Project Description SW 10t	n Street SIMR				uning Data
✓ Oper.(LOS)			Jes.(N)		inning Data
	7050	and the		0.05	
Volume, V AADT	7250	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub>	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjustr	nents				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
E <sub>T</sub>	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	4	ft			mpn
Number of Lanes, N	4	romno/mi	ILC		mpn
FES (measured)	70.0	mph		70.0	mph
Base free-flow Speed BEES	70.0	mph	FFS	70.0	mpn
	Magazina	mpn			
LOS and Performance	Measures		Design (N)		
<u>Operational (LOS)</u> v <sub>p</sub> = (V or DDHV) / (PHF x N S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1937 63.7 30.4 D	pc/h/ln mph pc/mi/ln	<u>Design (N)</u> Design LOS v <sub>p</sub> = (V or DDHV) / (PHF x N x S D = v <sub>p</sub> / S Required Number of Lanes, N	f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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		RAMP	S AND RAM	P JUNCTI	ONS WO	RKS	HEET			
General Info	rmation			Site Infor	mation					
Analyst			Fre	eeway/Dir of Tr	avel	I-95 SE	}			
RAMPS AND RAMP JUIGeneral InformationSite IAnalystFreeway/CAgency or CompanyAECOMDate PerformedJurisdictionAnalysis Time PeriodPMAnalysis Time PeriodPMAcceleration Lane LengthLNoOffDeceleration Lane LengthLFreeway Volume, V <sub>F</sub> Ramp Volume, V <sub>F</sub> Lup =4500Vu =1560Vu =1560Vig (pc/h)VV(pc/h)PHFTerrain%TrFreeway72500.95Level2DownStreamMerge AreasEstimation of v12V12 = V <sub>F</sub> (P <sub>FM</sub> )Leq =(Equation 13-6 or 13-7)P <sub>FM</sub> =using Equation (Exhibit 13-6)V12 =pc/hVard =pc/hVa or Vard =pc/h </td <td>nction</td> <td></td> <td>Seg 10</td> <td>- Diverge to</td> <td>o Express</td> <td></td> <td></td>				nction		Seg 10	- Diverge to	o Express		
Date Performed			Ju	risdiction						
Analysis Time Perio	d PM		An	alysis Year		2040 B	uild 1			
Project Description	SW 10th Stree	t SIMR								
Inputs									-	
Upstream Adj F	Ramp	Freeway Num	nber of Lanes, N	4					Downstrea	am Adj
		Ramp Numbe	er of Lanes, N	1					Ramp	-
Yes	⊻ On	Acceleration I	Lane Length, L <sub>A</sub>						Yes	On
	Off	Deceleration	Lane Length L	300						
		Freeway Volu	ime. V <sub>r</sub>	7250					Mo No	Off
L <sub>up</sub> = 4	500 ft	Ramp Volume	≏ V_	770					L <sub>down</sub> =	ft
up		Erooway Eroc	Elow Spood S	70.0						
V <sub>u</sub> = 1	560 veh/h	Demo Free F	lew Greed, S <sub>FF</sub>	10.0					V <sub>D</sub> =	veh/h
	( //		iow Speed, S <sub>FR</sub>	45.0						
Conversion	to pc/n Und	der Base	Conditions		<b></b>					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f <sub>HV</sub>	f <sub>p</sub>	v = V/PHF	x f <sub>HV</sub> x f <sub>p</sub>
Freeway	7250	0.95	l evel	3	0	0	985	1 00	77	46
Ramp	770	0.92		2	0	0	990	1 00	84	15
UpStream	1560	0.92	Level	2	0	0	990	1.00	17	13
DownStream	1000	0.02	20101	<u> </u>	, v	<u> </u>	000	1.00		10
		Merge Areas					ı	verge Areas		
Estimation o	f v <sub>12</sub>				Estimat	ion o	f v <sub>12</sub>			
	V = V	(P)					<u> </u>	V + (V - V)		
	12 F	\'FM /	10 7)		$v_{12} = v_R + (v_F - v_R)^{\prime} FD$					
	(⊏qua		13-7)		EQ -		(1		-12 01 13-13	)
P <sub>FM</sub> =	using	Equation (	Exhibit 13-6)		P <sub>FD</sub> =		0.4	436 USING E	quation (Exhi	bit 13-7)
V <sub>12</sub> =	pc/h				V <sub>12</sub> =		38	54 pc/h		
V <sub>3</sub> or V <sub>av34</sub>	pc/h (	Equation 13	-14 or 13-17)		$V_3^{}$ or $V_{av34}^{}$		19	946 pc/h (Ec	uation 13-14	l or 13-17)
Is $V_3$ or $V_{av34} > 2,7$	00 pc/h? 🔲 Ye	s 🗌 No			Is V <sub>3</sub> or V <sub>av</sub>	<sub>34</sub> > 2,7	00 pc/h?	Yes 🗹 No	0	
Is $V_3$ or $V_{av34} > 1.5$	* V <sub>12</sub> /2	s 🗌 No			Is $V_3$ or $V_{av}$	<sub>34</sub> > 1.5	* V <sub>12</sub> /2	Yes 🗹 No	D	
If Yes,V <sub>122</sub> =	pc/h (	Equation 13	-16, 13-18, or		If Yes,V <sub>120</sub> =	=	р	c/h (Equatio	on 13-16, 13-	18, or 13-
	13-19)						1	)		
Capacity Che		1				y Ch	ecks			
	Actual		capacity	LOS F?			Actual	(		LOS F?
					V <sub>F</sub>		//46	Exhibit 13	3-8 9600	No
V <sub>FO</sub>		Exhibit 13-8			$V_{FO} = V_{F}$	- V <sub>R</sub>	6901	Exhibit 13	3-8 9600	No
					V <sub>R</sub>		845	Exhibit 13	-10 2100	No
Flow Enterin	g Merge In	fluence A	Area		Flow En	terin	g Dive	rge Influe	nce Area	
	Actual	Max	Desirable	Violation?			Actual	Max Desir	able	Violation?
V <sub>R12</sub>		Exhibit 13-8			V <sub>12</sub>	3	3854	Exhibit 13-8	4400:All	No
Level of Service Determination (if not F)				Level of	f Serv	vice De	terminati	on (if not i	F)	
D <sub>P</sub> = 5.475 + 0	.00734 v <sub>P</sub> +	0.0078 V <sub>12</sub>	- 0.00627 L <sub>A</sub>			D <sub>P</sub> = 4	1.252 + 0	.0086 V <sub>12</sub> -	0.009 L <sub>D</sub>	•
$D_{\rm p} = (pc/mi/ln)$					$D_{p} = 38$	3.0 (pc	/mi/ln)	12	D	
LOS = (Exhibit 13-2)						(Evhil	nit 13 2)			
Speed Deter	mination				Spood [		minatic	<b>n</b>		
Speed Deter	innation							40)		
M <sub>S</sub> = (Exibit 1	3-11)				$\nu_{\rm s} = 0.$	3/4 (E	xnidit 13-	·12)		
S <sub>R</sub> = mph (Ex	hibit 13-11)				S <sub>R</sub> = 59	9.5 mph	(Exhibit	13-12)		
S <sub>0</sub> = mph (Ex	hibit 13-11)				S <sub>0</sub> = 73	3.9 mph	(Exhibit	13-12)		
S = mph (Ex	hibit 13-13)				S = 65	5.3 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 SB Seg 11-l	Bet Off Exp Off Sample	
Analysis Time Period	PM		Analysis Year	2040 Bu	ild 1	
Project Description SW 10	n Street SIMR				unaina Data	
Elow Inputs	)		Jes.(N)		anning Data	
	0.400	and the		0.05		
Volume, V AADT	6480	ven/n veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub>	0.95 3		
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi		
Calculate Flow Adjust	ments					
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2		
Ε <sub>T</sub>	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				
Lane Width Rt-Side Lat. Clearance		ft ft	fux		mph	
Number of Lanes, N	4	ramps/mi	f <sub>LC</sub> 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 <sub>p</sub> = (V or DDHV) / (PHF x N S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1731 66.7 25.9 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln	
Glossary			Factor Location			
N - Number of lanes V - Hourly volume v <sub>p</sub> - 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 <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - 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	l-95 SB Seg 13-l	Bet Off & On Ramps
Analysis Time Period	PM		Analysis Year	2040 Bu	ild 1
Project Description SW 10	th Street SIMR		2 40		
✓ Oper.(LOS)	)		Jes.(N)		anning Data
	5470			0.05	
Volume, V AADT	5170	veh/h veh/day	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub>	0.95 3	
Peak-Hr Prop. of AADT, K Peak-Hr Direction Prop, D DDHV = AADT x K x D		veh/h	%RVs, P <sub>R</sub> General Terrain: Grade % Length Up/Down %	0 Level mi	
Calculate Flow Adjust	ments				
f <sub>p</sub>	1.00		E <sub>R</sub>	1.2	
Έ <sub>τ</sub>	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	f		mph
Number of Lanes, N	3	n rampe/mi	f <sub>LC</sub>		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 <sub>p</sub> = (V or DDHV) / (PHF x N S D = v <sub>p</sub> / S LOS	x f <sub>HV</sub> x f <sub>p</sub> ) 1841 65.2 28.2 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 <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln mph pc/mi/ln
Glossary			Factor Location		
N - Number of lanes V - Hourly volume v <sub>p</sub> - Flow rate LOS - Level of service DDHV - Directional design he	S - Speed D - Density FFS - Free-flow BFFS - Base fre our volume	speed ee-flow speed	E <sub>R</sub> - Exhibits 11-10, 11-12 E <sub>T</sub> - Exhibits 11-10, 11-11, 11- f <sub>p</sub> - Page 11-18 LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2	13 2, 11-3	f <sub>LW</sub> - Exhibit 11-8 f <sub>LC</sub> - Exhibit 11-9 TRD - Page 11-11

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Genera	al Informatio	on		Site Information						
Analyst Agency/C Date Perfo Analysis T	ompany ormed Fime Period	AECON PM	1		Freeway/Dir Weaving Se Analysis Yea	of Travel gment Locati ar	I-95 S on Seg 1 2040	SB 4- Bet Sampl Build 1	le & Copa	
Project De	escription SW 10th	n Street SIMR								
Inputs										
Weaving o Weaving r Weaving s Freeway f	configuration number of lanes, N segment length, L <sub>s</sub> ree-flow speed, FF	S		One-Sided 4 2520ft 70 mph	Segment typ Freeway mir Freeway ma Terrain type	be nimum speed ximum capad	, S <sub>MIN</sub> city, C <sub>IFL</sub>		Fre	
Conve	rsions to po	/h Unde	r Base Co	ondition	s		-		_	
	V (veh/h)	PHF	Truck (%)	RV (%)	E <sub>T</sub>	E <sub>R</sub>	f <sub>HV</sub>	fp	v (po	
V <sub>FF</sub>	4430	0.95	3	0	1.5	1.2	0.985	1.00	473	
V <sub>RF</sub>	1580	0.92	2	0	1.5	1.2	0.990	1.00	173	
V <sub>FR</sub>	740	0.92	2	0	1.5	1.2	0.990	1.00	812	
V <sub>RR</sub>	0	0.95	0	0	1.5	1.2	1.000	1.00	0	
V <sub>NW</sub>	4733							V =	728	
V <sub>W</sub>	2547									
VR	0.350									
Config	juration Cha	racterist	ics							
Minimum	maneuver lanes, I	N <sub>WL</sub>		2 lc	Minimum weaving lane changes, LC <sub>MIN</sub>					
Interchan	ge density, ID			0.7 int/mi	i Weaving lane changes, LC <sub>w</sub>					
Minimum	RF lane changes,	LC <sub>RF</sub>		1 lc/pc	Non-weaving lane changes, LC <sub>NW</sub>					
Minimum	FR lane changes,	LC <sub>FR</sub>		1 lc/pc	Total lane changes, LC <sub>ALL</sub>					
Minimum	RR lane changes,	LC <sub>RR</sub>		lc/pc	Non-weaving vehicle index, $I_{_{\rm NW}}$					
Weavi	ng Segment	Speed,	Density, I	Level of	Service,	and Ca	pacity			
Weaving segment flow rate, v71Weaving segment capacity, c67				7185 veh/h 6758 veh/h	Weaving intensity factor, W Weaving segment speed, S					
Weaving	segment v/c ratio			1.063	Average weaving speed, S <sub>W</sub>					
Veaving	segment density, L	J		pc/mi/ln ⊏	Average not	n-weaving sp	eea, S <sub>NW</sub>		~	
				Г	iviaximum w	eaving lengt	n, L <sub>MAX</sub>		6	
NOTES a. Weaving	g segments longer th	an the calcula	ted maximum le	ength should	be treated as is	solated merge	and diverge ar	eas using the	procedure	
Chapter 13 b. For volu	3, "Freeway Merge a mes that exceed the	nd Diverge Se weaving sear	gments". nent capacity. tl	he level of se	rvice is "F".					
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