					2032 NA			Existing				2032 NA						
Facility	ID	Study Segments	Analyzed Type	LOS	Avg Speed (S, mph)	Avg Density (D, pc/mi/ln)	LOS	Avg Speed (S, mph)	Avg Density (D, pc/mi/ln)	Mainline	Off-ramp On-Ramp	Volume Weaving MnIn-MnIr	Weaving Rmp-Mnln	Weaving Rmp-Rmp	Weaving Mnln-Rmp	Speed	e Adjustmer Capacity Adj. Factor	
Sub Area A –	A1	EB SR 518 from SR 509 NB Off Ramp to DMM EB off Ramp	Weaving	С	46.0	21.1	В	56.1	13.5			1645	760	64	150	/ laji i accoi	0.900	/ tajii decei
SR 518 EB	A2	EB SR 518 from DMM EB off Ramp to DMM Interchange	Basic	С	63.0	20.4	В	64.0	17.0	2405							0.852	'
Sub Area B –	B1	WB SR 518 from DMM Undercrossing to Diverge Influence Point	Basic	С	57.2	26.0	С	60.0	19.7	2890							0.852	
SR 518 WB	В2	WB SR 518 from DMM Diverge Influence Point to SR 509 NB On Ramp	Diverge	С	50.4	29.9	В	50.5	23.6		1120						0.852	'
	C1	EB SR 518 from 51 st St Off Ramp to I-5 NB Off Ramp	Basic (Drop)	E	35.3	43.7	E	38.8	38.0	3285						0.800	0.700	1.300
Sub Area C –	C2	EB SR 518 from I-5 NB Off Ramp to I-5 SB Off Ramp	Basic (Drop)	F	34.5	45.0	F	34.5	45.0	2220) I-5 NB On from EB SR 518					0.800	0.700	1.300
SR 518 EB	C3	NB I-405 from I-5 SB Off Ramp to I-5 SB On Ramp	N/A ¹ (Skipped)	-	-	-	-	-	-		, , , , , , , , , , , , , , , , , , , ,					0.000	0.700	
/I-5 & I-405	C4	NB I-405 from I-5 SB On Ramp to I-5 NB On Ramp	Basic (Add) ²	F	44.5	45.0	F	34.5	45.0	4115	ff to I-405 NB + (+) I-5 SB to	I-405 NB					0.852	1.300
NB	C5	NB I-405 from I-5 NB On Ramp to Southcenter Pkwy	Basic (Add) ²	F	44.5	45.0	F	34.5	45.0	5695							0.852	1.300
	D1	SB I-405 from Interurban Ave S 3-Lane Start Point to I-5 NB Off/Southcenter Off Ramp	Basic (Drop) ²	F	34.5	45.0	F	34.5	45.0	4805						0.800	0.700	1.300
Sub Area D –	D2	SB I-405 from I-5 NB Off Ramp to I-5 NB On Ramp	Basic	F	34.5	45.0	F	34.5	45.0	3135						0.800	0.700	1.300
SR 518 WB/	D3	SB I-405 from I-5 NB On Ramp to I-5 SB Off Ramp	Weaving	F	26.3	83.2	F	26.8	83.2			1615	985	478	1520	0.700	0.900	1.300
I-5 & I-405	D4	WB SR 518 from I-5 SB Off Ramp to I-5 SB On Ramp	Basic	F	34.5	45.0	F	34.5	45.0	2600						0.800	0.700	1.300
SB	D5	WB SR 518 from I-5 SB On Ramp to 51 st St On Ramp	Basic (Add)	F	34.5	45.0	F	34.5	45.0	3645	-5 + (+) I-5 SB Off to WB SR	518				0.800	0.700	1.300
	E1	SB I-5 at Southcenter Blvd/SR 518 Off Ramp Diverge Area	Major Diverge ^{2,3}	E	39.0	39.5	E	39.0	35.8	8520	1985					0.600	0.800	1.300
	E2	SB I-5 from Southcenter Blvd/SR 518 Off Ramp to I-405 NB Off Ramp	Basic (Drop) ²	F	39.0	39.4	F	39.0	35.1		(-) I-5 SB to 405 NB					0.600	0.800	1.500
	E3	SB I-5 from I-405 NB Off Ramp to I-405 SB On Ramp	Basic	F	20.0	71.9	E	39.0	37.4	4195	(+) 405 SB to I-	-5 SB				0.600	0.800	1.300
	E4	SB I-5 from I-405 SB On Ramp to Klickitat SB On Ramp	Basic (Add) ²	F	18.1	76.6	F	27.7	49.8	5715	(1) 105 55 101	3 3 2				0.800	0.800	1.300
	E5	SB I-5 at Klickitat SB On Ramp Merge Area	Merge ²	F	23.9	64.4	F	24.3	63.3	0.20	1220					0.800	0.800	
	E6	SB I-5 from Klickitat SB On Ramp Merge Area to 188 th St SB Off Ramp Diverge Area	Basic ²	F	39.5	45.0	F	27.4	58.7	6935	1220					0.800	0.800	1.300
Sub Area E –	E7	SB I-5 at 188 th St SB Off Ramp Diverge Area	Diverge ²	F	50.3	28.2	F	27.0	57.9		1210					0.800	0.800	
I-5 SB	E8	SB I-5 from 188 th St SB Off Ramp Diverge Area to Lane Reduction Point	Basic ²	F	50.8	27.5	F	16.5	79.5	-	1210					0.800	0.800	
	E9	SB I-5 from Lane Reduction Point to 188 th St SB On Ramp	Basic ²	F	22.7	71.9	F	19.9	77.9	5725						0.000	0.852	1.300
	E10	SB I-5 at 188 th St SB On Ramp Merge Area	Merge ²	F	57.3	33.1	F	31.6	55.7	0.00	780						0.852	
	E11	SB I-5 from 188 th St SB On Ramp Merge Area to 200 th St SB Off Ramp Diverge Area	Overlap ²	F	57.3	33.1	F	29.4	58.7		7.00						0.852	
	E12	SB I-5 at 200 th St SB Off Ramp Diverge Area	Diverge ²	F	60.0	31.1	F	29.4	58.7		440						0.852	
	E13	SB I-5 from 200 th St SB Off Ramp to 200 th St SB On Ramp	Basic ²	F	32.0	51.6	F	23.0	70.0	-							0.852	
	E14	·	Merge ²	F	32.3	56.3	F	31.3	58.0		520						0.852	
	F1	NB I-5 at Military Rd NB Off Ramp Diverge Area	Diverge ²	C	61.7	21.3	C	61.3	24.5	4770	260						0.852	
	F2	NB I-5 from Military Rd NB Off Ramp to Military Rd NB On Ramp	Basic ²	С	63.9	19.5	С	61.7	22.9	.,,,,	200						0.852	
	F3	NB I-5 at Military Rd NB On Ramp Merge Area	Merge ²	C	59.4	24.0	C	59.1	26.2	-	710						0.852	
	F4	NB I-5 from Military Rd NB On Ramp to 188 th St NB Off Ramp	Basic ²	C	61.5	23.2	С	59.2	26.0	-	710						0.852	
	F5	NB I-5 at 188 th St NB Off Ramp Diverge Area	Diverge ²	C	62.4	22.8	D	62.5	24.6	-	650						0.852	
	F6	NB I-5 from 188 th St NB Off Ramp to 188 th St NB On Ramp	Basic ²	C	64.0	19.3		62.2	22.2	-	030						0.852	
	F7	NB I-5 at 188 th St NB On Ramp Merge Area	Merge ²	D	58.3	27.6	D	58.2	29.1	-	1360						0.852	
Sub Area F –	F8	NB I-5 from 188 th St NB On Ramp to Southcenter Pkwy Off Ramp	Basic ²	D	57.7	27.8	D	55.5	30.4		1300						0.852	
I-5 NB	F9	NB I-5 at Southcenter Pkwy Off Ramp Diverge Area	Diverge ²	C	62.0	25.9	C	62.1	27.2		750						0.852	
	F10	NB I-5 from Southcenter Pkwy Off Ramp to SR 518 WB/I-405 EB Off Ramp	Basic ²	C	61.9	22.6	C	59.8	25.3								0.852	
	F11	NB I-5 at SR 518 WB/I-405 EB Off Ramp Diverge Area	Major Diverge ^{2,3}	C	57.1	24.5	C	57.1	26.5		2565						0.852	ŀ
	F12	NB I-5 from SR 518 WB/I-405 EB Off Ramp to I-405 WB HOV On Ramp	Basic	В	65.0	14.6	В	65.0	16.3	2615							0.852	
	F13	NB I-5 from I-405 WB HOV On Ramp to I-405 WB On Ramp	Basic	В	65.0	12.3	В	65.0	13.4	2865	(+) 4	105 WB to I-5 N	B (HOV))				0.852	-
	F14	NB I-5 at I-405 WB On Ramp Merge Area	Merge	В	60.9	17.8	В	60.5	19.6) 518 EB to I-					0.852	
	F15	NB I-5 from SR 518 EB On Ramp to Southcenter Blvd NB On Ramp	Basic (Add) ²	В	64.7	17.4	В	64.5	18.0	5000	2070	,					0.852	
		NB I-5 at Southcenter Blvd NB On Ramp Merge Area	Merge ²	В	60.0	17.6	В	59.9	17.9		890						0.852	

Note

¹- One-lane freeway mainline cannot be analyzed in HCS.

 $^{^{2}\}text{-}\ \text{HOV}$ lane ignored due to the analysis constraint of HCS.

³- A major diverge area is one in which two primary roadways, each having multiple lanes, diverge from a single freeway segment. Major Diverge type analyzed as basic segment with Major Diverge areas, a model exists for computing the average density across all approaching freeway lanes within 1,500 ft of the diverge.

⁴- WSDOT Level of Service Standard for State Routes is LOS D

					2032 PA			Existing				2032 PA						
Facility	ID	Study Segments	Analyzed Type	LOS	Avg Speed	Avg Density	LOS	Avg Speed	Avg Density			Volume				Mainlin	e Adjustmer	nt Factor
racinty	10	Study Segments	Analyzed Type	103	(S, mph)	(D, pc/mi/ln)	103	(S, mph)	(D, pc/mi/ln)	Mainline	Off-ramp On-Ramp	Weaving Mnln-Mnln	Weaving Rmp-MnIn	Weaving Rmp-Rmp	Weaving MnIn-Rmp	Speed Adi. Factor	Capacity Adi. Factor	Demand Adj.Factor
Sub Area A –	A1	EB SR 518 from SR 509 NB Off Ramp to DMM EB off Ramp	Weaving	С	45.2	22.0	В	56.1	13.5			1635	800	73	165		0.900	
SR 518 EB	A2	EB SR 518 from DMM EB off Ramp to DMM Interchange	Basic	С	62.9	20.7	В	64.0	17.0	2435							0.852	
Sub Area B –	B1	WB SR 518 from DMM Undercrossing to Diverge Influence Point	Basic	D	55.9	27.9	С	60.0	19.7	3022							0.852	
SR 518 WB	B2	WB SR 518 from DMM Diverge Influence Point to SR 509 NB On Ramp	Diverge	С	50.4	31.2	В	50.5	23.6		1115						0.852	
	C1	EB SR 518 from 51 st St Off Ramp to I-5 NB Off Ramp	Basic (Drop)	F	34.5	45.0	E	38.8	38.0	3355						0.800	0.700	1.300
Sub Area C – SR 518 EB	C2	EB SR 518 from I-5 NB Off Ramp to I-5 SB Off Ramp	Basic (Drop)	F	34.5	45.0	F	34.5	45.0	2219	·) I-5 NB On from EB SR 518					0.800	0.700	1.300
/I-5 & I-405	C3	NB I-405 from I-5 SB Off Ramp to I-5 SB On Ramp	N/A ¹ (Skipped)	-	-	-	-	-	-									
NB	C4	NB I-405 from I-5 SB On Ramp to I-5 NB On Ramp	Basic (Add) ²	F	44.5	45.0	F	34.5	45.0	4155	ff to I-405 NB + (+) I-5 SB to	I-405 NB					0.852	1.300
	C5	NB I-405 from I-5 NB On Ramp to Southcenter Pkwy	Basic (Add) ²	F	44.5	45.0	F	34.5	45.0	5735							0.852	1.300
	D1	SB I-405 from Interurban Ave S 3-Lane Start Point to I-5 NB Off/Southcenter Off Ramp	Basic (Drop) ²	F	34.5	45.0	F	34.5	45.0	4848						0.800	0.700	1.300
Sub Area D –	D2	SB I-405 from I-5 NB Off Ramp to I-5 NB On Ramp	Basic	F	34.5	45.0	F	34.5	45.0	3178						0.800	0.700	1.300
SR 518 WB/	D3	SB I-405 from I-5 NB On Ramp to I-5 SB Off Ramp	Weaving	F	26.4	82.9	F	26.8	83.2			1658	1061	507	1520	0.700	0.900	1.300
SB	D4	WB SR 518 from I-5 SB Off Ramp to I-5 SB On Ramp	Basic	F	34.5	45.0	F	34.5	45.0	2719						0.800	0.700	1.300
	D5	WB SR 518 from I-5 SB On Ramp to 51st St On Ramp	Basic (Add)	F	34.5	45.0	F	34.5	45.0	3832	I-5 + (+) I-5 SB Off to WB SR	518				0.800	0.700	1.300
	E1	SB I-5 at Southcenter Blvd/SR 518 Off Ramp Diverge Area	Major Diverge ^{2,3}	E	39.0	40.0	E	39.0	35.8	8618	2053 assume same	e HOV vol				0.600	0.800	1.300
	E2	SB I-5 from Southcenter Blvd/SR 518 Off Ramp to I-405 NB Off Ramp	Basic (Drop) ²	E	39.0	39.4	E	39.0	35.1		(-) I-5 SB to 405 NB					0.600	0.800	
	E3	SB I-5 from I-405 NB Off Ramp to I-405 SB On Ramp	Basic	F	20.0	71.9	E	39.0	37.4	4225	(+) 405 SB to I-	5 SB				0.600	0.800	1.300
	E4	SB I-5 from I-405 SB On Ramp to Klickitat SB On Ramp	Basic (Add) ²	F	18.1	76.6	F	27.7	49.8	5745						0.800	0.800	1.300
	E5	SB I-5 at Klickitat SB On Ramp Merge Area	Merge ²	F	23.9	64.4	F	24.3	63.3		1179					0.800	0.800	
	E6	SB I-5 from Klickitat SB On Ramp Merge Area to 188 th St SB Off Ramp Diverge Area	Basic ²	F	39.5	45.0	F	27.4	58.7	6924						0.800	0.800	1.300
Sub Area E –	E7	SB I-5 at 188 th St SB Off Ramp Diverge Area	Diverge ²	F	50.3	28.2	F	27.0	57.9		1220					0.800	0.800	
I-5 SB	E8	SB I-5 from 188 th St SB Off Ramp Diverge Area to Lane Reduction Point	Basic ²	F	50.9	27.3	F	16.5	79.5							0.800	0.800	
	E9	SB I-5 from Lane Reduction Point to 188 th St SB On Ramp	Basic ²	F	22.7	71.9	F	19.9	77.9	5704							0.852	1.300
	E10	SB I-5 at 188 th St SB On Ramp Merge Area	Merge ²	F	57.3	33.1	F	31.6	55.7		785					1	0.852	
	E11	SB I-5 from 188 th St SB On Ramp Merge Area to 200 th St SB Off Ramp Diverge Area	Overlap ²	F	57.3	33.1	F	29.4	58.7							1	0.852	
	E12	SB I-5 at 200 th St SB Off Ramp Diverge Area	Diverge ²	F	60.0	31.1	F	29.4	58.7		455					1	0.852	
	E13	SB I-5 from 200 th St SB Off Ramp to 200 th St SB On Ramp	Basic ²	F	33.4	49.5	F	23.0	70.0							1	0.852	
	E14	SB I-5 at 200 th St SB On Ramp Merge Area	Merge ²	F	32.5	55.8	F	31.3	58.0		520						0.852	
	F1	NB I-5 at Military Rd NB Off Ramp Diverge Area	Diverge ²	С	61.7	21.7	С	61.3	24.5	4854	260					1	0.852	
	F2	NB I-5 from Military Rd NB Off Ramp to Military Rd NB On Ramp	Basic ²	С	63.7	19.9	С	61.7	22.9								0.852	
	F3	NB I-5 at Military Rd NB On Ramp Merge Area	Merge ²	С	59.3	24.5	С	59.1	26.2		710					1	0.852	
	F4	NB I-5 from Military Rd NB On Ramp to 188 th St NB Off Ramp	Basic ²	С	61.1	23.7	С	59.2	26.0								0.852	
	F5	NB I-5 at 188 th St NB Off Ramp Diverge Area	Diverge ²	С	62.3	23.2	D	62.5	24.6		640						0.852	
	F6	NB I-5 from 188 th St NB Off Ramp to 188 th St NB On Ramp	Basic ²	С	63.7	19.8	С	62.2	22.2							l	0.852	
	F7	NB I-5 at 188 th St NB On Ramp Merge Area	Merge ²	D	58.2	28.2	D	58.2	29.1		1375					l	0.852	ļ
Sub Area F –	F8	NB I-5 from 188 th St NB On Ramp to Southcenter Pkwy Off Ramp	Basic ²	D	56.9	28.7	D	55.5	30.4							l	0.852	
I-5 NB	F9	NB I-5 at Southcenter Pkwy Off Ramp Diverge Area	Diverge ²	С	61.9	26.4	С	62.1	27.2		750						0.852	ļ
	F10	NB I-5 from Southcenter Pkwy Off Ramp to SR 518 WB/I-405 EB Off Ramp	Basic ²	С	61.4	23.3	С	59.8	25.3								0.852	
	F11	NB I-5 at SR 518 WB/I-405 EB Off Ramp Diverge Area	Major Diverge ^{2,3}	С	57.1	25.0	С	57.1	26.5		2641						0.852	
	F12		Basic	В	65.0	14.8	В	65.0	16.3	2648						<u> </u>	0.852	\longrightarrow
	F13	NB I-5 from I-405 WB HOV On Ramp to I-405 WB On Ramp	Basic	В	65.0	12.4	В	65.0	13.4	2898		05 WB to I-5 NB				l	0.852	
	F14	NB I-5 at I-405 WB On Ramp Merge Area	Merge	В	60.8	17.9	В	60.5	19.6		1070	(+) 518 EB to	-5 NB			ļ	0.852	
	F15	NB I-5 from SR 518 EB On Ramp to Southcenter Blvd NB On Ramp	Basic (Add) ²	В	64.6	17.8	В	64.5	18.0	5104							0.852	
	F16	NB I-5 at Southcenter Blvd NB On Ramp Merge Area	Merge ²	В	59.9	17.9	В	59.9	17.9		890						0.852	

Note:

¹- One-lane freeway mainline cannot be analyzed in HCS.

²- HOV lane ignored due to the analysis constraint of HCS.

³- A major diverge area is one in which two primary roadways, each having multiple lanes, diverge from a single freeway segment. Major Diverge type analyzed as basic segment with Major Diverge checkbox checked. For major diverge areas, a model exists for computing the average density across all approaching freeway lanes within 1,500 ft of the diverge.

⁴- WSDOT Level of Service Standard for State Routes is LOS D

					2037 NA			Existing				2037 NA]		
Facility	ID	Study Segments	Analyzed Type	LOS	Avg Speed	Avg Density	LOS	Avg Speed	Avg Density			Volume	Manuina	Manuina	Maning		Adjustmen	
					(S, mph)	(D, pc/mi/ln)		(S, mph)	(D, pc/mi/ln)	Mainline	Off-ramp On-Ramp	Weaving Mnln-Mnln	Weaving Rmp-Mnln	Weaving Rmp-Rmp	Weaving MnIn-Rmp	Speed Adj. Factor	Capacity Adj. Factor	
Sub Area A –	A1	EB SR 518 from SR 509 NB Off Ramp to DMM EB off Ramp	Weaving	С	45.4	22.9	В	56.1	13.5			1780	800	66	160		0.900	
SR 518 EB	A2	EB SR 518 from DMM EB off Ramp to DMM Interchange	Basic	С	62.1	22.3	В	64.0	17.0	2580							0.852	
Sub Area B –	B1	WB SR 518 from DMM Undercrossing to Diverge Influence Point	Basic	D	54.0	30.4	С	60.0	19.7	3190							0.852	
SR 518 WB	В2	WB SR 518 from DMM Diverge Influence Point to SR 509 NB On Ramp	Diverge	С	50.2	33.1	В	50.5	23.6		1210						0.852	
	C1	EB SR 518 from 51 st St Off Ramp to I-5 NB Off Ramp	Basic (Drop)	F	34.5	45.0	E	38.8	38.0	3580						0.800	0.700	1.300
Sub Area C – SR 518 EB	C2	EB SR 518 from I-5 NB Off Ramp to I-5 SB Off Ramp	Basic (Drop)	F	34.5	45.0	F	34.5	45.0	2335) I-5 NB On from EB SR 518					0.800	0.700	1.300
/I-5 & I-405	C3	NB I-405 from I-5 SB Off Ramp to I-5 SB On Ramp	N/A ¹ (Skipped)	-	-	-	-	-	-									
NB	C4	NB I-405 from I-5 SB On Ramp to I-5 NB On Ramp	Basic (Add) ²	F	44.5	45.0	F	34.5	45.0	4210	ff to I-405 NB + (+) I-5 SB to	I-405 NB					0.852	1.300
	C5	NB I-405 from I-5 NB On Ramp to Southcenter Pkwy	Basic (Add) ²	F	44.5	45.0	F	34.5	45.0	5800							0.852	1.300
Cub Arr- D	D1	SB I-405 from Interurban Ave S 3-Lane Start Point to I-5 NB Off/Southcenter Off Ramp	Basic (Drop) ²	F	34.5	45.0	F	34.5	45.0	5145						0.800	0.700	1.300
Sub Area D – SR 518 WB/	D2	SB I-405 from I-5 NB Off Ramp to I-5 NB On Ramp	Basic	F	34.5	45.0	F	34.5	45.0	3435						0.800	0.700	1.300
I-5 & I-405	D3	SB I-405 from I-5 NB On Ramp to I-5 SB Off Ramp	Weaving	F	26.7	81.7	F	26.8	83.2			1875	1015	461	1560	0.700	0.900	1.300
SB	D4	WB SR 518 from I-5 SB Off Ramp to I-5 SB On Ramp	Basic	F	34.5	45.0	F	34.5	45.0	2890						0.800	0.700	1.300
	D5	WB SR 518 from I-5 SB On Ramp to 51 st St On Ramp	Basic (Add)	F	34.5	45.0	F	34.5	45.0	3995	-5 + (+) I-5 SB Off to WB SR !	518				0.800	0.700	1.300
	E1	SB I-5 at Southcenter Blvd/SR 518 Off Ramp Diverge Area	Major Diverge ^{2,3}	E	39.0	40.6	E	39.0	35.8	8750	2075					0.600	0.800	1.300
	E2	SB I-5 from Southcenter Blvd/SR 518 Off Ramp to I-405 NB Off Ramp	Basic (Drop) ²	E	39.0	40.1	E	39.0	35.1	(-) I-5 SB to 405 NB					0.600	0.800	
	E3	SB I-5 from I-405 NB Off Ramp to I-405 SB On Ramp	Basic	F	20.0	71.9	E	39.0	37.4	4275	(+) 405 SB to I-	5 SB				0.600	0.800	1.300
	E4	SB I-5 from I-405 SB On Ramp to Klickitat SB On Ramp	Basic (Add) ²	F	18.0	76.8	F	27.7	49.8	5835		_				0.800	0.800	1.300
	E5	SB I-5 at Klickitat SB On Ramp Merge Area	Merge ²	F	23.8	64.6	F	24.3	63.3		1320					0.800	0.800	
	E6	SB I-5 from Klickitat SB On Ramp Merge Area to 188 th St SB Off Ramp Diverge Area	Basic ²	F	39.5	45.0	F	27.4	58.7	7155						0.800	0.800	1.300
Sub Area E –	E7	SB I-5 at 188 th St SB Off Ramp Diverge Area	Diverge ²	F	50.1	28.4	F	27.0	57.9		1350					0.800	0.800	
I-5 SB	E8	SB I-5 from 188 th St SB Off Ramp Diverge Area to Lane Reduction Point	Basic ²	F	51.4	26.3	F	16.5	79.5							0.800	0.800	
	E9	SB I-5 from Lane Reduction Point to 188 th St SB On Ramp	Basic ²	F	22.7	71.9	F	19.9	77.9	5805							0.852	1.300
	E10	SB I-5 at 188 th St SB On Ramp Merge Area	Merge	F	57.1	33.8	F	31.6	55.7		870						0.852	
	E11	SB I-5 from 188 th St SB On Ramp Merge Area to 200 th St SB Off Ramp Diverge Area	Overlap ²	F	57.1	33.8	F -	29.4	58.7								0.852	
	E12	SB I-5 at 200 th St SB Off Ramp Diverge Area	Diverge ²	F	59.8	31.2	F	29.4	58.7		500						0.852	
	E13	SB I-5 from 200 th St SB Off Ramp to 200 th St SB On Ramp	Basic ²	F	33.4	48.9	- F	23.0	70.0								0.852	
	E14	SB I-5 at 200 th St SB On Ramp Merge Area	Merge ²		32.6	55.6	<u> </u>	31.3	58.0		570						0.852	
	F1	NB I-5 at Military Rd NB Off Ramp Diverge Area	Diverge ²	C	61.7	20.5	С	61.3	24.5	4590	290						0.852	
	F2	NB I-5 from Military Rd NB Off Ramp to Military Rd NB On Ramp	Basic ²	С	64.4	18.4	С	61.7	22.9								0.852	
	F3	NB I-5 at Military Rd NB On Ramp Merge Area	Merge ²	С	59.5	23.3	С	59.1	26.2		780						0.852	
	F4	NB I-5 from Military Rd NB On Ramp to 188 th St NB Off Ramp	Basic ²		62.1	22.3		59.2	26.0		720						0.852	
	F5	NB I-5 at 188 th St NB Off Ramp Diverge Area	Diverge ²	C	62.2 64.4	22.3 18.3	D C	62.5 62.2	24.6		720						0.852	
	F6	NB I-5 from 188 th St NB Off Ramp to 188 th St NB On Ramp	Basic ²	C D			<u> </u>		22.2		4540						0.852	
Sub Area E	F7	NB I-5 at 188 th St NB On Ramp Merge Area	Merge ²	D D	58.1 58.1	27.5 27.3		58.2 55.5	29.1 30.4		1510						0.852	
Sub Area F – I-5 NB	F8 F9	NB I-5 from 188 th St NB On Ramp to Southcenter Pkwy Off Ramp NB I-5 at Southcenter Pkwy Off Ramp Diverge Area	Basic ²		61.8	27.3		62.1	27.2		830						0.852 0.852	
13140	F10	NB I-5 at Southeenter Pkwy Off Ramp blverge Area NB I-5 from Southcenter Pkwy Off Ramp to SR 518 WB/I-405 EB Off Ramp	Diverge ² Basic ²	C	62.4	25.7	C	59.8	25.3		030						0.852	
	F10	NB I-5 from Southcenter Pkwy Off Ramp to SR 518 Wb/I-405 EB Off Ramp NB I-5 at SR 518 Wb/I-405 EB Off Ramp Diverge Area	Major Diverge ^{2,3}	C	57.1	23.9	С.	57.1	26.5		2605						0.852	
	F11	NB I-5 at 5K 516 WB/I-405 EB Off Ramp to I-405 WB HOV On Ramp	Basic	В.	65.0	13.6	R	65.0	16.3	2435	2003						0.852	
	F13	NB I-5 from I-405 WB HOV On Ramp to I-405 WB On Ramp	Basic	В	65.0	11.5	B R	65.0	13.4	2695	(1) 4	05 WB to I-5 NB	(HOV))				0.852	
	F14	NB I-5 at I-405 WB On Ramp Merge Area	Merge	В	60.9	17.1	R	60.5	19.6	2033) 518 EB to I-5					0.852	
	F15	NB I-5 from SR 518 EB On Ramp to Southcenter Blvd NB On Ramp	Basic (Add) ²	В	64.7	17.6	B	64.5	18.0	5040	1100	7 510 15 10 1-5	110				0.852	-
		NB I-5 at Southcenter Blvd NB On Ramp Merge Area	Merge ²	C	59.8	18.1	B	59.9	17.9	3040	990						0.852	
Note:	. 10		INICIEC	-	33.0	23.1		33.3	27.5		330						0.002	

Note:

 $^{^{\}mbox{\scriptsize 1}}\mbox{-}$ One-lane freeway mainline cannot be analyzed in HCS.

 $^{^{2}\}text{-}\,\text{HOV}$ lane ignored due to the analysis constraint of HCS.

³⁻ A major diverge area is one in which two primary roadways, each having multiple lanes, diverge from a single freeway lanes within 1,500 ft of the diverge.

⁴- WSDOT Level of Service Standard for State Routes is LOS D

					2037 PA			Existing				2037 PA						
Facility	ID	Study Segments	Analyzed Type	LOS	Avg Speed (S, mph)	Avg Density (D, pc/mi/ln)	LOS	Avg Speed (S, mph)	Avg Density (D, pc/mi/ln)	Mainline	Off-ramp On-Ramp	Volume Weaving MnIn-MnIr	Weaving Rmp-Mnln	Weaving Rmp-Rmp	Weaving Mnln-Rmp	Speed	Capacity Adj. Factor	
Sub Area A –	A1	EB SR 518 from SR 509 NB Off Ramp to DMM EB off Ramp	Weaving	С	44.4	24.4	В	56.1	13.5			1800	855	78	180		0.900	
SR 518 EB	A2	EB SR 518 from DMM EB off Ramp to DMM Interchange	Basic	С	61.5	23.2	В	64.0	17.0	2655							0.852	
Sub Area B –	B1	WB SR 518 from DMM Undercrossing to Diverge Influence Point	Basic	D	51.4	33.8	С	60.0	19.7	3370							0.852	
SR 518 WB	B2	WB SR 518 from DMM Diverge Influence Point to SR 509 NB On Ramp	Diverge	С	50.2	35.0	В	50.5	23.6		1235						0.852	
	C1	EB SR 518 from 51 st St Off Ramp to I-5 NB Off Ramp	Basic (Drop)	F	34.5	45.0	Е	38.8	38.0	3745						0.800	0.700	1.300
Sub Area C –	C2	EB SR 518 from I-5 NB Off Ramp to I-5 SB Off Ramp	Basic (Drop)	F	34.5	45.0	F	34.5	45.0	2383) I-5 NB On from EB SR 518					0.800	0.700	1.300
SR 518 EB	С3	NB I-405 from I-5 SB Off Ramp to I-5 SB On Ramp	N/A ¹ (Skipped)	-	-	-	-	-	-		,							
/I-5 & I-405 NB	C4	NB I-405 from I-5 SB On Ramp to I-5 NB On Ramp	Basic (Add) ²	F	44.5	45.0	F	34.5	45.0	4277	ff to I-405 NB + (+) I-5 SB to	I-405 NB					0.852	1.300
IND	C5	NB I-405 from I-5 NB On Ramp to Southcenter Pkwy	Basic (Add) ²	F	44.5	45.0	F	34.5	45.0	5867	` '						0.852	1.300
	D1	SB I-405 from Interurban Ave S 3-Lane Start Point to I-5 NB Off/Southcenter Off Ramp	Basic (Drop) ²	F	34.5	45.0	F	34.5	45.0	5235						0.800	0.700	1.300
Sub Area D –	D2	SB I-405 from I-5 NB Off Ramp to I-5 NB On Ramp	Basic	F	34.5	45.0	F	34.5	45.0	3525						0.800	0.700	1.300
SR 518 WB/	D3	SB I-405 from I-5 NB On Ramp to I-5 SB Off Ramp	Weaving	F	26.8	81.4	F	26.8	83.2			1965	1097	485	1560	0.700	0.900	1.300
I-5 & I-405 SB	D4	WB SR 518 from I-5 SB Off Ramp to I-5 SB On Ramp	Basic	F	34.5	45.0	F	34.5	45.0	3062						0.800	0.700	1.300
36	D5	WB SR 518 from I-5 SB On Ramp to 51 st St On Ramp	Basic (Add)	F	34.5	45.0	F	34.5	45.0	4285	-5 + (+) I-5 SB Off to WB SR	518				0.800	0.700	1.300
	E1	SB I-5 at Southcenter Blvd/SR 518 Off Ramp Diverge Area	Major Diverge ^{2,3}	F	39.0	31.5	Е	39.0	35.8	8898	2193 assume sam	ne HOV vol				0.600	0.800	1.300
	E2	SB I-5 from Southcenter Blvd/SR 518 Off Ramp to I-405 NB Off Ramp	Basic (Drop) ²	F	20.6	69.5	Е	39.0	35.1	(-) I-5 SB to 405 NB					0.600	0.800	,
	E3	SB I-5 from I-405 NB Off Ramp to I-405 SB On Ramp	Basic	F	20.0	71.9	E	39.0	37.4	4305	(+) 405 SB to I-	-5 SB				0.600	0.800	1.300
	E4	SB I-5 from I-405 SB On Ramp to Klickitat SB On Ramp	Basic (Add) ²	F	18.0	76.8	F	27.7	49.8	5865						0.800	0.800	1.300
	E5	SB I-5 at Klickitat SB On Ramp Merge Area	Merge ²	F	23.8	64.6	F	24.3	63.3		1301					0.800	0.800	,
	E6	SB I-5 from Klickitat SB On Ramp Merge Area to 188 th St SB Off Ramp Diverge Area	Basic ²	F	39.5	45.0	F	27.4	58.7	7166						0.800	0.800	1.300
Sub Area E –	E7	SB I-5 at 188 th St SB Off Ramp Diverge Area	Diverge ²	F	50.1	28.4	F	27.0	57.9		1360					0.800	0.800	
I-5 SB	E8	SB I-5 from 188 th St SB Off Ramp Diverge Area to Lane Reduction Point	Basic ²	F	51.4	26.2	F	16.5	79.5							0.800	0.800	
	E9	SB I-5 from Lane Reduction Point to 188 th St SB On Ramp	Basic ²	F	22.7	71.9	F	19.9	77.9	5806							0.852	1.300
	E10	SB I-5 at 188 th St SB On Ramp Merge Area	Merge ²	F	57.0	33.8	F	31.6	55.7		875						0.852	
	E11	SB I-5 from 188 th St SB On Ramp Merge Area to 200 th St SB Off Ramp Diverge Area	Overlap ²	F	57.0	33.8	F	29.4	58.7								0.852	
	E12	SB I-5 at 200 th St SB Off Ramp Diverge Area	Diverge ²	F	59.7	31.2	F	29.4	58.7		520						0.852	
	E13	SB I-5 from 200 th St SB Off Ramp to 200 th St SB On Ramp	Basic ²	F	34.4	47.5	F	23.0	70.0			_					0.852	,
	E14	SB I-5 at 200 th St SB On Ramp Merge Area	Merge ²	F	33.0	55.1	F	31.3	58.0		580						0.852	
	F1	NB I-5 at Military Rd NB Off Ramp Diverge Area	Diverge ²	С	61.7	20.9	С	61.3	24.5	4675	290						0.852	
	F2	NB I-5 from Military Rd NB Off Ramp to Military Rd NB On Ramp	Basic ²	С	64.2	18.8	С	61.7	22.9								0.852	
	F3	NB I-5 at Military Rd NB On Ramp Merge Area	Merge ²	С	59.5	23.7	С	59.1	26.2		780						0.852	
	F4	NB I-5 from Military Rd NB On Ramp to 188 th St NB Off Ramp	Basic ²	С	61.7	22.8	С	59.2	26.0								0.852	
	F5	NB I-5 at 188 th St NB Off Ramp Diverge Area	Diverge ²	С	62.3	22.6	D	62.5	24.6		710						0.852	
	F6	NB I-5 from 188 th St NB Off Ramp to 188 th St NB On Ramp	Basic ²	С	64.3	18.7	С	62.2	22.2								0.852	,
	F7	NB I-5 at 188 th St NB On Ramp Merge Area	Merge ²	D	58.0	28.1	D	58.2	29.1		1530						0.852	,
Sub Area F –	F8	NB I-5 from 188 th St NB On Ramp to Southcenter Pkwy Off Ramp	Basic ²	D	57.3	28.3	D	55.5	30.4								0.852	
I-5 NB	F9	NB I-5 at Southcenter Pkwy Off Ramp Diverge Area	Diverge ²	С	61.8	26.2	С	62.1	27.2		830						0.852	
	F10	NB I-5 from Southcenter Pkwy Off Ramp to SR 518 WB/I-405 EB Off Ramp	Basic ²	С	62.0	22.5	С	59.8	25.3								0.852	
	F11	NB I-5 at SR 518 WB/I-405 EB Off Ramp Diverge Area	Major Diverge ^{2,3}	С	57.1	24.4	С	57.1	26.5		2687						0.852	
	F12	NB I-5 from SR 518 WB/I-405 EB Off Ramp to I-405 WB HOV On Ramp	Basic	В	65.0	13.8	В	65.0	16.3	2468							0.852	
	F13	NB I-5 from I-405 WB HOV On Ramp to I-405 WB On Ramp	Basic	В	65.0	11.7	В	65.0	13.4	2728	(+) 4	105 WB to I-5 N	B (HOV))				0.852	
	F14	NB I-5 at I-405 WB On Ramp Merge Area	Merge	В	60.9	17.3	В	60.5	19.6		1100	(+) 518 EB to	1-5 NB				0.852	
	F15	NB I-5 from SR 518 EB On Ramp to Southcenter Blvd NB On Ramp	Basic (Add) ²	С	64.5	18.2	В	64.5	18.0	5190							0.852	
	F16	NB I-5 at Southcenter Blvd NB On Ramp Merge Area	Merge ²	С	59.7	18.6	В	59.9	17.9		990						0.852	

Note

 $^{^{\}mbox{\scriptsize 1}}\mbox{-}$ One-lane freeway mainline cannot be analyzed in HCS.

²- HOV lane ignored due to the analysis constraint of HCS.

³- A major diverge area is one in which two primary roadways, each having multiple lanes, diverge from a single freeway segment. Major Diverge type analyzed as basic segment with Major Diverge areas, a model exists for computing the average density across all approaching freeway lanes within 1,500 ft of the diverge.

⁴- WSDOT Level of Service Standard for State Routes is LOS D

		ICC Fragues		Nowing Dono	v+		
		acs Freeway	y v	Veaving Repo	or t		
Project Information							
Analyst		Concord Engineeri	ng	Date		10/6/2023	
Agency				Analysis Year	2032 - No Action		
Jurisdiction				Time Analyzed	PM Peak		
Project Description		SAMP		Units	U.S. Customary		
Segment Number		2		Segment Name	A1 - EB SR 518 from SR 509 NB Off Ramp to DMM EB off Ramp		
Analysis Period Number		1		Segment Analysis Per	riod	16:45-17:00	
Geometric Data							
Number of Lanes (N), In		3		Segment Type		Freeway	
Segment Length (Ls), ft		140		Number of Maneuve	r Lanes (NWL), ln	2	
Weaving Configuration		One-Sided		Ramp-to-Freeway La	ne Changes (LCRF), lc	1	
Terrain Type		Level		Freeway-to-Ramp La	ne Changes (LCFR), lc	1	
Percent Grade, %		-		Ramp-to-Ramp Lane	0		
Interchange Density (ID), int/mi		0.67		Cross Weaving Mana	No		
Adjustment Factors							
Driver Population		All Familiar		Final Speed Adjustme	ent Factor (SAF)	1.000	
Weather Type		Non-Severe Weath	er	Demand Adjustment	Factor (DAF)	1.000	
Incident Type		No Incident		Capacity Adjustment	Factor for CAVs, CAFCAV	Overwritten	
Proportion of CAVs in Traffic Stream		0		Final Capacity Adjust	ment Factor (CAF)	0.900	
Demand and Capacity							
	П	FF		RF	RR	FR	
Demand Volume (Vi), veh/h	16	45	760	0	64	150	
Peak Hour Factor (PHF)	0.9	16	0.8	6	0.94	0.79	
Total Trucks, %	2.0	00	3.0	0	0.00	0.00	
Heavy Vehicle Adjustment Factor (fHV)	0.9	980	0.9	71	1.000	1.000	
Flow Rate (vi), pc/h	17	49	910	0	68	190	
Weaving Flow Rate (vw), pc/h	11	00	Ide	eal Conditions Capacity	/ (cIFL), pc/h/ln	2350	
Non-Weaving Flow Rate (vNW), pc/h	18	17	De	nsity-Based Capacity (cIWL × N × fHV), veh/h	5489	
Total Flow Rate (v), pc/h	29	17	De	mand Flow-Based Cap	acity (cIW × fHV), veh/h	6232	
Volume Ratio (VR)	0.3	377	We	eaving Area Capacity (d	cw), veh/h	5489	
Minimum Lane Change Rate (LCMIN), lc/h	11	00	Ad	justed Weaving Area C	Capacity (cwA), veh/h	4940	
Maximum Weaving Length (LMAX), ft	24	Vo	lume-to-Capacity Ratio) (v/c)	0.58		
Speed and Density							
Non-Weaving Vehicle Index (INW)		17		Average Weaving Spe	38.3		
Non-Weaving Lane Change Rate (LCNW), lc/h				Average Non-Weavir	52.4		
Weaving Lane Change Rate (LCW), lc/h	1100		Average Speed (S), m	46.0			
Weaving Lane Change Rate (LCAII), lc/h		1100		Density (D), pc/mi/ln	21.1		

Weaving Intensity Factor (W) 1.149 Level of Service (LOS) C

Copyright © 2024 University of Florida. All Rights Reserved.

HCSTM Freeways Version 2022 A – SR 518 EB_Updated.xuf Generated: 01/31/2024 12:50:30

HCS Basic Freeway Report									
Project Information									
Analyst	Concord Engineering	Date	10/6/2023						
Agency		Analysis Year	2032 - No Action						
Jurisdiction		Time Analyzed	PM Peak						
Project Description	SAMP	Units	U.S. Customary						
Segment Number	3	Segment Name	A2 - EB SR 518 from DMM EB off Ramp to DMM Interchange						
Analysis Period Number	1	Segment Analysis Period	16:45-17:00						
Geometric Data									
Number of Lanes (N), In	2	Terrain Type	Level						
Segment Length (L), ft	1290	Percent Grade, %	-						
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-						
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-						
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0						
Right-Side Lateral Clearance, ft	-								
Adjustment Factors									
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000						
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000						
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852						
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten						
Demand and Capacity									
Demand Volume (V), veh/h	2405	Heavy Vehicle Adjustment Factor (fHV)	0.980						
Peak Hour Factor (PHF)	0.95	Flow Rate (vp), pc/h/ln	1292						
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350						
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002						
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.65						
Passenger Car Equivalent (ET)	2.00								
Speed and Density									
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	63.0						
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	20.4						
Total Ramp Density Adjustment	-	Level of Service (LOS)	С						
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0								
S 11:000001111 1: 651 11 411 51 1: 5		14 1 0000							

HCSTM Freeways Version 2022 A – SR 518 EB_Updated.xuf

Generated: 01/31/2024 12:50:46

HCS Basic Freeway Report									
Project Information									
Analyst	Concord Engineering	Date	10/6/2023						
Agency		Analysis Year	2032 - No Action						
Jurisdiction		Time Analyzed	PM Peak						
Project Description	SAMP	Units	U.S. Customary						
Segment Number	1	Segment Name	B1 - WB SR 518 from DMM Undercrossing to Diverge Influence Point						
Analysis Period Number	1	Segment Analysis Period	16:45-17:00						
Geometric Data									
Number of Lanes (N), In	2	Terrain Type	Level						
Segment Length (L), ft	940	Percent Grade, %	-						
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-						
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-						
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	60.0						
Right-Side Lateral Clearance, ft	-								
Adjustment Factors									
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000						
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000						
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852						
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten						
Demand and Capacity									
Demand Volume (V), veh/h	2890	Heavy Vehicle Adjustment Factor (fHV)	0.980						
Peak Hour Factor (PHF)	0.99	Flow Rate (vp), pc/h/ln	1490						
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2300						
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1960						
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.76						
Passenger Car Equivalent (ET)	2.00								
Speed and Density									
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	57.2						
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	26.0						
Total Ramp Density Adjustment	-	Level of Service (LOS)	С						
Adjusted Free-Flow Speed (FFSadj), mi/h	60.0								

HCSTM Freeways Version 2022 B – SR 518 WB_Updated.xuf

Generated: 10/06/2023 11:56:25

		HCS Freeway	Diverge Report				
Project Information							
Analyst	Concord E	ngineering	Date	10/6/2023			
Agency			Analysis Year	2032 - No	Action		
Jurisdiction			Time Analyzed	PM Peak	PM Peak		
Project Description	SAMP		Units	U.S. Custo	U.S. Customary		
Segment Number	2		Segment Name		R 518 from DMM fluence Point to SR 509 np		
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	0		
Geometric Data							
			Freeway	Ramp			
Number of Lanes (N), In			2	1			
Free-Flow Speed (FFS), mi/h			60.0	35.0			
Segment Length (L) / Decelerat	tion Length (LD)	, ft	1500	890			
Terrain Type			Level	Level			
Percent Grade, %			-	-			
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane		
Adjustment Factors							
Driver Population			All Familiar	All Familia			
Weather Type			Non-Severe Weather	Non-Sever	e Weather		
Incident Type			No Incident	-			
Proportion of CAVs in Traffic St	ream		0	-			
Final Speed Adjustment Factor	(SAF)		1.000	1.000			
Demand Adjustment Factor (D/	AF)		1.000	1.000			
Capacity Adjustment Factor (CA	AF)		0.852	0.950			
Capacity Adj. Factor for CAVs, C	CAFCAV		Overwritten	-			
Demand and Capacity							
Demand Volume (Vi), veh/h			2890	1120			
Peak Hour Factor (PHF)			0.98	0.95			
Total Trucks, %			2.00	1.00			
Single-Unit Trucks (SUT), %			-	-			
Tractor-Trailers (TT), %			-	-			
Heavy Vehicle Adjustment Fact	or (fHV)		0.980	0.990			
Flow Rate (vi), pc/h			3009	1191			
Capacity (cmd), pc/h			4600	2000			
Adjusted Capacity (cmd), pc/h			3919	1900			
Volume-to-Capacity Ratio (v/c)			0.77	0.63			
Speed and Density							
Upstream Equilibrium Distance	(LEQ), ft	-	Number of Outer Lanes on Fre	eeway (NO), In	0		
Distance to Upstream Ramp (Li	JP), ft	-	Speed Index (Ds)		0.535		
Downstream Equilibrium Distar	nce (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/l	In	-		

Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	50.4					
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	65.8					
Flow in Lanes 1 and 2 (v12), pc/h	3009	Ramp Junction Speed (S), mi/h	50.4					
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	29.9					
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/ln	22.1					
Copyright © 2023 University of Florida. All Rights Reserved. HCSTM Freeways Version 2022 Generated: 10/06/2023 11:56:56								

HCSTM Freeways Version 2022 B – SR 518 WB_Updated.xuf

HCS Basic Freeway Report									
Project Information									
Analyst	Concord Engineering	Date	10/6/2023						
Agency		Analysis Year	2032 - No Action						
Jurisdiction		Time Analyzed	PM Peak						
Project Description	SAMP	Units	U.S. Customary						
Segment Number	1	Segment Name	C1 - EB SR 518 from 51st St Off Ramp to I-5 NB Off Ramp						
Analysis Period Number	1	Segment Analysis Period	16:45-17:00						
Geometric Data									
Number of Lanes (N), In	3	Terrain Type	Level						
Segment Length (L), ft	1030	Percent Grade, %	-						
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-						
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-						
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0						
Right-Side Lateral Clearance, ft	-								
Adjustment Factors									
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800						
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300						
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700						
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten						
Demand and Capacity									
Demand Volume (V), veh/h	3285	Heavy Vehicle Adjustment Factor (fHV)	0.952						
Peak Hour Factor (PHF)	0.97	Flow Rate (vp), pc/h/ln	1541						
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2220						
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554						
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.99						
Passenger Car Equivalent (ET)	2.00								
Speed and Density									
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	35.3						
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	43.7						
Total Ramp Density Adjustment	-	Level of Service (LOS)	Е						
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0								
C									

HCSTM Freeways Version 2022 C1 – SR 518+I-5 & I-405 EB_Updated.xuf

Generated: 10/06/2023 11:57:41

HCS Basic Freeway Report									
Project Information									
Analyst	Concord Engineering	Date	10/6/2023						
Agency		Analysis Year	2032 - No Action						
Jurisdiction		Time Analyzed	PM Peak						
Project Description	SAMP	Units	U.S. Customary						
Segment Number	1	Segment Name	C2 - EB SR 518 from I-5 NB Off Ramp to I-5 SB Off Ramp						
Analysis Period Number	1	Segment Analysis Period	16:45-17:00						
Geometric Data									
Number of Lanes (N), In	2	Terrain Type	Level						
Segment Length (L), ft	650	Percent Grade, %	-						
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-						
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-						
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0						
Right-Side Lateral Clearance, ft	-								
Adjustment Factors									
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800						
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300						
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700						
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten						
Demand and Capacity									
Demand Volume (V), veh/h	2220	Heavy Vehicle Adjustment Factor (fHV)	0.943						
Peak Hour Factor (PHF)	0.95	Flow Rate (vp), pc/h/ln	1611						
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2220						
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554						
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.04						
Passenger Car Equivalent (ET)	2.00								
Speed and Density									
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5						
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0						
Total Ramp Density Adjustment	-	Level of Service (LOS)	F						
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0								
5 11.00000111 1: (51.11.41151.1.5									

HCSTM Freeways Version 2022 C2 – SR 518+I-5 & I-405 EB_Updated.xuf

Generated: 10/06/2023 11:58:23

	HCS Basic Fro	eeway Report	
Project Information			
Analyst	Concord Engineering	Date	10/6/2023
Agency		Analysis Year	2032 - No Action
Jurisdiction		Time Analyzed	PM Peak
Project Description	SAMP	Units	U.S. Customary
Segment Number	1	Segment Name	C4 - NB I-405 from I-5 SB On Ramp to I-5 NB On Ramp
Analysis Period Number	1	Segment Analysis Period	16:45-17:00
Geometric Data			
Number of Lanes (N), In	2	Terrain Type	Level
Segment Length (L), ft	670	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		
Adjustment Factors			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten
Demand and Capacity			
Demand Volume (V), veh/h	4115	Heavy Vehicle Adjustment Factor (fHV)	0.943
Peak Hour Factor (PHF)	0.96	Flow Rate (vp), pc/h/ln	2955
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.48
Passenger Car Equivalent (ET)	2.00		
Speed and Density			
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	44.5
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		
5 11.00000111 1: (51.11.41151.1.5			

HCSTM Freeways Version 2022 C4 – SR 518+I-5 & I-405 EB_Updated.xuf

Generated: 10/06/2023 12:00:17

HCS Basic Freeway Report				
Project Information				
Analyst	Concord Engineering	Date	10/6/2023	
Agency		Analysis Year	2032 - No Action	
Jurisdiction		Time Analyzed	PM Peak	
Project Description	SAMP	Units	U.S. Customary	
Segment Number	1	Segment Name	C5 - NB I-405 from I-5 NB On Ramp to Southcenter Pkwy	
Analysis Period Number	1	Segment Analysis Period	16:45-17:00	
Geometric Data				
Number of Lanes (N), In	3	Terrain Type	Level	
Segment Length (L), ft	1180	Percent Grade, %	-	
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-	
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-	
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0	
Right-Side Lateral Clearance, ft	-			
Adjustment Factors				
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000	
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300	
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852	
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten	
Demand and Capacity				
Demand Volume (V), veh/h	5695	Heavy Vehicle Adjustment Factor (fHV)	0.943	
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	2671	
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2350	
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002	
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.33	
Passenger Car Equivalent (ET)	2.00			
Speed and Density				
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	44.5	
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0	
Total Ramp Density Adjustment	-	Level of Service (LOS)	F	
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0			
5 11.00000111 1: (51.11.41151.1.5				

HCSTM Freeways Version 2022 C5 – SR 518+I-5 & I-405 EB_Updated.xuf

Generated: 10/06/2023 12:00:59

HCS Basic Freeway Report				
Project Information				
Analyst	Concord Engineering	Date	10/6/2023	
Agency		Analysis Year	2032 - No Action	
Jurisdiction		Time Analyzed	PM Peak	
Project Description	SAMP	Units	U.S. Customary	
Segment Number	1	Segment Name	D1 - SB I-405 from Interurban Ave S 3-Lane Start Point to I-5 NB Off/ Southcenter Off Ramp	
Analysis Period Number	1	Segment Analysis Period	16:45-17:00	
Geometric Data				
Number of Lanes (N), In	3	Terrain Type	Level	
Segment Length (L), ft	1820	Percent Grade, %	-	
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-	
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-	
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0	
Right-Side Lateral Clearance, ft	-			
Adjustment Factors				
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800	
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300	
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700	
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten	
Demand and Capacity				
Demand Volume (V), veh/h	4805	Heavy Vehicle Adjustment Factor (fHV)	0.952	
Peak Hour Factor (PHF)	0.99	Flow Rate (vp), pc/h/ln	2209	
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2220	
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554	
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.42	
Passenger Car Equivalent (ET)	2.00			
Speed and Density				
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5	
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0	
Total Ramp Density Adjustment	-	Level of Service (LOS)	F	
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0			

Generated: 10/06/2023 12:02:04

HCS Basic Freeway Report				
Project Information				
Analyst	Concord Engineering	Date	10/6/2023	
Agency		Analysis Year	2032 - No Action	
Jurisdiction		Time Analyzed	PM Peak	
Project Description	SAMP	Units	U.S. Customary	
Segment Number	1	Segment Name	D2 - SB I-405 from I-5 NB Off Ramp to I-5 NB On Ramp	
Analysis Period Number	1	Segment Analysis Period	16:45-17:00	
Geometric Data				
Number of Lanes (N), In	2	Terrain Type	Level	
Segment Length (L), ft	1350	Percent Grade, %	-	
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-	
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-	
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0	
Right-Side Lateral Clearance, ft	-			
Adjustment Factors				
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800	
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300	
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700	
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten	
Demand and Capacity				
Demand Volume (V), veh/h	3135	Heavy Vehicle Adjustment Factor (fHV)	0.952	
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	2184	
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2220	
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554	
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.41	
Passenger Car Equivalent (ET)	2.00			
Speed and Density				
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5	
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0	
Total Ramp Density Adjustment	-	Level of Service (LOS)	F	
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0			
C				

HCS™ Freeways Version 2022

Generated: 10/06/2023 12:02:55

D2 – SR 518+I-5 & I-405 W_Updated.xuf

		HCS Freeway	v V	Veaving Repo	rt	
Project Information		- Tes Treewa	, ·	Teaving Repo		
•		Canaard Fasinsori		Data		10/6/2022
Analyst		Concord Engineeri	ng	Date		10/6/2023
Agency	-			Analysis Year		2032 - No Action
Jurisdiction		CANAD		Time Analyzed		PM Peak
Project Description	\dashv	SAMP		Units		U.S. Customary
Segment Number		1		Segment Name		D3 - SB I-405 from I-5 NB On Ramp to I-5 SB Off Ramp
Analysis Period Number		1		Segment Analysis Per	riod	16:45-17:00
Geometric Data						
Number of Lanes (N), In		3		Segment Type		Freeway
Segment Length (Ls), ft		570		Number of Maneuve	r Lanes (NWL), In	0
Weaving Configuration	\neg	Two-Sided		Ramp-to-Freeway La	ne Changes (LCRF), lc	1
Terrain Type		Level		Freeway-to-Ramp La	ne Changes (LCFR), lc	1
Percent Grade, %		-		Ramp-to-Ramp Lane	Changes (LCRR), lc	2
Interchange Density (ID), int/mi		0.67		Cross Weaving Mana	ged Lane	No
Adjustment Factors						
Driver Population	All Familiar			Final Speed Adjustme	ent Factor (SAF)	0.700
Weather Type		Non-Severe Weather		Demand Adjustment	Factor (DAF)	1.300
Incident Type		No Incident Capacity Adjustment Factor for CAVs, CAFCAV		Overwritten		
Proportion of CAVs in Traffic Stream		0	Final Capacity Adjustment Factor (CAF)		0.900	
Demand and Capacity						
	П	FF	П	RF	RR	FR
Demand Volume (Vi), veh/h	17!	 55	98	5	478	1520
Peak Hour Factor (PHF)	0.9	8	0.9	4	0.96	0.97
Total Trucks, %	5.0	0	2.0	0	2.00	4.00
Heavy Vehicle Adjustment Factor (fHV)	0.9	52	0.9	80	0.980	0.962
Flow Rate (vi), pc/h	244	45	13	55 645		2118
Weaving Flow Rate (vw), pc/h	64!	5	lde	eal Conditions Capacity (cIFL), pc/h/ln		2200
Non-Weaving Flow Rate (vNW), pc/h	59°	18	De	ensity-Based Capacity (cIWL × N × fHV), veh/h		5010
Total Flow Rate (v), pc/h	656	53	De	emand Flow-Based Capacity (cIW × fHV), veh/h		-
Volume Ratio (VR)	0.1	00	We	eaving Area Capacity (c	cw), veh/h	5010
Minimum Lane Change Rate (LCMIN), lc/h	128	39	Ad	justed Weaving Area C	Capacity (cwA), veh/h	4509
Maximum Weaving Length (LMAX), ft	667	672 V		lume-to-Capacity Ratio	o (v/c)	1.00
Speed and Density						•
Non-Weaving Vehicle Index (INW)		225		Average Weaving Spo	eed (Sw), mi/h	33.1
Non-Weaving Lane Change Rate (LCNW), Ic	/h	950		Average Non-Weavir		25.7
Weaving Lane Change Rate (LCW), lc/h		1376		Average Speed (S), m	ni/h	26.3
Weaving Lane Change Rate (LCAII), lc/h		2326		Density (D), pc/mi/ln		83.2

Weaving Intensity Factor (W) 0.685 Level of Service (LOS) F

Copyright © 2024 University of Florida. All Rights Reserved.

HCSTM Freeways Version 2022 D3 – SR 518+I-5 & I-405 W_Updated.xuf Generated: 01/31/2024 09:49:42

	HCS Basic Freeway Report				
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2032 - No Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	D4 - WB SR 518 from I-5 SB Off Ramp to I-5 SB On Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	2	Terrain Type	Level		
Segment Length (L), ft	1280	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00		
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	10				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	2600	Heavy Vehicle Adjustment Factor (fHV)	0.980		
Peak Hour Factor (PHF)	0.90	Flow Rate (vp), pc/h/ln	1916		
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2220		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.23		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	34.5		
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	45.0		
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0				
5 11.00000111 1: (51.11.41151.1.5					

HCSTM Freeways Version 2022 D4 – SR 518+I-5 & I-405 W_Updated.xuf

Generated: 10/06/2023 12:05:02

HCS Basic Freeway Report				
Project Information				
Analyst	Concord Engineering	Date	10/6/2023	
Agency		Analysis Year	2032 - No Action	
Jurisdiction		Time Analyzed	PM Peak	
Project Description	SAMP	Units	U.S. Customary	
Segment Number	1	Segment Name	D5 - WB SR 518 from I-5 SB On Ramp to 51st St On Ramp	
Analysis Period Number	1	Segment Analysis Period	16:45-17:00	
Geometric Data				
Number of Lanes (N), In	3	Terrain Type	Level	
Segment Length (L), ft	760	Percent Grade, %	-	
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-	
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-	
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0	
Right-Side Lateral Clearance, ft	-			
Adjustment Factors				
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800	
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300	
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700	
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten	
Demand and Capacity				
Demand Volume (V), veh/h	3645	Heavy Vehicle Adjustment Factor (fHV)	0.980	
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	1644	
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2220	
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554	
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.06	
Passenger Car Equivalent (ET)	2.00			
Speed and Density				
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5	
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0	
Total Ramp Density Adjustment	-	Level of Service (LOS)	F	
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0			
		V : 0000		

HCSTM Freeways Version 2022 D5 – SR 518+I-5 & I-405 W_Updated.xuf

Generated: 10/06/2023 12:05:51

	HCS Free	eway Diverge Report	
Project Information			
Analyst	Concord Engineering	Date	10/6/2023
Agency		Analysis Year	2032 - No Action
Jurisdiction		Time Analyzed	PM Peak
Project Description	SAMP	Units	U.S. Customary
Segment Number	1	Segment Name	E1 - SB I-5 at Southcenter Blvd/ SR 518 Off Ramp Diverge Area
Analysis Period Number	1	Segment Analysis Period	16:45-17:00
Geometric Data			·
		Freeway	Ramp
Number of Lanes (N), In		6	2
Free-Flow Speed (FFS), mi/h		65.0	45.0
Segment Length (L) / Deceleration	Length (LD), ft	1500	840
Terrain Type		Level	Level
Percent Grade, %		-	-
Segment Type / Ramp Type		Freeway	Right-Sided Major Diverge
Adjustment Factors			
Driver Population		All Familiar	All Familiar
Weather Type		Non-Severe Weather	Non-Severe Weather
Incident Type		No Incident	-
Proportion of CAVs in Traffic Stream		0	-
Final Speed Adjustment Factor (SA	AF)	0.600	1.000
Demand Adjustment Factor (DAF)		1.300	1.300
Capacity Adjustment Factor (CAF)		0.800	0.950
Capacity Adj. Factor for CAVs, CAF	CAV	Overwritten	-
Demand and Capacity			
Demand Volume (Vi), veh/h		8520	1985
Peak Hour Factor (PHF)		0.94	0.98
Total Trucks, %		15.00	9.00
Single-Unit Trucks (SUT), %		-	-
Tractor-Trailers (TT), %		-	-
Heavy Vehicle Adjustment Factor (fHV)		0.870	0.917
Flow Rate (vi), pc/h		13544	2871
Capacity (cmd), pc/h		13500	4200
Adjusted Capacity (cmd), pc/h		10800	3990
Volume-to-Capacity Ratio (v/c)		1.25	0.72
Density and LOS			
Average Density (D), pc/mi/ln	39.5	Average Speed (S), mi/h	39.0
Density in Ramp Influence Area (D	MD), pc/mi/ln 39.5	Level of Service (LOS)	E
Copyright © 2024 University of Florida. Al	I Rights Reserved. HCS	TM Freeways Version 2022	Generated: 01/29/2024 14:45:11

HCS Basic Freeway Report				
Project Information				
Analyst	Concord Engineering	Date	10/6/2023	
Agency		Analysis Year	2032 - No Action	
Jurisdiction		Time Analyzed	PM Peak	
Project Description	SAMP	Units	U.S. Customary	
Segment Number	2	Segment Name	E2 - SB I-5 from Southcenter Blvd/SR 518 Off Ramp to I-405 NB Off Ramp	
Analysis Period Number	1	Segment Analysis Period	16:45-17:00	
Geometric Data				
Number of Lanes (N), In	6	Terrain Type	Level	
Segment Length (L), ft	2240	Percent Grade, %	-	
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-	
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-	
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0	
Right-Side Lateral Clearance, ft	-			
Adjustment Factors				
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.600	
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300	
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800	
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten	
Demand and Capacity				
Demand Volume (V), veh/h	5940	Heavy Vehicle Adjustment Factor (fHV)	0.855	
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	1536	
Total Trucks, %	17.00	Capacity (c), pc/h/ln	2200	
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1760	
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.87	
Passenger Car Equivalent (ET)	2.00			
Speed and Density				
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	39.0	
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	39.4	
Total Ramp Density Adjustment	-	Level of Service (LOS)	Е	
Adjusted Free-Flow Speed (FFSadj), mi/h	39.0			

	HCS Basic Freeway Report				
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2032 - No Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	E3 - SB I-5 from I-405 NB Off Ramp to I-405 SB On Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	4	Terrain Type	Level		
Segment Length (L), ft	620	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.600		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	4195	Heavy Vehicle Adjustment Factor (fHV)	0.800		
Peak Hour Factor (PHF)	0.99	Flow Rate (vp), pc/h/ln	1722		
Total Trucks, %	25.00	Capacity (c), pc/h/ln	2200		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1760		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	20.0		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	71.9		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	39.0				
Copyright © 2024 University of Florida, All Rights I	Deserved LICCEN Francis	rays Varsion 2022	Generated: 01/29/2024 14:48:40		

HCSTM Freeways Version 2022 E – I-5 SB [3]_Updated.xuf Generated: 01/29/2024 14:48:40

HCS Basic Freeway Report				
Project Information				
Analyst	Concord Engineering	Date	10/6/2023	
Agency		Analysis Year	2032 - No Action	
Jurisdiction		Time Analyzed	PM Peak	
Project Description	SAMP	Units	U.S. Customary	
Segment Number	1	Segment Name	E4 - SB I-5 from I-405 SB On Ramp to Klickitat SB On Ramp	
Analysis Period Number	1	Segment Analysis Period	16:45-17:00	
Geometric Data				
Number of Lanes (N), In	5	Terrain Type	Level	
Segment Length (L), ft	4330	Percent Grade, %	-	
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-	
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-	
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0	
Right-Side Lateral Clearance, ft	-			
Adjustment Factors				
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800	
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300	
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800	
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten	
Demand and Capacity				
Demand Volume (V), veh/h	5715	Heavy Vehicle Adjustment Factor (fHV)	0.840	
Peak Hour Factor (PHF)	0.97	Flow Rate (vp), pc/h/ln	1824	
Total Trucks, %	19.00	Capacity (c), pc/h/ln	2220	
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1776	
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.78	
Passenger Car Equivalent (ET)	2.00			
Speed and Density				
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	18.1	
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	76.6	
Total Ramp Density Adjustment	-	Level of Service (LOS)	F	
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0			

HCSTM Freeways Version 2022 E – I-5 SB [4-5]_Updated.xuf

Generated: 10/06/2023 12:09:23

HCS Freeway Merge Report						
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number 2	2		Segment Name	E5 - SB I-5 Ramp Mer	at Klickitat SB On ge Area	
Analysis Period Number	I		Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			5	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	1500		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type	Segment Type / Ramp Type		Freeway	Right-Side	Right-Sided One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	All Familiar		
Weather Type		Non-Severe Weather	Non-Sever	e Weather		
Incident Type		No Incident	-			
Proportion of CAVs in Traffic Stream		0	-	-		
Final Speed Adjustment Factor (SAF)		0.800	1.000	1.000		
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor for CAVs	, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	vE)		0.800	0.950		
Demand and Capacity						
Demand Volume (Vi), veh/h			7430	1220		
Peak Hour Factor (PHF)			0.97	0.92	0.92	
Total Trucks, %			19.00	0.02	0.02	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (fH	v)		0.840	1.000	1.000	
Flow Rate (vi), pc/h		9119	1724			
Capacity (cmd), pc/h		11250	2100			
Adjusted Capacity (cmd), pc/h		9000	1995			
Volume-to-Capacity Ratio (v/c)		0.85	0.86			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Free	way (No), In	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (MS)		0.495	
Downstream Equilibrium Distance (Li	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln		1986	

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	47.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.002	Outer Lanes Freeway Speed (SO), mi/h	46.7
Flow in Lanes 1 and 2 (v12), pc/h	2648	Ramp Junction Speed (S), mi/h	23.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	4372	Average Density (D), pc/mi/ln	64.4
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	29.5
Copyright © 2023 University of Florida. All Rights Reserved. HCSTM Freeways Version 2022 Generated: 10/06/2023 12:09			

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2032 - No Action		
Jurisdiction		Time Analyzed			
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	E6 - SB I-5 from Klickitat SB On Ramp Merge Area to 188th St SB Off Ramp Diverge Area		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	5	Terrain Type	Level		
Segment Length (L), ft	2000	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	6935	Heavy Vehicle Adjustment Factor (fHV)	0.862		
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	1776		
Total Trucks, %	16.00	Capacity (c), pc/h/ln	2220		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1776		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.00		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	39.5		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0				
C : 1 : @ 2022 !! : :: (FI : ! All B: 1 : E	Deserved LICCEM Francisco				

Generated: 10/06/2023 12:10:45

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - No	Action	
Jurisdiction			Time Analyzed			
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number 2	2		Segment Name	E7 - SB I-5 Ramp Dive	at 188th St SB Off erge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			5	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Deceleration Le	ength (LD),	ft	1500	240		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Sever	re Weather	
Incident Type		No Incident	-			
Proportion of CAVs in Traffic Stream			0	-		
Final Speed Adjustment Factor (SAF)			0.800	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor (CAF)			0.800	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			9016	1210	1210	
Peak Hour Factor (PHF)			0.98	0.90	0.90	
Total Trucks, %			16.00	9.00	9.00	
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.862	0.917		
Flow Rate (vi), pc/h			10673	1906		
Capacity (cmd), pc/h		11250	2100			
Adjusted Capacity (cmd), pc/h		9000	1995			
Volume-to-Capacity Ratio (v/c)		0.99	0.96			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on F	reeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (DS)		0.470	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h	ı/ln	1466	

Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	47.3	
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	55.2	
Flow in Lanes 1 and 2 (v12), pc/h	4172	Ramp Junction Speed (S), mi/h	50.3	
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.2	
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	38.0	
Copyright © 2023 University of Florida. All Rights Reserved. HCSTM Freeways Version 2022 Generated: 10/06/2023 12:11				

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2032 - No Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	E9 - SB I-5 from Lane Reduction Point to 188th St SB On Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	4	Terrain Type	Level		
Segment Length (L), ft	2330	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	5725	Heavy Vehicle Adjustment Factor (fHV)	0.855		
Peak Hour Factor (PHF)	0.97	Flow Rate (vp), pc/h/ln	2243		
Total Trucks, %	17.00	Capacity (c), pc/h/ln	2350		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	22.7		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	71.9		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0				

HCS Freeway Merge Report						
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number 2	2		Segment Name	E10 - SB I- Ramp Mer	5 at 188th St SB On ge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1440	520		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	Right-Sided One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Sever	Non-Severe Weather	
Incident Type		No Incident	-			
Proportion of CAVs in Traffic Stream			0	-		
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950		
Demand and Capacity						
Demand Volume (Vi), veh/h			7443	780	780	
Peak Hour Factor (PHF)			0.97	0.99	0.99	
Total Trucks, %			17.00	4.00	4.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.855	0.962	0.962	
Flow Rate (vi), pc/h		8973	1065	1065		
Capacity (cmd), pc/h	Capacity (cmd), pc/h		9400	2000		
Adjusted Capacity (cmd), pc/h		8009	1900	1900		
Volume-to-Capacity Ratio (v/c)		0.93	0.56	0.56		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Free	way (No), In	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (MS)		0.438	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln		1957	

Distance to Downstream Ramp (LDOWN), ft	2940	On-Ramp Influence Area Speed (SR), mi/h	54.9	
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.085	Outer Lanes Freeway Speed (SO), mi/h	59.8	
Flow in Lanes 1 and 2 (v12), pc/h	2610	Ramp Junction Speed (S), mi/h	57.3	
Flow Entering Ramp-Infl. Area (vR12), pc/h	3675	Average Density (D), pc/mi/ln	33.1	
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	30.5	
Copyright © 2023 University of Florida. All Rights Reserved. HCSTM Freeways Version 2022 Generated: 10/06/2023 12:12				

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number 4			Segment Name	E12 - SB I- Ramp Dive	5 at 200th St SB Off erge Area	
Analysis Period Number 1			Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Deceleration Le	ength (LD),	ft	1440	180		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Sever	e Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-		
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor (CAF)			0.852	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCAV	/		Overwritten	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			8457	440	440	
Peak Hour Factor (PHF)			0.97	0.80	0.80	
Total Trucks, %			15.00	4.00	4.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fhv	/)		0.870	0.962		
Flow Rate (vi), pc/h			10020	743		
Capacity (cmd), pc/h		9400	2000			
Adjusted Capacity (cmd), pc/h		8009	1900			
Volume-to-Capacity Ratio (v/c)		0.93	0.39			
Speed and Density						
Upstream Equilibrium Distance (LEQ),	ft	-	Number of Outer Lanes on Fre	eeway (NO), In	2	
Distance to Upstream Ramp (LUP), ft		2940	Speed Index (Ds)		0.495	
Downstream Equilibrium Distance (LE	(Q), ft	-	Flow Outer Lanes (vOA), pc/h/	ln	1894	

Distance to Downstream Ramp (LDOWN), ft	1730	Off-Ramp Influence Area Speed (SR), mi/h	53.6	
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.8	
Flow in Lanes 1 and 2 (v12), pc/h	3671	Ramp Junction Speed (S), mi/h	60.0	
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.1	
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	34.2	
Copyright © 2023 University of Florida. All Rights Reserved. HCSTM Freeways Version 2022 Generated: 10/06/2023 12:13:2				

HCS Freeway Merge Report						
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
Agency			Analysis Year	2032 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	6		Segment Name	E14 - SB I- Ramp Mei	5 at 200th St SB On ge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	470		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	ed One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Seve	Non-Severe Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-		
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor for CAVs	, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			7885	520	520	
Peak Hour Factor (PHF)			0.96	0.96	0.96	
Total Trucks, %			14.00	2.00	2.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.877	0.980		
Flow Rate (vi), pc/h			9364	719		
Capacity (cmd), pc/h		9400	2000			
Adjusted Capacity (cmd), pc/h		8009	1900	1900		
Volume-to-Capacity Ratio (v/c)		0.91	0.38			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Free	way (No), In	2	
Distance to Upstream Ramp (LUP), ft		1730	Speed Index (MS)		0.676	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln		2700	

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	49.5	
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.128	Outer Lanes Freeway Speed (SO), mi/h	56.1	
Flow in Lanes 1 and 2 (v12), pc/h	3964	Ramp Junction Speed (S), mi/h	32.3	
Flow Entering Ramp-Infl. Area (vR12), pc/h	4683	Average Density (D), pc/mi/ln	56.3	
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	38.8	
Copyright © 2023 University of Florida. All Rights Reserved. HCSTM Freeways Version 2022 Generated: 10/06/2023 1				

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord E	ngineering	Date	10/6/2023	<u> </u>	
Agency			Analysis Year	2032 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	1		Segment Name	F1 - NB I- Ramp Div	5 at Military Rd NB Off erge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Deceleration L	ength (LD),	ft	1500	290		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	ed One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	All Familiar	
Weather Type			Non-Severe Weather	Non-Seve	Non-Severe Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor (CAF)			1.000	0.852	0.852	
Capacity Adj. Factor for CAVs, CAFCA	V		1.000	-	-	
Demand and Capacity			<u> </u>			
Demand Volume (Vi), veh/h			4770	260	260	
Peak Hour Factor (PHF)			0.97	0.93	0.93	
Total Trucks, %			7.00	3.00	3.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.971	0.971	
Flow Rate (vi), pc/h		5259	288	288		
Capacity (cmd), pc/h		9400	2000			
Adjusted Capacity (cmd), pc/h		9400	1704	1704		
Volume-to-Capacity Ratio (v/c)		0.56	0.17			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on F	Freeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ds)		0.454	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h	n/ln	1402	

Distance to Downstream Ramp (LDOWN), ft	900	Off-Ramp Influence Area Speed (SR), mi/h	54.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	69.7
Flow in Lanes 1 and 2 (v12), pc/h	2455	Ramp Junction Speed (S), mi/h	61.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.3
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/In	22.8

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

Generated: 01/29/2024 14:54:30

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	3		Segment Name	F3 - NB I-5 Ramp Mer	at Military Rd NB On ge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	0	
Geometric Data			·	·		
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	710		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	Right-Sided One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	All Familiar	
Weather Type			Non-Severe Weather	Non-Sever	Non-Severe Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			4510	710	710	
Peak Hour Factor (PHF)			0.97	0.97	0.97	
Total Trucks, %			7.00	1.00	1.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.990		
Flow Rate (vi), pc/h			4973	739		
Capacity (cmd), pc/h		9400	2000			
Adjusted Capacity (cmd), pc/h		8009	1900	1900		
Volume-to-Capacity Ratio (v/c)		0.71	0.39	0.39		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fro	eeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		900	Speed Index (Ms)		0.331	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/	ln	1492	

Distance to Downstream Ramp (LDOWN), ft	5090	On-Ramp Influence Area Speed (SR), mi/h	57.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.125	Outer Lanes Freeway Speed (SO), mi/h	61.4
Flow in Lanes 1 and 2 (v12), pc/h	1989	Ramp Junction Speed (S), mi/h	59.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	2728	Average Density (D), pc/mi/ln	24.0
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/In	22.0

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf Generated: 01/29/2024 14:55:36

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number 5	5		Segment Name	F5 - NB I-5 Ramp Dive	at 188th St NB Off erge Area	
Analysis Period Number 1			Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Deceleration Le	ength (LD),	ft	1500	180		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	r	
Weather Type			Non-Severe Weather	Non-Sever	re Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor (CAF)			0.852	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-	-	
Demand and Capacity			<u>'</u>			
Demand Volume (Vi), veh/h			5220	650	650	
Peak Hour Factor (PHF)			0.98	0.95	0.95	
Total Trucks, %			7.00	8.00	8.00	
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fHV	/)		0.935	0.926		
Flow Rate (vi), pc/h			5697	739		
Capacity (cmd), pc/h		9400	2100			
Adjusted Capacity (cmd), pc/h		8009	1995			
Volume-to-Capacity Ratio (v/c)		0.71	0.37			
Speed and Density						
Upstream Equilibrium Distance (LEQ),	ft	-	Number of Outer Lanes on Fr	eeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		5090	Speed Index (Ds)		0.365	
Downstream Equilibrium Distance (Le	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/	′ln	1398	

Distance to Downstream Ramp (LDOWN), ft	2260	Off-Ramp Influence Area Speed (SR), mi/h	56.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	69.8
Flow in Lanes 1 and 2 (v12), pc/h	2901	Ramp Junction Speed (S), mi/h	62.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.8
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/In	27.6

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf Generated: 01/29/2024 14:56:04

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord E	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	7		Segment Name	F7 - NB I-5 Ramp Mer	5 at 188th St NB On ge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	570		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	r	
Weather Type			Non-Severe Weather	Non-Seve	re Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			4570	1360	1360	
Peak Hour Factor (PHF)			0.99	0.92	0.92	
Total Trucks, %			7.00	2.00	2.00	
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.980		
Flow Rate (vi), pc/h			4937	1508		
Capacity (cmd), pc/h		9400	2100			
Adjusted Capacity (cmd), pc/h		8009	1995			
Volume-to-Capacity Ratio (v/c)		0.80	0.76			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fre	eway (No), In	2	
Distance to Upstream Ramp (LUP), ft		2260	Speed Index (Ms)		0.397	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/lr	า	1481	

Distance to Downstream Ramp (LDOWN), ft	7350	On-Ramp Influence Area Speed (SR), mi/h	55.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.029	Outer Lanes Freeway Speed (SO), mi/h	61.5
Flow in Lanes 1 and 2 (v12), pc/h	1975	Ramp Junction Speed (S), mi/h	58.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	3483	Average Density (D), pc/mi/ln	27.6
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/In	28.4

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf Generated: 01/29/2024 14:56:26

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	9		Segment Name		at Southcenter Pkwy Diverge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Deceleration Le	ength (LD),	ft	1500	840		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	All Familiar	
Weather Type			Non-Severe Weather	Non-Seve	Non-Severe Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor (CAF)			0.852	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-		
Demand and Capacity				·		
Demand Volume (Vi), veh/h			5930	750	750	
Peak Hour Factor (PHF)			0.98	0.91	0.91	
Total Trucks, %			6.00	2.00	2.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.943	0.980	0.980	
Flow Rate (vi), pc/h			6417	841		
Capacity (cmd), pc/h		9400	2100			
Adjusted Capacity (cmd), pc/h		8009	1995	1995		
Volume-to-Capacity Ratio (v/c)		0.80	80 0.42			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Free	eway (No), In	2	
Distance to Upstream Ramp (LUP), ft		7350	Speed Index (Ds)		0.374	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln		1573	

Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	56.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	69.1
Flow in Lanes 1 and 2 (v12), pc/h	3272	Ramp Junction Speed (S), mi/h	62.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.9
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/In	24.8

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

Generated: 01/29/2024 14:56:48

	HCS F	reeway l	Diverge Report		
Project Information					
Analyst	Concord Engineering]	Date	10/6/2023	
Agency			Analysis Year	2032 - No A	ction
Jurisdiction			Time Analyzed	PM Peak	
Project Description	SAMP		Units	U.S. Custom	ary
Segment Number	11		Segment Name		at SR 518 WB/I-405 Diverge Area
Analysis Period Number	1		Segment Analysis Period	16:45-17:00	
Geometric Data				•	
			Freeway	Ramp	
Number of Lanes (N), In			4	2	
Free-Flow Speed (FFS), mi/h			65.0	35.0	
Segment Length (L) / Deceleration	Length (LD), ft		1500	400	
Terrain Type			Level	Level	
Percent Grade, %			-	-	
Segment Type / Ramp Type			Freeway	Right-Sided	Major Diverge
Adjustment Factors					
Driver Population			All Familiar	All Familiar	
Weather Type			Non-Severe Weather	Non-Severe	Weather
Incident Type			No Incident	-	
Proportion of CAVs in Traffic Strea	m		0	-	
Final Speed Adjustment Factor (SA	.F)		1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	
Capacity Adjustment Factor (CAF)			0.852	0.950	
Capacity Adj. Factor for CAVs, CAF	CAV		Overwritten	-	
Demand and Capacity					
Demand Volume (Vi), veh/h			5180	2565	
Peak Hour Factor (PHF)			0.98	0.97	
Total Trucks, %			6.00	5.00	
Single-Unit Trucks (SUT), %			-	-	
Tractor-Trailers (TT), %			-	-	
Heavy Vehicle Adjustment Factor (fHV)		0.943	0.952		
Flow Rate (vi), pc/h		5605	2778	2778	
Capacity (cmd), pc/h		9400	4000		
Adjusted Capacity (cmd), pc/h		8009	3800		
Volume-to-Capacity Ratio (v/c)		0.70	0.73	0.73	
Density and LOS					
Average Density (D), pc/mi/ln	24.5		Average Speed (S), mi/h		57.1
Density in Ramp Influence Area (D	MD), pc/mi/ln 24.5		Level of Service (LOS)		С
Copyright © 2024 University of Florida. Al	Rights Reserved.	HCSTM Freewa	ys Version 2022	Gene	erated: 01/29/2024 14:57:06

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2032 - No Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	F12 - NB I-5 from SR 518 WB/I-405 EB Off Ramp to I-405 WB HOV On Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	3	Terrain Type	Level		
Segment Length (L), ft	2130	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	2615	Heavy Vehicle Adjustment Factor (fHV)	0.935		
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	951		
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.48		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	14.6		
Total Ramp Density Adjustment	-	Level of Service (LOS)	В		
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0				
6 11:00004111 1: 651 11 411 B1 1: 5		14 1 0000			

HCSTM Freeways Version 2022 F – I-5 NB [12]_Updated.xuf Generated: 01/29/2024 15:01:12

	HCS Basic Freeway Report						
Project Information	Project Information						
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2032 - No Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	F13 - NB I-5 from I-405 WB HOV On Ramp to I-405 WB On Ramp				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	4	Terrain Type	Level				
Segment Length (L), ft	150	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	2865	Heavy Vehicle Adjustment Factor (fHV)	0.935				
Peak Hour Factor (PHF)	0.96	Flow Rate (vp), pc/h/ln	798				
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.40				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	12.3				
Total Ramp Density Adjustment	-	Level of Service (LOS)	В				
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0						
Copyright © 2024 University of Florida, All Rights I	Deserved LICCEN Francis	rays Version 2022	Generated: 01/29/2024 15:03:1				

HCSTM Freeways Version 2022 F – I-5 NB [13-14]_Updated.xuf Generated: 01/29/2024 15:03:18

		HCS Freeway	Merge Report				
Project Information	Project Information						
Analyst	Concord Er	ngineering	Date	10/6/202	23		
Agency			Analysis Year	2032 - N	o Action		
Jurisdiction			Time Analyzed	PM Peak			
Project Description	SAMP		Units	U.S. Cust	omary		
Segment Number	2		Segment Name		I-5 at I-405 WB On erge Area		
Analysis Period Number	1		Segment Analysis Period	16:45-17	:00		
Geometric Data							
			Freeway	Ramp			
Number of Lanes (N), In			4	1			
Free-Flow Speed (FFS), mi/h			65.0	45.0			
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	1130			
Terrain Type			Level	Level			
Percent Grade, %			-	-			
Segment Type / Ramp Type			Freeway	Right-Sid	ded One-Lane		
Adjustment Factors							
Driver Population		All Familiar	All Famil	ar			
Weather Type			Non-Severe Weather	Non-Sev	ere Weather		
Incident Type		No Incident	-				
Proportion of CAVs in Traffic Stream			0	-			
Final Speed Adjustment Factor (SAF)	1		1.000	1.000			
Demand Adjustment Factor (DAF)			1.000	1.000	1.000		
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-		
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950		
Demand and Capacity							
Demand Volume (Vi), veh/h			2865	1070	1070		
Peak Hour Factor (PHF)			0.96	0.99	0.99		
Total Trucks, %			7.00	5.00	5.00		
Single-Unit Trucks (SUT), %			-	-			
Tractor-Trailers (TT), %			-	-			
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.952			
Flow Rate (vi), pc/h			3192	1135			
Capacity (cmd), pc/h			9400	2100			
Adjusted Capacity (cmd), pc/h			8009	1995			
Volume-to-Capacity Ratio (v/c)			0.54	0.57			
Speed and Density							
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on	Freeway (No), In	2		
Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ms)		0.263		
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc,	/h/ln	958		

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	59.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.356	Outer Lanes Freeway Speed (SO), mi/h	63.4
Flow in Lanes 1 and 2 (v12), pc/h	1277	Ramp Junction Speed (S), mi/h	60.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	2412	Average Density (D), pc/mi/ln	17.8
Level of Service (LOS)	В	Density in Ramp Influence Area (DR), pc/mi/In	16.8

HCSTM Freeways Version 2022 F – I-5 NB [13-14]_Updated.xuf

Generated: 01/29/2024 15:03:41

	HCS Basic F	reeway Report	
Project Information			
Analyst	Concord Engineering	Date	10/6/2023
Agency		Analysis Year	2032 - No Action
Jurisdiction		Time Analyzed	PM Peak
Project Description	SAMP	Units	U.S. Customary
Segment Number	1	Segment Name	F15 - NB I-5 from SR 518 EB On Ramp to Southcenter Blvd NB On Ramp
Analysis Period Number	1	Segment Analysis Period	16:45-17:00
Geometric Data			
Number of Lanes (N), In	5	Terrain Type	Level
Segment Length (L), ft	700	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		
Adjustment Factors			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten
Demand and Capacity			
Demand Volume (V), veh/h	5000	Heavy Vehicle Adjustment Factor (fHV)	0.943
Peak Hour Factor (PHF)	0.94	Flow Rate (vp), pc/h/ln	1128
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.56
Passenger Car Equivalent (ET)	2.00		
Speed and Density			
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	64.7
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	17.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	В
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS Freeway Merge Report							
Project Information	Project Information						
Analyst	Concord E	ngineering	Date	10/6/2023			
Agency			Analysis Year	2032 - No	Action		
Jurisdiction			Time Analyzed	PM Peak			
Project Description S	SAMP		Units	U.S. Custo	mary		
Segment Number 2	2		Segment Name		-5 at Southcenter Blvd mp Merge Area		
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00		
Geometric Data							
			Freeway	Ramp			
Number of Lanes (N), In			5	1			
Free-Flow Speed (FFS), mi/h			65.0	35.0			
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	1070			
Terrain Type			Level	Level			
Percent Grade, %			-	-			
Segment Type / Ramp Type		Freeway	Right-Side	Right-Sided One-Lane			
Adjustment Factors							
Driver Population		All Familiar	All Familia	r			
Weather Type			Non-Severe Weather	Non-Seve	Non-Severe Weather		
Incident Type		No Incident	-				
Proportion of CAVs in Traffic Stream			0	-	-		
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000		
Demand Adjustment Factor (DAF)			1.000	1.000	1.000		
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-		
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950		
Demand and Capacity							
Demand Volume (Vi), veh/h			5000	890			
Peak Hour Factor (PHF)			0.94	0.95	0.95		
Total Trucks, %			6.00	5.00	5.00		
Single-Unit Trucks (SUT), %			-	-	-		
Tractor-Trailers (TT), %			-	-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.943	0.952	0.952		
Flow Rate (vi), pc/h			5641	984			
Capacity (cmd), pc/h			11750	2000			
Adjusted Capacity (cmd), pc/h		10011	1900	1900			
Volume-to-Capacity Ratio (v/c)			0.66	0.52	0.52		
Speed and Density							
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Freev	vay (NO), In	2		
Distance to Upstream Ramp (LUP), ft		-	Speed Index (MS)		0.304		
Downstream Equilibrium Distance (Li	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln		1286		

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.095	Outer Lanes Freeway Speed (SO), mi/h	62.2
Flow in Lanes 1 and 2 (v12), pc/h	1715	Ramp Junction Speed (S), mi/h	60.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	2699	Average Density (D), pc/mi/ln	17.6
Level of Service (LOS)	В	Density in Ramp Influence Area (DR), pc/mi/ln	19.4

HCSTM Freeways Version 2022 F – I-5 NB [15-16]_Updated.xuf

Generated: 10/06/2023 12:20:33

		HCS Freeway Weaving Report				
Project Information	_					
Analyst Concord Engineering		ng	Date		10/6/2023	
Agency				Analysis Year		2032 - Proposed Action
Jurisdiction				Time Analyzed		PM Peak
Project Description		SAMP		Units		U.S. Customary
Segment Number		2		Segment Name		A1 - EB SR 518 from SR 509 NB Off Ramp to DMM EB off Ramp
Analysis Period Number		1		Segment Analysis Per	riod	16:45-17:00
Geometric Data						
Number of Lanes (N), In		3		Segment Type		Freeway
Segment Length (Ls), ft		140		Number of Maneuve	r Lanes (NWL), In	2
Weaving Configuration		One-Sided		Ramp-to-Freeway La	ne Changes (LCRF), Ic	1
Terrain Type		Level		Freeway-to-Ramp La	ne Changes (LCFR), Ic	1
Percent Grade, %		-		Ramp-to-Ramp Lane	Changes (LCRR), Ic	0
Interchange Density (ID), int/mi		0.67		Cross Weaving Managed Lane		No
Adjustment Factors						
Driver Population		All Familiar		Final Speed Adjustment Factor (SAF)		1.000
Weather Type		Non-Severe Weather		Demand Adjustment	Factor (DAF)	1.000
Incident Type		No Incident		Capacity Adjustment	Factor for CAVs, CAFCAV	Overwritten
Proportion of CAVs in Traffic Stream		0		Final Capacity Adjust	ment Factor (CAF)	0.900
Demand and Capacity						
		FF		RF	RR	FR
Demand Volume (Vi), veh/h	16	35	800)	73	165
Peak Hour Factor (PHF)	0.9	96	0.8	6	0.94	0.79
Total Trucks, %	2.0	00	3.0	0	0.00	0.00
Heavy Vehicle Adjustment Factor (fHV)	0.9	980	0.9	71	1.000	1.000
Flow Rate (vi), pc/h	17	38	958	8 78		209
Weaving Flow Rate (vw), pc/h	11	67	Ide	leal Conditions Capacity (cIFL), pc/h/ln		2350
Non-Weaving Flow Rate (vNW), pc/h	18	16	De	Density-Based Capacity (cIWL × N × fHV), veh/h		5454
Total Flow Rate (v), pc/h	29	83	De	mand Flow-Based Cap	acity (cɪw × fнv), veh/h	6009
Volume Ratio (VR)	0.3	91	We	Veaving Area Capacity (cw), veh/h		5454
Minimum Lane Change Rate (LCMIN), lc/h	11	1167 Ad		djusted Weaving Area Capacity (cWA), veh/h		4909
Maximum Weaving Length (LMAX), ft	65	6580 Vo		lume-to-Capacity Ratio	o (v/c)	0.59
Speed and Density						
Non-Weaving Vehicle Index (INW)		17		Average Weaving Spe	eed (Sw), mi/h	37.7
Non-Weaving Lane Change Rate (LCNW), lc,	/h	0		Average Non-Weavir	g Speed (SNW), mi/h	51.8
Weaving Lane Change Rate (LCW), lc/h		1167		Average Speed (S), mi/h		45.2

Weaving Lane Change Rate (LCAII), lc/h	1167	Density (D), pc/mi/ln	22.0
Weaving Intensity Factor (W)	1.204	Level of Service (LOS)	С

HCSTM Freeways Version 2022 A – SR 518 EB_Updated.xuf Generated: 01/31/2024 12:55:50

HCS Basic Freeway Report							
Project Information	Project Information						
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2032 - Proposed Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	3	Segment Name	A2 - EB SR 518 from DMM EB off Ramp to DMM Interchange				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	2	Terrain Type	Level				
Segment Length (L), ft	1290	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.33				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	2435	Heavy Vehicle Adjustment Factor (fHV)	0.980				
Peak Hour Factor (PHF)	0.95	Flow Rate (vp), pc/h/ln	1308				
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.65				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	62.9				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	20.7				
Total Ramp Density Adjustment	-	Level of Service (LOS)	С				
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0						
S 11:000001111 1: 651 11 411 B1 1: 5		14 1 0000					

HCSTM Freeways Version 2022 A – SR 518 EB_Updated.xuf Generated: 01/31/2024 12:56:10

HCS Basic Freeway Report							
Project Information	Project Information						
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2032 - Proposed Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	B1 - WB SR 518 from DMM Undercrossing to Diverge Influence Point				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	2	Terrain Type	Level				
Segment Length (L), ft	940	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	60.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	3022	Heavy Vehicle Adjustment Factor (fHV)	0.980				
Peak Hour Factor (PHF)	0.99	Flow Rate (vp), pc/h/ln	1558				
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2300				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1960				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.79				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	55.9				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	27.9				
Total Ramp Density Adjustment	-	Level of Service (LOS)	D				
Adjusted Free-Flow Speed (FFSadj), mi/h	60.0						
6 11:00004111 1: (FI 11 411 B) 1: F		14 1 0000					

HCSTM Freeways Version 2022 B – SR 518 WB_Updated.xuf Generated: 01/30/2024 09:45:25

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord E	ngineering	Date		10/6/2023	
Agency			Analysis Year		2032 - Pro	posed Action
Jurisdiction			Time Analyzed		PM Peak	
Project Description	SAMP		Units		U.S. Custo	mary
Segment Number	2		Segment Name			R 518 from DMM fluence Point to SR 509 mp
Analysis Period Number	1		Segment Analysis Period		16:45-17:0	0
Geometric Data						
			Freeway		Ramp	
Number of Lanes (N), In			2		1	
Free-Flow Speed (FFS), mi/h			60.0		35.0	
Segment Length (L) / Deceleration L	ength (LD),	ft	1500		890	
Terrain Type			Level		Level	
Percent Grade, %		-		-		
Segment Type / Ramp Type			Freeway		Right-Side	d One-Lane
Adjustment Factors						
Driver Population		All Familiar		All Familia	r	
Weather Type		Non-Severe Weather		Non-Seve	e Weather	
Incident Type		No Incident		-		
Proportion of CAVs in Traffic Stream		0		-		
Final Speed Adjustment Factor (SAF))		1.000		1.000	
Demand Adjustment Factor (DAF)			1.000		1.000	
Capacity Adjustment Factor (CAF)			0.852		0.950	
Capacity Adj. Factor for CAVs, CAFCA	١V		Overwritten		-	
Demand and Capacity						
Demand Volume (Vi), veh/h			3022		1115	
Peak Hour Factor (PHF)			0.98		0.95	
Total Trucks, %			2.00		1.00	
Single-Unit Trucks (SUT), %			-		-	
Tractor-Trailers (TT), %			-		-	
Heavy Vehicle Adjustment Factor (f	IV)		0.980		0.990	
Flow Rate (vi), pc/h			3147		1186	
Capacity (cmd), pc/h			4600		2000	
Adjusted Capacity (cmd), pc/h			3919		1900	
Volume-to-Capacity Ratio (v/c)			0.80 0.62			
Speed and Density						
Upstream Equilibrium Distance (LEQ)), ft	-	Number of Outer Lanes of	n Freeway	(No), In	0
Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ds) 0.535			0.535
Downstream Equilibrium Distance (L	.EQ), ft	-	Flow Outer Lanes (vOA), p	c/h/ln		-

Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	50.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	65.8
Flow in Lanes 1 and 2 (v12), pc/h	3147	Ramp Junction Speed (S), mi/h	50.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.2
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/In	23.3

HCSTM Freeways Version 2022 B – SR 518 WB_Updated.xuf

Generated: 01/30/2024 09:45:45

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2032 - Proposed Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	C1 - EB SR 518 from 51st St Off Ramp to I-5 NB Off Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	3	Terrain Type	Level		
Segment Length (L), ft	1030	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	3355	Heavy Vehicle Adjustment Factor (fHV)	0.952		
Peak Hour Factor (PHF)	0.97	Flow Rate (vp), pc/h/ln	1575		
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2220		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.01		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0				

HCS TIM Freeways Version 2022 C1 – SR 518+I-5 & I-405 EB_Updated.xuf Generated: 01/30/2024 09:47:25

	HCS Basic Freeway Report				
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2032 - Proposed Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	C2 - EB SR 518 from I-5 NB Off Ramp to I-5 SB Off Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	2	Terrain Type	Level		
Segment Length (L), ft	650	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	2219	Heavy Vehicle Adjustment Factor (fHV)	0.943		
Peak Hour Factor (PHF)	0.95	Flow Rate (vp), pc/h/ln	1610		
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2220		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.04		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0				
Copyright © 2024 University of Florida, All Rights I	Deserved LICCEM Francis	vavs Version 2022	Generated: 01/30/2024 09:48:5/		

HCS TIM Freeways Version 2022 C2 – SR 518+I-5 & I-405 EB_Updated.xuf Generated: 01/30/2024 09:48:54

	HCS Basic Freeway Report					
Project Information	Project Information					
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2032 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	C4 - NB I-405 from I-5 SB On Ramp to I-5 NB On Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	2	Terrain Type	Level			
Segment Length (L), ft	670	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity	-					
Demand Volume (V), veh/h	4155	Heavy Vehicle Adjustment Factor (fHV)	0.943			
Peak Hour Factor (PHF)	0.96	Flow Rate (vp), pc/h/ln	2984			
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2350			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.49			
Passenger Car Equivalent (ET)	2.00					
Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	44.5			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0			
Total Ramp Density Adjustment	-	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0					
Copyright © 2024 University of Florida, All Rights I	Deserved LICCEN Francis	rays Version 2022	Generated: 01/30/2024 09:49:43			

HCS TIM Freeways Version 2022 C4 – SR 518+I-5 & I-405 EB_Updated.xuf Generated: 01/30/2024 09:49:43

	HCS Basic Freeway Report					
Project Information	Project Information					
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2032 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	C5 - NB I-405 from I-5 NB On Ramp to Southcenter Pkwy			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	3	Terrain Type	Level			
Segment Length (L), ft	1180	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity						
Demand Volume (V), veh/h	5735	Heavy Vehicle Adjustment Factor (fHV)	0.943			
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	2689			
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2350			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.34			
Passenger Car Equivalent (ET)	2.00					
Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	44.5			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0			
Total Ramp Density Adjustment	-	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0					
Copyright © 2024 University of Florida, All Rights F	Deserved LICCEN Francis	rays Varsion 2022	Generated: 01/30/2024 09:51:0			

HCS TIM Freeways Version 2022 C5 – SR 518+I-5 & I-405 EB_Updated.xuf Generated: 01/30/2024 09:51:04

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2032 - Proposed Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	D1 - SB I-405 from Interurban Ave S 3-Lane Start Point to I-5 NB Off/ Southcenter Off Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	3	Terrain Type	Level		
Segment Length (L), ft	1820	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	4848	Heavy Vehicle Adjustment Factor (fHV)	0.952		
Peak Hour Factor (PHF)	0.99	Flow Rate (vp), pc/h/ln	2229		
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2220		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.43		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0				

	HCS Basic Freeway Report				
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2032 - Proposed Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	D2 - SB I-405 from I-5 NB Off Ramp to I-5 NB On Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	2	Terrain Type	Level		
Segment Length (L), ft	1350	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity	-				
Demand Volume (V), veh/h	3178	Heavy Vehicle Adjustment Factor (fHV)	0.952		
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	2214		
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2220		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.42		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0				
Copyright © 2024 University of Florida, All Rights I	Deserved LICCEM Francis	vavs Version 2022	Generated: 01/30/2024 09:53:2		

HCS TIM Freeways Version 2022 D2 – SR 518+I-5 & I-405 W_Updated.xuf Generated: 01/30/2024 09:53:22

		HCS Freeway	y V	Veaving Repo	rt	
Project Information	_					
Analyst		Concord Engineerin	ng	Date		10/6/2023
Agency				Analysis Year		2032 - Proposed Action
Jurisdiction				Time Analyzed		PM Peak
Project Description		SAMP		Units		U.S. Customary
Segment Number		1		Segment Name		D3 - SB I-405 from I-5 NB On Ramp to I-5 SB Off Ramp
Analysis Period Number		1		Segment Analysis Per	riod	16:45-17:00
Geometric Data						
Number of Lanes (N), In		3		Segment Type		Freeway
Segment Length (Ls), ft		570		Number of Maneuve	r Lanes (NWL), In	0
Weaving Configuration		Two-Sided		Ramp-to-Freeway La	ne Changes (LCRF), Ic	1
Terrain Type		Level		Freeway-to-Ramp La	ne Changes (LCFR), lc	1
Percent Grade, %		-		Ramp-to-Ramp Lane	Changes (LCRR), lc	2
Interchange Density (ID), int/mi		0.67		Cross Weaving Managed Lane		No
Adjustment Factors						
Driver Population		All Familiar		Final Speed Adjustment Factor (SAF)		0.700
Weather Type		Non-Severe Weather		Demand Adjustment	Factor (DAF)	1.300
Incident Type		No Incident		Capacity Adjustment Factor for CAVs, CAFCAV		Overwritten
Proportion of CAVs in Traffic Stream		0		Final Capacity Adjust	ment Factor (CAF)	0.900
Demand and Capacity						
		FF		RF	RR	FR
Demand Volume (Vi), veh/h	17	55	10	61	507	1520
Peak Hour Factor (PHF)	0.9	98	0.9	4	0.96	0.97
Total Trucks, %	5.0	00	2.0	0	2.00	4.00
Heavy Vehicle Adjustment Factor (fHV)	0.9	952	0.9	80	0.980	0.962
Flow Rate (vi), pc/h	24	45	130	1362 638		2118
Weaving Flow Rate (vw), pc/h	63	8	Ide	deal Conditions Capacity (cIFL), pc/h/ln		2200
Non-Weaving Flow Rate (vNW), pc/h	59	25	De	Density-Based Capacity (CIWL × N × fHV), veh/h		5003
Total Flow Rate (v), pc/h	65	63	De	Demand Flow-Based Capacity (cIW × fHV), veh/h		-
Volume Ratio (VR)	0.1	104	We	Weaving Area Capacity (cW), veh/h		5003
Minimum Lane Change Rate (LCMIN), lc/h	12	276 Ad		djusted Weaving Area Capacity (cwa), veh/h		4503
Maximum Weaving Length (LMAX), ft	67	6710 Vo		lume-to-Capacity Ratio) (v/c)	1.00
Speed and Density						
Non-Weaving Vehicle Index (INW)		225		Average Weaving Spe	eed (Sw), mi/h	33.1
Non-Weaving Lane Change Rate (LCNW), Ic,	/h	952		Average Non-Weavir	ig Speed (SNW), mi/h	25.8
Weaving Lane Change Rate (LCW), lc/h		1363		Average Speed (S), mi/h		26.4

Weaving Lane Change Rate (LCAII), Ic/h	2315	Density (D), pc/mi/ln	82.9
Weaving Intensity Factor (W)	0.683	Level of Service (LOS)	F

HCSTM Freeways Version 2022 D3 – SR 518+I-5 & I-405 W_Updated.xuf Generated: 01/31/2024 09:53:19

HCS Basic Freeway Report						
Project Information	Project Information					
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2032 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	D4 - WB SR 518 from I-5 SB Off Ramp to I-5 SB On Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	2	Terrain Type	Level			
Segment Length (L), ft	1280	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00			
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity						
Demand Volume (V), veh/h	2719	Heavy Vehicle Adjustment Factor (fHV)	0.980			
Peak Hour Factor (PHF)	0.90	Flow Rate (vp), pc/h/ln	2004			
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2220			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.29			
Passenger Car Equivalent (ET)	2.00					
Speed and Density	Speed and Density					
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	34.5			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	45.0			
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0					
S 11:000001111 1: 651 11 411 51 1: 5						

HCSTM Freeways Version 2022 D4 – SR 518+I-5 & I-405 W_Updated.xuf

Generated: 01/30/2024 09:56:01

	HCS Basic Freeway Report					
Project Information	Project Information					
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2032 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	D5 - WB SR 518 from I-5 SB On Ramp to 51st St On Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	3	Terrain Type	Level			
Segment Length (L), ft	760	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity	-					
Demand Volume (V), veh/h	3832	Heavy Vehicle Adjustment Factor (fHV)	0.980			
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	1729			
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2220			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.11			
Passenger Car Equivalent (ET)	2.00					
Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0			
Total Ramp Density Adjustment	-	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0					

HCSTM Freeways Version 2022 D5 – SR 518+I-5 & I-405 W_Updated.xuf Generated: 01/30/2024 09:57:00

	HCS Free	eway Diverge Report	
Project Information			
Analyst	Concord Engineering	Date	10/6/2023
Agency		Analysis Year	2032 - Proposed Action
Jurisdiction		Time Analyzed	PM Peak
Project Description	SAMP	Units	U.S. Customary
Segment Number	1	Segment Name	E1 - SB I-5 at Southcenter Blvd/ SR 518 Off Ramp Diverge Area
Analysis Period Number	1	Segment Analysis Period	16:45-17:00
Geometric Data	·	·	
		Freeway	Ramp
Number of Lanes (N), In		6	2
Free-Flow Speed (FFS), mi/h		65.0	45.0
Segment Length (L) / Decelera	tion Length (LD), ft	1500	840
Terrain Type		Level	Level
Percent Grade, %		-	-
Segment Type / Ramp Type		Freeway	Right-Sided Major Diverge
Adjustment Factors		·	·
Driver Population		All Familiar	All Familiar
Weather Type		Non-Severe Weather	Non-Severe Weather
Incident Type		No Incident	-
Proportion of CAVs in Traffic St	ream	0	-
Final Speed Adjustment Factor	(SAF)	0.600	1.000
Demand Adjustment Factor (Da	AF)	1.300	1.300
Capacity Adjustment Factor (Ca	AF)	0.800	0.950
Capacity Adj. Factor for CAVs, (CAFCAV	Overwritten	-
Demand and Capacity		<u> </u>	·
Demand Volume (Vi), veh/h		8618	2053
Peak Hour Factor (PHF)		0.94	0.98
Total Trucks, %		15.00	9.00
Single-Unit Trucks (SUT), %		-	-
Tractor-Trailers (TT), %		-	-
Heavy Vehicle Adjustment Fact	or (fHV)	0.870	0.917
Flow Rate (vi), pc/h		13699	2970
Capacity (cmd), pc/h		13500	4200
Adjusted Capacity (cmd), pc/h		10800	3990
Volume-to-Capacity Ratio (v/c)		1.27	0.74
Density and LOS			
Average Density (D), pc/mi/ln	40.0	Average Speed (S), mi/h	39.0
Density in Ramp Influence Area	a (DMD), pc/mi/ln 40.0	Level of Service (LOS)	E
Copyright © 2024 University of Florida. All Rights Reserved. HCSTM Freeways Version 2022 Generated: 01/31/2024 16:34			

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2032 - Proposed Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	2	Segment Name	E2 - SB I-5 from Southcenter Blvd/SR 518 Off Ramp to I-405 NB Off Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	6	Terrain Type	Level		
Segment Length (L), ft	2240	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.600		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	5949	Heavy Vehicle Adjustment Factor (fHV)	0.855		
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	1538		
Total Trucks, %	17.00	Capacity (c), pc/h/ln	2200		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1760		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.87		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	39.0		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	39.4		
Total Ramp Density Adjustment	-	Level of Service (LOS)	Е		
Adjusted Free-Flow Speed (FFSadj), mi/h	39.0				

HCS Basic Freeway Report						
Project Information	Project Information					
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2032 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	E3 - SB I-5 from I-405 NB Off Ramp to I-405 SB On Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	4	Terrain Type	Level			
Segment Length (L), ft	620	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.600			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity						
Demand Volume (V), veh/h	4225	Heavy Vehicle Adjustment Factor (fHV)	0.800			
Peak Hour Factor (PHF)	0.99	Flow Rate (vp), pc/h/ln	1734			
Total Trucks, %	25.00	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1760			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81			
Passenger Car Equivalent (ET)	2.00					
Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	20.0			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	71.9			
Total Ramp Density Adjustment	-	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	39.0					
6 11:00004111 1: 651 11 411 B1 1: 5		14 1 0000				

HCSTM Freeways Version 2022 E – I-5 SB [3]_Updated.xuf

HCS Basic Freeway Report						
Project Information	Project Information					
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2032 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	E4 - SB I-5 from I-405 SB On Ramp to Klickitat SB On Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	5	Terrain Type	Level			
Segment Length (L), ft	4330	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity						
Demand Volume (V), veh/h	5745	Heavy Vehicle Adjustment Factor (fHV)	0.840			
Peak Hour Factor (PHF)	0.97	Flow Rate (vp), pc/h/ln	1833			
Total Trucks, %	19.00	Capacity (c), pc/h/ln	2220			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1776			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.78			
Passenger Car Equivalent (ET)	2.00					
Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	18.1			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	76.6			
Total Ramp Density Adjustment	-	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0					
6 11:00004111 1: (FL 11 All B) 1: F						

HCSTM Freeways Version 2022 E – I-5 SB [4-5]_Updated.xuf

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date		10/6/2023	
Agency			Analysis Year		2032 - Pro	posed Action
Jurisdiction			Time Analyzed		PM Peak	
Project Description	SAMP		Units		U.S. Custo	mary
Segment Number	2		Segment Name		E5 - SB I-5 Ramp Mer	at Klickitat SB On ge Area
Analysis Period Number	1		Segment Analysis Period		16:45-17:0	0
Geometric Data						
			Freeway		Ramp	
Number of Lanes (N), In			5		1	
Free-Flow Speed (FFS), mi/h			65.0		45.0	
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500		1500	
Terrain Type			Level		Level	
Percent Grade, %			-		-	
Segment Type / Ramp Type			Freeway		Right-Side	d One-Lane
Adjustment Factors						
Driver Population		All Familiar		All Familiar		
Weather Type			Non-Severe Weather		Non-Severe Weather	
Incident Type		No Incident		-		
Proportion of CAVs in Traffic Stream			0		-	
Final Speed Adjustment Factor (SAF)	1		0.800		1.000	
Demand Adjustment Factor (DAF)			1.000		1.300	
Capacity Adjustment Factor for CAV	s, CAFCAV		Overwritten		-	
Final Capacity Adjustment Factor (CA	AF)		0.800		0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			7469		1179	
Peak Hour Factor (PHF)			0.97		0.92	
Total Trucks, %			19.00		0.02	
Single-Unit Trucks (SUT), %			-		-	
Tractor-Trailers (TT), %			-		-	
Heavy Vehicle Adjustment Factor (fH	V)		0.840		1.000	
Flow Rate (vi), pc/h			9165		1666	
Capacity (cmd), pc/h			11250		2100	
Adjusted Capacity (cmd), pc/h			9000		1995	
Volume-to-Capacity Ratio (v/c)			0.85		0.84	
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes or	n Freeway	(No), In	2
Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ms)			0.483
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), po	:/h/ln		2000

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h 47.2	
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.010	Outer Lanes Freeway Speed (SO), mi/h	46.6
Flow in Lanes 1 and 2 (v12), pc/h	2666	Ramp Junction Speed (S), mi/h	23.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	4332	Average Density (D), pc/mi/ln	64.4
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/In	29.2

HCSTM Freeways Version 2022 E – I-5 SB [4-5]_Updated.xuf

HCS Basic Freeway Report				
Project Information				
Analyst	Concord Engineering	Date	10/6/2023	
Agency		Analysis Year	2032 - Proposed Action	
Jurisdiction		Time Analyzed		
Project Description	SAMP	Units	U.S. Customary	
Segment Number	1	Segment Name	E6 - SB I-5 from Klickitat SB On Ramp Merge Area to 188th St SB Off Ramp Diverge Area	
Analysis Period Number	1	Segment Analysis Period	16:45-17:00	
Geometric Data				
Number of Lanes (N), In	5	Terrain Type	Level	
Segment Length (L), ft	2000	Percent Grade, %	-	
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-	
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-	
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0	
Right-Side Lateral Clearance, ft	-			
Adjustment Factors	-			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800	
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300	
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800	
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten	
Demand and Capacity				
Demand Volume (V), veh/h	6924	Heavy Vehicle Adjustment Factor (fHV)	0.862	
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	1776	
Total Trucks, %	16.00	Capacity (c), pc/h/ln	2220	
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1776	
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.00	
Passenger Car Equivalent (ET)	2.00			
Speed and Density				
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	39.5	
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0	
Total Ramp Density Adjustment	-	Level of Service (LOS)	F	
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0			
G	Deserved LICCEN Francis		Carageta di 01/21/2024 10:20:27	

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord E	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - Pro	posed Action	
Jurisdiction			Time Analyzed			
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number 2	2		Segment Name	E7 - SB I-5 Ramp Dive	at 188th St SB Off erge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data			·			
			Freeway	Ramp		
Number of Lanes (N), In			5	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Deceleration L	ength (LD),	ft	1500	240		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type	egment Type / Ramp Type		Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Seve	Non-Severe Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			0.800	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor (CAF)			0.800	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			9001	1220		
Peak Hour Factor (PHF)			0.98	0.90	0.90	
Total Trucks, %			16.00	9.00	9.00	
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.862	0.917		
Flow Rate (vi), pc/h			10655	1922		
Capacity (cmd), pc/h			11250	2100		
Adjusted Capacity (cmd), pc/h	Adjusted Capacity (cmd), pc/h		9000	1995	1995	
Volume-to-Capacity Ratio (v/c)			0.99	0.96		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on F	reeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (DS)		0.471	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h	n/ln	1462	

Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h 47.3	
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	55.2
Flow in Lanes 1 and 2 (v12), pc/h	4181	Ramp Junction Speed (S), mi/h	50.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.2
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/In	38.0

HCSTM Freeways Version 2022 E – I-5 SB [6-8]_Updated.xuf

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2032 - Proposed Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	E9 - SB I-5 from Lane Reduction Point to 188th St SB On Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	4	Terrain Type	Level		
Segment Length (L), ft	2330	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	5704	Heavy Vehicle Adjustment Factor (fHV)	0.855		
Peak Hour Factor (PHF)	0.97	Flow Rate (vp), pc/h/ln	2235		
Total Trucks, %	17.00	Capacity (c), pc/h/ln	2350		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	22.7		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	71.9		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0				
6 11:00004111 1: (FI 11 411 B) 1: F		14 1 0000			

HCSTM Freeways Version 2022 E – I-5 SB [9-14]_Updated.xuf

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description	SAMP		Units	U.S. Custo	mary	
Segment Number	2		Segment Name	E10 - SB I- Ramp Mer	5 at 188th St SB On ge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1440	520		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Sever	e Weather	
Incident Type		No Incident	-			
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)	1		1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor for CAV	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			7415	785	785	
Peak Hour Factor (PHF)			0.97	0.99	0.99	
Total Trucks, %			17.00	4.00	4.00	
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (fH	V)		0.855	0.962	0.962	
Flow Rate (vi), pc/h			8941	1071		
Capacity (cmd), pc/h			9400	2000		
Adjusted Capacity (cmd), pc/h		8009	1900	1900		
Volume-to-Capacity Ratio (v/c)			0.93	0.56		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fr	eeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ms)		0.439	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/	ln .	1957	

Distance to Downstream Ramp (LDOWN), ft	2940	On-Ramp Influence Area Speed (SR), mi/h 54.9	
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.084	Outer Lanes Freeway Speed (SO), mi/h	59.8
Flow in Lanes 1 and 2 (v12), pc/h	2610	Ramp Junction Speed (S), mi/h	57.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	3681	Average Density (D), pc/mi/ln	33.1
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/In	30.5

HCSTM Freeways Version 2022 E – I-5 SB [9-14]_Updated.xuf

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord E	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description 5	SAMP		Units	U.S. Custo	mary	
Segment Number	4		Segment Name	E12 - SB I- Ramp Dive	5 at 200th St SB Off erge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Deceleration Le	ength (LD),	ft	1440	180		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Seve	re Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000		
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor (CAF)			0.852	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			8436	455		
Peak Hour Factor (PHF)			0.97	0.80	0.80	
Total Trucks, %			15.00	4.00	4.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.870	0.962	0.962	
Flow Rate (vi), pc/h			9996	769		
Capacity (cmd), pc/h			9400	2000		
Adjusted Capacity (cmd), pc/h		8009	1900			
Volume-to-Capacity Ratio (v/c)			0.93	0.40		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fre	eeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		2940	Speed Index (Ds)		0.497	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/l	n	1887	

Distance to Downstream Ramp (LDOWN), ft	1730	Off-Ramp Influence Area Speed (SR), mi/h 53.6	
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.8
Flow in Lanes 1 and 2 (v12), pc/h	3685	Ramp Junction Speed (S), mi/h	60.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.1
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/In	34.3

HCSTM Freeways Version 2022 E – I-5 SB [9-14]_Updated.xuf

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description	SAMP		Units	U.S. Custo	mary	
Segment Number	6		Segment Name	E14 - SB I- Ramp Mer	5 at 200th St SB On ge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	470		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	ed One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Seve	re Weather	
Incident Type		No Incident	-			
Proportion of CAVs in Traffic Stream			0	-		
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			7844	520	520	
Peak Hour Factor (PHF)			0.96	0.96	0.96	
Total Trucks, %			14.00	2.00	2.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (fH	V)		0.877	0.980	0.980	
Flow Rate (vi), pc/h			9317	719		
Capacity (cmd), pc/h		9400	2000			
Adjusted Capacity (cmd), pc/h		8009	1900	1900		
Volume-to-Capacity Ratio (v/c)			0.91	0.38	0.38	
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fre	eeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		1730	Speed Index (Ms)		0.676	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/l	n	2700	

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	49.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.128	Outer Lanes Freeway Speed (SO), mi/h	56.1
Flow in Lanes 1 and 2 (v12), pc/h	3917	Ramp Junction Speed (S), mi/h	32.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	4636	Average Density (D), pc/mi/ln	55.8
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/In	38.4

HCSTM Freeways Version 2022 E – I-5 SB [9-14]_Updated.xuf

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord Er	ngineering	Date		10/6/2023	
Agency			Analysis Year		2032 - Pro	posed Action
Jurisdiction			Time Analyzed		PM Peak	
Project Description S	SAMP		Units		U.S. Custo	mary
Segment Number	1		Segment Name		F1 - NB I-5 Ramp Dive	at Military Rd NB Off erge Area
Analysis Period Number	1		Segment Analysis Period		16:45-17:0	0
Geometric Data						
			Freeway		Ramp	
Number of Lanes (N), In			4		1	
Free-Flow Speed (FFS), mi/h			65.0		35.0	
Segment Length (L) / Deceleration Le	ength (LD),	ft	1500		290	
Terrain Type			Level		Level	
Percent Grade, %			-		-	
Segment Type / Ramp Type			Freeway		Right-Side	d One-Lane
Adjustment Factors						
Driver Population			All Familiar		All Familiar	
Weather Type			Non-Severe Weather		Non-Sever	e Weather
Incident Type			No Incident		-	
Proportion of CAVs in Traffic Stream			0		-	
Final Speed Adjustment Factor (SAF)			1.000		1.000	
Demand Adjustment Factor (DAF)			1.000		1.000	
Capacity Adjustment Factor (CAF)			1.000		0.852	
Capacity Adj. Factor for CAVs, CAFCA	V		1.000		-	
Demand and Capacity						
Demand Volume (Vi), veh/h			4854		260	
Peak Hour Factor (PHF)			0.97		0.93	
Total Trucks, %			7.00		3.00	
Single-Unit Trucks (SUT), %			-		-	
Tractor-Trailers (TT), %			-		-	
Heavy Vehicle Adjustment Factor (fH	V)		0.935		0.971	
Flow Rate (vi), pc/h			5352		288	
Capacity (cmd), pc/h		9400		2000		
Adjusted Capacity (cmd), pc/h		9400		1704		
Volume-to-Capacity Ratio (v/c)			0.57		0.17	
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes or	n Freeway	y (No), In	2
Distance to Upstream Ramp (LUP), ft		-	Speed Index (DS)			0.454
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), po	c/h/ln		1428

Distance to Downstream Ramp (LDOWN), ft	900	Off-Ramp Influence Area Speed (SR), mi/h	54.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	69.6
Flow in Lanes 1 and 2 (v12), pc/h	2496	Ramp Junction Speed (S), mi/h	61.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.7
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/In	23.1

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	3		Segment Name	F3 - NB I-5 Ramp Mer	5 at Military Rd NB On ge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	710		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	ed One-Lane	
Adjustment Factors				·		
Driver Population			All Familiar	All Familia	r	
Weather Type			Non-Severe Weather	Non-Seve	re Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			4594	710	710	
Peak Hour Factor (PHF)			0.97	0.97	0.97	
Total Trucks, %			7.00	1.00	1.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.990	0.990	
Flow Rate (vi), pc/h			5065	739		
Capacity (cmd), pc/h		9400	2000			
Adjusted Capacity (cmd), pc/h		8009	1900	1900		
Volume-to-Capacity Ratio (v/c)		0.72	0.39			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Free	eway (No), In	2	
Distance to Upstream Ramp (LUP), ft		900	Speed Index (Ms)		0.333	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln		1520	

Distance to Downstream Ramp (LDOWN), ft	5090	On-Ramp Influence Area Speed (SR), mi/h	57.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.125	Outer Lanes Freeway Speed (SO), mi/h	61.3
Flow in Lanes 1 and 2 (v12), pc/h	2026	Ramp Junction Speed (S), mi/h	59.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	2765	Average Density (D), pc/mi/ln	24.5
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/In	22.3

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	5		Segment Name	F5 - NB I-5 Ramp Dive	at 188th St NB Off erge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Deceleration Le	ength (LD),	ft	1500	180		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	r	
Weather Type			Non-Severe Weather	Non-Sever	e Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor (CAF)			0.852	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			5304	640		
Peak Hour Factor (PHF)			0.98	0.95	0.95	
Total Trucks, %			7.00	8.00	8.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.926		
Flow Rate (vi), pc/h			5788	728		
Capacity (cmd), pc/h		9400	2100			
Adjusted Capacity (cmd), pc/h		8009	1995	1995		
Volume-to-Capacity Ratio (v/c)		0.72	0.36			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fre	eeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		5090	Speed Index (DS)		0.364	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/l	n	1427	

Distance to Downstream Ramp (LDOWN), ft	2260	Off-Ramp Influence Area Speed (SR), mi/h	56.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	69.6
Flow in Lanes 1 and 2 (v12), pc/h	2934	Ramp Junction Speed (S), mi/h	62.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	23.2
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/ln	27.9

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description 5	SAMP		Units	U.S. Custo	mary	
Segment Number	7		Segment Name	F7 - NB I-5 Ramp Mer	5 at 188th St NB On ge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	570		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	r	
Weather Type			Non-Severe Weather	Non-Sever	re Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-		
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			4664	1375	1375	
Peak Hour Factor (PHF)			0.99	0.92		
Total Trucks, %			7.00	2.00	2.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.980		
Flow Rate (vi), pc/h			5039	1525		
Capacity (cmd), pc/h		9400	2100			
Adjusted Capacity (cmd), pc/h		8009	1995	1995		
Volume-to-Capacity Ratio (v/c)		0.82	0.76			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fre	eway (No), In	2	
Distance to Upstream Ramp (LUP), ft		2260	Speed Index (Ms)		0.404	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/lr	n	1512	

Distance to Downstream Ramp (LDOWN), ft	7350	On-Ramp Influence Area Speed (SR), mi/h	55.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.027	Outer Lanes Freeway Speed (SO), mi/h	61.4
Flow in Lanes 1 and 2 (v12), pc/h	2016	Ramp Junction Speed (S), mi/h	58.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	3541	Average Density (D), pc/mi/ln	28.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/In	28.9

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord E	ngineering	Date	10/6/2023		
Agency			Analysis Year	2032 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	9		Segment Name		at Southcenter Pkwy Diverge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Deceleration Lo	ength (LD),	ft	1500	840		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	r	
Weather Type			Non-Severe Weather	Non-Seve	re Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor (CAF)			0.852	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			6039	750	750	
Peak Hour Factor (PHF)			0.98	0.91	0.91	
Total Trucks, %			6.00	2.00	2.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (fH	V)		0.943	0.980	0.980	
Flow Rate (vi), pc/h			6535	841		
Capacity (cmd), pc/h		9400	2100			
Adjusted Capacity (cmd), pc/h		8009	1995	1995		
Volume-to-Capacity Ratio (v/c)		0.82	0.42			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fre	eway (No), In	2	
Distance to Upstream Ramp (LUP), ft		7350	Speed Index (Ds)		0.374	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/l	n	1606	

Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	56.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	68.9
Flow in Lanes 1 and 2 (v12), pc/h	3324	Ramp Junction Speed (S), mi/h	61.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.4
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/ln	25.3

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

Project Information			
Analyst C	Concord Engineering	Date	10/6/2023
Agency		Analysis Year	2032 - Proposed Action
Jurisdiction		Time Analyzed	PM Peak
Project Description S.	SAMP	Units	U.S. Customary
Segment Number 1	1	Segment Name	F11 - NB I-5 at SR 518 WB/I-405 EB Off Ramp Diverge Area
Analysis Period Number 1		Segment Analysis Period	16:45-17:00
Geometric Data			
		Freeway	Ramp
Number of Lanes (N), In		4	2
Free-Flow Speed (FFS), mi/h		65.0	35.0
Segment Length (L) / Deceleration Le	ength (LD), ft	1500	400
Terrain Type		Level	Level
Percent Grade, %		-	-
Segment Type / Ramp Type		Freeway	Right-Sided Major Diverge
Adjustment Factors		·	
Driver Population		All Familiar	All Familiar
Weather Type		Non-Severe Weather	Non-Severe Weather
Incident Type		No Incident	-
Proportion of CAVs in Traffic Stream		0	-
Final Speed Adjustment Factor (SAF)		1.000	1.000
Demand Adjustment Factor (DAF)		1.000	1.000
Capacity Adjustment Factor (CAF)		0.852	0.950
Capacity Adj. Factor for CAVs, CAFCAV	/	Overwritten	-
Demand and Capacity		·	
Demand Volume (Vi), veh/h		5289	2641
Peak Hour Factor (PHF)		0.98	0.97
Total Trucks, %		6.00	5.00
Single-Unit Trucks (SUT), %		-	-
Tractor-Trailers (TT), %		-	-
Heavy Vehicle Adjustment Factor (fhv	/)	0.943	0.952
Flow Rate (vi), pc/h		5723	2860
Capacity (cmd), pc/h		9400	4000
Adjusted Capacity (cmd), pc/h		8009	3800
Volume-to-Capacity Ratio (v/c)		0.71	0.75
Density and LOS			
Average Density (D), pc/mi/ln	25.0	Average Speed (S), mi/h	57.1
Density in Ramp Influence Area (DMD), pc/mi/ln 25.0	Level of Service (LOS)	С

HCS Basic Freeway Report							
Project Information							
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2032 - Proposed Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	F12 - NB I-5 from SR 518 WB/I-405 EB Off Ramp to I-405 WB HOV On Ramp				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	3	Terrain Type	Level				
Segment Length (L), ft	2130	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	2648	Heavy Vehicle Adjustment Factor (fHV)	0.935				
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	963				
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.48				
Passenger Car Equivalent (ET)	2.00						
Speed and Density	Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	14.8				
Total Ramp Density Adjustment	-	Level of Service (LOS)	В				
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0						
6 11:00004111 1: 651 11 411 B1 1: 5		14 1 0000					

HCSTM Freeways Version 2022 F – I-5 NB [12]_Updated.xuf

HCS Basic Freeway Report							
Project Information							
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2032 - Proposed Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	F13 - NB I-5 from I-405 WB HOV On Ramp to I-405 WB On Ramp				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	4	Terrain Type	Level				
Segment Length (L), ft	150	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	2898	Heavy Vehicle Adjustment Factor (fHV)	0.935				
Peak Hour Factor (PHF)	0.96	Flow Rate (vp), pc/h/ln	807				
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.40				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	12.4				
Total Ramp Density Adjustment	-	Level of Service (LOS)	В				
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0						
Copyright © 2024 University of Florida, All Rights I	Posseniod UCS TIME From	rays Version 2022	Generated: 01/31/2024 16:46:09				

HCSTM Freeways Version 2022 F – I-5 NB [13-14]_Updated.xuf

		HCS Freeway	Merge Report					
Project Information								
Analyst	st Concord Engineering		Date		10/6/2023			
Agency			Analysis Year		2032 - Pro	posed Action		
Jurisdiction			Time Analyzed		PM Peak			
Project Description	SAMP		Units		U.S. Custo	mary		
Segment Number	2		Segment Name		F14 - NB I- Ramp Mer	5 at I-405 WB On ge Area		
Analysis Period Number	1		Segment Analysis Period		16:45-17:0	0		
Geometric Data								
			Freeway		Ramp			
Number of Lanes (N), In			4		1			
Free-Flow Speed (FFS), mi/h			65.0		45.0			
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500		1130			
Terrain Type			Level		Level			
Percent Grade, %			-		-			
Segment Type / Ramp Type			Freeway		Right-Side	d One-Lane		
Adjustment Factors								
Driver Population			All Familiar		All Familiar			
Weather Type			Non-Severe Weather		Non-Severe Weather			
Incident Type			No Incident		-			
Proportion of CAVs in Traffic Stream			0		-			
Final Speed Adjustment Factor (SAF)	1		1.000		1.000			
Demand Adjustment Factor (DAF)			1.000		1.000			
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten		-			
Final Capacity Adjustment Factor (CA	AF)		0.852		0.950			
Demand and Capacity								
Demand Volume (Vi), veh/h			2898		1070			
Peak Hour Factor (PHF)			0.96		0.99			
Total Trucks, %			7.00		5.00			
Single-Unit Trucks (SUT), %			-		-			
Tractor-Trailers (TT), %			-		-			
Heavy Vehicle Adjustment Factor (fHV)			0.935		0.952			
Flow Rate (vi), pc/h		3229		1135				
Capacity (cmd), pc/h			9400		2100			
Adjusted Capacity (cmd), pc/h		8009		1995				
Volume-to-Capacity Ratio (v/c)			0.54 0.57					
Speed and Density								
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes of	on Freeway	y (No), In	2		
Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ms) 0.263		0.263			
Downstream Equilibrium Distance (L	.EQ), ft	-	Flow Outer Lanes (vOA), p	oc/h/ln		969		

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	59.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.356	Outer Lanes Freeway Speed (SO), mi/h	63.3
Flow in Lanes 1 and 2 (v12), pc/h	1292	Ramp Junction Speed (S), mi/h	60.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	2427	Average Density (D), pc/mi/ln	17.9
Level of Service (LOS)	В	Density in Ramp Influence Area (DR), pc/mi/In	16.9

HCSTM Freeways Version 2022 F – I-5 NB [13-14]_Updated.xuf

HCS Basic Freeway Report							
Project Information							
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2032 - Proposed Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	F15 - NB I-5 from SR 518 EB On Ramp to Southcenter Blvd NB On Ramp				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	5	Terrain Type	Level				
Segment Length (L), ft	700	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	5104	Heavy Vehicle Adjustment Factor (fHV)	0.943				
Peak Hour Factor (PHF)	0.94	Flow Rate (vp), pc/h/ln	1152				
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2350				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.58				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	64.6				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	17.8				
Total Ramp Density Adjustment	-	Level of Service (LOS)	В				
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0						

		HCS Freeway	Merge Report					
Project Information	Project Information							
Analyst	Concord Engineering		Date	10/6/2023				
Agency			Analysis Year	2032 - Pro	posed Action			
Jurisdiction			Time Analyzed	PM Peak				
Project Description	SAMP		Units	U.S. Custo	mary			
Segment Number	2		Segment Name		-5 at Southcenter Blvd mp Merge Area			
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00			
Geometric Data								
			Freeway	Ramp				
Number of Lanes (N), In			5	1				
Free-Flow Speed (FFS), mi/h			65.0	35.0				
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	1070				
Terrain Type			Level	Level				
Percent Grade, %			-	-				
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane			
Adjustment Factors								
Driver Population			All Familiar	All Familia	r			
Weather Type			Non-Severe Weather	Non-Sever	Non-Severe Weather			
Incident Type			No Incident	-				
Proportion of CAVs in Traffic Stream			0	-	-			
Final Speed Adjustment Factor (SAF)	1		1.000	1.000	1.000			
Demand Adjustment Factor (DAF)			1.000	1.000	1.000			
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-			
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950			
Demand and Capacity								
Demand Volume (Vi), veh/h			5104	890	890			
Peak Hour Factor (PHF)			0.94	0.95	0.95			
Total Trucks, %			6.00	5.00	5.00			
Single-Unit Trucks (SUT), %			-	-	-			
Tractor-Trailers (TT), %			-	-				
Heavy Vehicle Adjustment Factor (fH	V)		0.943	0.952	0.952			
Flow Rate (vi), pc/h		5758	984					
Capacity (cmd), pc/h			11750	2000				
Adjusted Capacity (cmd), pc/h		10011	1900	1900				
Volume-to-Capacity Ratio (v/c)			0.67 0.52					
Speed and Density								
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fre	eway (No), In	2			
Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ms) 0.306		0.306			
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/lr	n	1313			

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.095	Outer Lanes Freeway Speed (SO), mi/h	62.1
Flow in Lanes 1 and 2 (v12), pc/h	1750	Ramp Junction Speed (S), mi/h	59.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	2734	Average Density (D), pc/mi/ln	17.9
Level of Service (LOS)	В	Density in Ramp Influence Area (DR), pc/mi/In	19.7

HCSTM Freeways Version 2022 F – I-5 NB [15-16]_Updated.xuf

		HCS Freeway	v V	Veaving Repo	r†	
Dualage Information		1C5 TTCCWa	y v	veaving repo		
Project Information		c 15 · ·		ь.		10/5/2022
Analyst		Concord Engineeri	ng	Date		10/6/2023
Agency				Analysis Year		2037 - No Action
Jurisdiction		CALAD		Time Analyzed		PM Peak
Project Description		SAMP		Units		U.S. Customary
Segment Number		2		Segment Name		A1 - EB SR 518 from SR 509 NB Off Ramp to DMM EB off Ramp
Analysis Period Number		1		Segment Analysis Per	riod	16:45-17:00
Geometric Data						
Number of Lanes (N), In		3		Segment Type		Freeway
Segment Length (Ls), ft		140		Number of Maneuve	r Lanes (NWL), In	2
Weaving Configuration		One-Sided		Ramp-to-Freeway La	ne Changes (LCRF), lc	1
Terrain Type		Level		Freeway-to-Ramp La	ne Changes (LCFR), lc	1
Percent Grade, %		-		Ramp-to-Ramp Lane	Changes (LCRR), lc	0
Interchange Density (ID), int/mi		0.67		Cross Weaving Mana	ged Lane	No
Adjustment Factors						
Driver Population		All Familiar		Final Speed Adjustment Factor (SAF)		1.000
Weather Type		Non-Severe Weather		Demand Adjustment Factor (DAF)		1.000
Incident Type		No Incident		Capacity Adjustment	Factor for CAVs, CAFCAV	Overwritten
Proportion of CAVs in Traffic Stream		0		Final Capacity Adjust	ment Factor (CAF)	0.900
Demand and Capacity						
		FF	П	RF	RR	FR
Demand Volume (Vi), veh/h	178	80	800	0	66	160
Peak Hour Factor (PHF)	0.9	6	0.8	6	0.94	0.79
Total Trucks, %	2.0	0	3.0	0	0.00	0.00
Heavy Vehicle Adjustment Factor (fHV)	0.9	80	0.9	71	1.000	1.000
Flow Rate (vi), pc/h	189	92	95	70		203
Weaving Flow Rate (vw), pc/h	110	61	Ide	deal Conditions Capacity (cIFL), pc/h/ln		2350
Non-Weaving Flow Rate (vNW), pc/h	19	62	De	Pensity-Based Capacity (cIWL \times N \times fHV), veh/h		5501
Total Flow Rate (v), pc/h	31	23	De	Demand Flow-Based Capacity (cıw × fнv), veh/h		6316
Volume Ratio (VR)	0.3	72	We	Veaving Area Capacity (cW), veh/h		5501
Minimum Lane Change Rate (LCMIN), lc/h	110			djusted Weaving Area Capacity (cWA), veh/h		4951
Maximum Weaving Length (LMAX), ft	63	6369		/olume-to-Capacity Ratio (v/c)		0.62
Speed and Density						
Non-Weaving Vehicle Index (INW)		18		Average Weaving Speed (SW), mi/h		37.7
Non-Weaving Lane Change Rate (LCNW), lc,	/h	0		Average Non-Weavir	ig Speed (SNW), mi/h	51.6
Weaving Lane Change Rate (LCW), lc/h		1161		Average Speed (S), m	ni/h	45.4
Weaving Lane Change Rate (LCAII), lc/h		1161		Density (D), pc/mi/ln		22.9

Weaving Intensity Factor (W) 1.199 Level of Service (LOS) C

Copyright © 2024 University of Florida. All Rights Reserved.

HCSTM Freeways Version 2022 A – SR 518 EB_Updated.xuf Generated: 01/31/2024 12:52:15

HCS Basic Freeway Report							
Project Information							
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2037 - No Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	3	Segment Name	A2 - EB SR 518 from DMM EB off Ramp to DMM Interchange				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	2	Terrain Type	Level				
Segment Length (L), ft	1290	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	0.33				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity	-						
Demand Volume (V), veh/h	2580	Heavy Vehicle Adjustment Factor (fHV)	0.980				
Peak Hour Factor (PHF)	0.95	Flow Rate (vp), pc/h/ln	1386				
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	62.1				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	22.3				
Total Ramp Density Adjustment	-	Level of Service (LOS)	С				
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0						
Copyright © 2024 University of Florida, All Rights I	Deserved LICCEN Frage.	avs Version 2022	Generated: 01/31/2024 12:52:43				

HCSTM Freeways Version 2022 A – SR 518 EB_Updated.xuf Generated: 01/31/2024 12:52:43

HCS Basic Freeway Report							
Project Information							
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2037 - No Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	B1 - WB SR 518 from DMM Undercrossing to Diverge Influence Point				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	2	Terrain Type	Level				
Segment Length (L), ft	940	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	60.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	3190	Heavy Vehicle Adjustment Factor (fHV)	0.980				
Peak Hour Factor (PHF)	0.99	Flow Rate (vp), pc/h/ln	1644				
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2300				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1960				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.84				
Passenger Car Equivalent (ET)	2.00						
Speed and Density	Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	54.0				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	30.4				
Total Ramp Density Adjustment	-	Level of Service (LOS)	D				
Adjusted Free-Flow Speed (FFSadj), mi/h	60.0						
5 11:00000111 1: (FI 11 All B) 1: F							

HCSTM Freeways Version 2022 B – SR 518 WB_Updated.xuf

Generated: 10/08/2023 19:40:45

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord E	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description	SAMP		Units	U.S. Custo	mary	
Segment Number	2		Segment Name	_	R 518 from DMM fluence Point to SR 509 mp	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			2	1		
Free-Flow Speed (FFS), mi/h			60.0	35.0		
Segment Length (L) / Deceleration	n Length (LD)	, ft	1500	890		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	Right-Sided One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	r	
Weather Type			Non-Severe Weather	Non-Seve	re Weather	
Incident Type			No Incident	-	-	
Proportion of CAVs in Traffic Strea	m		0	-	-	
Final Speed Adjustment Factor (Sa	AF)		1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor (CAF)			0.852	0.950	0.950	
Capacity Adj. Factor for CAVs, CAF	CAV		Overwritten	-		
Demand and Capacity						
Demand Volume (Vi), veh/h			3190	1210		
Peak Hour Factor (PHF)			0.98	0.95	0.95	
Total Trucks, %			2.00	1.00	1.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor	(fHV)		0.980	0.990	0.990	
Flow Rate (vi), pc/h		3322	1287	1287		
Capacity (cmd), pc/h		4600	2000			
Adjusted Capacity (cmd), pc/h		3919	1900	1900		
Volume-to-Capacity Ratio (v/c)		0.85	0.68			
Speed and Density						
Upstream Equilibrium Distance (L	EQ), ft	-	Number of Outer Lanes on Freev	vay (No), In	0	
Distance to Upstream Ramp (LUP)	, ft	-	Speed Index (DS) 0.544		0.544	
Downstream Equilibrium Distance	(LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln -			

Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	50.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	65.8
Flow in Lanes 1 and 2 (v12), pc/h	3322	Ramp Junction Speed (S), mi/h	50.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.1
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/ln	24.8

HCSTM Freeways Version 2022 B – SR 518 WB_Updated.xuf

Generated: 10/08/2023 19:41:18

HCS Basic Freeway Report							
Project Information	Project Information						
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2037 - No Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	C1 - EB SR 518 from 51st St Off Ramp to I-5 NB Off Ramp				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	3	Terrain Type	Level				
Segment Length (L), ft	1030	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	3580	Heavy Vehicle Adjustment Factor (fHV)	0.952				
Peak Hour Factor (PHF)	0.97	Flow Rate (vp), pc/h/ln	1680				
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2220				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.08				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0				
Total Ramp Density Adjustment	-	Level of Service (LOS)	F				
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0						
5 11.00000111 1: (51.11.41151.1.5		14 1 0000					

HCSTM Freeways Version 2022 C1 – SR 518+I-5 & I-405 EB_Updated.xuf

Generated: 10/08/2023 19:49:55

HCS Basic Freeway Report						
Project Information						
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2037 - No Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	C2 - EB SR 518 from I-5 NB Off Ramp to I-5 SB Off Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	2	Terrain Type	Level			
Segment Length (L), ft	650	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity						
Demand Volume (V), veh/h	2335	Heavy Vehicle Adjustment Factor (fHV)	0.943			
Peak Hour Factor (PHF)	0.95	Flow Rate (vp), pc/h/ln	1694			
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2220			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.09			
Passenger Car Equivalent (ET)	2.00					
Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0			
Total Ramp Density Adjustment	-	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0					
C			Caracata d. 10/00/2022 10:50:50			

HCSTM Freeways Version 2022 C2 – SR 518+I-5 & I-405 EB_Updated.xuf

Generated: 10/08/2023 19:50:58

HCS Basic Freeway Report							
Project Information	Project Information						
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2037 - No Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	C4 - NB I-405 from I-5 SB On Ramp to I-5 NB On Ramp				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	2	Terrain Type	Level				
Segment Length (L), ft	670	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	4210	Heavy Vehicle Adjustment Factor (fHV)	0.943				
Peak Hour Factor (PHF)	0.96	Flow Rate (vp), pc/h/ln	3023				
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2350				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.51				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	44.5				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0				
Total Ramp Density Adjustment	-	Level of Service (LOS)	F				
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0						
C			Caracata di 10/00/2022 10:50:12				

HCSTM Freeways Version 2022 C4 – SR 518+I-5 & I-405 EB_Updated.xuf

Generated: 10/08/2023 19:59:12

HCS Basic Freeway Report							
Project Information	Project Information						
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2037 - No Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	C5 - NB I-405 from I-5 NB On Ramp to Southcenter Pkwy				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	3	Terrain Type	Level				
Segment Length (L), ft	1180	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	5800	Heavy Vehicle Adjustment Factor (fHV)	0.943				
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	2720				
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2350				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.36				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	44.5				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0				
Total Ramp Density Adjustment	-	Level of Service (LOS)	F				
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0						
			Caracata di 10/00/2022 20:00:00				

HCSTM Freeways Version 2022 C5 – SR 518+I-5 & I-405 EB_Updated.xuf

Generated: 10/08/2023 20:00:05

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2037 - No Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	D1 - SB I-405 from Interurban Ave S 3-Lane Start Point to I-5 NB Off/ Southcenter Off Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	3	Terrain Type	Level		
Segment Length (L), ft	1820	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	5145	Heavy Vehicle Adjustment Factor (fHV)	0.952		
Peak Hour Factor (PHF)	0.99	Flow Rate (vp), pc/h/ln	2365		
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2220		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.52		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0				

HCSTM Freeways Version 2022 D1 – SR 518+I-5 & I-405 W_Updated.xuf

Generated: 10/08/2023 20:00:49

HCS Basic Freeway Report						
Project Information						
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2037 - No Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	D2 - SB I-405 from I-5 NB Off Ramp to I-5 NB On Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	2	Terrain Type	Level			
Segment Length (L), ft	1350	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity						
Demand Volume (V), veh/h	3435	Heavy Vehicle Adjustment Factor (fHV)	0.952			
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	2394			
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2220			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.54			
Passenger Car Equivalent (ET)	2.00					
Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0			
Total Ramp Density Adjustment	-	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0					
5 11.00000111 1: (51.11.41151.1.5			Cararata di 10/00/2022 20:01:45			

HCSTM Freeways Version 2022 D2 – SR 518+I-5 & I-405 W_Updated.xuf

Generated: 10/08/2023 20:01:45

	ŀ	HCS Freeway	v V	Veaving Repo	rt	
Project Information	ď	- Tes rreewa	, ·			
Analyst	_	Concord Engineeri	n.a	Date		10/6/2023
		Concord Engineering		Analysis Year		2037 - No Action
Agency Jurisdiction	-			•		PM Peak
Project Description		SAMP		Time Analyzed Units		U.S. Customary
Segment Number		1				D3 - SB I-405 from I-5
segment Number		ı		Segment Name		NB On Ramp to I-5 SB Off Ramp
Analysis Period Number		1		Segment Analysis Per	riod	16:45-17:00
Geometric Data						
Number of Lanes (N), In	П	3		Segment Type		Freeway
Segment Length (Ls), ft		570		Number of Maneuve	r Lanes (NWL), In	0
Weaving Configuration		Two-Sided		Ramp-to-Freeway La	ne Changes (LCRF), lc	1
Terrain Type		Level		Freeway-to-Ramp La	ne Changes (LCFR), lc	1
Percent Grade, %		-		Ramp-to-Ramp Lane	Changes (LCRR), lc	2
Interchange Density (ID), int/mi		0.67		Cross Weaving Mana	ged Lane	No
Adjustment Factors						
Driver Population	П	All Familiar		Final Speed Adjustme	ent Factor (SAF)	0.700
Weather Type		Non-Severe Weath	er	Demand Adjustment Factor (DAF)		1.300
Incident Type		No Incident		Capacity Adjustment	Factor for CAVs, CAFCAV	Overwritten
Proportion of CAVs in Traffic Stream		0		Final Capacity Adjust	ment Factor (CAF)	0.900
Demand and Capacity						
	П	FF	Π	RF	RR	FR
Demand Volume (Vi), veh/h	170)3	10°	 15	461	1560
Peak Hour Factor (PHF)	0.9	8	0.9	4	0.96	0.97
Total Trucks, %	5.0	0	2.0			4.00
Heavy Vehicle Adjustment Factor (fHV)	0.9	 52	0.9			0.962
Flow Rate (vi), pc/h	237	73	138	84 616		2173
Weaving Flow Rate (vw), pc/h	616	5	lde	eal Conditions Capacity (cIFL), pc/h/ln		2200
Non-Weaving Flow Rate (vNW), pc/h	593	30	De	ensity-Based Capacity (clWL \times N \times fHV), veh/h		5020
Total Flow Rate (v), pc/h	654	16	De	emand Flow-Based Capacity (ciW × fHV), veh/h		-
Volume Ratio (VR)	0.0	96		/eaving Area Capacity (cw), veh/h		5020
Minimum Lane Change Rate (LCMIN), lc/h	123	32	Ad	djusted Weaving Area Capacity (cWA), veh/h		4518
Maximum Weaving Length (LMAX), ft	663			olume-to-Capacity Ratio (v/c)		1.00
Speed and Density						
Non-Weaving Vehicle Index (INW)		225		Average Weaving Spo	eed (Sw), mi/h	33.2
Non-Weaving Lane Change Rate (LCNW), Ic	/h	953		Average Non-Weavir		26.2
Weaving Lane Change Rate (LCW), lc/h		1319		Average Speed (S), m		26.7
		2272		Density (D), pc/mi/ln	81.7	

Weaving Intensity Factor (W) 0.673 Level of Service (LOS) F

Copyright © 2024 University of Florida. All Rights Reserved.

HCSTM Freeways Version 2022 D3 – SR 518+I-5 & I-405 W_Updated.xuf Generated: 01/31/2024 09:51:35

HCS Basic Freeway Report							
Project Information	Project Information						
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2037 - No Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	D4 - WB SR 518 from I-5 SB Off Ramp to I-5 SB On Ramp				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	2	Terrain Type	Level				
Segment Length (L), ft	1280	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00				
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	10						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	2890	Heavy Vehicle Adjustment Factor (fHV)	0.980				
Peak Hour Factor (PHF)	0.90	Flow Rate (vp), pc/h/ln	2130				
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2220				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.37				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	34.5				
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	45.0				
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	F				
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0						
5 11.00000111 1: (51.11.41151.1.5			Caracrata di 10/00/2022 00:12:20				

HCSTM Freeways Version 2022 D4 – SR 518+I-5 & I-405 W_Updated.xuf

Generated: 10/09/2023 09:12:35

HCS Basic Freeway Report							
Project Information	Project Information						
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2037 - No Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	D5 - WB SR 518 from I-5 SB On Ramp to 51st St On Ramp				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	3	Terrain Type	Level				
Segment Length (L), ft	760	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	3995	Heavy Vehicle Adjustment Factor (fHV)	0.980				
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	1803				
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2220				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.16				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0				
Total Ramp Density Adjustment	-	Level of Service (LOS)	F				
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0						
			Caracrata di 10/00/2022 00:12:22				

HCSTM Freeways Version 2022 D5 – SR 518+I-5 & I-405 W_Updated.xuf

Generated: 10/09/2023 09:13:23

	HCS Fre	eeway [Diverge Report			
Project Information						
Analyst	Concord Engineering		Date	10/6/2023		
Agency			Analysis Year	2037 - No Ad	tion	
Jurisdiction			Time Analyzed	PM Peak		
Project Description	SAMP		Units	U.S. Customa	ıry	
Segment Number	1		Segment Name		Southcenter Blvd/ amp Diverge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:00		
Geometric Data				·		
			Freeway	Ramp		
Number of Lanes (N), In			6	2		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Deceleration	Length (LD), ft		1500	840		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Sided I	Right-Sided Major Diverge	
Adjustment Factors						
Driver Population			All Familiar	All Familiar		
Weather Type			Non-Severe Weather	Non-Severe	Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Strea	m		0	-		
Final Speed Adjustment Factor (SA	AF)		0.600	1.000		
Demand Adjustment Factor (DAF)			1.300	1.300		
Capacity Adjustment Factor (CAF)			0.800	0.950		
Capacity Adj. Factor for CAVs, CAF	CAV		Overwritten	-	-	
Demand and Capacity				-		
Demand Volume (Vi), veh/h			8750	2075		
Peak Hour Factor (PHF)			0.94	0.98		
Total Trucks, %			15.00	9.00	9.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor	(fhv)		0.870	0.917		
Flow Rate (vi), pc/h		13909	3002			
Capacity (cmd), pc/h			13500	4200		
Adjusted Capacity (cmd), pc/h		10800	3990	3990		
Volume-to-Capacity Ratio (v/c)	Volume-to-Capacity Ratio (v/c)		1.29	0.75	0.75	
Density and LOS						
Average Density (D), pc/mi/ln	40.6		Average Speed (S), mi/h		39.0	
Density in Ramp Influence Area (D	OMD), pc/mi/ln 40.6		Level of Service (LOS)		E	
Copyright © 2024 University of Florida. Al	l Riahts Reserved.	HCSTM Freewa	ys Version 2022	Gener	rated: 01/29/2024 15:34:36	

	HCS Basic F	reeway Report	
Project Information			
Analyst	Concord Engineering	Date	10/6/2023
Agency		Analysis Year	2037 - No Action
Jurisdiction		Time Analyzed	PM Peak
Project Description	SAMP	Units	U.S. Customary
Segment Number	2	Segment Name	E2 - SB I-5 from Southcenter Blvd/SR 518 Off Ramp to I-405 NB Off Ramp
Analysis Period Number	1	Segment Analysis Period	16:45-17:00
Geometric Data			
Number of Lanes (N), In	6	Terrain Type	Level
Segment Length (L), ft	2240	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		
Adjustment Factors			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.600
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten
Demand and Capacity			
Demand Volume (V), veh/h	6053	Heavy Vehicle Adjustment Factor (fHV)	0.855
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	1565
Total Trucks, %	17.00	Capacity (c), pc/h/ln	2200
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1760
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.89
Passenger Car Equivalent (ET)	2.00		
Speed and Density			
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	39.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	40.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	39.0		

HCS Basic Freeway Report				
Project Information				
Analyst	Concord Engineering	Date	10/6/2023	
Agency		Analysis Year	2037 - No Action	
Jurisdiction		Time Analyzed	PM Peak	
Project Description	SAMP	Units	U.S. Customary	
Segment Number	1	Segment Name	E3 - SB I-5 from I-405 NB Off Ramp to I-405 SB On Ramp	
Analysis Period Number	1	Segment Analysis Period	16:45-17:00	
Geometric Data				
Number of Lanes (N), In	4	Terrain Type	Level	
Segment Length (L), ft	620	Percent Grade, %	-	
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-	
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-	
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0	
Right-Side Lateral Clearance, ft	-			
Adjustment Factors				
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.600	
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300	
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800	
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten	
Demand and Capacity				
Demand Volume (V), veh/h	4275	Heavy Vehicle Adjustment Factor (fHV)	0.800	
Peak Hour Factor (PHF)	0.99	Flow Rate (vp), pc/h/ln	1754	
Total Trucks, %	25.00	Capacity (c), pc/h/ln	2200	
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1760	
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81	
Passenger Car Equivalent (ET)	2.00			
Speed and Density				
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	20.0	
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	71.9	
Total Ramp Density Adjustment	-	Level of Service (LOS)	F	
Adjusted Free-Flow Speed (FFSadj), mi/h	39.0			
Copyright © 2024 University of Florida, All Rights I	Reserved HCSTM Freev	vavs Version 2022	Generated: 01/29/2024 15:38:07	

HCSTM Freeways Version 2022 E – I-5 SB [3]_Updated.xuf

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2037 - No Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	E4 - SB I-5 from I-405 SB On Ramp to Klickitat SB On Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	5	Terrain Type	Level		
Segment Length (L), ft	4330	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	5835	Heavy Vehicle Adjustment Factor (fHV)	0.840		
Peak Hour Factor (PHF)	0.97	Flow Rate (vp), pc/h/ln	1862		
Total Trucks, %	19.00	Capacity (c), pc/h/ln	2220		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1776		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.78		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	18.0		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	76.8		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0				
6 11:00004111 1: 651 11 411 B1 1: 5		14 1 0000			

HCSTM Freeways Version 2022 E – I-5 SB [4-5]_Updated.xuf

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023	<u> </u>	
Agency			Analysis Year	2037 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description	SAMP		Units	U.S. Custo	mary	
Segment Number	2		Segment Name	E5 - SB I-5 Ramp Me	at Klickitat SB On rge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			5	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	1500		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	ed One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Seve	re Weather	
Incident Type		No Incident	-			
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)	1		0.800	1.000		
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.800	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			7586	1320	1320	
Peak Hour Factor (PHF)			0.97	0.92	0.92	
Total Trucks, %			19.00	0.02	0.02	
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.840	1.000		
Flow Rate (vi), pc/h			9310	1865		
Capacity (cmd), pc/h		11250	2100			
Adjusted Capacity (cmd), pc/h	Adjusted Capacity (cmd), pc/h		9000	1995		
Volume-to-Capacity Ratio (v/c)	/olume-to-Capacity Ratio (v/c)		0.85	0.93		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on	Freeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ms)		0.570	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/l	h/ln	2043	

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	46.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	46.4
Flow in Lanes 1 and 2 (v12), pc/h	2724	Ramp Junction Speed (S), mi/h	23.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	4589	Average Density (D), pc/mi/ln	64.6
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	31.1

HCSTM Freeways Version 2022 E – I-5 SB [4-5]_Updated.xuf

HCS Basic Freeway Report				
Project Information				
Analyst	Concord Engineering	Date	10/6/2023	
Agency		Analysis Year	2037 - No Action	
Jurisdiction		Time Analyzed		
Project Description	SAMP	Units	U.S. Customary	
Segment Number	1	Segment Name	E6 - SB I-5 from Klickitat SB On Ramp Merge Area to 188th St SB Off Ramp Diverge Area	
Analysis Period Number	1	Segment Analysis Period	16:45-17:00	
Geometric Data				
Number of Lanes (N), In	5	Terrain Type	Level	
Segment Length (L), ft	2000	Percent Grade, %	-	
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-	
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-	
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0	
Right-Side Lateral Clearance, ft	-			
Adjustment Factors				
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800	
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300	
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800	
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten	
Demand and Capacity				
Demand Volume (V), veh/h	7155	Heavy Vehicle Adjustment Factor (fHV)	0.862	
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	1776	
Total Trucks, %	16.00	Capacity (c), pc/h/ln	2220	
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1776	
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.00	
Passenger Car Equivalent (ET)	2.00			
Speed and Density				
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	39.5	
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0	
Total Ramp Density Adjustment	-	Level of Service (LOS)	F	
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0			

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord E	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - No	Action	
Jurisdiction			Time Analyzed			
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number 2	2		Segment Name	E7 - SB I-5 Ramp Div	at 188th St SB Off erge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data				·		
			Freeway	Ramp		
Number of Lanes (N), In			5	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Deceleration L	ength (LD),	ft	1500	240		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	ed One-Lane	
Adjustment Factors				·		
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Seve	re Weather	
Incident Type		No Incident	-			
Proportion of CAVs in Traffic Stream			0	-		
Final Speed Adjustment Factor (SAF)			0.800	1.000		
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor (CAF)			0.800	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			9302	1350		
Peak Hour Factor (PHF)			0.98	0.90	0.90	
Total Trucks, %			16.00	9.00	9.00	
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.862	0.917		
Flow Rate (vi), pc/h			11011	2126		
Capacity (cmd), pc/h		11250	2100			
Adjusted Capacity (cmd), pc/h		9000	1995			
Volume-to-Capacity Ratio (v/c)	me-to-Capacity Ratio (v/c)		0.99	1.07		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on F	Freeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (DS)		0.489	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h	n/ln	1404	

Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	47.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	55.5
Flow in Lanes 1 and 2 (v12), pc/h	4296	Ramp Junction Speed (S), mi/h	50.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.4
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/In	39.0

HCSTM Freeways Version 2022 E – I-5 SB [6-8]_Updated.xuf

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2037 - No Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	E9 - SB I-5 from Lane Reduction Point to 188th St SB On Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	4	Terrain Type	Level		
Segment Length (L), ft	2330	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	5805	Heavy Vehicle Adjustment Factor (fHV)	0.855		
Peak Hour Factor (PHF)	0.97	Flow Rate (vp), pc/h/ln	2275		
Total Trucks, %	17.00	Capacity (c), pc/h/ln	2350		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81		
Passenger Car Equivalent (ET)	2.00				
Speed and Density			-		
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	22.7		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	71.9		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0				
S 11:000001111 1: 651 11 411 51 1: 5		14 1 0000			

HCSTM Freeways Version 2022 E – I-5 SB [9-14]_Updated.xuf

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	1	0/6/2023	
Agency			Analysis Year	2	2037 - No	Action
Jurisdiction			Time Analyzed	Р	PM Peak	
Project Description	SAMP		Units	L	J.S. Custor	nary
Segment Number	2		Segment Name		:10 - SB I- Ramp Mer	5 at 188th St SB On ge Area
Analysis Period Number	1		Segment Analysis Period	1	6:45-17:0	0
Geometric Data						
			Freeway	R	Ramp	
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	3	5.0	
Segment Length (L) / Acceleration Le	ength (LA),	ft	1440	5	520	
Terrain Type			Level	L	evel	
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	R	Right-Side	d One-Lane
Adjustment Factors						
Driver Population		All Familiar	А	All Familiar		
Weather Type			Non-Severe Weather	N	Non-Severe Weather	
Incident Type		No Incident	-			
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)	1		1.000	1	1.000	
Demand Adjustment Factor (DAF)			1.000	1	1.300	
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			7547	8	870	
Peak Hour Factor (PHF)			0.97	0	0.99	
Total Trucks, %			17.00	4	4.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (fH	V)		0.855	0	0.962	
Flow Rate (vi), pc/h			9099	1	188	
Capacity (cmd), pc/h		9400	2	2000		
Adjusted Capacity (cmd), pc/h		8009	1	1900		
Volume-to-Capacity Ratio (v/c)	Volume-to-Capacity Ratio (v/c)		0.93	0	0.63	
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes or	r Freeway ((No), In	2
Distance to Upstream Ramp (LUP), ft		-	Speed Index (MS)			0.458
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), po	:/h/ln		1957

Distance to Downstream Ramp (LDOWN), ft	2940	On-Ramp Influence Area Speed (SR), mi/h	54.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.069	Outer Lanes Freeway Speed (SO), mi/h	59.8
Flow in Lanes 1 and 2 (v12), pc/h	2609	Ramp Junction Speed (S), mi/h	57.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	3797	Average Density (D), pc/mi/ln	33.8
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/In	31.4

HCSTM Freeways Version 2022 E – I-5 SB [9-14]_Updated.xuf

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description 5	SAMP		Units	U.S. Custo	mary	
Segment Number	4		Segment Name	E12 - SB I- Ramp Dive	5 at 200th St SB Off erge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Deceleration Le	ength (LD),	ft	1440	180		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Sever	e Weather	
Incident Type		No Incident	-			
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor (CAF)			0.852	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			8678	500	500	
Peak Hour Factor (PHF)			0.97	0.80	0.80	
Total Trucks, %			15.00	4.00	4.00	
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.870	0.962		
Flow Rate (vi), pc/h			10283	845		
Capacity (cmd), pc/h		9400	2000			
Adjusted Capacity (cmd), pc/h		8009	1900			
Volume-to-Capacity Ratio (v/c)	Volume-to-Capacity Ratio (v/c)		0.93	0.44		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Free	eway (No), In	2	
Distance to Upstream Ramp (LUP), ft		2940	Speed Index (Ds)		0.504	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln		1865	

Distance to Downstream Ramp (LDOWN), ft	1730	Off-Ramp Influence Area Speed (SR), mi/h	53.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.9
Flow in Lanes 1 and 2 (v12), pc/h	3728	Ramp Junction Speed (S), mi/h	59.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.2
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	34.7

HCSTM Freeways Version 2022 E – I-5 SB [9-14]_Updated.xuf

		HCS Freeway	Merge Report				
Project Information	Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023			
Agency			Analysis Year	2037 - No	Action		
Jurisdiction			Time Analyzed	PM Peak			
Project Description S	SAMP		Units	U.S. Custo	mary		
Segment Number	6		Segment Name	E14 - SB I- Ramp Mei	5 at 200th St SB On ge Area		
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00		
Geometric Data							
			Freeway	Ramp			
Number of Lanes (N), In			4	1			
Free-Flow Speed (FFS), mi/h			65.0	35.0			
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	470			
Terrain Type			Level	Level			
Percent Grade, %			-	-			
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane		
Adjustment Factors							
Driver Population		All Familiar	All Familia	r			
Weather Type			Non-Severe Weather	Non-Seve	Non-Severe Weather		
Incident Type		No Incident	-				
Proportion of CAVs in Traffic Stream			0	-	-		
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000		
Demand Adjustment Factor (DAF)			1.000	1.300	1.300		
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-		
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950		
Demand and Capacity							
Demand Volume (Vi), veh/h			8028	570	570		
Peak Hour Factor (PHF)			0.96	0.96	0.96		
Total Trucks, %			14.00	2.00	2.00		
Single-Unit Trucks (SUT), %			-	-			
Tractor-Trailers (TT), %			-	-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.877	0.980	0.980		
Flow Rate (vi), pc/h		9535	788				
Capacity (cmd), pc/h		9400	2000				
Adjusted Capacity (cmd), pc/h		8009	1900	1900			
Volume-to-Capacity Ratio (v/c)		0.91	0.41	0.41			
Speed and Density							
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fre	eeway (No), In	2		
Distance to Upstream Ramp (LUP), ft		1730	Speed Index (MS)		0.676		
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/l	n	2700		

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	49.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.119	Outer Lanes Freeway Speed (SO), mi/h	56.1
Flow in Lanes 1 and 2 (v12), pc/h	4135	Ramp Junction Speed (S), mi/h	32.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	4923	Average Density (D), pc/mi/ln	55.6
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/In	40.6

HCSTM Freeways Version 2022 E – I-5 SB [9-14]_Updated.xuf

		HCS Freeway	Diverge Report				
Project Information	Project Information						
Analyst	Concord E	ngineering	Date	10/6/2023	<u> </u>		
Agency			Analysis Year	2037 - No	Action		
Jurisdiction			Time Analyzed	PM Peak			
Project Description	SAMP		Units	U.S. Custo	mary		
Segment Number	1		Segment Name	F1 - NB I- Ramp Div	5 at Military Rd NB Off erge Area		
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00		
Geometric Data							
			Freeway	Ramp			
Number of Lanes (N), In			4	1			
Free-Flow Speed (FFS), mi/h			65.0	35.0			
Segment Length (L) / Deceleration L	ength (LD),	ft	1500	290			
Terrain Type			Level	Level			
Percent Grade, %			-	-			
Segment Type / Ramp Type			Freeway	Right-Side	ed One-Lane		
Adjustment Factors							
Driver Population		All Familiar	All Familia	r			
Weather Type			Non-Severe Weather	Non-Seve	Non-Severe Weather		
Incident Type		No Incident	-				
Proportion of CAVs in Traffic Stream			0	-	-		
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000		
Demand Adjustment Factor (DAF)			1.000	1.000	1.000		
Capacity Adjustment Factor (CAF)			1.000	0.852	0.852		
Capacity Adj. Factor for CAVs, CAFCA	V		1.000	-	-		
Demand and Capacity							
Demand Volume (Vi), veh/h			4590	290	290		
Peak Hour Factor (PHF)			0.97	0.93	0.93		
Total Trucks, %			7.00	3.00	3.00		
Single-Unit Trucks (SUT), %			-	-	-		
Tractor-Trailers (TT), %			-	-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.971	0.971		
Flow Rate (vi), pc/h		5061	321				
Capacity (cmd), pc/h		9400	2000	2000			
Adjusted Capacity (cmd), pc/h		9400	1704	1704			
Volume-to-Capacity Ratio (v/c)		0.54	0.19	0.19			
Speed and Density							
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on	Freeway (No), In	2		
Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ds)		0.457		
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/l	h/ln	1337		

Distance to Downstream Ramp (LDOWN), ft	900	Off-Ramp Influence Area Speed (SR), mi/h 54.5	
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	70.0
Flow in Lanes 1 and 2 (v12), pc/h	2388	Ramp Junction Speed (S), mi/h	61.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	20.5
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/In	22.2

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	3		Segment Name	F3 - NB I-5 Ramp Mer	at Military Rd NB On ge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	710		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Sever	Non-Severe Weather	
Incident Type		No Incident	-			
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			4300	780	780	
Peak Hour Factor (PHF)			0.97	0.97	0.97	
Total Trucks, %			7.00	1.00	1.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.990	0.990	
Flow Rate (vi), pc/h		4741	812			
Capacity (cmd), pc/h		9400	2000			
Adjusted Capacity (cmd), pc/h		8009	1900	1900		
Volume-to-Capacity Ratio (v/c)		0.69	0.43	0.43		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on F	reeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		900	Speed Index (Ms)		0.330	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h	n/ln	1423	

Distance to Downstream Ramp (LDOWN), ft	5090	On-Ramp Influence Area Speed (SR), mi/h 57.4	
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.116	Outer Lanes Freeway Speed (SO), mi/h	61.7
Flow in Lanes 1 and 2 (v12), pc/h	1896	Ramp Junction Speed (S), mi/h	59.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	2708	Average Density (D), pc/mi/ln	23.3
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/In	21.8

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	5		Segment Name	F5 - NB I-5 Ramp Dive	at 188th St NB Off erge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Deceleration Le	ength (LD),	ft	1500	180		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Sever	Non-Severe Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-		
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor (CAF)			0.852	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			5080	720	720	
Peak Hour Factor (PHF)			0.98	0.95	0.95	
Total Trucks, %			7.00	8.00	8.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.926	0.926	
Flow Rate (vi), pc/h		5544	818			
Capacity (cmd), pc/h		9400	2100			
Adjusted Capacity (cmd), pc/h		8009	1995	1995		
Volume-to-Capacity Ratio (v/c)		0.69	0.41	0.41		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fre	eeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		5090	Speed Index (DS)		0.372	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/l	ln	1333	

Distance to Downstream Ramp (LDOWN), ft	2260	Off-Ramp Influence Area Speed (SR), mi/h	56.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	70.0
Flow in Lanes 1 and 2 (v12), pc/h	2879	Ramp Junction Speed (S), mi/h	62.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.3
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/ln	27.4

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number 7	7		Segment Name	F7 - NB I-5 Ramp Mer	5 at 188th St NB On ge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	570		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Seve	Non-Severe Weather	
Incident Type		No Incident	-			
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			4360	1510	1510	
Peak Hour Factor (PHF)			0.99	0.92	0.92	
Total Trucks, %			7.00	2.00	2.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.980	0.980	
Flow Rate (vi), pc/h			4710	1675		
Capacity (cmd), pc/h		9400	2100			
Adjusted Capacity (cmd), pc/h		8009	1995	1995		
Volume-to-Capacity Ratio (v/c)		0.80	0.84	0.84		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fi	reeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		2260	Speed Index (Ms)		0.407	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h,	/ln	1413	

Distance to Downstream Ramp (LDOWN), ft	7350	On-Ramp Influence Area Speed (SR), mi/h 55.6	
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.008	Outer Lanes Freeway Speed (SO), mi/h	61.7
Flow in Lanes 1 and 2 (v12), pc/h	1884	Ramp Junction Speed (S), mi/h	58.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	3559	Average Density (D), pc/mi/ln	27.5
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/In	29.0

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	9		Segment Name		at Southcenter Pkwy Diverge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Deceleration Length	ength (LD),	ft	1500	840		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type		Freeway	Right-Side	Right-Sided One-Lane		
Adjustment Factors						
Driver Population			All Familiar	All Familia	r	
Weather Type		Non-Severe Weather	Non-Sever	Non-Severe Weather		
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor (CAF)			0.852	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			5870	830		
Peak Hour Factor (PHF)			0.98	0.91	0.91	
Total Trucks, %			6.00	2.00	2.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (fH	V)		0.943	0.980	0.980	
Flow Rate (vi), pc/h			6352	931		
Capacity (cmd), pc/h			9400	2100		
Adjusted Capacity (cmd), pc/h		8009	1995	1995		
Volume-to-Capacity Ratio (v/c)		0.79	0.47			
Speed and Density			•			
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fre	eeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		7350	Speed Index (Ds)		0.382	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/l	ln	1529	

Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	56.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	69.2
Flow in Lanes 1 and 2 (v12), pc/h	3295	Ramp Junction Speed (S), mi/h	61.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.7
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/ln	25.0

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

Generated: 01/29/2024 15:50:22

	HCS Freev	way Diverge Report	
Project Information			
Analyst	Concord Engineering	Date	10/6/2023
Agency		Analysis Year	2037 - No Action
Jurisdiction		Time Analyzed	PM Peak
Project Description	SAMP	Units	U.S. Customary
Segment Number	11	Segment Name	F11 - NB I-5 at SR 518 WB/I-405 EB Off Ramp Diverge Area
Analysis Period Number	1	Segment Analysis Period	16:45-17:00
Geometric Data			
		Freeway	Ramp
Number of Lanes (N), In		4	2
Free-Flow Speed (FFS), mi/h		65.0	35.0
Segment Length (L) / Deceleration	n Length (LD), ft	1500	400
Terrain Type		Level	Level
Percent Grade, %		-	-
Segment Type / Ramp Type		Freeway	Right-Sided Major Diverge
Adjustment Factors			·
Driver Population		All Familiar	All Familiar
Weather Type		Non-Severe Weather	Non-Severe Weather
Incident Type		No Incident	-
Proportion of CAVs in Traffic Stre	am	0	-
Final Speed Adjustment Factor (S	AF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000
Capacity Adjustment Factor (CAF)	0.852	0.950
Capacity Adj. Factor for CAVs, CA	FCAV	Overwritten	-
Demand and Capacity			·
Demand Volume (Vi), veh/h		5040	2605
Peak Hour Factor (PHF)		0.98	0.97
Total Trucks, %		6.00	5.00
Single-Unit Trucks (SUT), %		-	-
Tractor-Trailers (TT), %		-	-
Heavy Vehicle Adjustment Factor	(fHV)	0.943	0.952
Flow Rate (vi), pc/h		5454	2821
Capacity (cmd), pc/h		9400	4000
Adjusted Capacity (cmd), pc/h	Adjusted Capacity (cmd), pc/h		3800
Volume-to-Capacity Ratio (v/c)		0.68	0.74
Density and LOS			
Average Density (D), pc/mi/ln	23.9	Average Speed (S), mi/h	57.1
Density in Ramp Influence Area (DMD), pc/mi/ln 23.9	Level of Service (LOS)	С
Copyright © 2024 University of Florida. <i>F</i>	All Rights Reserved. HCST	M Freeways Version 2022	Generated: 01/29/2024 15:50:52

HCS Basic Freeway Report							
Project Information							
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2037 - No Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	F12 - NB I-5 from SR 518 WB/I-405 EB Off Ramp to I-405 WB HOV On Ramp				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	3	Terrain Type	Level				
Segment Length (L), ft	2130	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	2435	Heavy Vehicle Adjustment Factor (fHV)	0.935				
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	886				
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.44				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	13.6				
Total Ramp Density Adjustment	-	Level of Service (LOS)	В				
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0						
	•						

HCSTM Freeways Version 2022 F – I-5 NB [12]_Updated.xuf Generated: 01/29/2024 15:51:43

	HCS Basic Freeway Report						
Project Information							
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2037 - No Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	F13 - NB I-5 from I-405 WB HOV On Ramp to I-405 WB On Ramp				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	4	Terrain Type	Level				
Segment Length (L), ft	150	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	2695	Heavy Vehicle Adjustment Factor (fHV)	0.935				
Peak Hour Factor (PHF)	0.96	Flow Rate (vp), pc/h/ln	750				
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.37				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	11.5				
Total Ramp Density Adjustment	-	Level of Service (LOS)	В				
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0						
Copyright © 2024 University of Florida, All Rights	Deserved LICCTM Freeze	vavs Version 2022	Generated: 01/29/2024 15:53:10				

HCSTM Freeways Version 2022 F – I-5 NB [13-14]_Updated.xuf Generated: 01/29/2024 15:53:19

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/202	3	
Agency			Analysis Year	2037 - No	Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description	SAMP		Units	U.S. Custo	omary	
Segment Number	2		Segment Name	F14 - NB Ramp Me	I-5 at I-405 WB On rge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	1130		
Terrain Type			Level	Level		
Percent Grade, %		-	-			
Segment Type / Ramp Type		Freeway	Right-Sid	ed One-Lane		
Adjustment Factors				·		
Driver Population		All Familiar	All Familia	ar		
Weather Type		Non-Severe Weather	Non-Seve	re Weather		
Incident Type		No Incident	-			
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)	1		1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-		
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			2695	1100	1100	
Peak Hour Factor (PHF)			0.96	0.99	0.99	
Total Trucks, %			7.00	5.00	5.00	
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.952		
Flow Rate (vi), pc/h			3002	1167		
Capacity (cmd), pc/h			9400	2100		
Adjusted Capacity (cmd), pc/h		8009	1995			
Volume-to-Capacity Ratio (v/c)		0.52	0.58			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on	Freeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (MS)		0.261	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln 901			

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	59.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.352	Outer Lanes Freeway Speed (SO), mi/h	63.6
Flow in Lanes 1 and 2 (v12), pc/h	1201	Ramp Junction Speed (S), mi/h	60.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	2368	Average Density (D), pc/mi/ln	17.1
Level of Service (LOS)	В	Density in Ramp Influence Area (DR), pc/mi/ln	16.4

HCSTM Freeways Version 2022 F – I-5 NB [13-14]_Updated.xuf

Generated: 01/29/2024 15:54:35

	HCS Basic F	reeway Report	
Project Information			
Analyst	Concord Engineering	Date	10/6/2023
Agency		Analysis Year	2037 - No Action
Jurisdiction		Time Analyzed	PM Peak
Project Description	SAMP	Units	U.S. Customary
Segment Number	1	Segment Name	F15 - NB I-5 from SR 518 EB On Ramp to Southcenter Blvd NB On Ramp
Analysis Period Number	1	Segment Analysis Period	16:45-17:00
Geometric Data			
Number of Lanes (N), In	5	Terrain Type	Level
Segment Length (L), ft	700	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		
Adjustment Factors			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten
Demand and Capacity			
Demand Volume (V), veh/h	5040	Heavy Vehicle Adjustment Factor (fHV)	0.943
Peak Hour Factor (PHF)	0.94	Flow Rate (vp), pc/h/ln	1137
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.57
Passenger Car Equivalent (ET)	2.00		
Speed and Density			
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	64.7
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	17.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	В
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord E	ngineering	Date		10/6/2023	
Agency			Analysis Year		2037 - No	Action
Jurisdiction			Time Analyzed		PM Peak	
Project Description	SAMP		Units		U.S. Custo	mary
Segment Number	2		Segment Name			5 at Southcenter Blvd np Merge Area
Analysis Period Number	1		Segment Analysis Period		16:45-17:0	0
Geometric Data						
			Freeway		Ramp	
Number of Lanes (N), In			5		1	
Free-Flow Speed (FFS), mi/h			65.0		35.0	
Segment Length (L) / Acceleration I	Length (LA),	ft	1500		1070	
Terrain Type			Level		Level	
Percent Grade, %			-		-	
Segment Type / Ramp Type		Freeway		Right-Sided One-Lane		
Adjustment Factors						
Driver Population		All Familiar		All Familiar		
Weather Type		Non-Severe Weather		Non-Severe Weather		
Incident Type		No Incident		-		
Proportion of CAVs in Traffic Stream	า		0		-	
Final Speed Adjustment Factor (SAF	-)		1.000		1.000	
Demand Adjustment Factor (DAF)			1.000		1.000	
Capacity Adjustment Factor for CAV	/s, CAFCAV		Overwritten		-	
Final Capacity Adjustment Factor (C	AF)		0.852		0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			5040		990	
Peak Hour Factor (PHF)			0.94		0.95	
Total Trucks, %			6.00		5.00	
Single-Unit Trucks (SUT), %			-		-	
Tractor-Trailers (TT), %			-		-	
Heavy Vehicle Adjustment Factor (f	HV)		0.943		0.952	
Flow Rate (vi), pc/h			5686		1095	
Capacity (cmd), pc/h			11750		2000	
Adjusted Capacity (cmd), pc/h		10011		1900		
Volume-to-Capacity Ratio (v/c)		0.68	0.68 0.58			
Speed and Density						
Upstream Equilibrium Distance (LEC	(), ft	-	Number of Outer Lanes o	n Freeway	/ (No), In	2
Distance to Upstream Ramp (LUP), f	ft	-	Speed Index (MS)			0.312
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln 1296			1296

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.8	
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.081	Outer Lanes Freeway Speed (SO), mi/h	62.1	
Flow in Lanes 1 and 2 (v12), pc/h	1729	Ramp Junction Speed (S), mi/h	59.8	
Flow Entering Ramp-Infl. Area (vR12), pc/h	2824	Average Density (D), pc/mi/ln	18.1	
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/ln	20.4	
Copyright © 2023 University of Florida. All Rights Reserved. HCSTM Freeways Version 2022 Generated: 10/09/2023 09:32				

HCSTM Freeways Version 2022 F – I-5 NB [15-16]_Updated.xuf

		HCS Freeway Weaving Report				
Project Information	_					
Analyst		Concord Engineeri	ng	Date		10/6/2023
Agency				Analysis Year		2037 - Proposed Action
Jurisdiction				Time Analyzed		PM Peak
Project Description		SAMP		Units		U.S. Customary
Segment Number		2		Segment Name		A1 - EB SR 518 from SR 509 NB Off Ramp to DMM EB off Ramp
Analysis Period Number		1		Segment Analysis Pe	riod	16:45-17:00
Geometric Data						
Number of Lanes (N), In		3		Segment Type		Freeway
Segment Length (Ls), ft		140		Number of Maneuve	r Lanes (NWL), In	2
Weaving Configuration		One-Sided		Ramp-to-Freeway La	ne Changes (LCRF), Ic	1
Terrain Type		Level		Freeway-to-Ramp La	ne Changes (LCFR), lc	1
Percent Grade, %		-		Ramp-to-Ramp Lane	Changes (LCRR), Ic	0
Interchange Density (ID), int/mi		0.67		Cross Weaving Managed Lane		No
Adjustment Factors						
Driver Population		All Familiar		Final Speed Adjustment Factor (SAF)		1.000
Weather Type		Non-Severe Weather		Demand Adjustment	Factor (DAF)	1.000
Incident Type		No Incident		Capacity Adjustment Factor for CAVs, CAFCAV		Overwritten
Proportion of CAVs in Traffic Stream		0		Final Capacity Adjust	ment Factor (CAF)	0.900
Demand and Capacity						
		FF		RF	RR	FR
Demand Volume (Vi), veh/h	18	00	855	5	78	180
Peak Hour Factor (PHF)	0.9	96	0.8	6	0.94	0.79
Total Trucks, %	2.0	00	3.0	0.00		0.00
Heavy Vehicle Adjustment Factor (fHV)	0.9	980	0.9	71	1.000	1.000
Flow Rate (vi), pc/h	19	13	102	24	83	228
Weaving Flow Rate (vw), pc/h	12	52	Ide	deal Conditions Capacity (cIFL), pc/h/ln		2350
Non-Weaving Flow Rate (vNW), pc/h	19	96	De	Density-Based Capacity (cIWL × N × fHV), veh/h		5469
Total Flow Rate (v), pc/h	32	48	De	mand Flow-Based Cap	acity (cɪw × fнv), veh/h	6103
Volume Ratio (VR)	0.3	385	We	Weaving Area Capacity (cW), veh/h		5469
Minimum Lane Change Rate (LCMIN), lc/h	1252 A		Ad	Adjusted Weaving Area Capacity (cWA), veh/h		4922
Maximum Weaving Length (LMAX), ft	MAX), ft 6513		Vol	lume-to-Capacity Ratio	0.65	
Speed and Density						
Non-Weaving Vehicle Index (INW)		19		Average Weaving Sp	eed (SW), mi/h	37.0
Non-Weaving Lane Change Rate (LCNW), lc,	/h	0		Average Non-Weavir	ig Speed (SNW), mi/h	50.8
Weaving Lane Change Rate (LCW), lc/h		1252		Average Speed (S), mi/h		44.4

Weaving Lane Change Rate (LCAII), lc/h	1252	Density (D), pc/mi/ln	24.4
Weaving Intensity Factor (W)	1.273	Level of Service (LOS)	С

HCSTM Freeways Version 2022 A – SR 518 EB_Updated.xuf Generated: 01/31/2024 12:58:01

	HCS Basic Freeway Report					
Project Information						
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2037 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	3	Segment Name	A2 - EB SR 518 from DMM EB off Ramp to DMM Interchange			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	2	Terrain Type	Level			
Segment Length (L), ft	1290	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity						
Demand Volume (V), veh/h	2655	Heavy Vehicle Adjustment Factor (fHV)	0.980			
Peak Hour Factor (PHF)	0.95	Flow Rate (vp), pc/h/ln	1426			
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.71			
Passenger Car Equivalent (ET)	2.00					
Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	61.5			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	23.2			
Total Ramp Density Adjustment	-	Level of Service (LOS)	С			
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0					
Copyright © 2024 University of Florida, All Rights I	Deserved LICCEN Frage.	avs Version 2022	Generated: 01/31/2024 12:58:2/			

HCSTM Freeways Version 2022 A – SR 518 EB_Updated.xuf Generated: 01/31/2024 12:58:24

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2037 - Proposed Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	B1 - WB SR 518 from DMM Undercrossing to Diverge Influence Point		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	2	Terrain Type	Level		
Segment Length (L), ft	940	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	60.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	3370	Heavy Vehicle Adjustment Factor (fHV)	0.980		
Peak Hour Factor (PHF)	0.99	Flow Rate (vp), pc/h/ln	1737		
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2300		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1960		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.89		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	51.4		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	33.8		
Total Ramp Density Adjustment	-	Level of Service (LOS)	D		
Adjusted Free-Flow Speed (FFSadj), mi/h	60.0				
6 11:00004111 1: (FI 11 411 B) 1: F					

HCSTM Freeways Version 2022 B – SR 518 WB_Updated.xuf Generated: 01/30/2024 10:55:49

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord E	ngineering	Date	10/6/202	3	
Agency			Analysis Year	2037 - Pr	oposed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description	SAMP		Units	U.S. Custo	omary	
Segment Number	2		Segment Name		SR 518 from DMM nfluence Point to SR 509 mp	
Analysis Period Number	1		Segment Analysis Period	16:45-17:	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			2	1		
Free-Flow Speed (FFS), mi/h			60.0	35.0		
Segment Length (L) / Deceleration L	ength (LD),	ft	1500	890		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Sid	ed One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	ar	
Weather Type			Non-Severe Weather	Non-Seve	ere Weather	
Incident Type			No Incident	-	-	
Proportion of CAVs in Traffic Stream	ı		0	-	-	
Final Speed Adjustment Factor (SAF)		1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor (CAF)			0.852	0.950		
Capacity Adj. Factor for CAVs, CAFCA	AV		Overwritten	-		
Demand and Capacity						
Demand Volume (Vi), veh/h			3370	1235		
Peak Hour Factor (PHF)			0.98	0.95		
Total Trucks, %			2.00	1.00		
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (f	HV)		0.980	0.990	0.990	
Flow Rate (vi), pc/h			3509	1313	1313	
Capacity (cmd), pc/h			4600	2000	2000	
Adjusted Capacity (cmd), pc/h	djusted Capacity (cmd), pc/h		3919	1900	1900	
Volume-to-Capacity Ratio (v/c)			0.90	0.69		
Speed and Density						
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes or	n Freeway (NO), In	0	
Distance to Upstream Ramp (LUP), fi	t	-	Speed Index (Ds)		0.546	
Downstream Equilibrium Distance (I	LEQ), ft	-	Flow Outer Lanes (vOA), po	c/h/ln	-	

Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	50.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	65.8
Flow in Lanes 1 and 2 (v12), pc/h	3509	Ramp Junction Speed (S), mi/h	50.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	35.0
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/In	26.4

HCSTM Freeways Version 2022 B – SR 518 WB_Updated.xuf

Generated: 01/30/2024 10:56:05

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2037 - Proposed Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	C1 - EB SR 518 from 51st St Off Ramp to I-5 NB Off Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	3	Terrain Type	Level		
Segment Length (L), ft	1030	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	3745	Heavy Vehicle Adjustment Factor (fHV)	0.952		
Peak Hour Factor (PHF)	0.97	Flow Rate (vp), pc/h/ln	1757		
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2220		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.13		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0				
		N. 1 0000			

HCS TIM Freeways Version 2022 C1 – SR 518+I-5 & I-405 EB_Updated.xuf Generated: 01/30/2024 11:02:37

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2037 - Proposed Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	C2 - EB SR 518 from I-5 NB Off Ramp to I-5 SB Off Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	2	Terrain Type	Level		
Segment Length (L), ft	650	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	2383	Heavy Vehicle Adjustment Factor (fHV)	0.943		
Peak Hour Factor (PHF)	0.95	Flow Rate (vp), pc/h/ln	1729		
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2220		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.11		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0				
		N. 1 0000			

HCS TIM Freeways Version 2022 C2 – SR 518+I-5 & I-405 EB_Updated.xuf Generated: 01/30/2024 11:05:17

	HCS Basic F	reeway Report	
Project Information			
Analyst	Concord Engineering	Date	10/6/2023
Agency		Analysis Year	2037 - Proposed Action
Jurisdiction		Time Analyzed	PM Peak
Project Description	SAMP	Units	U.S. Customary
Segment Number	1	Segment Name	C4 - NB I-405 from I-5 SB On Ramp to I-5 NB On Ramp
Analysis Period Number	1	Segment Analysis Period	16:45-17:00
Geometric Data			
Number of Lanes (N), In	2	Terrain Type	Level
Segment Length (L), ft	670	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		
Adjustment Factors			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten
Demand and Capacity		·	•
Demand Volume (V), veh/h	4277	Heavy Vehicle Adjustment Factor (fHV)	0.943
Peak Hour Factor (PHF)	0.96	Flow Rate (vp), pc/h/ln	3071
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.53
Passenger Car Equivalent (ET)	2.00		
Speed and Density		·	
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	44.5
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCSTM Freeways Version 2022 C4 – SR 518+I-5 & I-405 EB_Updated.xuf

HCS Basic Freeway Report							
Project Information							
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2037 - Proposed Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	C5 - NB I-405 from I-5 NB On Ramp to Southcenter Pkwy				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	3	Terrain Type	Level				
Segment Length (L), ft	1180	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	5867	Heavy Vehicle Adjustment Factor (fHV)	0.943				
Peak Hour Factor (PHF)	0.98	Flow Rate (v _p), pc/h/ln	2751				
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2350				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.37				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	44.5				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0				
Total Ramp Density Adjustment	-	Level of Service (LOS)	F				
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0						

HCSTM Freeways Version 2022 C5 – SR 518+I-5 & I-405 EB_Updated.xuf Generated: 01/30/2024 11:06:56

	HCS Basic Freeway Report					
Project Information						
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2037 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	D1 - SB I-405 from Interurban Ave S 3-Lane Start Point to I-5 NB Off/ Southcenter Off Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	3	Terrain Type	Level			
Segment Length (L), ft	1820	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity						
Demand Volume (V), veh/h	5235	Heavy Vehicle Adjustment Factor (fHV)	0.952			
Peak Hour Factor (PHF)	0.99	Flow Rate (vp), pc/h/ln	2407			
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2220			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.55			
Passenger Car Equivalent (ET)	2.00					
Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0			
Total Ramp Density Adjustment	-	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0					

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2037 - Proposed Action		
Jurisdiction		Time Analyzed	PM Peak		
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	D2 - SB I-405 from I-5 NB Off Ramp to I-5 NB On Ramp		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	2	Terrain Type	Level		
Segment Length (L), ft	1350	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	3525	Heavy Vehicle Adjustment Factor (fHV)	0.952		
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	2456		
Total Trucks, %	5.00	Capacity (c), pc/h/ln	2220		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.58		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0				
		N 1 0000			

HCSTM Freeways Version 2022 D2 – SR 518+I-5 & I-405 W_Updated.xuf

Generated: 01/30/2024 11:08:55

		HCS Freeway	y V	Veaving Repo	rt	
Project Information	_					
Analyst		Concord Engineeri	ng	Date		10/6/2023
Agency				Analysis Year		2037 - Proposed Action
Jurisdiction				Time Analyzed		PM Peak
Project Description		SAMP		Units		U.S. Customary
Segment Number		1		Segment Name		D3 - SB I-405 from I-5 NB On Ramp to I-5 SB Off Ramp
Analysis Period Number		1		Segment Analysis Per	riod	16:45-17:00
Geometric Data						
Number of Lanes (N), In		3		Segment Type		Freeway
Segment Length (Ls), ft		570		Number of Maneuve	r Lanes (NWL), In	0
Weaving Configuration		Two-Sided		Ramp-to-Freeway La	ne Changes (LCRF), lc	1
Terrain Type		Level		Freeway-to-Ramp La	ne Changes (LCFR), lc	1
Percent Grade, %	• • • • • • • • • • • • • • • • • • • •			Ramp-to-Ramp Lane	Changes (LCRR), lc	2
Interchange Density (ID), int/mi		0.67 Cro		Cross Weaving Managed Lane		No
Adjustment Factors						
Driver Population		All Familiar		Final Speed Adjustment Factor (SAF)		0.700
Weather Type		Non-Severe Weather		Demand Adjustment	Factor (DAF)	1.300
Incident Type		No Incident		Capacity Adjustment	Factor for CAVs, CAFCAV	Overwritten
Proportion of CAVs in Traffic Stream		0 Final Capacity Adjustment		ment Factor (CAF)	0.900	
Demand and Capacity						
		FF		RF	RR	FR
Demand Volume (Vi), veh/h	17	03	109	97	485	1560
Peak Hour Factor (PHF)	0.9	98	0.9	4	0.96	0.97
Total Trucks, %	5.0	00	2.0	0	2.00	4.00
Heavy Vehicle Adjustment Factor (fHV)	0.9	952	0.9	80	0.980	0.962
Flow Rate (vi), pc/h	23	73	139	1396 604		2173
Weaving Flow Rate (vw), pc/h	60	4	Ide	deal Conditions Capacity (cIFL), pc/h/ln		2200
Non-Weaving Flow Rate (vNW), pc/h	59	42	De	Density-Based Capacity (cIWL \times N \times fHV), veh/h		5016
Total Flow Rate (v), pc/h	65	46	De	Demand Flow-Based Capacity (cIW × fHV), veh/h		-
Volume Ratio (VR)	0.0)99	We	Weaving Area Capacity (cw), veh/h		5016
Minimum Lane Change Rate (LCMIN), lc/h	12	1208 A		Adjusted Weaving Area Capacity (cWA), veh/h		4514
Maximum Weaving Length (LMAX), ft	66	62	Vo	lume-to-Capacity Ratio) (v/c)	1.00
Speed and Density						
Non-Weaving Vehicle Index (INW)		226		Average Weaving Spe	eed (Sw), mi/h	33.3
Non-Weaving Lane Change Rate (LCNW), Ic,	/h	955		Average Non-Weavir	ig Speed (SNW), mi/h	26.3
Weaving Lane Change Rate (LCW), lc/h		1295		Average Speed (S), mi/h		26.8

Weaving Lane Change Rate (LCAII), lc/h	2250	Density (D), pc/mi/ln	81.4
Weaving Intensity Factor (W)	0.668	Level of Service (LOS)	F

HCSTM Freeways Version 2022 D3 – SR 518+I-5 & I-405 W_Updated.xuf Generated: 01/31/2024 09:54:52

HCS Basic Freeway Report						
Project Information	Project Information					
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2037 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	D4 - WB SR 518 from I-5 SB Off Ramp to I-5 SB On Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	2	Terrain Type	Level			
Segment Length (L), ft	1280	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00			
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity	-					
Demand Volume (V), veh/h	3062	Heavy Vehicle Adjustment Factor (fHV)	0.980			
Peak Hour Factor (PHF)	0.90	Flow Rate (vp), pc/h/ln	2257			
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2220			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.45			
Passenger Car Equivalent (ET)	2.00					
Speed and Density						
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	34.5			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	45.0			
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0					
Copyright © 2024 University of Florida, All Rights F	Deserved LICCEN Francis	rays Varsion 2022	Generated: 01/30/2024 11:10:53			

HCSTM Freeways Version 2022 D4 – SR 518+I-5 & I-405 W_Updated.xuf Generated: 01/30/2024 11:10:53

HCS Basic Freeway Report						
Project Information	Project Information					
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2037 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	D5 - WB SR 518 from I-5 SB On Ramp to 51st St On Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	3	Terrain Type	Level			
Segment Length (L), ft	760	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.700			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity						
Demand Volume (V), veh/h	4285	Heavy Vehicle Adjustment Factor (fHV)	0.980			
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	1933			
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2220			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1554			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.24			
Passenger Car Equivalent (ET)	2.00					
Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	34.5			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0			
Total Ramp Density Adjustment	-	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0					
Convigant © 2024 University of Florida, All Rights I	Deserved LICCEM Francis	vavs Version 2022	Generated: 01/30/2024 11:12:2			

HCSTM Freeways Version 2022 D5 – SR 518+I-5 & I-405 W_Updated.xuf Generated: 01/30/2024 11:12:20

	HCS Free	eway Diverge Report	
Project Information			
Analyst	Concord Engineering	Date	10/6/2023
Agency		Analysis Year	2037 - Proposed Action
Jurisdiction		Time Analyzed	PM Peak
Project Description	SAMP	Units	U.S. Customary
Segment Number	1	Segment Name	E1 - SB I-5 at Southcenter Blvd/ SR 518 Off Ramp Diverge Area
Analysis Period Number	1	Segment Analysis Period	16:45-17:00
Geometric Data			
		Freeway	Ramp
Number of Lanes (N), In		6	2
Free-Flow Speed (FFS), mi/h		65.0	45.0
Segment Length (L) / Decelera	ation Length (LD), ft	1500	840
Terrain Type		Level	Level
Percent Grade, %		-	-
Segment Type / Ramp Type		Freeway	Right-Sided Major Diverge
Adjustment Factors			
Driver Population		All Familiar	All Familiar
Weather Type		Non-Severe Weather	Non-Severe Weather
Incident Type		No Incident	-
Proportion of CAVs in Traffic S	tream	0	-
Final Speed Adjustment Factor	r (SAF)	0.600	1.000
Demand Adjustment Factor (D	PAF)	1.300	1.300
Capacity Adjustment Factor (C	AF)	0.800	0.950
Capacity Adj. Factor for CAVs,	CAFCAV	Overwritten	-
Demand and Capacity			
Demand Volume (Vi), veh/h		8898	2193
Peak Hour Factor (PHF)		0.94	0.98
Total Trucks, %		15.00	9.00
Single-Unit Trucks (SUT), %		-	-
Tractor-Trailers (TT), %		-	-
Heavy Vehicle Adjustment Fac	tor (fHV)	0.870	0.917
Flow Rate (vi), pc/h		14144	3173
Capacity (cmd), pc/h		13500	4200
Adjusted Capacity (cmd), pc/h	Adjusted Capacity (cmd), pc/h		3990
Volume-to-Capacity Ratio (v/c	Volume-to-Capacity Ratio (v/c)		0.80
Density and LOS			
Average Density (D), pc/mi/ln	31.5	Average Speed (S), mi/h	39.0
Density in Ramp Influence Are	a (DMD), pc/mi/ln 31.5	Level of Service (LOS)	F
Copyright © 2024 University of Florid	la. All Rights Reserved. HCS	Freeways Version 2022	Generated: 01/30/2024 11:13:48

	HCS Basic F	reeway Report	
Project Information			
Analyst	Concord Engineering	Date	10/6/2023
Agency		Analysis Year	2037 - Proposed Action
Jurisdiction		Time Analyzed	PM Peak
Project Description	SAMP	Units	U.S. Customary
Segment Number	2	Segment Name	E2 - SB I-5 from Southcenter Blvd/SR 518 Off Ramp to I-405 NB Off Ramp
Analysis Period Number	1	Segment Analysis Period	16:45-17:00
Geometric Data			
Number of Lanes (N), In	6	Terrain Type	Level
Segment Length (L), ft	2240	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		
Adjustment Factors			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.600
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten
Demand and Capacity			
Demand Volume (V), veh/h	6047	Heavy Vehicle Adjustment Factor (fHV)	0.855
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	1564
Total Trucks, %	17.00	Capacity (c), pc/h/ln	2200
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1760
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81
Passenger Car Equivalent (ET)	2.00		
Speed and Density	<u> </u>		
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	20.6
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	69.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFSadj), mi/h	39.0		

HCS Basic Freeway Report						
Project Information						
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2037 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	E3 - SB I-5 from I-405 NB Off Ramp to I-405 SB On Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	4	Terrain Type	Level			
Segment Length (L), ft	620	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.600			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity						
Demand Volume (V), veh/h	4305	Heavy Vehicle Adjustment Factor (fHV)	0.800			
Peak Hour Factor (PHF)	0.99	Flow Rate (vp), pc/h/ln	1766			
Total Trucks, %	25.00	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1760			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81			
Passenger Car Equivalent (ET)	2.00					
Speed and Density	Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	20.0			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	71.9			
Total Ramp Density Adjustment	-	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	39.0					
S 11:000001111 1: 651 11 411 B1 1: 5		14 1 0000				

HCSTM Freeways Version 2022 E – I-5 SB [3]_Updated.xuf Generated: 01/30/2024 11:14:44

HCS Basic Freeway Report						
Project Information	Project Information					
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2037 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	E4 - SB I-5 from I-405 SB On Ramp to Klickitat SB On Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	5	Terrain Type	Level			
Segment Length (L), ft	4330	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity						
Demand Volume (V), veh/h	5865	Heavy Vehicle Adjustment Factor (fHV)	0.840			
Peak Hour Factor (PHF)	0.97	Flow Rate (vp), pc/h/ln	1871			
Total Trucks, %	19.00	Capacity (c), pc/h/ln	2220			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1776			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.78			
Passenger Car Equivalent (ET)	2.00					
Speed and Density	Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	18.0			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	76.8			
Total Ramp Density Adjustment	-	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0					
6 11:00004111 1: (FL 11 All B) 1: F		14 1 0000				

HCSTM Freeways Version 2022 E – I-5 SB [4-5]_Updated.xuf Generated: 01/30/2024 11:17:37

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/202	23	
Agency			Analysis Year	2037 - Pi	oposed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description	SAMP		Units	U.S. Cust	omary	
Segment Number	2		Segment Name		-5 at Klickitat SB On erge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17	:00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			5	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	1500		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Sic	led One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Famili	All Familiar	
Weather Type			Non-Severe Weather	Non-Sev	Non-Severe Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)	1		0.800	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.800	0.950	0.950	
Demand and Capacity			•			
Demand Volume (Vi), veh/h			7625	1301		
Peak Hour Factor (PHF)			0.97	0.92		
Total Trucks, %			19.00	0.02	0.02	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.840	1.000	1.000	
Flow Rate (vi), pc/h			9357	1838		
Capacity (cmd), pc/h			11250	2100		
Adjusted Capacity (cmd), pc/h	adjusted Capacity (cmd), pc/h		9000	1995		
Volume-to-Capacity Ratio (v/c)			0.85 0.92			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on	Freeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ms)		0.567	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/	/h/ln	2057	

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	46.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	46.4
Flow in Lanes 1 and 2 (v12), pc/h	2743	Ramp Junction Speed (S), mi/h	23.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	4581	Average Density (D), pc/mi/ln	64.6
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/In	31.0

HCSTM Freeways Version 2022 E – I-5 SB [4-5]_Updated.xuf

Generated: 01/30/2024 11:17:52

HCS Basic Freeway Report					
Project Information					
Analyst	Concord Engineering	Date	10/6/2023		
Agency		Analysis Year	2037 - Proposed Action		
Jurisdiction		Time Analyzed			
Project Description	SAMP	Units	U.S. Customary		
Segment Number	1	Segment Name	E6 - SB I-5 from Klickitat SB On Ramp Merge Area to 188th St SB Off Ramp Diverge Area		
Analysis Period Number	1	Segment Analysis Period	16:45-17:00		
Geometric Data					
Number of Lanes (N), In	5	Terrain Type	Level		
Segment Length (L), ft	2000	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-		
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0		
Right-Side Lateral Clearance, ft	-				
Adjustment Factors					
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	0.800		
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300		
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.800		
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten		
Demand and Capacity					
Demand Volume (V), veh/h	7166	Heavy Vehicle Adjustment Factor (fHV)	0.862		
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	1776		
Total Trucks, %	16.00	Capacity (c), pc/h/ln	2220		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	1776		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.00		
Passenger Car Equivalent (ET)	2.00				
Speed and Density					
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	39.5		
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	45.0		
Total Ramp Density Adjustment	-	Level of Service (LOS)	F		
Adjusted Free-Flow Speed (FFSadj), mi/h	52.0				

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord E	ngineering	Date	10/6/2	2023	
Agency			Analysis Year	2037	- Proposed Action	
Jurisdiction			Time Analyzed			
Project Description 5	SAMP		Units	U.S. C	ustomary	
Segment Number 2	2		Segment Name		B I-5 at 188th St SB Off Diverge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-	-17:00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			5	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Deceleration Le	ength (LD),	ft	1500	240		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-	Sided One-Lane	
Adjustment Factors						
Driver Population	Driver Population		All Familiar	All Far	miliar	
Weather Type			Non-Severe Weather	Non-S	Non-Severe Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-		
Final Speed Adjustment Factor (SAF)			0.800	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor (CAF)			0.800	0.950		
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-		
Demand and Capacity			•			
Demand Volume (Vi), veh/h			9316	1360		
Peak Hour Factor (PHF)			0.98	0.90		
Total Trucks, %			16.00	9.00		
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.862	0.917	0.917	
Flow Rate (vi), pc/h			11028	2142		
Capacity (cmd), pc/h			11250	2100		
Adjusted Capacity (cmd), pc/h	ted Capacity (cmd), pc/h 9000 1995					
Volume-to-Capacity Ratio (v/c)			0.99 1.07			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on	Freeway (No),	In 2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (DS)		0.491	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/	/h/ln	1400	

Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	47.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	55.5
Flow in Lanes 1 and 2 (v12), pc/h	4305	Ramp Junction Speed (S), mi/h	50.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.4
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	39.1

HCSTM Freeways Version 2022 E – I-5 SB [6-8]_Updated.xuf

Generated: 01/30/2024 11:21:03

HCS Basic Freeway Report						
Project Information	Project Information					
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2037 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	E9 - SB I-5 from Lane Reduction Point to 188th St SB On Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	4	Terrain Type	Level			
Segment Length (L), ft	2330	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.300			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity						
Demand Volume (V), veh/h	5806	Heavy Vehicle Adjustment Factor (fHV)	0.855			
Peak Hour Factor (PHF)	0.97	Flow Rate (vp), pc/h/ln	2275			
Total Trucks, %	17.00	Capacity (c), pc/h/ln	2350			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81			
Passenger Car Equivalent (ET)	2.00					
Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	22.7			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	71.9			
Total Ramp Density Adjustment	-	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0					
Copyright © 2024 University of Florida, All Rights I	Deserved LICCEM Francis	vavs Version 2022	Generated: 01/30/2024 11:22:5/			

HCSTM Freeways Version 2022 E – I-5 SB [9-14]_Updated.xuf Generated: 01/30/2024 11:22:54

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description	SAMP		Units	U.S. Custo	mary	
Segment Number	2		Segment Name	E10 - SB I- Ramp Mer	5 at 188th St SB On ge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1440	520		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	r	
Weather Type			Non-Severe Weather	Non-Sever	re Weather	
Incident Type		No Incident	-			
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF))		1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor for CAV	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			7548	875	875	
Peak Hour Factor (PHF)			0.97	0.99	0.99	
Total Trucks, %			17.00	4.00	4.00	
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	IV)		0.855	0.962		
Flow Rate (vi), pc/h			9101	1195		
Capacity (cmd), pc/h			9400	2000		
Adjusted Capacity (cmd), pc/h		8009	1900	1900		
Volume-to-Capacity Ratio (v/c)			0.93	0.63		
Speed and Density						
Upstream Equilibrium Distance (LEQ)), ft	-	Number of Outer Lanes on Fro	eeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ms)		0.460	
Downstream Equilibrium Distance (L	.EQ), ft	-	Flow Outer Lanes (vOA), pc/h/	ln	1957	

Distance to Downstream Ramp (LDOWN), ft	2940	On-Ramp Influence Area Speed (SR), mi/h 54.4	
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.068	Outer Lanes Freeway Speed (SO), mi/h	59.8
Flow in Lanes 1 and 2 (v12), pc/h	2609	Ramp Junction Speed (S), mi/h	57.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	3804	Average Density (D), pc/mi/ln	33.8
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/In	31.4

HCSTM Freeways Version 2022 E – I-5 SB [9-14]_Updated.xuf

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord E	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	4		Segment Name	E12 - SB I- Ramp Dive	5 at 200th St SB Off erge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Deceleration Le	ength (LD),	ft	1440	180		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type	Segment Type / Ramp Type		Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	r	
Weather Type			Non-Severe Weather	Non-Seve	re Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor (CAF)			0.852	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			8685	520	520	
Peak Hour Factor (PHF)			0.97	0.80	0.80	
Total Trucks, %			15.00	4.00	4.00	
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.870	0.962		
Flow Rate (vi), pc/h			10292	878		
Capacity (cmd), pc/h			9400	2000		
Adjusted Capacity (cmd), pc/h		8009	1900	1900		
Volume-to-Capacity Ratio (v/c)		0.93	0.46			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fre	eway (No), In	2	
Distance to Upstream Ramp (LUP), ft		2940	Speed Index (DS)		0.507	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/lr	า	1856	

Distance to Downstream Ramp (LDOWN), ft	1730	Off-Ramp Influence Area Speed (SR), mi/h	53.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	68.0
Flow in Lanes 1 and 2 (v12), pc/h	3747	Ramp Junction Speed (S), mi/h	59.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.2
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	34.9

HCSTM Freeways Version 2022 E – I-5 SB [9-14]_Updated.xuf

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	6		Segment Name	E14 - SB I- Ramp Mer	5 at 200th St SB On ge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	470		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Seve	re Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-		
Final Speed Adjustment Factor (SAF)	1		1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.300	1.300	
Capacity Adjustment Factor for CAVs	s, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			8009	580	580	
Peak Hour Factor (PHF)			0.96	0.96	0.96	
Total Trucks, %			14.00	2.00	2.00	
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.877	0.980	0.980	
Flow Rate (vi), pc/h			9513	801		
Capacity (cmd), pc/h			9400	2000		
Adjusted Capacity (cmd), pc/h		8009	1900	1900		
Volume-to-Capacity Ratio (v/c)		0.91	0.42	0.42		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Free	eway (No), In	2	
Distance to Upstream Ramp (LUP), ft		1730	Speed Index (MS)		0.676	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln		2700	

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	49.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.118	Outer Lanes Freeway Speed (SO), mi/h	56.1
Flow in Lanes 1 and 2 (v12), pc/h	4113	Ramp Junction Speed (S), mi/h	33.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	4914	Average Density (D), pc/mi/ln	55.1
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/In	40.6

HCSTM Freeways Version 2022 E – I-5 SB [9-14]_Updated.xuf

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord E	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	1		Segment Name	F1 - NB I- Ramp Dive	5 at Military Rd NB Off erge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Deceleration L	ength (LD),	ft	1500	290		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	ed One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	r	
Weather Type			Non-Severe Weather	Non-Seve	re Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor (CAF)			1.000	0.852	0.852	
Capacity Adj. Factor for CAVs, CAFCA	V		1.000	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			4675	290		
Peak Hour Factor (PHF)			0.97	0.93	0.93	
Total Trucks, %			7.00	3.00	3.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.971	0.971	
Flow Rate (vi), pc/h			5155	321		
Capacity (cmd), pc/h			9400	2000		
Adjusted Capacity (cmd), pc/h		9400	1704	1704		
Volume-to-Capacity Ratio (v/c)			0.55	0.19		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on F	reeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ds)		0.457	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h	n/ln	1363	

Distance to Downstream Ramp (LDOWN), ft	900	Off-Ramp Influence Area Speed (SR), mi/h	54.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	69.9
Flow in Lanes 1 and 2 (v12), pc/h	2429	Ramp Junction Speed (S), mi/h	61.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	20.9
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/In	22.5

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number 3	3		Segment Name	F3 - NB I-5 Ramp Mer	at Military Rd NB On ge Area	
Analysis Period Number 1	1		Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	710		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Sever	Non-Severe Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor for CAVs	, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			4385	780		
Peak Hour Factor (PHF)			0.97	0.97	0.97	
Total Trucks, %			7.00	1.00	1.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	v)		0.935	0.990	0.990	
Flow Rate (vi), pc/h			4835	812		
Capacity (cmd), pc/h			9400	2000		
Adjusted Capacity (cmd), pc/h		8009	1900	1900		
Volume-to-Capacity Ratio (v/c)		0.71	0.43	0.43		
Speed and Density						
Upstream Equilibrium Distance (LEQ),	, ft	-	Number of Outer Lanes on Free	eway (No), In	2	
Distance to Upstream Ramp (LUP), ft		900	Speed Index (Ms)		0.332	
Downstream Equilibrium Distance (Li	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/lr	1	1451	

Distance to Downstream Ramp (LDOWN), ft	5090	On-Ramp Influence Area Speed (SR), mi/h	57.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.116	Outer Lanes Freeway Speed (SO), mi/h	61.6
Flow in Lanes 1 and 2 (v12), pc/h	1934	Ramp Junction Speed (S), mi/h	59.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	2746	Average Density (D), pc/mi/ln	23.7
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/In	22.1

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number 5	5		Segment Name	F5 - NB I-5 Ramp Dive	5 at 188th St NB Off erge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Deceleration Le	ength (LD),	ft	1500	180		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population			All Familiar	All Familia	r	
Weather Type			Non-Severe Weather	Non-Sever	re Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor (CAF)			0.852	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			5165	710		
Peak Hour Factor (PHF)			0.98	0.95	0.95	
Total Trucks, %			7.00	8.00		
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.935	0.926		
Flow Rate (vi), pc/h			5637	807		
Capacity (cmd), pc/h			9400	2100		
Adjusted Capacity (cmd), pc/h		8009	1995	1995		
Volume-to-Capacity Ratio (v/c)			0.70	0.40		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fre	eway (No), In	2	
Distance to Upstream Ramp (LUP), ft		5090	Speed Index (DS)		0.371	
Downstream Equilibrium Distance (Li	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/lr	n	1362	

Distance to Downstream Ramp (LDOWN), ft	2260	Off-Ramp Influence Area Speed (SR), mi/h	56.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	69.9
Flow in Lanes 1 and 2 (v12), pc/h	2913	Ramp Junction Speed (S), mi/h	62.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.6
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/In	27.7

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

		HCS Freeway	Merge Report			
Project Information						
Analyst	oncord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description SA	AMP		Units	U.S. Custo	mary	
Segment Number 7			Segment Name	F7 - NB I-5 Ramp Mer	5 at 188th St NB On ge Area	
Analysis Period Number 1			Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Acceleration Ler	ngth (LA),	ft	1500	570		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type		Freeway	Right-Side	d One-Lane		
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Seve	re Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor for CAVs,	CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CAF	F)		0.852	0.950	0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			4455	1530	1530	
Peak Hour Factor (PHF)			0.99	0.92	0.92	
Total Trucks, %			7.00	2.00	2.00	
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fhv)		0.935	0.980		
Flow Rate (vi), pc/h			4813	1697		
Capacity (cmd), pc/h			9400	2100		
Adjusted Capacity (cmd), pc/h		8009	1995			
Volume-to-Capacity Ratio (v/c)		0.81 0.85				
Speed and Density						
Upstream Equilibrium Distance (LEQ),	ft	-	Number of Outer Lanes on F	reeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		2260	Speed Index (Ms)		0.416	
Downstream Equilibrium Distance (LEG	Q), ft	-	Flow Outer Lanes (vOA), pc/h	ı/ln	1444	

Distance to Downstream Ramp (LDOWN), ft	7350	On-Ramp Influence Area Speed (SR), mi/h 55.4	
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.006	Outer Lanes Freeway Speed (SO), mi/h	61.6
Flow in Lanes 1 and 2 (v12), pc/h	1925	Ramp Junction Speed (S), mi/h	58.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	3622	Average Density (D), pc/mi/ln	28.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/In	29.4

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

		HCS Freeway	Diverge Report			
Project Information						
Analyst	Concord E	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number	9		Segment Name		at Southcenter Pkwy Diverge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	0	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			65.0	45.0		
Segment Length (L) / Deceleration Lo	ength (LD),	ft	1500	840		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type	Segment Type / Ramp Type		Freeway	Right-Side	d One-Lane	
Adjustment Factors			•			
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Seve	Non-Severe Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor (CAF)			0.852	0.950	0.950	
Capacity Adj. Factor for CAVs, CAFCA	V		Overwritten	-	-	
Demand and Capacity						
Demand Volume (Vi), veh/h			5985	830	830	
Peak Hour Factor (PHF)			0.98	0.91	0.91	
Total Trucks, %			6.00	2.00	2.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.943	0.980	0.980	
Flow Rate (vi), pc/h			6476	931		
Capacity (cmd), pc/h		9400	2100			
Adjusted Capacity (cmd), pc/h		8009	1995			
Volume-to-Capacity Ratio (v/c)		0.81	0.81 0.47			
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Fre	eeway (No), In	2	
Distance to Upstream Ramp (LUP), ft		7350	Speed Index (Ds)		0.382	
Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/l	ln	1564	

Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	56.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	69.1
Flow in Lanes 1 and 2 (v12), pc/h	3349	Ramp Junction Speed (S), mi/h	61.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.2
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/ln	25.5

HCSTM Freeways Version 2022 F – I-5 NB [1-11]_Updated.xuf

	HCS Free	eway Div	erge Report			
Project Information						
	Concord Engineering	Dat	te	10/6/2023	10/6/2023	
Agency		Ana	alysis Year	2037 - Propo	sed Action	
Jurisdiction		Tim	ne Analyzed	PM Peak		
Project Description	SAMP	Uni	its	U.S. Customa	nry	
Segment Number	11	Seg	gment Name		at SR 518 WB/I-405 Diverge Area	
Analysis Period Number	1	Seg	gment Analysis Period	16:45-17:00		
Geometric Data				·		
		Free	eway	Ramp		
Number of Lanes (N), In		4		2		
Free-Flow Speed (FFS), mi/h		65.0)	35.0		
Segment Length (L) / Deceleration L	ength (LD), ft	150	00	400		
Terrain Type		Leve	el	Level		
Percent Grade, %		-		-		
Segment Type / Ramp Type		Free	eway	Right-Sided I	Major Diverge	
Adjustment Factors						
Driver Population		All I	Familiar	All Familiar		
Weather Type		Nor	n-Severe Weather	Non-Severe	Weather	
Incident Type		No	Incident	-		
Proportion of CAVs in Traffic Stream		0		-		
Final Speed Adjustment Factor (SAF))	1.00	00	1.000		
Demand Adjustment Factor (DAF)		1.00	00	1.000		
Capacity Adjustment Factor (CAF)		0.85	52	0.950		
Capacity Adj. Factor for CAVs, CAFCA	AV	Ove	erwritten	-		
Demand and Capacity						
Demand Volume (Vi), veh/h		515	55	2687		
Peak Hour Factor (PHF)		0.98	3	0.97		
Total Trucks, %		6.00)	5.00		
Single-Unit Trucks (SUT), %		-		-		
Tractor-Trailers (TT), %		-		-		
Heavy Vehicle Adjustment Factor (fHV)		0.94	43	0.952		
Flow Rate (vi), pc/h		557	8	2910		
Capacity (cmd), pc/h		940	00	4000		
Adjusted Capacity (cmd), pc/h		800	9	3800		
Volume-to-Capacity Ratio (v/c)		0.70)	0.77	0.77	
Density and LOS						
Average Density (D), pc/mi/ln	24.4	Ave	erage Speed (S), mi/h		57.1	
Density in Ramp Influence Area (DM	D), pc/mi/ln 24.4	Lev	rel of Service (LOS)		С	
Copyright © 2024 University of Florida. All R	ights Reserved. HCS	STM Freeways Vei	rsion 2022	Gene	rated: 01/30/2024 11:27:39	

HCS Basic Freeway Report							
Project Information	Project Information						
Analyst	Concord Engineering	Date	10/6/2023				
Agency		Analysis Year	2037 - Proposed Action				
Jurisdiction		Time Analyzed	PM Peak				
Project Description	SAMP	Units	U.S. Customary				
Segment Number	1	Segment Name	F12 - NB I-5 from SR 518 WB/I-405 EB Off Ramp to I-405 WB HOV On Ramp				
Analysis Period Number	1	Segment Analysis Period	16:45-17:00				
Geometric Data							
Number of Lanes (N), In	3	Terrain Type	Level				
Segment Length (L), ft	2130	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-				
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0				
Right-Side Lateral Clearance, ft	-						
Adjustment Factors							
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000				
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000				
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852				
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten				
Demand and Capacity							
Demand Volume (V), veh/h	2468	Heavy Vehicle Adjustment Factor (fHV)	0.935				
Peak Hour Factor (PHF)	0.98	Flow Rate (vp), pc/h/ln	898				
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.45				
Passenger Car Equivalent (ET)	2.00						
Speed and Density							
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0				
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	13.8				
Total Ramp Density Adjustment	-	Level of Service (LOS)	В				
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0						
6 11:00004111 1: (FI 11 411 B) 1: F		14 1 0000					

HCSTM Freeways Version 2022 F – I-5 NB [12]_Updated.xuf

HCS Basic Freeway Report						
Project Information						
Analyst	Concord Engineering	Date	10/6/2023			
Agency		Analysis Year	2037 - Proposed Action			
Jurisdiction		Time Analyzed	PM Peak			
Project Description	SAMP	Units	U.S. Customary			
Segment Number	1	Segment Name	F13 - NB I-5 from I-405 WB HOV On Ramp to I-405 WB On Ramp			
Analysis Period Number	1	Segment Analysis Period	16:45-17:00			
Geometric Data						
Number of Lanes (N), In	4	Terrain Type	Level			
Segment Length (L), ft	150	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-			
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0			
Right-Side Lateral Clearance, ft	-					
Adjustment Factors						
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000			
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000			
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852			
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten			
Demand and Capacity	-					
Demand Volume (V), veh/h	2728	Heavy Vehicle Adjustment Factor (fHV)	0.935			
Peak Hour Factor (PHF)	0.96	Flow Rate (vp), pc/h/ln	760			
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.38			
Passenger Car Equivalent (ET)	2.00					
Speed and Density						
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0			
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	11.7			
Total Ramp Density Adjustment	-	Level of Service (LOS)	В			
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0					
Copyright © 2024 University of Florida, All Rights I	Deserved LICCEM Francis	vavs Version 2022	Generated: 01/30/2024 11:20:55			

HCSTM Freeways Version 2022 F – I-5 NB [13-14]_Updated.xuf

		HCS Freeway	Merge Report			
Project Information						
Analyst	Concord E	ngineering	Date		10/6/2023	
Agency			Analysis Year		2037 - Pro	posed Action
Jurisdiction			Time Analyzed		PM Peak	
Project Description	SAMP		Units		U.S. Custo	mary
Segment Number	2		Segment Name		F14 - NB I- Ramp Mer	5 at I-405 WB On ge Area
Analysis Period Number	1		Segment Analysis Period		16:45-17:0	0
Geometric Data						
			Freeway		Ramp	
Number of Lanes (N), In			4		1	
Free-Flow Speed (FFS), mi/h			65.0		45.0	
Segment Length (L) / Acceleration L	ength (LA),	ft	1500		1130	
Terrain Type			Level		Level	
Percent Grade, %			-		-	
Segment Type / Ramp Type		Freeway		Right-Sided One-Lane		
Adjustment Factors						
Driver Population		All Familiar		All Familiar		
Weather Type			Non-Severe Weather		Non-Sever	e Weather
Incident Type			No Incident		-	
Proportion of CAVs in Traffic Stream	1		0		-	
Final Speed Adjustment Factor (SAF)		1.000		1.000	
Demand Adjustment Factor (DAF)			1.000		1.000	
Capacity Adjustment Factor for CAV	s, CAFCAV		Overwritten		-	
Final Capacity Adjustment Factor (C	AF)		0.852		0.950	
Demand and Capacity						
Demand Volume (Vi), veh/h			2728		1100	
Peak Hour Factor (PHF)			0.96		0.99	
Total Trucks, %			7.00		5.00	
Single-Unit Trucks (SUT), %			-		-	
Tractor-Trailers (TT), %			-		-	
Heavy Vehicle Adjustment Factor (fi	HV)		0.935		0.952	
Flow Rate (vi), pc/h			3039		1167	
Capacity (cmd), pc/h		9400		2100		
Adjusted Capacity (cmd), pc/h		8009		1995		
Volume-to-Capacity Ratio (v/c)		0.53		0.58		
Speed and Density						
Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes o	n Freeway	/ (No), In	2
Distance to Upstream Ramp (LUP), f	t	-	Speed Index (Ms)			0.262
Downstream Equilibrium Distance (l	LEQ), ft	-	Flow Outer Lanes (vOA), p	c/h/ln		912

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h 59.0	
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.352	Outer Lanes Freeway Speed (SO), mi/h	63.5
Flow in Lanes 1 and 2 (v12), pc/h	1216	Ramp Junction Speed (S), mi/h	60.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	2383	Average Density (D), pc/mi/ln	17.3
Level of Service (LOS)	В	Density in Ramp Influence Area (DR), pc/mi/In	16.5

HCSTM Freeways Version 2022 F – I-5 NB [13-14]_Updated.xuf

	HCS Basic F	reeway Report	
Project Information			
Analyst	Concord Engineering	Date	10/6/2023
Agency		Analysis Year	2037 - Proposed Action
Jurisdiction		Time Analyzed	PM Peak
Project Description	SAMP	Units	U.S. Customary
Segment Number	1	Segment Name	F15 - NB I-5 from SR 518 EB On Ramp to Southcenter Blvd NB On Ramp
Analysis Period Number	1	Segment Analysis Period	16:45-17:00
Geometric Data			
Number of Lanes (N), In	5	Terrain Type	Level
Segment Length (L), ft	700	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	-	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		
Adjustment Factors			
Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Demand Adjustment Factor (DAF)	1.000
Incident Type	No Incident	Capacity Adjustment Factor (CAF)	0.852
Proportion of CAVs in Traffic Stream	0	Capacity Adj. Factor for CAVs, CAFCAV	Overwritten
Demand and Capacity			
Demand Volume (V), veh/h	5190	Heavy Vehicle Adjustment Factor (fHV)	0.943
Peak Hour Factor (PHF)	0.94	Flow Rate (vp), pc/h/ln	1171
Total Trucks, %	6.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2002
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.58
Passenger Car Equivalent (ET)	2.00		
Speed and Density			
Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	64.5
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	18.2
Total Ramp Density Adjustment	-	Level of Service (LOS)	С
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS Freeway Merge Report						
Project Information						
Analyst	Concord Er	ngineering	Date	10/6/2023		
Agency			Analysis Year	2037 - Pro	posed Action	
Jurisdiction			Time Analyzed	PM Peak		
Project Description S	SAMP		Units	U.S. Custo	mary	
Segment Number 2	2		Segment Name		-5 at Southcenter Blvd mp Merge Area	
Analysis Period Number	1		Segment Analysis Period	16:45-17:0	00	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			5	1		
Free-Flow Speed (FFS), mi/h			65.0	35.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	1070		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type		Freeway	Right-Side	Right-Sided One-Lane		
Adjustment Factors						
Driver Population		All Familiar	All Familia	r		
Weather Type			Non-Severe Weather	Non-Sever	Non-Severe Weather	
Incident Type			No Incident	-		
Proportion of CAVs in Traffic Stream			0	-	-	
Final Speed Adjustment Factor (SAF)			1.000	1.000	1.000	
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Capacity Adjustment Factor for CAVs	, CAFCAV		Overwritten	-	-	
Final Capacity Adjustment Factor (CA	AF)		0.852	0.950	0.950	
Demand and Capacity				_		
Demand Volume (Vi), veh/h			5190	990		
Peak Hour Factor (PHF)			0.94	0.95	0.95	
Total Trucks, %			6.00	5.00	5.00	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.943	0.952		
Flow Rate (vi), pc/h		5855	1095	1095		
Capacity (cmd), pc/h			11750	2000		
Adjusted Capacity (cmd), pc/h		10011	1900	1900		
Volume-to-Capacity Ratio (v/c)		0.69	0.58	0.58		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Free	eway (No), In	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (MS)		0.315	
Downstream Equilibrium Distance (Li	EQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln		1335	

Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.8	
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.081	Outer Lanes Freeway Speed (SO), mi/h	62.0	
Flow in Lanes 1 and 2 (v12), pc/h	1780	Ramp Junction Speed (S), mi/h	59.7	
Flow Entering Ramp-Infl. Area (vR12), pc/h	2875	Average Density (D), pc/mi/ln	18.6	
Level of Service (LOS)	С	Density in Ramp Influence Area (DR), pc/mi/ln	20.8	
Copyright © 2023 University of Florida. All Rights Reserved. HCSTM Freeways Version 2022 Generated: 10/09/2023 10				

HCSTM Freeways Version 2022 F – I-5 NB [15-16]_Updated.xuf