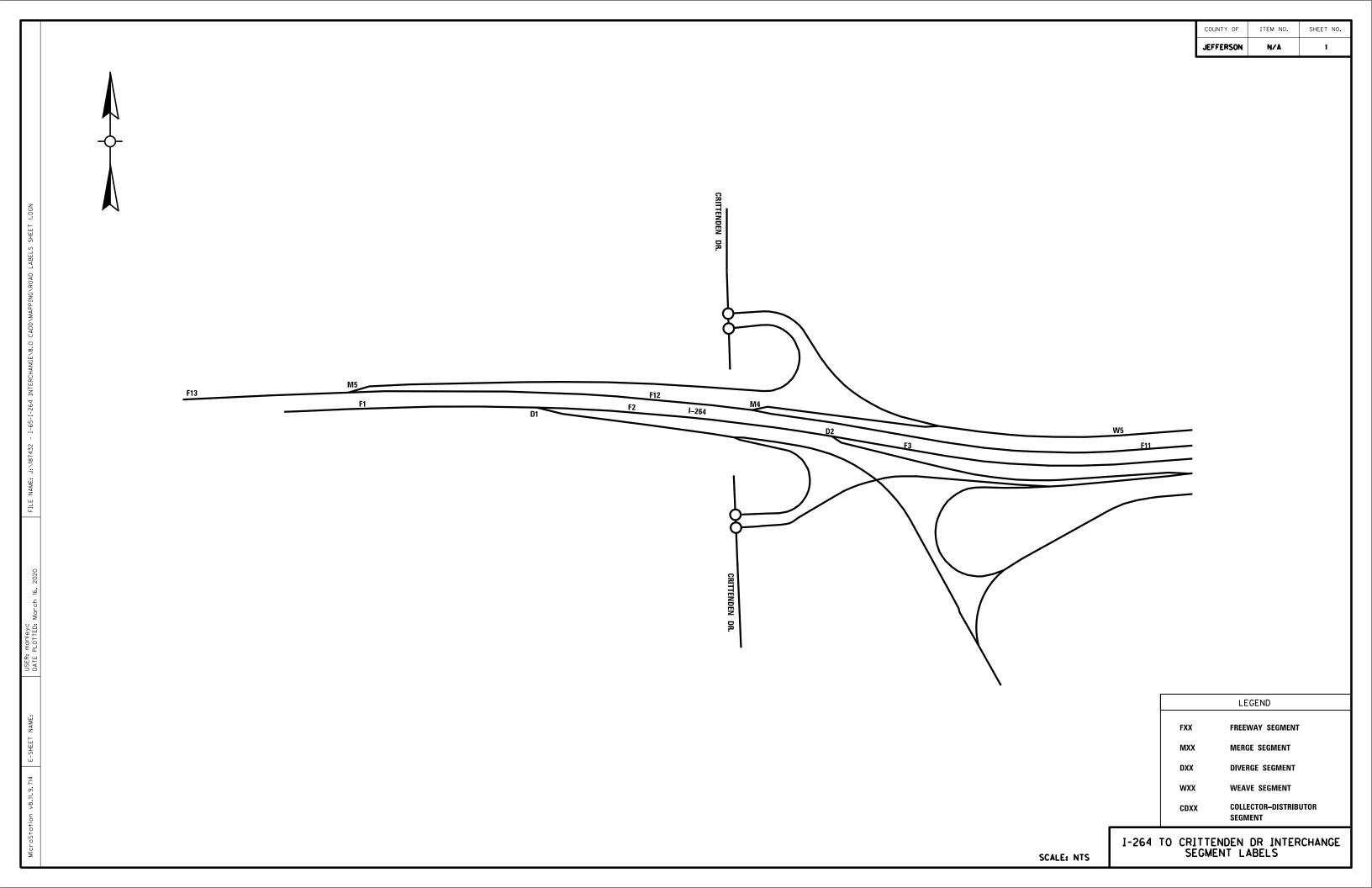
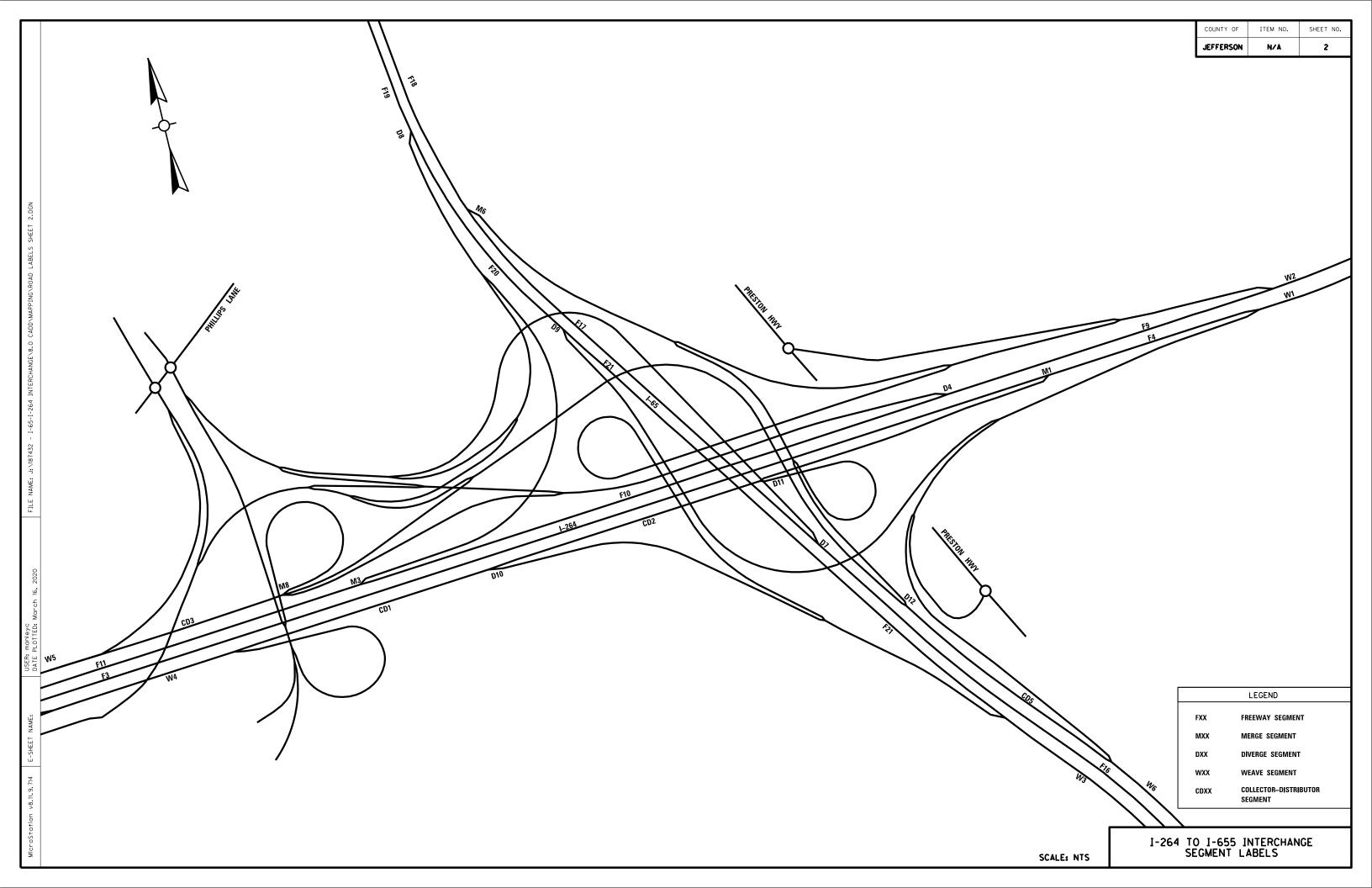
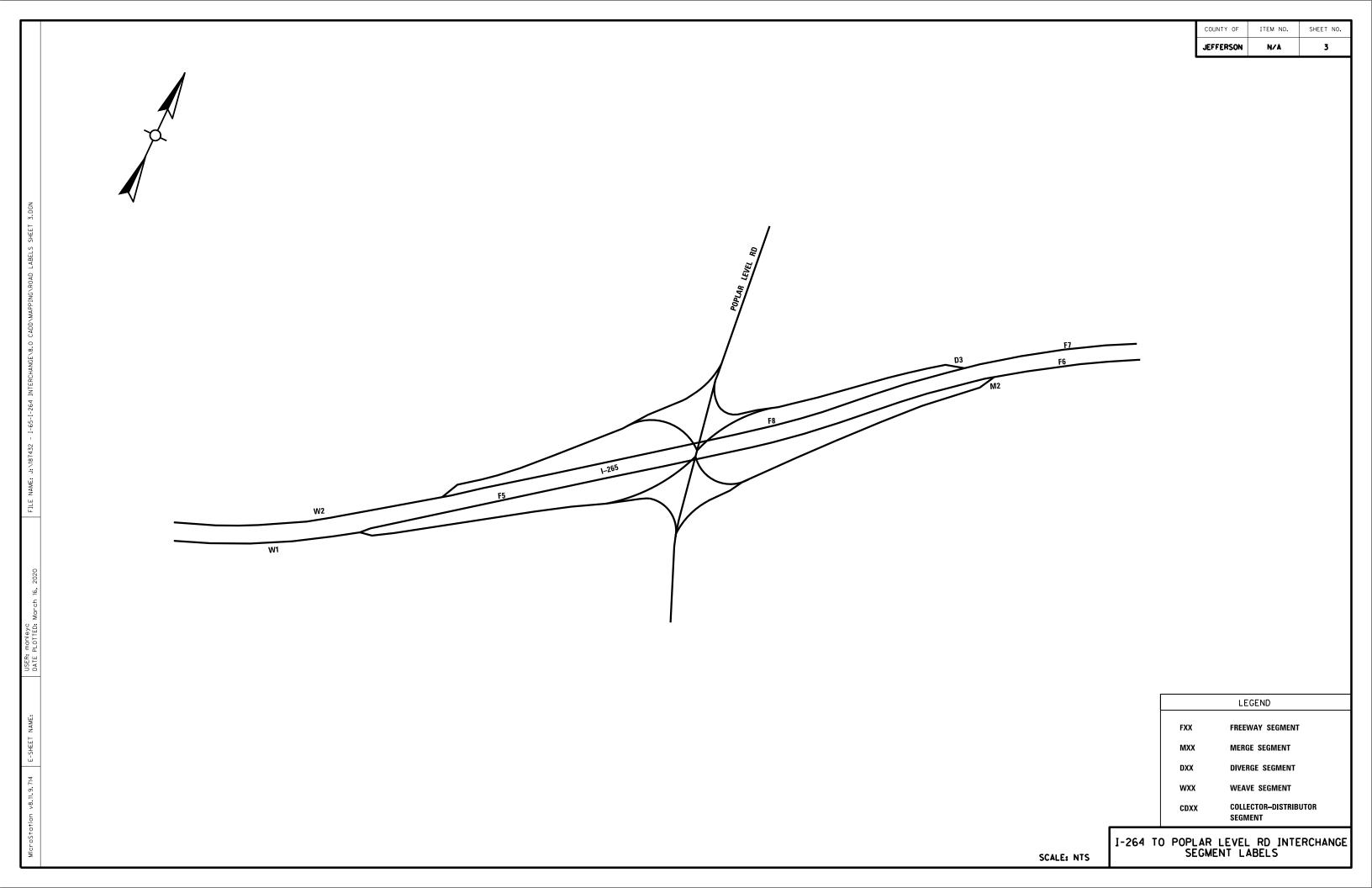
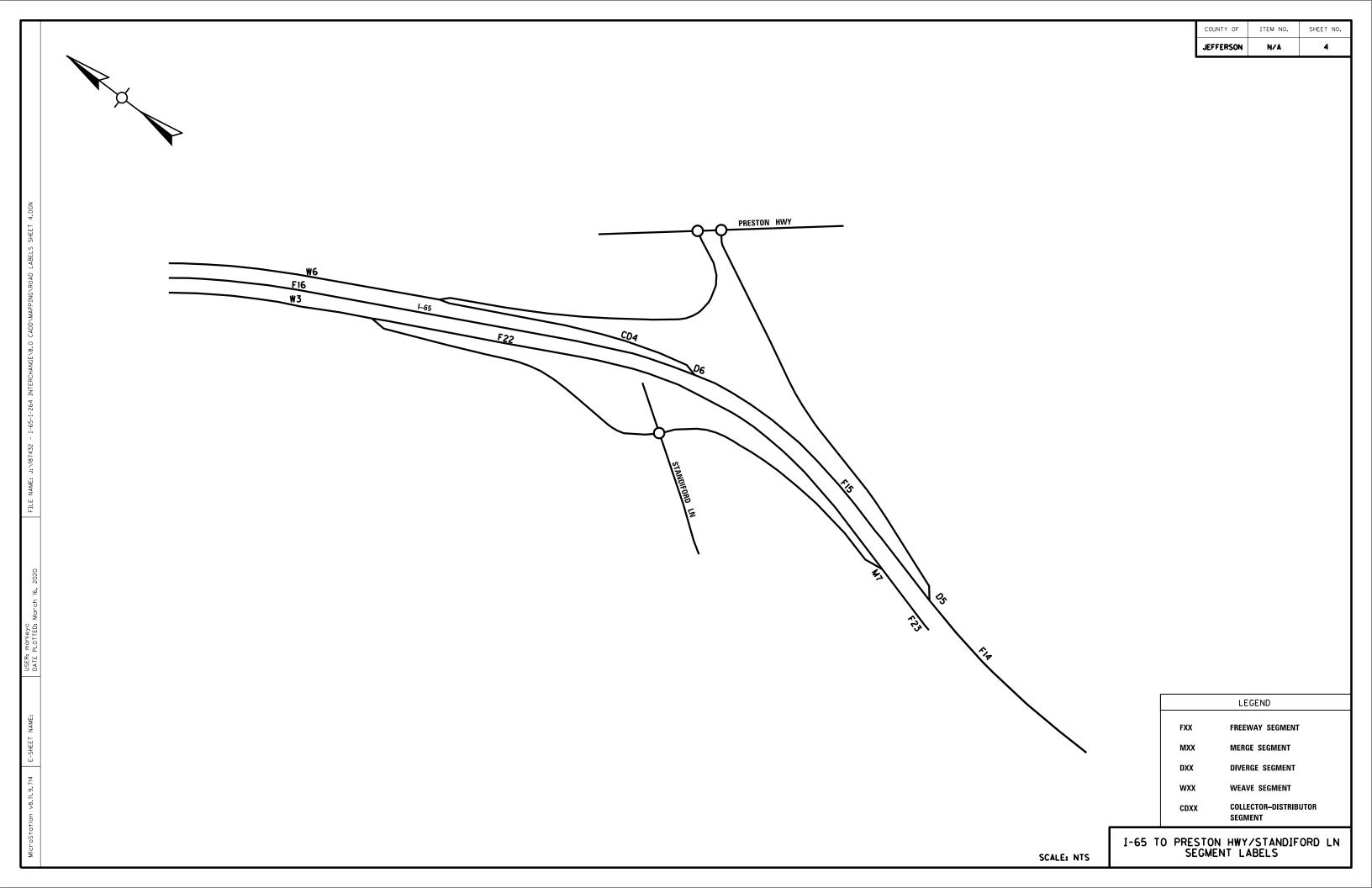
APPENDIX

D HCS ANALYSIS









HCS7 Basic Freeway Report Project Information						
Agency	WSP	Analysis Year	2020			
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour			
Project Description	I-65/264 Interchange Study	,				
Geometric Data						
Number of Lanes, In	4	Terrain Type	Level			
Segment Length (L), ft	-	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	5.40			
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	41.7			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors	-		-			
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950			
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939			
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000			
Demand and Capacity						
Demand Volume veh/h	5206	Heavy Vehicle Adjustment Factor (fHV)	0.953			
Peak Hour Factor	0.97	Flow Rate (Vp), pc/h/ln	1408			
Total Trucks, %	4.94	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.68			
Passenger Car Equivalent (ET)	2.000					
Speed and Density						
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	39.6			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	35.6			
Total Ramp Density Adjustment	13.3	Level of Service (LOS)	E			
Adjusted Free-Flow Speed (FFSadj), mi/h	39.6					

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		HCS7 Freeway	Diverge Report			
Project Information						
Analyst	Cameron N	Manley	Date	3/10/2020		
Agency	WSP		Analysis Year	2020		
Jurisdiction	D05		Time Period Analyzed	PM Peak H	lour	
Project Description	I-65/264 Ir	iterchange Study		<u> </u>		
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	2		
Free-Flow Speed (FFS), mi/h			55.0	55.0		
Segment Length (L) / Deceleration L	ength (LA),	ft	1500	630		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Side			Freeway	Right		
Adjustment Factors						
Driver Population			Balanced Mix	Balanced N	Иix	
Weather Type			Non-Severe Weather	Non-Sever	e Weather	
Incident Type			No Incident	-	-	
Final Speed Adjustment Factor (SAF))		0.950	0.950		
Final Capacity Adjustment Factor (Ca	AF)		0.939	0.939		
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Demand and Capacity						
Demand Volume (Vi)			5206	416		
Peak Hour Factor (PHF)			0.97	0.94		
Total Trucks, %			4.94	5.53		
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (f	IV)		0.953	0.948		
Flow Rate (vi),pc/h			5632	467		
Capacity (c), pc/h			8451	4132		
Volume-to-Capacity Ratio (v/c)			0.67	0.11		
Speed and Density						
Upstream Equilibrium Distance (LEQ)), ft	-	Number of Outer Lanes on Fr	eeway (No)	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (DS)		0.246	
Downstream Equilibrium Distance (L	.EQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln 16		1690	
Distance to Downstream Ramp (LDC	wn), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h 4		49.7	
Prop. Freeway Vehicles in Lane 1 and	d 2 (PFD)	0.260	Outer Lanes Freeway Speed (SO), mi/h 54.		54.6	
Flow in Lanes 1 and 2 (v12), pc/h		2253	Ramp Junction Speed (S), mi/	'n	52.5	
Flow Entering Ramp-Infl. Area (vR12)	, pc/h	-	Average Density (D), pc/mi/ln	1	26.8	
Level of Service (LOS)		В	Density in Ramp Influence Are	ea (DR), pc/mi/ln	18.0	

HCS7 Basic Freeway Report						
Project Information						
Analyst	Cameron Manley	Date	3/9/2020			
Agency	WSP	Analysis Year	2020			
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour			
Project Description	I-65/264 Interchange Stu	dy				
Geometric Data						
Number of Lanes, In	3	Terrain Type	Level			
Segment Length (L), ft	-	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	6.00			
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	40.5			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors	-					
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950			
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939			
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000			
Demand and Capacity						
Demand Volume veh/h	4790	Heavy Vehicle Adjustment Factor (fHV)	0.953			
Peak Hour Factor	0.94	Flow Rate (V _p), pc/h/ln	1782			
Total Trucks, %	4.89	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.86			
Passenger Car Equivalent (ET)	2.000					
Speed and Density						
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	-			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	-			
Total Ramp Density Adjustment	14.5	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	38.5					

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	Н	CS7 Freeway	Diverge Report			
Project Information						
Analyst	Cameron Ma	nley	Date	3/10/2020		
Agency	WSP		Analysis Year	2020		
Jurisdiction [D05		Time Period Analyzed	PM Peak H	our	
Project Description I	I-65/264 Inte	rchange Study	Unit	United Sta	tes Customary	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			3	1		
Free-Flow Speed (FFS), mi/h			55.0	55.0		
Segment Length (L) / Deceleration Le	ength (LA),ft		1380	230		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population			Balanced Mix	Balanced N	Лix	
Weather Type			Non-Severe Weather	Non-Sever	Non-Severe Weather	
Incident Type			No Incident	-	-	
Final Speed Adjustment Factor (SAF)			0.950	0.950		
Final Capacity Adjustment Factor (CA	AF)		0.939	0.939		
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Demand and Capacity						
Demand Volume (Vi)			4790	1710		
Peak Hour Factor (PHF)			0.94	0.94		
Total Trucks, %			4.89	8.01		
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.953	0.926		
Flow Rate (vi),pc/h			5347	1965		
Capacity (c), pc/h			6338	2066	2066	
Volume-to-Capacity Ratio (v/c)			0.84	0.95		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft -		Number of Outer Lanes on Fr	eeway (No)	1	
Distance to Upstream Ramp (LUP), ft	-		Speed Index (DS)		0.381	
Downstream Equilibrium Distance (Li	.EQ), ft -		Flow Outer Lanes (vOA), pc/h/ln		1569	
Distance to Downstream Ramp (LDO)	WN), ft -		Off-Ramp Influence Area Speed (SR), mi/h 4		48.3	
Prop. Freeway Vehicles in Lane 1 and	d 2 (PFD) 0	.536	 		55.0	
Flow in Lanes 1 and 2 (v12), pc/h	3	778	Ramp Junction Speed (S), mi/	′h	50.1	
Flow Entering Ramp-Infl. Area (vR12),	, pc/h -		Average Density (D), pc/mi/ln	l	35.6	
Level of Service (LOS)	D)	Density in Ramp Influence Ar	ea (DR), pc/mi/ln	34.7	

HCS7 Basic Freeway Report						
Project Information						
Analyst	Cameron Manley	Date	3/9/2020			
Agency	WSP	Analysis Year	2020			
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour			
Project Description	I-65/264 Interchange Study					
Geometric Data						
Number of Lanes, In	3	Terrain Type	Level			
Segment Length (L), ft	-	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	1.42			
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	50.7			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors	-		-			
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950			
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939			
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000			
Demand and Capacity						
Demand Volume veh/h	3080	Heavy Vehicle Adjustment Factor (fHV)	0.969			
Peak Hour Factor	0.94	Flow Rate (V _p), pc/h/ln	1127			
Total Trucks, %	3.15	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.55			
Passenger Car Equivalent (ET)	2.000					
Speed and Density						
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	48.1			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	23.4			
Total Ramp Density Adjustment	4.3	Level of Service (LOS)	С			
Adjusted Free-Flow Speed (FFSadj), mi/h	48.1					

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	ŀ	HCS7 Freeway	Merge Report			
Project Information						
Analyst Ca	ameron M	anley	Date	3/10/2020		
Agency W:	'SP		Analysis Year	2020		
Jurisdiction DO	05		Time Period Analyzed	PM Peak H	our	
Project Description I-6	65/264 Int	erchange Study				
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			3	1		
Free-Flow Speed (FFS), mi/h			55.0	55.0		
Segment Length (L) / Acceleration Len	ngth (LA),ft	:	1500	300		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Side			Freeway	Right		
Adjustment Factors						
Driver Population			Balanced Mix	Balanced N	Лix	
Weather Type			Non-Severe Weather	Non-Severe Weather		
Incident Type			No Incident	-	-	
Final Speed Adjustment Factor (SAF)			0.950	0.950		
Final Capacity Adjustment Factor (CAF	-)		0.939	0.939		
Demand Adjustment Factor (DAF)			1.000	1.000		
Demand and Capacity						
Demand Volume (Vi)			3080	794		
Peak Hour Factor (PHF)			0.94	0.94		
Total Trucks, %			3.15	3.15		
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fHV)			0.969	0.969		
Flow Rate (vi),pc/h			3381	872		
Capacity (c), pc/h			6338	2066		
Volume-to-Capacity Ratio (v/c)			0.67	0.42		
Speed and Density						
Upstream Equilibrium Distance (LEQ), f	ft	1371.5	Number of Outer Lanes on Freew	ay (No)	1	
Distance to Upstream Ramp (LUP), ft		7500	Speed Index (Ms)		0.357	
Downstream Equilibrium Distance (LEC	Q), ft	-	Flow Outer Lanes (vOA), pc/mi/ln 14		1400	
Distance to Downstream Ramp (LDOW	N), ft	10000	On-Ramp Influenece Area Speed (SR), mi/h		48.6	
Prop. Freeway Vehicles in Lane 1 and 2	2 (PFM)	0.586	Outer Lanes Freeway Speed (SO), mi/h 49		49.0	
Flow in Lanes 1 and 2 (v12), pc/h		1981	Ramp Junction Speed (S), mi/h 48.7		48.7	
Flow Entering Ramp-Infl. Area (vR12), p	oc/h	2853	Average Density (D), pc/mi/ln		29.1	
Level of Service (LOS)		С	Density in Ramp Influence Area (E	PR), pc/mi/ln	25.5	

HCS7 Basic Freeway Report						
Project Information						
Analyst	Cameron Manley	Date	3/9/2020			
Agency	WSP	Analysis Year	2020			
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour			
Project Description	I-65/264 Interchange Study					
Geometric Data						
Number of Lanes, In	3	Terrain Type	Level			
Segment Length (L), ft	-	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	6.00			
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	40.5			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors						
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950			
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939			
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000			
Demand and Capacity						
Demand Volume veh/h	3874	Heavy Vehicle Adjustment Factor (fHV)	0.969			
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1418			
Total Trucks, %	3.15	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69			
Passenger Car Equivalent (ET)	2.000					
Speed and Density						
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	38.5			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	36.8			
Total Ramp Density Adjustment	14.5	Level of Service (LOS)	E			
Adjusted Free-Flow Speed (FFSadj), mi/h	38.5					

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H	HCS7 Freeway	Weaving Repo	rt	
Project Information				
Analyst	Cameron Manley	Date		3/10/2020
Agency	WSP	Analysis Year		2020
Jurisdiction	D05	Time Period Analyzed		PM Peak Hour
Project Description	I-65/264 Interchange S	itudy		
Geometric Data				
Number of Lanes (N), In	5	Segment Type		Freeway
Segment Length (Ls), ft	0	Number of Maneuver I	Lanes (NWL), In	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane	e Changes (LCRF), lc	0
Terrain Type	Level	Freeway-to-Ramp Lane	e Changes (LCFR), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane C	Changes (LCRR), Ic	0
Interchange Density (ID), int/mi	4.00	Cross Weaving Manag	ed Lane	No
Adjustment Factors				
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)		0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)		0.939
Incident Type	No Incident	Demand Adjustment F	actor (DAF)	1.000
Demand and Capacity				
	FF	RF	RR	FR
Demand Volume (Vi), veh/h	2758	2828	361	1116
Peak Hour Factor (PHF)	0.94	0.94	0.94	0.94
Total Trucks, %	2.54	7.25	7.20	4.66
Heavy Vehicle Adjustment Factor (fhv)	0.975	0.932	0.933	0.955
Flow Rate (vi), pc/h	3009	3228	412	1243
Weaving Flow Rate (vw), pc/h	4471	Freeway Max Capacity	(cIFL), pc/h/ln	2222
Non-Weaving Flow Rate (vNW), pc/h	3421	Density-Based Capacity	y (cIWL), pc/h/ln	1563
Total Flow Rate (v), pc/h	7892	Demand Flow-Based C	apacity (c৷W), pc/h	4233
Volume Ratio (VR)	0.567	Weaving Segment Cap	acity (cw), veh/h	4030
Minimum Lane Change Rate (LСміn), lc/h	0	Adjusted Weaving Area	a Capacity, pc/h	3974
Maximum Weaving Length (LMAX), ft	8620	Volume-to-Capacity Ratio (v/c)		1.99
Speed and Density				
Non-Weaving Vehicle Index (INW)	-	Average Weaving Speed (SW),mi/h		-
Non-Weaving Lane Change Rate (LCNW), lc/h	-	Average Non-Weaving	Speed (SNW), mi/h	-
Weaving Lane Change Rate (LCW), lc/h	-	Average Speed (S), mi/	'h	-
Weaving Lane Change Rate (LCAII), lc/h	-	Density (D), pc/mi/ln		-
Weaving Intensity Factor (W)	-	Level of Service (LOS)		F

HCS7 Basic Freeway Report						
Project Information						
Analyst	Cameron Manley	Date	3/9/2020			
Agency	WSP	Analysis Year	2020			
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour			
Project Description	I-65/264 Interchange Study	Unit	United States Customary			
Geometric Data						
Number of Lanes, In	4	Terrain Type	Level			
Segment Length (L), ft	-	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	3.40			
Lane Width, ft	10	Free-Flow Speed (FFS), mi/h	39.4			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors						
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950			
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939			
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000			
Demand and Capacity						
Demand Volume veh/h	6129	Heavy Vehicle Adjustment Factor (fHV)	0.957			
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1703			
Total Trucks, %	4.52	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.82			
Passenger Car Equivalent (ET)	2.000					
Speed and Density						
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	45.9			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	45.0			
Total Ramp Density Adjustment	9.0	Level of Service (LOS)	F			
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HCS7 Freeway Merge Report						
Project Information						
Analyst	Cameron N	Manley	Date	3/10/2020		
Agency	NSP		Analysis Year	2020		
Jurisdiction [005		Time Period Analyzed	PM Peak H	lour	
Project Description I	-65/264 Ir	terchange Study		'		
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			55.0	55.0		
Segment Length (L) / Acceleration Le	ength (LA),	ft	1500	440		
Terrain Type			Level	Level		
Percent Grade, %			-			
Segment Type / Ramp Side			Freeway	Right		
Adjustment Factors						
Driver Population			Balanced Mix	Balanced N	Мix	
Weather Type			Non-Severe Weather	Non-Sever	e Weather	
Incident Type			No Incident	-	-	
Final Speed Adjustment Factor (SAF)			0.950	0.950		
Final Capacity Adjustment Factor (CA	λF)		0.939	0.939		
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Demand and Capacity						
Demand Volume (Vi)			6129	1137		
Peak Hour Factor (PHF)			0.98	0.82		
Total Trucks, %			4.52	0.18	0.18	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (fHV	v)		0.957	0.998		
Flow Rate (vi),pc/h			6535	1389		
Capacity (c), pc/h			8451	2066	2066	
Volume-to-Capacity Ratio (v/c)			0.94	0.67		
Speed and Density						
Upstream Equilibrium Distance (LEQ),	, ft	-	Number of Outer Lanes on Free	eway (No)	2	
Distance to Upstream Ramp (LUP), ft		7500	Speed Index (MS)		0.489	
Downstream Equilibrium Distance (Li	EQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln		1961	
Distance to Downstream Ramp (LDO)	wn), ft	10000	On-Ramp Influenece Area Speed (SR), mi/h		47.2	
Prop. Freeway Vehicles in Lane 1 and	2 (PFM)	0.044	Outer Lanes Freeway Speed (SO), mi/h 46.9		46.9	
Flow in Lanes 1 and 2 (v12), pc/h		2614	Ramp Junction Speed (S), mi/h 47.1		47.1	
Flow Entering Ramp-Infl. Area (vR12),	pc/h	4003	Average Density (D), pc/mi/ln		42.1	
Level of Service (LOS)		D	Density in Ramp Influence Area	(DR), pc/mi/ln	33.4	

HCS7 Basic Freeway Report						
Project Information						
Analyst	Cameron Manley	Date	3/9/2020			
Agency	WSP	Analysis Year	2020			
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour			
Project Description	I-65/264 Interchange Study	Unit	United States Customary			
Geometric Data						
Number of Lanes, In	4	Terrain Type	Level			
Segment Length (L), ft	-	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	2.99			
Lane Width, ft	10	Free-Flow Speed (FFS), mi/h	40.3			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors						
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950			
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939			
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000			
Demand and Capacity						
Demand Volume veh/h	7266	Heavy Vehicle Adjustment Factor (fHV)	0.963			
Peak Hour Factor	0.98	Flow Rate (V _p), pc/h/ln	1925			
Total Trucks, %	3.84	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93			
Passenger Car Equivalent (ET)	2.000					
Speed and Density						
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	45.9			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	45.0			
Total Ramp Density Adjustment	8.1	Level of Service (LOS)	F			
Adjusted Free-Flow Speed (FFSadj), mi/h	38.3					
		-	•			

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HCS7 Basic Freeway Report						
Project Information						
Analyst	Cameron Manley	Date	3/9/2020			
Agency	WSP	Analysis Year	2020			
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour			
Project Description	I-65/264 Interchange Stud	ly				
Geometric Data						
Number of Lanes, In	4	Terrain Type	Level			
Segment Length (L), ft	-	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	3.23			
Lane Width, ft	10	Free-Flow Speed (FFS), mi/h	39.8			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors						
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950			
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939			
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000			
Demand and Capacity						
Demand Volume veh/h	5391	Heavy Vehicle Adjustment Factor (fHV)	0.953			
Peak Hour Factor	0.97	Flow Rate (V _p), pc/h/ln	1458			
Total Trucks, %	4.97	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.71			
Passenger Car Equivalent (ET)	2.000					
Speed and Density						
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	37.8			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	38.6			
Total Ramp Density Adjustment	8.6	Level of Service (LOS)	E			
Adjusted Free-Flow Speed (FFSadj), mi/h	37.8					

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	НС	S7 Freeway	Diverge Report			
Project Information						
Analyst Ca	ameron Manl	ey	Date	3/10/2020		
Agency W	'SP		Analysis Year	2020		
Jurisdiction DO	05		Time Period Analyzed	PM Peak H	our	
Project Description I-6	65/264 Interc	hange Study		·		
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			55.0	55.0		
Segment Length (L) / Deceleration Ler	ngth (LA),ft		1500	310		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Side			Freeway	Right		
Adjustment Factors						
Driver Population			Balanced Mix	Balanced N	Лix	
Weather Type		Non-Severe Weather	Non-Sever	Non-Severe Weather		
Incident Type			No Incident	-	-	
Final Speed Adjustment Factor (SAF)			0.950	0.950		
Final Capacity Adjustment Factor (CAF)		0.939	0.939			
Demand Adjustment Factor (DAF)			1.000	1.000		
Demand and Capacity						
Demand Volume (Vi)			5391	771		
Peak Hour Factor (PHF)			0.97	0.84		
Total Trucks, %			4.97	0.52		
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fHV)			0.953	0.995		
Flow Rate (vi),pc/h			5832	922		
Capacity (c), pc/h			8451	2066		
Volume-to-Capacity Ratio (v/c)		0.69	0.45			
Speed and Density				·		
Upstream Equilibrium Distance (LEQ), f	ft -		Number of Outer Lanes on	Freeway (NO)	2	
Distance to Upstream Ramp (LUP), ft	-		Speed Index (Ds)		0.287	
Downstream Equilibrium Distance (LEC	Q), ft -		Flow Outer Lanes (vOA), pc/mi/ln		1385	
Distance to Downstream Ramp (LDOW	'N), ft -		Off-Ramp Influenece Area Speed (SR), mi/h		49.3	
Prop. Freeway Vehicles in Lane 1 and 2	2 (PFD) 0.43	36	Outer Lanes Freeway Speed (SO), mi/h		55.8	
Flow in Lanes 1 and 2 (v12), pc/h	306	53	Ramp Junction Speed (S), r	ni/h	52.2	
Flow Entering Ramp-Infl. Area (vR12), p	oc/h -		Average Density (D), pc/mi	/ln	27.9	
Level of Service (LOS)	С		Density in Ramp Influence	Area (DR), pc/mi/ln	27.8	

	HCS7 Basic Freeway Report					
Project Information						
Analyst	Cameron Manley	Date	3/9/2020			
Agency	WSP	Analysis Year	2020			
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour			
Project Description	I-65/264 Interchange Study					
Geometric Data						
Number of Lanes, In	4	Terrain Type	Level			
Segment Length (L), ft	-	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	4.26			
Lane Width, ft	10	Free-Flow Speed (FFS), mi/h	37.5			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors	-		-			
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950			
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939			
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000			
Demand and Capacity	•					
Demand Volume veh/h	4620	Heavy Vehicle Adjustment Factor (fHV)	0.946			
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1299			
Total Trucks, %	5.71	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63			
Passenger Car Equivalent (ET)	2.000					
Speed and Density						
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	35.6			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	36.5			
Total Ramp Density Adjustment	10.9	Level of Service (LOS)	E			
Adjusted Free-Flow Speed (FFSadj), mi/h	35.6					

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Project Information				
Analyst	Cameron Manley	Date		3/10/2020
Agency	WSP	Analysis Year		2020
Jurisdiction	D05	Time Period Analyzed		PM Peak Hour
Project Description	I-65/264 Interchange S	Study		
Geometric Data				
Number of Lanes (N), In	5	Segment Type		Freeway
Segment Length (Ls), ft	0	Number of Maneuver I	anes (NWL), In	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane	e Changes (LCRF), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane	e Changes (LCFR), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane C	hanges (LCRR), lc	0
Interchange Density (ID), int/mi	4.00	Cross Weaving Manage	ed Lane	No
Adjustment Factors	-	-		
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)		0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)		0.939
Incident Type	No Incident	Demand Adjustment Factor (DAF)		1.000
Demand and Capacity				•
	FF	RF	RR	FR
Demand Volume (Vi), veh/h	2722	464	743	1898
Peak Hour Factor (PHF)	0.94	0.94	0.94	0.94
Total Trucks, %	3.93	3.02	2.42	8.27
Heavy Vehicle Adjustment Factor (fHV)	0.962	0.971	0.976	0.924
Flow Rate (vi), pc/h	3010	508	810	2185
Weaving Flow Rate (vw), pc/h	2693	Freeway Max Capacity	(cIFL), pc/h/ln	2222
Non-Weaving Flow Rate (vNW), pc/h	3820	Density-Based Capacity	/ (cIWL), pc/h/ln	1700
Total Flow Rate (v), pc/h	6513	Demand Flow-Based C	apacity (cɪw), pc/h	5811
Volume Ratio (VR)	0.413	Weaving Segment Capacity (cw), veh/h		5530
Minimum Lane Change Rate (LCMIN), lc/h	0	Adjusted Weaving Area Capacity, pc/h		5457
Maximum Weaving Length (LMAX), ft	6827	Volume-to-Capacity Ratio (v/c)		1.19
Speed and Density				
Non-Weaving Vehicle Index (INW)	-	Average Weaving Speed (SW),mi/h		-
Non-Weaving Lane Change Rate (LCNW), lc/h	-	Average Non-Weaving Speed (SNW), mi/h		-
Weaving Lane Change Rate (LCW), lc/h	-	Average Speed (S), mi/	'h	-
Weaving Lane Change Rate (LCAII), lc/h	-	Density (D), pc/mi/ln		-

HCS7 Basic Freeway Report Project Information					
Agency	WSP	Analysis Year	2020		
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour		
Project Description	I-65/264 Interchange Study	Unit	United States Customary		
Geometric Data					
Number of Lanes, In	4	Terrain Type	Level		
Segment Length (L), ft	-	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	5.71		
Lane Width, ft	10	Free-Flow Speed (FFS), mi/h	34.5		
Right-Side Lateral Clearance, ft	10				
Adjustment Factors		·			
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950		
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939		
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000		
Demand and Capacity					
Demand Volume veh/h	3537	Heavy Vehicle Adjustment Factor (fHV)	0.965		
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	975		
Total Trucks, %	3.65	Capacity (c), pc/h/ln	2200		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.47		
Passenger Car Equivalent (ET)	2.000				
Speed and Density					
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	32.8		
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	29.7		
Total Ramp Density Adjustment	13.9	Level of Service (LOS)	D		
Adjusted Free-Flow Speed (FFSadj), mi/h	32.8				

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Project Information	HCS7 Freeway Diverge Report						
Agency	Project Information						
Durisdiction	Analyst	Cameron N	Manley	Date	3/10/2020		
Project Description	Agency	WSP		Analysis Year	2020		
Freeway Ramp	Jurisdiction I	D05		Time Period Analyzed	PM Peak H	lour	
Freeway Ramp	Project Description	I-65/264 Ir	terchange Study				
Number of Lanes (N), In	Geometric Data						
Free-Flow Speed (FFS), mi/h				Freeway	Ramp		
Segment Length (L) / Deceleration Length (LA),ft 1500 510	Number of Lanes (N), In			4	2		
Terrain Type	Free-Flow Speed (FFS), mi/h			55.0	55.0		
Percent Grade, % - - -	Segment Length (L) / Deceleration Le	ength (LA),	ft	1500	510		
Segment Type / Ramp Side	Terrain Type			Level	Level		
Adjustment Factors Driver Population Balanced Mix Non-Severe Weather Non-Severe We	Percent Grade, %			-	-		
Driver Population Balanced Mix Balanced Mix Weather Type Non-Severe Weather Non-Severe Weather Incident Type No Incident - Final Speed Adjustment Factor (SAF) 0.950 0.950 Final Capacity Adjustment Factor (CAF) 0.939 0.939 Demand Adjustment Factor (DAF) 1.000 1.000 Demand Volume (Vi) Demand Volume (Vi) 3537 666 Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, % 3.65 5.41 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHV) 0.965 0.949 Flow Rate (vi),pc/h 3899 747 Capacity (c), pc/h 8451 4132 Volume-to-Capacity Ratio (v/c) 0.46 0.18 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (NO) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (Ds) 0.2	Segment Type / Ramp Side			Freeway	Right		
Weather Type Non-Severe Weather Non-Severe Weather Incident Type No Incident - Final Speed Adjustment Factor (SAF) 0.950 0.950 Final Capacity Adjustment Factor (CAF) 0.939 0.939 Demand Adjustment Factor (DAF) 1.000 1.000 Demand And Capacity Demand Volume (Vi) 3537 666 Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, % 3.65 5.41 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHv) 0.965 0.949 Flow Rate (vi),pc/h 3899 747 Capacity (c), pc/h 8451 4132 Volume-to-Capacity Ratio (v/c) 0.46 0.18 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (No) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (DS) 0.272	Adjustment Factors						
Incident Type	Driver Population			Balanced Mix	Balanced N	Mix	
Final Speed Adjustment Factor (SAF) 0.950 0.950 Final Capacity Adjustment Factor (CAF) 0.939 0.939 Demand Adjustment Factor (DAF) 1.000 1.000 Demand And Capacity Demand Volume (Vi) 3537 666 Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, % 3.65 5.41 Single-Unit Trucks (SUT), % - - Tractor-Trailers (IT), % - - Heavy Vehicle Adjustment Factor (fHv) 0.965 0.949 Flow Rate (vi),pc/h 3899 747 Capacity (c), pc/h 8451 4132 Volume-to-Capacity Ratio (v/c) 0.46 0.18 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (No) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (Ds) 0.272	Weather Type		Non-Severe Weather	Non-Sever	Non-Severe Weather		
Final Capacity Adjustment Factor (CAF) 0.939 0.939 Demand Adjustment Factor (DAF) 1.000 1.000 Demand And Capacity Demand Volume (Vi) 3537 666 Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, % 3.65 5.41 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHV) 0.965 0.949 Flow Rate (vi),pc/h 3899 747 Capacity (c), pc/h 8451 4132 Volume-to-Capacity Ratio (v/c) 0.46 0.18 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (NO) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (Ds) 0.272	Incident Type		No Incident	-	-		
Demand Adjustment Factor (DAF) 1.000 1.000 Demand And Capacity Demand Volume (Vi) 3537 666 Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, % 3.65 5.41 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHV) 0.965 0.949 Flow Rate (vi),pc/h 3899 747 Capacity (c), pc/h 8451 4132 Volume-to-Capacity Ratio (v/c) 0.46 0.18 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (No) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (Ds) 0.272	Final Speed Adjustment Factor (SAF)		0.950	0.950			
Demand and Capacity 3537 666	Final Capacity Adjustment Factor (CAF)		0.939	0.939			
Demand Volume (Vi) 3537 666 Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, % 3.65 5.41 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHV) 0.965 0.949 Flow Rate (vi),pc/h 3899 747 Capacity (c), pc/h 8451 4132 Volume-to-Capacity Ratio (v/c) 0.46 0.18 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (No) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (Ds) 0.272	Demand Adjustment Factor (DAF)		1.000	1.000			
Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, % 3.65 5.41 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHv) 0.965 0.949 Flow Rate (vi),pc/h 3899 747 Capacity (c), pc/h 8451 4132 Volume-to-Capacity Ratio (v/c) 0.46 0.18 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (No) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (DS) 0.272	Demand and Capacity						
Total Trucks, % 3.65 5.41 Single-Unit Trucks (SUT), % - Tractor-Trailers (TT), % - Heavy Vehicle Adjustment Factor (fHV) Flow Rate (vi),pc/h Capacity (c), pc/h Volume-to-Capacity Ratio (v/c) Speed and Density Upstream Equilibrium Distance (LEQ), ft Distance to Upstream Ramp (LUP), ft - 3.65 5.41 5.41 5.41 - Number of Outer Lanes on Freeway (NO) 2 Speed Index (DS) 0.272	Demand Volume (Vi)			3537	666		
Single-Unit Trucks (SUT), % Tractor-Trailers (TT), %	Peak Hour Factor (PHF)			0.94	0.94		
Tractor-Trailers (TT), % Heavy Vehicle Adjustment Factor (fHV) D.965 0.949 Flow Rate (vi),pc/h Capacity (c), pc/h Volume-to-Capacity Ratio (v/c) Speed and Density Upstream Equilibrium Distance (LEQ), ft Distance to Upstream Ramp (LUP), ft -	Total Trucks, %			3.65	5.41		
Heavy Vehicle Adjustment Factor (fHV) 0.965 0.949 Flow Rate (vi),pc/h Capacity (c), pc/h Volume-to-Capacity Ratio (v/c) Speed and Density Upstream Equilibrium Distance (LEQ), ft Distance to Upstream Ramp (LUP), ft 0.965 0.949 747 8451 4132 0.18 Speed Index (DS) Number of Outer Lanes on Freeway (NO) 2 Speed Index (DS) 0.272	Single-Unit Trucks (SUT), %			-	-	-	
Flow Rate (vi),pc/h Capacity (c), pc/h 8451 Volume-to-Capacity Ratio (v/c) Speed and Density Upstream Equilibrium Distance (LEQ), ft Distance to Upstream Ramp (LUP), ft 3899 747 8451 4132 0.46 Number of Outer Lanes on Freeway (NO) 2 Speed Index (DS) 0.272	Tractor-Trailers (TT), %			-	-		
Capacity (c), pc/h 8451 Volume-to-Capacity Ratio (v/c) Speed and Density Upstream Equilibrium Distance (LEQ), ft Distance to Upstream Ramp (LUP), ft Speed Index (DS) 4132 0.18 Number of Outer Lanes on Freeway (NO) Speed Index (DS) 0.272	Heavy Vehicle Adjustment Factor (fH	V)		0.965	0.949		
Volume-to-Capacity Ratio (v/c) Speed and Density Upstream Equilibrium Distance (LEQ), ft Distance to Upstream Ramp (LUP), ft O.46 Number of Outer Lanes on Freeway (NO) Speed Index (DS) 0.272	Flow Rate (vi),pc/h			3899	747		
Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (NO) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (DS) 0.272	Capacity (c), pc/h	Capacity (c), pc/h		8451	4132	4132	
Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (NO) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (DS) 0.272	Volume-to-Capacity Ratio (v/c)		0.46	0.18			
Distance to Upstream Ramp (LUP), ft - Speed Index (DS) 0.272	Speed and Density						
	Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on Free	eway (No)	2	
	Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ds)		0.272	
Downstream Equilibrium Distance (LEQ), ft - Flow Outer Lanes (vOA), pc/mi/ln 1166	Downstream Equilibrium Distance (L	EQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln		1166	
Distance to Downstream Ramp (LDOWN), ft - Off-Ramp Influenece Area Speed (SR), mi/h 49.4	Distance to Downstream Ramp (LDO	WN), ft	-	Off-Ramp Influenece Area Speed (SR), mi/h		49.4	
Prop. Freeway Vehicles in Lane 1 and 2 (PFD) 0.260 Outer Lanes Freeway Speed (SO), mi/h 56.6	Prop. Freeway Vehicles in Lane 1 and	d 2 (PFD)	0.260	<u> </u>		56.6	
Flow in Lanes 1 and 2 (v12), pc/h 1567 Ramp Junction Speed (S), mi/h 53.5	Flow in Lanes 1 and 2 (v12), pc/h		1567	Ramp Junction Speed (S), mi/h		53.5	
Flow Entering Ramp-Infl. Area (vR12), pc/h - Average Density (D), pc/mi/ln 18.2	Flow Entering Ramp-Infl. Area (vR12),	, pc/h	-	Average Density (D), pc/mi/ln		18.2	
Level of Service (LOS) B Density in Ramp Influence Area (DR), pc/mi/ln 13.1	Level of Service (LOS)		В	Density in Ramp Influence Area	(DR), pc/mi/ln	13.1	

HCS7 Basic Freeway Report Project Information					
Agency	WSP	Analysis Year	2020		
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour		
Project Description	I-65/264 Interchange Study	Unit	United States Customary		
Geometric Data					
Number of Lanes, In	4	Terrain Type	Level		
Segment Length (L), ft	-	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	3.28		
Lane Width, ft	10	Free-Flow Speed (FFS), mi/h	39.7		
Right-Side Lateral Clearance, ft	10				
Adjustment Factors					
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950		
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939		
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000		
Demand and Capacity					
Demand Volume veh/h	2871	Heavy Vehicle Adjustment Factor (fHV)	0.969		
Peak Hour Factor	0.94	Flow Rate (V _p), pc/h/ln	788		
Total Trucks, %	3.24	Capacity (c), pc/h/ln	2200		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.38		
Passenger Car Equivalent (ET)	2.000				
Speed and Density					
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	37.7		
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	20.9		
Total Ramp Density Adjustment	8.7	Level of Service (LOS)	С		
Adjusted Free-Flow Speed (FFSadj), mi/h	37.7				
		•	-		

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HCS7 Freeway Merge Report						
Project Information						
Analyst C	Cameron N	Manley	Date	3/10/2020		
Agency V	VSP		Analysis Year	2020		
Jurisdiction D	005		Time Period Analyzed	PM Peak H	our	
Project Description I-	-65/264 Ir	iterchange Study				
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			3	1		
Free-Flow Speed (FFS), mi/h			55.0	55.0		
Segment Length (L) / Acceleration Le	ngth (LA),	ft	1500	550		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Side			Freeway	Right		
Adjustment Factors						
Driver Population			Balanced Mix	Balanced N	Лix	
Weather Type		Non-Severe Weather	Non-Sever	Non-Severe Weather		
Incident Type		No Incident	-			
Final Speed Adjustment Factor (SAF)		0.950	0.950			
Final Capacity Adjustment Factor (CAF)		0.939	0.939			
Demand Adjustment Factor (DAF)		1.000	1.000			
Demand and Capacity				·		
Demand Volume (Vi)			3057	186		
Peak Hour Factor (PHF)			0.94	0.87		
Total Trucks, %			3.30	4.30	4.30	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fhv	/)		0.968	0.959		
Flow Rate (vi),pc/h			3360	223		
Capacity (c), pc/h		6338	2066	2066		
Volume-to-Capacity Ratio (v/c)		0.57	0.11			
Speed and Density				·		
Upstream Equilibrium Distance (LEQ),	ft	1339.1	Number of Outer Lanes on F	reeway (No)	1	
Distance to Upstream Ramp (LUP), ft		3260	Speed Index (MS)		0.299	
Downstream Equilibrium Distance (LE	(Q), ft	-	Flow Outer Lanes (vOA), pc/mi/ln		1368	
Distance to Downstream Ramp (LDOV	VN), ft	4000	On-Ramp Influenece Area Speed (SR), mi/h		49.2	
Prop. Freeway Vehicles in Lane 1 and	2 (PFM)	0.593	<u> </u>		49.1	
Flow in Lanes 1 and 2 (v12), pc/h		1992	Ramp Junction Speed (S), mi,	/h	49.2	
Flow Entering Ramp-Infl. Area (vR12),	pc/h	2215	Average Density (D), pc/mi/lr	n	24.3	
Level of Service (LOS)		В	Density in Ramp Influence Ar	rea (DR), pc/mi/ln	19.3	

HCS7 Basic Freeway Report						
Project Information						
Analyst	Cameron Manley	Date	3/9/2020			
Agency	WSP	Analysis Year	2020			
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour			
Project Description	I-65/264 Interchange Stud	у				
Geometric Data						
Number of Lanes, In	3	Terrain Type	Level			
Segment Length (L), ft	-	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	2.67			
Lane Width, ft	10	Free-Flow Speed (FFS), mi/h	41.1			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors						
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950			
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939			
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000			
Demand and Capacity						
Demand Volume veh/h	3057	Heavy Vehicle Adjustment Factor (fHV)	0.968			
Peak Hour Factor	0.94	Flow Rate (V _p), pc/h/ln	1120			
Total Trucks, %	3.30	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.54			
Passenger Car Equivalent (ET)	2.000					
Speed and Density						
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	39.0			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	28.7			
Total Ramp Density Adjustment	7.3	Level of Service (LOS)	D			
Adjusted Free-Flow Speed (FFSadj), mi/h	39.0					
2	- L. LICCETT F		C = = = = = = = = = = = = = = = = = = =			

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HCS7 Freeway Merge Report						
Project Information						
Analyst C	Cameron N	Manley	Date	3/10/2020		
Agency V	VSP		Analysis Year	2020		
Jurisdiction [005		Time Period Analyzed	PM Peak H	our	
Project Description I-	-65/264 In	terchange Study				
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			3	2		
Free-Flow Speed (FFS), mi/h			55.0	55.0		
Segment Length (L) / Acceleration Le	ngth (LA),	ft	1500	1000		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Side			Freeway	Right		
Adjustment Factors						
Driver Population			Balanced Mix	Balanced N	Лix	
Weather Type		Non-Severe Weather	Non-Sever	Non-Severe Weather		
Incident Type		No Incident	-			
Final Speed Adjustment Factor (SAF)		0.950	0.950			
Final Capacity Adjustment Factor (CAF)		0.939	0.939			
Demand Adjustment Factor (DAF)		1.000	1.000			
Demand and Capacity						
Demand Volume (Vi)			3057	1546		
Peak Hour Factor (PHF)			0.94	0.94		
Total Trucks, %		3.30	4.98			
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH\	/)		0.968	0.953		
Flow Rate (vi),pc/h			3360	1726	1726	
Capacity (c), pc/h		6338	4132	4132		
Volume-to-Capacity Ratio (v/c)		0.80	0.42			
Speed and Density						
Upstream Equilibrium Distance (LEQ),	ft	-	Number of Outer Lanes on Fre	eway (No)	1	
Distance to Upstream Ramp (LUP), ft		4000	Speed Index (MS)		0.366	
Downstream Equilibrium Distance (LE	Q), ft	-	Flow Outer Lanes (vOA), pc/mi/ln		1440	
Distance to Downstream Ramp (LDOV	vn), ft	1960	On-Ramp Influenece Area Speed (SR), mi/h		48.5	
Prop. Freeway Vehicles in Lane 1 and	2 (PFM)	0.555			48.8	
Flow in Lanes 1 and 2 (v12), pc/h		1920	Ramp Junction Speed (S), mi/h		48.6	
Flow Entering Ramp-Infl. Area (vR12),	pc/h	3646	Average Density (D), pc/mi/ln		34.9	
Level of Service (LOS)		С	Density in Ramp Influence Area	a (DR), pc/mi/ln	26.9	

HCS7 Basic Freeway Report Project Information					
Agency	WSP	Analysis Year	2020		
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour		
Project Description	I-65/264 Interchange Study				
Geometric Data					
Number of Lanes, In	4	Terrain Type	Level		
Segment Length (L), ft	-	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	5.41		
Lane Width, ft	10	Free-Flow Speed (FFS), mi/h	35.1		
Right-Side Lateral Clearance, ft	10				
Adjustment Factors					
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950		
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939		
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000		
Demand and Capacity					
Demand Volume veh/h	4603	Heavy Vehicle Adjustment Factor (fHV)	0.963		
Peak Hour Factor	0.94	Flow Rate (V _P), pc/h/ln	1271		
Total Trucks, %	3.87	Capacity (c), pc/h/ln	2200		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.62		
Passenger Car Equivalent (ET)	2.000				
Speed and Density					
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	33.3		
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	38.2		
Total Ramp Density Adjustment	13.3	Level of Service (LOS)	E		
Adjusted Free-Flow Speed (FFSadj), mi/h	33.3				

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HCS7 Freeway Merge Report						
Project Information						
Analyst C	Cameron N	Manley	Date	3/10/2020		
Agency V	VSP		Analysis Year	2020		
Jurisdiction D	005		Time Period Analyzed	PM Peak H	our	
Project Description I-	-65/264 In	terchange Study				
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			55.0	55.0		
Segment Length (L) / Acceleration Le	ngth (LA),	ft	1500	500		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Side			Freeway	Right		
Adjustment Factors						
Driver Population			Balanced Mix	Balanced N	Лix	
Weather Type		Non-Severe Weather	Non-Sever	Non-Severe Weather		
Incident Type		No Incident	-			
Final Speed Adjustment Factor (SAF)		0.950	0.950			
Final Capacity Adjustment Factor (CAF)		0.939	0.939			
Demand Adjustment Factor (DAF)		1.000	1.000			
Demand and Capacity						
Demand Volume (Vi)			4603	212		
Peak Hour Factor (PHF)			0.96	0.65		
Total Trucks, %		3.87	5.66			
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (fhv	/)		0.963	0.946		
Flow Rate (vi),pc/h			4979	345	345	
Capacity (c), pc/h		8451	2066	2066		
Volume-to-Capacity Ratio (v/c)		0.63	0.17			
Speed and Density						
Upstream Equilibrium Distance (LEQ),	ft	-	Number of Outer Lanes on Fre	eeway (No)	2	
Distance to Upstream Ramp (LUP), ft		4000	Speed Index (Ms)		0.309	
Downstream Equilibrium Distance (LE	(Q), ft	-	Flow Outer Lanes (vOA), pc/mi/ln		1494	
Distance to Downstream Ramp (LDOV	VN), ft	1960	On-Ramp Influenece Area Speed (SR), mi/h		49.0	
Prop. Freeway Vehicles in Lane 1 and	2 (PFM)	0.175			48.6	
Flow in Lanes 1 and 2 (v12), pc/h		1992	Ramp Junction Speed (S), mi/h	า	48.8	
Flow Entering Ramp-Infl. Area (vR12),	pc/h	2337	Average Density (D), pc/mi/ln		27.3	
Level of Service (LOS)		С	Density in Ramp Influence Are	ea (DR), pc/mi/ln	20.5	

HCS7 Basic Freeway Report						
Project Information						
Analyst	Cameron Manley	Date	3/9/2020			
Agency	WSP	Analysis Year	2020			
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour			
Project Description	I-65/264 Interchange Stu	dy				
Geometric Data						
Number of Lanes, In	4	Terrain Type	Level			
Segment Length (L), ft	-	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	6.00			
Lane Width, ft	10	Free-Flow Speed (FFS), mi/h	33.9			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors						
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950			
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939			
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000			
Demand and Capacity						
Demand Volume veh/h	4815	Heavy Vehicle Adjustment Factor (fHV)	0.962			
Peak Hour Factor	0.96	Flow Rate (V _p), pc/h/ln	1304			
Total Trucks, %	3.95	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63			
Passenger Car Equivalent (ET)	2.000					
Speed and Density						
Lane Width Adjustment (fLW)	6.6	Average Speed (S), mi/h	32.2			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	40.5			
Total Ramp Density Adjustment	14.5	Level of Service (LOS)	Е			
Adjusted Free-Flow Speed (FFSadj), mi/h	32.2					

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HCS7 Basic Freeway Report						
Project Information						
Analyst	Cameron Manley	Date	3/9/2020			
Agency	WSP	Analysis Year	2020			
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour			
Project Description	I-65/264 Interchange Study	,				
Geometric Data						
Number of Lanes, In	5	Terrain Type	Level			
Segment Length (L), ft	-	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	2.33			
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	48.4			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors						
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950			
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939			
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000			
Demand and Capacity	-					
Demand Volume veh/h	5683	Heavy Vehicle Adjustment Factor (fHV)	0.925			
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1293			
Total Trucks, %	8.09	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63			
Passenger Car Equivalent (ET)	2.000					
Speed and Density						
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	46.0			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	28.1			
Total Ramp Density Adjustment	6.6	Level of Service (LOS)	D			
Adjusted Free-Flow Speed (FFSadj), mi/h	46.0					
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HCS7 Freeway Diverge Report						
Project Information						
Analyst	Cameron N	Manley	Date 3/10/2020			
Agency V	WSP		Analysis Year	2020		
Jurisdiction [005		Time Period Analyzed	PM Peak H	lour	
Project Description I-	-65/264 In	terchange Study		·		
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			5	1	1	
Free-Flow Speed (FFS), mi/h			55.0	55.0	55.0	
Segment Length (L) / Deceleration Le	ength (LA),	ft	1500	310		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Side			Freeway	Right		
Adjustment Factors				<u>'</u>		
Driver Population			Balanced Mix	Balanced N	Лix	
Weather Type			Non-Severe Weather	Non-Sever	Non-Severe Weather	
Incident Type			No Incident	-	-	
Final Speed Adjustment Factor (SAF)			0.950	0.950	0.950	
Final Capacity Adjustment Factor (CA	ιF)		0.939	0.939	0.939	
Demand Adjustment Factor (DAF)		1.000	1.000			
Demand and Capacity						
Demand Volume (Vi)			5683	358		
Peak Hour Factor (PHF)		0.95	0.84			
Total Trucks, %		8.09	8.66			
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH\	/)		0.925	0.920		
Flow Rate (vi),pc/h			6467	463		
Capacity (c), pc/h			10564	2066		
Volume-to-Capacity Ratio (v/c)		0.61	0.22			
Speed and Density				<u>'</u>		
Upstream Equilibrium Distance (LEQ),	ft	-	Number of Outer Lanes on Freew	ay (No)	2	
Distance to Upstream Ramp (LUP), ft		-	Speed Index (Ds)		0.246	
Downstream Equilibrium Distance (LE	Q), ft	-	Flow Outer Lanes (vOA), pc/mi/ln 1419		1419	
Distance to Downstream Ramp (LDOWN), ft -		Off-Ramp Influenece Area Speed (SR), mi/h		49.7		
Prop. Freeway Vehicles in Lane 1 and	2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h		55.6	
Flow in Lanes 1 and 2 (v12), pc/h		2658	Ramp Junction Speed (S), mi/h 52.6		52.6	
Flow Entering Ramp-Infl. Area (vR12),	pc/h	-	Average Density (D), pc/mi/ln 24.6		24.6	
Level of Service (LOS)		С	Density in Ramp Influence Area (DR), pc/mi/ln 24.3		24.3	
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	HCS7 Basic I	Freeway Report	
Project Information			
Analyst	Cameron Manley	Date	3/9/2020
Agency	WSP	Analysis Year	2020
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour
Project Description	I-65/264 Interchange Stud	dy	
Geometric Data			
Number of Lanes, In	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	6.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	40.5
Right-Side Lateral Clearance, ft	10		
Adjustment Factors			
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000
Demand and Capacity			
Demand Volume veh/h	5325	Heavy Vehicle Adjustment Factor (fHV)	0.925
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1225
Total Trucks, %	8.06	Capacity (c), pc/h/ln	2200
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.59
Passenger Car Equivalent (ET)	2.000		
Speed and Density	-		-
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	38.5
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	31.8
Total Ramp Density Adjustment	14.5	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	38.5		

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Project Information Analyst Camero NaPer			HCS7 Freeway	Diverge Report				
Agency NUSP Analysis Year 2020 Immediate	Project Information							
Project Description	Analyst	Cameron N	Manley	Date 3/10/2020				
Project Description	Agency V	VSP		Analysis Year	2020			
Preeway	Jurisdiction D	005		Time Period Analyzed	PM Peak H	our		
Number of Lanes (N), In 5 5 2 7 7 7 7 7 7 7 7 7	Project Description I-	-65/264 In	terchange Study					
Number of Lanes (N), In 5.0 2 Free-Flow Speed (FFS), mi/h 55.0 55.0 55.0 Segment Length (L) / Deceleration Length (LA), It 1500 <td>Geometric Data</td> <td></td> <td></td> <td></td> <td></td> <td></td>	Geometric Data							
Free-Flow Speed (FFS), mi/h 55.0 <				Freeway	Ramp			
Segment Length (L) / Deceleration Length (LA),ft 1500 1500 Terrain Type Level Level Percent Grade, % - - Segment Type / Ramp Side Freeway Right Adjustment Factors Driver Population Balanced Mix Balanced Mix Weather Type Non-Severe Weather Non-Severe Weather Incident Type 0.930 939 939 939 939 939 939 939 939 939 930 930 930 930	Number of Lanes (N), In			5	2	2		
Terrain Type Level Level Percent Grade, % - - Segment Type / Ramp Side Freeway Right Adjustment Factors Driver Population Balanced Mix Weather Type Non-Severe Weather Non-Severe Weather Incident Type Non-Severe Weather Non-Severe Weather Final Speed Adjustment Factor (SAF) 0.950 0.930 Final Speed Adjustment Factor (CAF) 0.939 0.939 Demand Adjustment Factor (DAF) 0.939 0.939 Demand Adjustment Factor (PAF) 0.939 0.939 Demand Adjustment Factor (PAF) 0.939 0.939 Demand Adjustment Factor (PAF) 0.94 0.94 Demand Adjustment Factor (PAF) 0.94 0.94 Demand Adjustment Factor (PHF) 0.94 0.94 Demand Capacity Demand Capacity (PHF) 0.94 0.94 Demand Capacity (PHF) 0.94 0.94 0.94 <td>Free-Flow Speed (FFS), mi/h</td> <td></td> <td></td> <td>55.0</td> <td>55.0</td> <td colspan="2">55.0</td>	Free-Flow Speed (FFS), mi/h			55.0	55.0	55.0		
Percent Grade, % -	Segment Length (L) / Deceleration Le	ength (LA),	ft	1500	1500			
Segment Type / Ramp Side Freeway Right Adjustment Factors Driver Population Balanced Mix Balanced Mix Weather Type Non-Severe Weather Non-Severe Weather Incident Type No Incident	Terrain Type			Level	Level			
Adjustment Factors Driver Population Balanced Mix Balanced Mix Weather Type Non-Severe Weather Non-Severe Weather Incident Type No Incident - Final Speed Adjustment Factor (SAF) 0.950 0.950 Final Capacity Adjustment Factor (DAF) 0.939 0.939 Demand Adjustment Factor (DAF) 1.000 1.000 Demand Volume (Vi) 5325 2592 Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, % 8.06 7.52 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHv) 0.925 0.930 Heavy Vehicle Adjustment Factor (fHv) 0.925 0.930 Flow Rate (vi),pc/h 10564 4132 Volume-to-Capacity Ratio (v/c) 0.58 0.72 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (No) 2 Distance to Upstream Ramp (LUP), ft -	Percent Grade, %			-	-			
Driver Population Balanced Mix Balanced Mix Weather Type Non-Severe Weather Non-Severe Weather Incident Type No Incident - Final Speed Adjustment Factor (SAF) 0.950 0.950 Final Capacity Adjustment Factor (DAF) 0.939 0.939 Demand Adjustment Factor (DAF) 1.000 1.000 Demand and Capacity Demand Teator (PHF) 5325 2592 Demand Volume (Vi) 5325 2592 Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, % 8.06 7.52 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHvy) 0.925 0.930 Flow Rate (vi),pc/h 6124 2965 Capacity (c), pc/h 10564 4132 Volume-to-Capacity Ratio (v/c) Number of Outer Lanes on Freeway (No) 2 Speed and Density <	Segment Type / Ramp Side			Freeway	Right			
Weather Type Non-Severe Weather Non-Severe Weather Incident Type No Incident - Final Speed Adjustment Factor (SAF) 0.950 0.950 Final Capacity Adjustment Factor (DAF) 0.939 0.939 Demand Adjustment Factor (DAF) 1.000 1.000 Demand Adjustment Factor (DAF) 1.000 1.000 Demand Adjustment Factor (DAF) 5325 2592 Demand Volume (Vi) 5325 2592 Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, % 8.06 7.52 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fliv) 0.925 0.930 Flow Rate (w),pc/h 6124 2965 Capacity (C), pc/h 10564 4132 Volume-to-Capacity Ratio (v/c) 0.58 0.72 Speed and Density Upstream Equilibrium Distance (LEQ), ft	Adjustment Factors							
Incident Type	Driver Population			Balanced Mix	Balanced N	Лix		
Final Speed Adjustment Factor (SAF) 0.950 0.950 Final Capacity Adjustment Factor (CAF) 0.939 0.939 Demand Adjustment Factor (DAF) 1.000 1.000 Demand Adjustment Factor (DAF) Demand Adjustment Factor (DAF) 1.000 1.000 Demand Volume (Vi) S325 2592 Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, SW 8.06 7.52 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHv) 0.925 0.930 Flow Rate (vi),pc/h 6124 2965 Capacity (c), pc/h 10564 4132 Volume-to-Capacity Ratio (v/c) 0.58 0.72 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (No) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (Ds) 0.471 Downstream Equilibrium Distance (LEQ), ft -	Weather Type			Non-Severe Weather	Non-Sever	Non-Severe Weather		
Final Capacity Adjustment Factor (CAF) 0.939 0.939 Demand Adjustment Factor (DAF) 1.000 1.000 Demand And Capacity 5325 2592 Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, % 8.06 7.52 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHv) 0.925 0.930 Flow Rate (vi), pc/h 6124 2965 Capacity (C), pc/h 10564 4132 Volume-to-Capacity Ratio (v/c) 0.58 0.72 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (NO) 2 Distance to Upstream Ramp (LuP), ft - Speed Index (DS) 0.471 Downstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes (voA), pc/mi/ln 829 Distance to Upstream Ramp (LUP), ft - Off-Ramp Influence Area Speed	Incident Type			No Incident	-	-		
Demand Adjustment Factor (DAF) 1,000 1,000 Demand and Capacity Demand Volume (Vi) 5325 2592 Peak Hour Factor (PHF) 0,94 0,94 Total Trucks, % 8.06 7.52 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHv) 0,925 0,930 Flow Rate (w),pc/h 10564 4132 Capacity (c), pc/h 10564 4132 Volume-to-Capacity Ratio (w/c) 0.58 0,72 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (No) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (Ds) 0,471 Downstream Equilibrium Distance (LEQ), ft <td c<="" td=""><td>Final Speed Adjustment Factor (SAF)</td><td></td><td></td><td>0.950</td><td>0.950</td><td colspan="2">0.950</td></td>	<td>Final Speed Adjustment Factor (SAF)</td> <td></td> <td></td> <td>0.950</td> <td>0.950</td> <td colspan="2">0.950</td>	Final Speed Adjustment Factor (SAF)			0.950	0.950	0.950	
Demand and Capacity Demand Volume (Vi) 5325 2592 Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, % 8.06 7.52 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHv) 0.925 0.930 Flow Rate (vi),pc/h 6124 2965 Capacity (c), pc/h 10564 4132 Volume-to-Capacity Ratio (v/c) 0.58 0.72 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (NO) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (DS) 0.471 Downstream Equilibrium Distance (LEQ), ft - Flow Outer Lanes (vOA), pc/mi/ln 829 Distance to Downstream Ramp (LDOWN), ft - Off-Ramp Influence Area Speed (SR), mi/h 47.4 Prop. Freeway Vehicles in Lane 1 and 2 (PFD) 0.260 Outer Lanes Freeway Speed (SO), mi/h 57.3 Flow in Lanes 1 and 2 (v12), pc/h 3548 Ramp Junction Speed (S), mi/h <t< td=""><td colspan="2">Final Capacity Adjustment Factor (CAF)</td><td>0.939</td><td>0.939</td><td></td></t<>	Final Capacity Adjustment Factor (CAF)		0.939	0.939				
Demand Volume (Vi) 5325 2592 Peak Hour Factor (PHF) 0,94 0,94 Total Trucks, % 8.06 7.52 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHv) 0.925 0.930 Flow Rate (vi), pc/h 6124 2965 Capacity (c), pc/h 10564 4132 Volume-to-Capacity Ratio (v/c) 0.58 0.72 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (NO) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (DS) 0.471 Downstream Equilibrium Distance (LEQ), ft - Flow Outer Lanes (voA), pc/mi/ln 829 Distance to Downstream Ramp (LDOWN), ft - Off-Ramp Influence Area Speed (SR), mi/h 47.4 Prop. Freeway Vehicles in Lane 1 and 2 (PFD) 0.260 Outer Lanes Freeway Speed (SO), mi/h 57.3 Flow in Lanes 1 and 2 (v12), pc/h 3548 Ramp Junction Speed (S), mi/h 50.2 Flow Entering Ramp-Infl. Area (vR12), pc/h - Average Density (D), pc/mi/ln	Demand Adjustment Factor (DAF)			1.000	1.000	1.000		
Peak Hour Factor (PHF) 0.94 0.94 Total Trucks, % 8.06 7.52 Single-Unit Trucks (SUT), % - - Tractor-Trailers (TT), % - - Heavy Vehicle Adjustment Factor (fHv) 0.925 0.930 Flow Rate (vi),pc/h 6124 2965 Capacity (c), pc/h 10564 4132 Volume-to-Capacity Ratio (v/c) 0.58 0.72 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (NO) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (DS) 0.471 Downstream Equilibrium Distance (LEQ), ft - Flow Outer Lanes (vOA), pc/mi/In 829 Distance to Downstream Ramp (LDOWN), ft - Off-Ramp Influence Area Speed (SD), mi/h 47.4 Prop. Freeway Vehicles in Lane 1 and 2 (PFD) 0.260 Outer Lanes Freeway Speed (SO), mi/h 57.3 Flow in Lanes 1 and 2 (v12), pc/h 3548 Ramp Junction Speed (S), mi/h 50.2 Flow Entering Ramp-Infl. Area (vR1	Demand and Capacity							
Total Trucks, % 8.06 7.52 Single-Unit Trucks (SUT), %	Demand Volume (Vi)			5325	2592			
Single-Unit Trucks (SUT), % - Tractor-Trailers (TT), % - Heavy Vehicle Adjustment Factor (fHv) 0.925 0.930 Flow Rate (w),pc/h 6124 2965 Capacity (c), pc/h 10564 4132 Volume-to-Capacity Ratio (v/c) 0.58 0.72 Speed and Density Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (No) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (Ds) 0.471 Downstream Equilibrium Distance (LEQ), ft - Speed Index (Ds) 0.471 Distance to Downstream Ramp (LDOWN), ft - Flow Outer Lanes (voA), pc/mi/In 829 Distance to Downstream Ramp (LDOWN), ft - Off-Ramp Influence Area Speed (Sn), mi/h 47.4 Prop. Freeway Vehicles in Lane 1 and 2 (PFD) 0.260 Outer Lanes Freeway Speed (So), mi/h 57.3	Peak Hour Factor (PHF)		0.94	0.94				
Tractor-Trailers (TT), % Heavy Vehicle Adjustment Factor (fHV) Flow Rate (vi),pc/h Capacity (c), pc/h Capacity (c), pc/h Capacity Ratio (v/c) Speed and Density Upstream Equilibrium Distance (LEQ), ft Distance to Upstream Ramp (LUP), ft Downstream Equilibrium Distance (LEQ), ft Composition of Duter Lanes (VOR) Flow Outer Lanes (VOR), pc/mi/ln Speed Index (DS) Distance to Downstream Ramp (LDOWN), ft Composition of Outer Lanes (VOR), pc/mi/ln Speed Index (DS) Distance to Downstream Ramp (LDOWN), ft Composition of Outer Lanes (VOR), pc/mi/ln Speed Index (DS) Distance to Downstream Ramp (LDOWN), ft Composition of Outer Lanes (VOR), pc/mi/ln Speed Index (DS) Distance to Downstream Ramp (LDOWN), ft Composition of CRAmp Influence Area Speed (SR), mi/h Flow In Lanes 1 and 2 (V12), pc/h Speed Ramp Junction Speed (S), mi/h Flow Entering Ramp-Infl. Area (VR12), pc/h Average Density (D), pc/mi/ln 24.4	Total Trucks, %		8.06	7.52				
Heavy Vehicle Adjustment Factor (fHV) Flow Rate (vi),pc/h Capacity (c), pc/h Capacity (c), pc/h Volume-to-Capacity Ratio (v/c) Speed and Density Upstream Equilibrium Distance (LEQ), ft Distance to Upstream Ramp (LUP), ft Downstream Equilibrium Distance (LEQ), ft Distance to Downstream Ramp (LDOWN), ft Prop. Freeway Vehicles in Lane 1 and 2 (PFD) Flow in Lanes 1 and 2 (v12), pc/h Flow Entering Ramp-Infl. Area (vR12), pc/h Posses 1024 10564 4132 10564 4132 10564 Average Density (NO) 2 Doyna Flow Outer Lanes on Freeway (NO) 2 Doyna 10471 10504 1	Single-Unit Trucks (SUT), %			-	-			
Flow Rate (vi),pc/h Capacity (c), pc/h Volume-to-Capacity Ratio (v/c) Speed and Density Upstream Equilibrium Distance (LEQ), ft Distance to Upstream Ramp (LUP), ft Downstream Equilibrium Distance (LEQ), ft Distance to Downstream Ramp (LDOWN), ft Prop. Freeway Vehicles in Lane 1 and 2 (PFD) Flow Entering Ramp-Infl. Area (vR12), pc/h Flow Entering Ramp-Infl. Area (vR12), pc/h Capacity (c), pc/h 10564 4132 0.72 Number of Outer Lanes on Freeway (NO) 2 Speed Index (DS) Flow Outer Lanes (vOA), pc/mi/ln S29 Outer Lanes (vOA), pc/mi/ln Flow In Lanes 1 and 2 (v12), pc/h Average Density (D), pc/mi/ln 24.4	Tractor-Trailers (TT), %			-	-			
Capacity (c), pc/h Volume-to-Capacity Ratio (v/c) Speed and Density Upstream Equilibrium Distance (LEQ), ft Distance to Upstream Ramp (LUP), ft Downstream Equilibrium Distance (LEQ), ft Distance to Downstream Ramp (LDOWN), ft Prop. Freeway Vehicles in Lane 1 and 2 (PFD) Flow in Lanes 1 and 2 (vr12), pc/h Flow Entering Ramp-Infl. Area (vR12), pc/h 10564 4132 0.58 Number of Outer Lanes on Freeway (NO) 2 Speed Index (DS) Flow Outer Lanes (vOA), pc/mi/ln 829 Outer Lanes Freeway Speed (SR), mi/h 47.4 Prop. Freeway Vehicles in Lane 1 and 2 (PFD) 77.3 Ramp Junction Speed (S), mi/h 50.2 Flow Entering Ramp-Infl. Area (vR12), pc/h Average Density (D), pc/mi/ln 24.4	Heavy Vehicle Adjustment Factor (fhv	/)		0.925	0.930			
Volume-to-Capacity Ratio (v/c) Speed and Density Upstream Equilibrium Distance (LEQ), ft Distance to Upstream Ramp (LUP), ft Downstream Equilibrium Distance (LEQ), ft Flow Outer Lanes (vOA), pc/mi/ln Off-Ramp Influence Area Speed (SR), mi/h Prop. Freeway Vehicles in Lane 1 and 2 (PFD) Distance to Downstream Ramp (LDOWN), ft Prop. Freeway Vehicles in Lane 1 and 2 (PFD) Average Density (D), pc/mi/ln 24.4	Flow Rate (vi),pc/h			6124	2965			
Speed and DensityUpstream Equilibrium Distance (LEQ), ft-Number of Outer Lanes on Freeway (NO)2Distance to Upstream Ramp (LUP), ft-Speed Index (DS)0.471Downstream Equilibrium Distance (LEQ), ft-Flow Outer Lanes (vOA), pc/mi/ln829Distance to Downstream Ramp (LDOWN), ft-Off-Ramp Influenece Area Speed (SR), mi/h47.4Prop. Freeway Vehicles in Lane 1 and 2 (PFD)0.260Outer Lanes Freeway Speed (SO), mi/h57.3Flow in Lanes 1 and 2 (v12), pc/h3548Ramp Junction Speed (S), mi/h50.2Flow Entering Ramp-Infl. Area (vR12), pc/h-Average Density (D), pc/mi/ln24.4	Capacity (c), pc/h		10564	4132				
Upstream Equilibrium Distance (LEQ), ft - Number of Outer Lanes on Freeway (NO) 2 Distance to Upstream Ramp (LUP), ft - Speed Index (DS) 0.471 Downstream Equilibrium Distance (LEQ), ft - Flow Outer Lanes (vOA), pc/mi/ln 829 Distance to Downstream Ramp (LDOWN), ft - Off-Ramp Influenece Area Speed (SR), mi/h 47.4 Prop. Freeway Vehicles in Lane 1 and 2 (PFD) 0.260 Outer Lanes Freeway Speed (SO), mi/h 57.3 Flow in Lanes 1 and 2 (v12), pc/h 3548 Ramp Junction Speed (S), mi/h 50.2 Flow Entering Ramp-Infl. Area (vR12), pc/h - Average Density (D), pc/mi/ln 24.4	Volume-to-Capacity Ratio (v/c)		0.58	0.72	0.72			
Distance to Upstream Ramp (LUP), ft - Speed Index (DS) 0.471 Downstream Equilibrium Distance (LEQ), ft - Flow Outer Lanes (vOA), pc/mi/ln 829 Distance to Downstream Ramp (LDOWN), ft - Off-Ramp Influenece Area Speed (SR), mi/h 47.4 Prop. Freeway Vehicles in Lane 1 and 2 (PFD) 0.260 Outer Lanes Freeway Speed (SO), mi/h 57.3 Flow in Lanes 1 and 2 (v12), pc/h 3548 Ramp Junction Speed (S), mi/h 50.2 Flow Entering Ramp-Infl. Area (vR12), pc/h - Average Density (D), pc/mi/ln 24.4	Speed and Density							
Downstream Equilibrium Distance (LEQ), ft - Flow Outer Lanes (vOA), pc/mi/ln 829 Distance to Downstream Ramp (LDOWN), ft - Off-Ramp Influenece Area Speed (SR), mi/h 47.4 Prop. Freeway Vehicles in Lane 1 and 2 (PFD) 0.260 Outer Lanes Freeway Speed (SO), mi/h 57.3 Flow in Lanes 1 and 2 (v12), pc/h 3548 Ramp Junction Speed (S), mi/h 50.2 Flow Entering Ramp-Infl. Area (vR12), pc/h - Average Density (D), pc/mi/ln 24.4	Upstream Equilibrium Distance (LEQ),	ft	-	Number of Outer Lanes on Freev	vay (No)	2		
Distance to Downstream Ramp (LDOWN), ft - Off-Ramp Influenece Area Speed (SR), mi/h 47.4 Prop. Freeway Vehicles in Lane 1 and 2 (PFD) 0.260 Outer Lanes Freeway Speed (SO), mi/h 57.3 Flow in Lanes 1 and 2 (v12), pc/h 3548 Ramp Junction Speed (S), mi/h 50.2 Flow Entering Ramp-Infl. Area (vR12), pc/h - Average Density (D), pc/mi/ln 24.4	Distance to Upstream Ramp (LUP), ft		-	Speed Index (DS)		0.471		
Prop. Freeway Vehicles in Lane 1 and 2 (PFD) 0.260 Outer Lanes Freeway Speed (SO), mi/h Flow in Lanes 1 and 2 (v12), pc/h Ramp Junction Speed (S), mi/h 50.2 Flow Entering Ramp-Infl. Area (vR12), pc/h Average Density (D), pc/mi/ln 24.4	Downstream Equilibrium Distance (LE	EQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln 829		829		
Flow in Lanes 1 and 2 (v12), pc/h Slow Entering Ramp-Infl. Area (vR12), pc/h Average Density (D), pc/mi/ln 24.4	Distance to Downstream Ramp (LDOWN), ft -		Off-Ramp Influenece Area Speed (SR), mi/h		47.4			
Flow Entering Ramp-Infl. Area (vR12), pc/h - Average Density (D), pc/mi/ln 24.4	Prop. Freeway Vehicles in Lane 1 and	2 (PFD)	0.260	Outer Lanes Freeway Speed (So), mi/h		57.3		
	Flow in Lanes 1 and 2 (v12), pc/h		3548	Ramp Junction Speed (S), mi/h 50.2		50.2		
Level of Service (LOS) C Density in Ramp Influence Area (DR), pc/mi/ln 21.3	Flow Entering Ramp-Infl. Area (vR12),	pc/h	-	Average Density (D), pc/mi/ln 24.4		24.4		
	Level of Service (LOS)		С	Density in Ramp Influence Area ((DR), pc/mi/ln	21.3		

	HCS7 Basic F	reeway Report	
Project Information			
Analyst	Cameron Manley	Date	3/9/2020
Agency	WSP	Analysis Year	2020
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour
Project Description	I-65/264 Interchange Stud	y	
Geometric Data			
Number of Lanes, In	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	2.22
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	48.7
Right-Side Lateral Clearance, ft	10		
Adjustment Factors	-		
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000
Demand and Capacity			
Demand Volume veh/h	2733	Heavy Vehicle Adjustment Factor (fHV)	0.921
Peak Hour Factor	0.94	Flow Rate (V _p), pc/h/ln	1052
Total Trucks, %	8.56	Capacity (c), pc/h/ln	2200
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.51
Passenger Car Equivalent (ET)	2.000		
Speed and Density			
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	46.3
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	22.7
Total Ramp Density Adjustment	6.3	Level of Service (LOS)	С
Adjusted Free-Flow Speed (FFSadj), mi/h	46.3		
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	Н	ICS7 Freeway	Diverge Report			
Project Information						
Analyst			Date	3/10/2	020	
Agency	WSP		Analysis Year	2020		
Jurisdiction	D05		Time Period Analyzed	PM Pea	ak Hour	
Project Description	I-65/264 Int	erchange Study	Unit	United	States Customary	
Geometric Data						
			Freeway	eway Ramp		
Number of Lanes (N), In			3	1	1	
Free-Flow Speed (FFS), mi/h			55.0	55.0	55.0	
Segment Length (L) / Deceleration	Length (LA),ft		1500	210		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-S	Sided One-Lane	
Adjustment Factors			•			
Driver Population			Balanced Mix	Balance	ed Mix	
Weather Type			Non-Severe Weather	Non-Se	Non-Severe Weather	
Incident Type			No Incident	-	-	
Final Speed Adjustment Factor (SAI	F)		0.950	0.950	0.950	
Final Capacity Adjustment Factor (C	CAF)		0.939	0.939	0.939	
Demand Adjustment Factor (DAF)			1.000	1.000		
Demand and Capacity				·		
Demand Volume (Vi)		2733	69			
Peak Hour Factor (PHF)			0.94	0.91		
Total Trucks, %		8.56	4.35			
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (f	HV)		0.921	0.958		
Flow Rate (vi),pc/h			3157	79		
Capacity (c), pc/h		6338	2066	2066		
Volume-to-Capacity Ratio (v/c)		0.50	0.04	0.04		
Speed and Density						
Upstream Equilibrium Distance (LEQ), ft -		Number of Outer Lanes on Freeway (NO) 1		1		
Distance to Upstream Ramp (LUP),	o Upstream Ramp (LUP), ft -		Speed Index (DS)		0.212	
Downstream Equilibrium Distance (LEQ), ft -		Flow Outer Lanes (vOA), pc/h/ln 994		994		
Distance to Downstream Ramp (LDOWN), ft -		Off-Ramp Influence Area Speed (SR), mi/h		50.0		
Prop. Freeway Vehicles in Lane 1 and 2 (PFD) 0.677		Outer Lanes Freeway Speed (SO), mi/h		57.3		
Flow in Lanes 1 and 2 (v12), pc/h		2163	Ramp Junction Speed (S), mi/h 52.1		52.1	
Flow Entering Ramp-Infl. Area (vR12	2), pc/h	-	Average Density (D), pc/mi/ln 20.2		20.2	
Level of Service (LOS)		С	Density in Ramp Influence Area (DR), pc/mi/ln 21.0		/ln 21.0	

HCS7 Basic Freeway Report Project Information					
Agency	WSP	Analysis Year	2020		
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour		
Project Description	I-65/264 Interchange Study	,			
Geometric Data					
Number of Lanes, In	3	Terrain Type	Level		
Segment Length (L), ft	-	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	4.17		
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	44.3		
Right-Side Lateral Clearance, ft	10				
Adjustment Factors					
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950		
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939		
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000		
Demand and Capacity					
Demand Volume veh/h	2664	Heavy Vehicle Adjustment Factor (fHV)	0.920		
Peak Hour Factor	0.94	Flow Rate (V _p), pc/h/ln	1027		
Total Trucks, %	8.67	Capacity (c), pc/h/ln	2200		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.50		
Passenger Car Equivalent (ET)	2.000				
Speed and Density					
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	42.1		
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	24.4		
Total Ramp Density Adjustment	10.7	Level of Service (LOS)	С		
Adjusted Free-Flow Speed (FFSadj), mi/h	42.1				

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	Н	CS7 Freeway	Merge Report			
Project Information						
Analyst Ca	ameron Man	lley	Date	3/10/2020		
Agency W	'SP		Analysis Year	2020		
Jurisdiction DO	05		Time Period Analyzed	PM Peak H	lour	
Project Description I-6	65/264 Inter	change Study				
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			3	2		
Free-Flow Speed (FFS), mi/h			55.0	55.0		
Segment Length (L) / Acceleration Len	ngth (LA),ft		1500	1260		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Side			Freeway	Right		
Adjustment Factors						
Driver Population			Balanced Mix	Balanced N	Mix	
Weather Type			Non-Severe Weather	Non-Sever	Non-Severe Weather	
Incident Type			No Incident	-		
Final Speed Adjustment Factor (SAF)			0.950	0.950		
Final Capacity Adjustment Factor (CAF	·)		0.939	0.939		
Demand Adjustment Factor (DAF)			1.000	1.000		
Demand and Capacity						
Demand Volume (Vi)			2664	1163		
Peak Hour Factor (PHF)			0.98	0.94		
Total Trucks, %			8.67	3.44		
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fHV)			0.920	0.967		
Flow Rate (vi),pc/h			2955	1279		
Capacity (c), pc/h			6338	4132		
Volume-to-Capacity Ratio (v/c)			0.67	0.31		
Speed and Density						
Upstream Equilibrium Distance (LEQ), f	ft 17	'93.6	Number of Outer Lanes on Freeway (NO)		1	
Distance to Upstream Ramp (LUP), ft	25	550	Speed Index (Ms)		0.265	
Downstream Equilibrium Distance (LEC	Q), ft -		Flow Outer Lanes (vOA), pc/mi/ln		1266	
Distance to Downstream Ramp (LDOWI	N), ft -		On-Ramp Influenece Area Speed (SR), mi/h		49.5	
Prop. Freeway Vehicles in Lane 1 and 2	2 (PFM) 0.5	555	Outer Lanes Freeway Speed (SO), mi/h 4		49.4	
Flow in Lanes 1 and 2 (v12), pc/h	16	589	Ramp Junction Speed (S), mi/h 49.5		49.5	
Flow Entering Ramp-Infl. Area (vR12), p	oc/h 29	068	Average Density (D), pc/mi/ln 28.5		28.5	
Level of Service (LOS)	С		Density in Ramp Influence Area ((DR), pc/mi/ln	20.2	

	HCS7 Basic F	reeway Report	
Project Information			
Analyst	Cameron Manley	Date	3/9/2020
Agency	WSP	Analysis Year	2020
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour
Project Description	I-65/264 Interchange Stud	у	
Geometric Data			
Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	1.50
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	50.5
Right-Side Lateral Clearance, ft	10		
Adjustment Factors			
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000
Demand and Capacity			
Demand Volume veh/h	3827	Heavy Vehicle Adjustment Factor (fHV)	0.934
Peak Hour Factor	0.98	Flow Rate (Vp), pc/h/ln	1045
Total Trucks, %	7.08	Capacity (c), pc/h/ln	2200
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.51
Passenger Car Equivalent (ET)	2.000		
Speed and Density			
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	47.9
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	21.8
Total Ramp Density Adjustment	4.5	Level of Service (LOS)	С
Adjusted Free-Flow Speed (FFSadj), mi/h	47.9		
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	HCS7 Basic F	reeway Report	
Project Information			
Analyst	Cameron Manley	Date	3/9/2020
Agency	WSP	Analysis Year	2020
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour
Project Description	I-65/264 Interchange Stud	у	
Geometric Data			
Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	1.77
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	49.8
Right-Side Lateral Clearance, ft	10		
Adjustment Factors			
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000
Demand and Capacity			
Demand Volume veh/h	5384	Heavy Vehicle Adjustment Factor (fHV)	0.947
Peak Hour Factor	0.99	Flow Rate (Vp), pc/h/ln	1436
Total Trucks, %	5.55	Capacity (c), pc/h/ln	2200
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.70
Passenger Car Equivalent (ET)	2.000		
Speed and Density			
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	47.3
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	30.4
Total Ramp Density Adjustment	5.2	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	47.3		
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HCS TM Freeways Version 7.7

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	HCS7 Freewa	y Diverge Report			
Project Information					
Analyst Ca	ameron Manley	Date	3/10/2020		
Agency	'SP	Analysis Year	2020		
Jurisdiction Do	05	Time Period Analyzed	PM Peak H	lour	
Project Description I-6	65/264 Interchange Study	Unit	United Sta	tes Customary	
Geometric Data		•			
		Freeway	Ramp		
Number of Lanes (N), In		4	1		
Free-Flow Speed (FFS), mi/h		55.0	55.0		
Segment Length (L) / Deceleration Ler	ngth (LA),ft	1500	170		
Terrain Type		Level	Level		
Percent Grade, %		-	-		
Segment Type / Ramp Type		Highway/CD Roadway	Right-Side	d One-Lane	
Adjustment Factors		•	·		
Driver Population		Balanced Mix	Balanced N	Иix	
Weather Type		Non-Severe Weather	Non-Sever	e Weather	
Incident Type		No Incident	-		
Final Speed Adjustment Factor (SAF)		0.950	0.950		
Final Capacity Adjustment Factor (CAF	·)	0.939	0.939		
Demand Adjustment Factor (DAF)		1.000	1.000	1.000	
Demand and Capacity					
Demand Volume (Vi)		5384	374		
Peak Hour Factor (PHF)		0.99	0.94		
Total Trucks, %		5.55	2.67		
Single-Unit Trucks (SUT), %		-	-		
Tractor-Trailers (TT), %		-	-		
Heavy Vehicle Adjustment Factor (fHV)		0.947	0.974		
Flow Rate (vi),pc/h		5743	408		
Capacity (c), pc/h		7512	2066		
Volume-to-Capacity Ratio (v/c)		0.76	0.20		
Speed and Density					
Upstream Equilibrium Distance (LEQ),	ft -	Number of Outer Lanes on F	reeway (NO)	2	
Distance to Upstream Ramp (LUP), ft	-	Speed Index (Ds)	Speed Index (Ds)		
Downstream Equilibrium Distance (LEC	2), ft -	Flow Outer Lanes (vOA), pc/h/ln		1505	
Distance to Downstream Ramp (LDOW	N), ft -	Off-Ramp Influence Area Sp	Off-Ramp Influence Area Speed (SR), mi/h		
Prop. Freeway Vehicles in Lane 1 and 2	2 (PFD) 0.436	Outer Lanes Freeway Speed	Outer Lanes Freeway Speed (SO), mi/h		
Flow in Lanes 1 and 2 (v12), pc/h	2734	Ramp Junction Speed (S), mi	Ramp Junction Speed (S), mi/h		
Flow Entering Ramp-Infl. Area (vR12), p	oc/h -	Average Density (D), pc/mi/ln 27.3		27.3	
Level of Service (LOS)	С	Density in Ramp Influence A	rea (DR), pc/mi/ln	26.2	

	HCS7 Basic	Freeway Report	
Project Information			
Analyst	Cameron Manley	Date	3/9/2020
Agency	WSP	Analysis Year	2020
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour
Project Description	I-65/264 Interchange Study	Unit	United States Customary
Geometric Data			
Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	6.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	40.5
Right-Side Lateral Clearance, ft	10		
Adjustment Factors			
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000
Demand and Capacity			
Demand Volume veh/h	5010	Heavy Vehicle Adjustment Factor (fHV)	0.945
Peak Hour Factor	0.94	Flow Rate (V _p), pc/h/ln	1410
Total Trucks, %	5.77	Capacity (c), pc/h/ln	2200
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.68
Passenger Car Equivalent (ET)	2.000		
Speed and Density			
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	38.5
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	36.6
Total Ramp Density Adjustment	14.5	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	38.5		
		•	-

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	Н	CS7 Freeway	Diverge Report			
Project Information						
Analyst	Cameron Ma	nley	Date	3/10/2020		
Agency	WSP		Analysis Year	2020		
Jurisdiction I	D05		Time Period Analyzed	PM Peak H	lour	
Project Description	I-65/264 Inte	rchange Study	Unit	United Sta	tes Customary	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			4	1		
Free-Flow Speed (FFS), mi/h			55.0	55.0		
Segment Length (L) / Deceleration L	ength (LA),ft		1380	1380		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Freeway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population			Balanced Mix	Balanced N	Иix	
Weather Type			Non-Severe Weather	Non-Sever	Non-Severe Weather	
Incident Type			No Incident	-	-	
Final Speed Adjustment Factor (SAF)			0.950	0.950		
Final Capacity Adjustment Factor (CA	AF)		0.939	0.939		
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Demand and Capacity						
Demand Volume (Vi)			5010	1099		
Peak Hour Factor (PHF)			0.94	0.94		
Total Trucks, %			5.77	8.55	8.55	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-	-	
Heavy Vehicle Adjustment Factor (fH	V)		0.945	0.921		
Flow Rate (vi),pc/h			5640	1269		
Capacity (c), pc/h			8451	2066	2066	
Volume-to-Capacity Ratio (v/c)			0.67	0.61		
Speed and Density						
Upstream Equilibrium Distance (LEQ)), ft -		Number of Outer Lanes on	Freeway (No)	2	
Distance to Upstream Ramp (LUP), ft	-		Speed Index (Ds)		0.319	
Downstream Equilibrium Distance (L	.EQ), ft -		Flow Outer Lanes (vOA), pc/h/ln		1233	
Distance to Downstream Ramp (LDO	WN), ft -		Off-Ramp Influence Area Speed (SR), mi/h		48.9	
Prop. Freeway Vehicles in Lane 1 and	d 2 (PFD) 0	.436	Outer Lanes Freeway Speed (SO), mi/h		56.4	
Flow in Lanes 1 and 2 (v12), pc/h	3	175	Ramp Junction Speed (S), n	ni/h	51.9	
Flow Entering Ramp-Infl. Area (vR12),	, pc/h -		Average Density (D), pc/mi/ln 27.2		27.2	
Level of Service (LOS)	В		Density in Ramp Influence	Area (DR), pc/mi/ln	19.1	

	HCS7 Basic I	Freeway Report	
Project Information			
Analyst	Cameron Manley	Date	3/9/2020
Agency	WSP	Analysis Year	2020
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour
Project Description	I-65/264 Interchange Stud	dy	
Geometric Data			
Number of Lanes, In	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	3.45
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	45.9
Right-Side Lateral Clearance, ft	10		
Adjustment Factors			
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000
Demand and Capacity			
Demand Volume veh/h	3911	Heavy Vehicle Adjustment Factor (fHV)	0.952
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1457
Total Trucks, %	4.99	Capacity (c), pc/h/ln	2200
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.71
Passenger Car Equivalent (ET)	2.000		
Speed and Density			
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	43.6
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	33.4
Total Ramp Density Adjustment	9.1	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	43.6		

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H	HCS7 Freeway	Weaving Repo	rt	
Project Information				
Analyst	Cameron Manley	Date		3/10/2020
Agency	WSP	Analysis Year		2020
Jurisdiction	D05	Time Period Analyzed		PM Peak Hour
Project Description	I-65/264 Interchange S	Study		
Geometric Data				
Number of Lanes (N), In	5	Segment Type		Freeway
Segment Length (Ls), ft	0	Number of Maneuver I	Lanes (NWL), In	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane	e Changes (LCRF), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane	e Changes (LCFR), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane C	Changes (LCRR), Ic	0
Interchange Density (ID), int/mi	4.00	Cross Weaving Manag	ed Lane	No
Adjustment Factors		-		
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)		0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)		0.939
Incident Type	No Incident	Demand Adjustment Factor (DAF)		1.000
Demand and Capacity				
	FF	RF	RR	FR
Demand Volume (Vi), veh/h	3741	2957	390	170
Peak Hour Factor (PHF)	0.94	0.94	0.94	0.94
Total Trucks, %	4.88	8.00	0.24	0.10
Heavy Vehicle Adjustment Factor (fHV)	0.953	0.926	0.998	0.999
Flow Rate (vi), pc/h	4176	3397	416	181
Weaving Flow Rate (vw), pc/h	3578	Freeway Max Capacity	(cIFL), pc/h/ln	2222
Non-Weaving Flow Rate (vNW), pc/h	4592	Density-Based Capacity	y (cIWL), pc/h/ln	1678
Total Flow Rate (v), pc/h	8170	Demand Flow-Based C	apacity (cIW), pc/h	5479
Volume Ratio (VR)	0.438	Weaving Segment Cap	acity (cW), veh/h	5179
Minimum Lane Change Rate (LСміN), lc/h	0	Adjusted Weaving Area	a Capacity, pc/h	5146
Maximum Weaving Length (LMAX), ft	7111	Volume-to-Capacity Ra	ntio (v/c)	1.59
Speed and Density				
Non-Weaving Vehicle Index (INW)	-	Average Weaving Spee	ed (Sw),mi/h	-
Non-Weaving Lane Change Rate (LCNW), lc/h	-	Average Non-Weaving	Speed (SNW), mi/h	-
Weaving Lane Change Rate (LCW), lc/h	-	Average Speed (S), mi/	'h	-
Weaving Lane Change Rate (LCAII), lc/h	-	Density (D), pc/mi/ln		-
Weaving Intensity Factor (W)	-	Level of Service (LOS)		F

	HCS7 Basic F	reeway Report				
Project Information						
Analyst	Cameron Manley	Date	3/9/2020			
Agency	WSP	Analysis Year	2020			
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour			
Project Description	I-65/264 Interchange Study	-65/264 Interchange Study				
Geometric Data						
Number of Lanes, In	5	Terrain Type	Level			
Segment Length (L), ft	-	Percent Grade, %	-			
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-			
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	3.77			
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	45.2			
Right-Side Lateral Clearance, ft	10					
Adjustment Factors	·					
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950			
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939			
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000			
Demand and Capacity						
Demand Volume veh/h	6820	Heavy Vehicle Adjustment Factor (fHV)	0.937			
Peak Hour Factor	0.94	Flow Rate (V _p), pc/h/ln	1549			
Total Trucks, %	6.67	Capacity (c), pc/h/ln	2200			
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066			
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.75			
Passenger Car Equivalent (ET)	2.000					
Speed and Density						
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	42.9			
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	36.1			
Total Ramp Density Adjustment	9.8	Level of Service (LOS)	E			
Adjusted Free-Flow Speed (FFSadj), mi/h	42.9					

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	HCS7 Fre	eeway Merge Re _l	oort		
Project Information					
Analyst	Cameron Manley	Date	3	3/10/2020	
Agency	WSP	Analysis Year	2	2020	
Jurisdiction	D05	Time Period Ana	lyzed P	M Peak H	our
Project Description	I-65/264 Interchange Stud	dy Unit	U	Jnited Stat	tes Customary
Geometric Data					
		Freeway	R	lamp	
Number of Lanes (N), In		6	1		
Free-Flow Speed (FFS), mi/h		55.0	5	5.0	
Segment Length (L) / Acceleration I	ength (LA),ft	1500	1	500	
Terrain Type		Level	L	evel	
Percent Grade, %		-	-		
Segment Type / Ramp Type		Freeway	R	Right-Side	d One-Lane
Adjustment Factors			·		
Driver Population		Balanced Mix	В	Balanced M	1ix
Weather Type		Non-Severe Wea	ther N	Non-Severe Weather	
Incident Type		No Incident	-	-	
Final Speed Adjustment Factor (SAF	·)	0.950	0	0.950	
Final Capacity Adjustment Factor (C	AF)	0.939	0	0.939	
Demand Adjustment Factor (DAF)		1.000	1	1.000	
Demand and Capacity					
Demand Volume (Vi)		6820	5	95	
Peak Hour Factor (PHF)		0.98	0	0.91	
Total Trucks, %		6.67	5	5.04	
Single-Unit Trucks (SUT), %		-	-	-	
Tractor-Trailers (TT), %		-	-	-	
Heavy Vehicle Adjustment Factor (fi	HV)	0.937	0	.952	
Flow Rate (vi),pc/h		7427	6	687	
Capacity (c), pc/h		12677	2	2066	
Volume-to-Capacity Ratio (v/c)		0.64	0	.33	
Speed and Density					
Upstream Equilibrium Distance (LEC), ft -	Number of Oute	r Lanes on Freeway (No)	2
Distance to Upstream Ramp (LUP), f	t -	Speed Index (MS	Speed Index (Ms)		0.236
Downstream Equilibrium Distance (LEQ), ft -	Flow Outer Lane	Flow Outer Lanes (vOA), pc/h/ln		1671
Distance to Downstream Ramp (LDG	OWN), ft -	On-Ramp Influer	On-Ramp Influence Area Speed (SR), mi/h		49.8
Prop. Freeway Vehicles in Lane 1 an	d 2 (РFM) 0.132	Outer Lanes Free	Outer Lanes Freeway Speed (SO), mi/h 48.0		48.0
Flow in Lanes 1 and 2 (v12), pc/h	2228	Ramp Junction S	Ramp Junction Speed (S), mi/h 48.8		48.8
Flow Entering Ramp-Infl. Area (vR12), pc/h 2915	Average Density	Average Density (D), pc/mi/ln 27.7		27.7
Level of Service (LOS)	В	Density in Ramp	Influence Area (DR),	pc/mi/ln	18.6

	HCS7 Basic	Freeway Report			
Project Information					
Analyst	Cameron Manley	Date	3/9/2020		
Agency	WSP	Analysis Year	2020		
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour		
Project Description	I-65/264 Interchange Stu	dy			
Geometric Data					
Number of Lanes, In	6	Terrain Type	Level		
Segment Length (L), ft	-	Percent Grade, %	-		
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-		
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	2.82		
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	47.3		
Right-Side Lateral Clearance, ft	10				
Adjustment Factors					
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950		
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939		
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000		
Demand and Capacity					
Demand Volume veh/h	7415	Heavy Vehicle Adjustment Factor (fHV)	0.939		
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1400		
Total Trucks, %	6.54	Capacity (c), pc/h/ln	2200		
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066		
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.68		
Passenger Car Equivalent (ET)	2.000				
Speed and Density					
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	44.9		
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	31.2		
Total Ramp Density Adjustment	7.7	Level of Service (LOS)	D		
Adjusted Free-Flow Speed (FFSadj), mi/h	44.9				

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ŀ	HCS7 Freeway	Weaving Repo	rt	
Project Information				
Analyst	Cameron Manley	Date		3/10/2020
Agency	WSP	Analysis Year		2020
Jurisdiction	D05	Time Period Analyzed		PM Peak Hour
Project Description	I-65/264 Interchange S	Study		
Geometric Data				
Number of Lanes (N), In	3	Segment Type		Highway/CD Roadway
Segment Length (Ls), ft	0	Number of Maneuver I	Lanes (NWL), In	0
Weaving Configuration	Two-Sided	Ramp-to-Freeway Lane	e Changes (LCRF), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane	e Changes (LCFR), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane C	Changes (LCRR), Ic	2
Interchange Density (ID), int/mi	4.00	Cross Weaving Manage	ed Lane	No
Adjustment Factors				·
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)		0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)		0.939
Incident Type	No Incident	Demand Adjustment Factor (DAF)		1.000
Demand and Capacity				
	FF	RF	RR	FR
Demand Volume (Vi), veh/h	1066	1262	90	644
Peak Hour Factor (PHF)	0.94	0.94	0.94	0.94
Total Trucks, %	5.20	2.59	0.22	2.81
Heavy Vehicle Adjustment Factor (fHV)	0.951	0.975	0.998	0.973
Flow Rate (vi), pc/h	1192	1377	96	704
Weaving Flow Rate (vw), pc/h	96	Freeway Max Capacity	(cIFL), pc/h/ln	2222
Non-Weaving Flow Rate (vnw), pc/h	3273	Density-Based Capacity	y (cIWL), pc/h/ln	1764
Total Flow Rate (v), pc/h	3369	Demand Flow-Based C	apacity (c৷w), pc/h	-
Volume Ratio (VR)	0.028	Weaving Segment Cap	acity (cw), veh/h	5116
Minimum Lane Change Rate (LCMIN), lc/h	192	Adjusted Weaving Area	a Capacity, pc/h	4969
Maximum Weaving Length (LMAX), ft	5987	Volume-to-Capacity Ratio (v/c)		0.68
Speed and Density				
Non-Weaving Vehicle Index (INW)	0	Average Weaving Spee	ed (Sw),mi/h	52.2
Non-Weaving Lane Change Rate (LCNW), lc/h	96	Average Non-Weaving	Speed (SNW), mi/h	45.4
Weaving Lane Change Rate (LCw), lc/h	192	Average Speed (S), mi/	'h	45.6
Weaving Lane Change Rate (LCAII), lc/h	288	Density (D), pc/mi/ln		24.6
Weaving Intensity Factor (W)	0.000	Level of Service (LOS)		С

	HCS7 Basic Fr	reeway Report	
Project Information			
Analyst	Cameron Manley	Date	3/10/2020
Agency	WSP	Analysis Year	2020
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour
Project Description	I-65/264 Interchange Study		
Geometric Data			
Number of Lanes, In	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	6.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	40.5
Right-Side Lateral Clearance, ft	10		
Adjustment Factors	-		-
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000
Demand and Capacity			
Demand Volume veh/h	2988	Heavy Vehicle Adjustment Factor (fHV)	0.976
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1086
Total Trucks, %	2.41	Capacity (c), pc/h/ln	2200
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.53
Passenger Car Equivalent (ET)	2.000		
Speed and Density			
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	38.5
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	28.2
Total Ramp Density Adjustment	14.5	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	38.5		

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	ŀ	HCS7 Freeway	Diverge Report			
Project Information						
Analyst	Cameron N	Manley	Date	3/10/2020		
Agency	WSP		Analysis Year	2020		
Jurisdiction	D05		Time Period Analyzed	PM Peak H	lour	
Project Description	I-65/264 In	terchange Study	Unit	United Sta	tes Customary	
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			3	1		
Free-Flow Speed (FFS), mi/h			55.0	55.0		
Segment Length (L) / Deceleration L	ength (LA),	ft	1370	340		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Type			Highway/CD Roadway	Right-Side	d One-Lane	
Adjustment Factors						
Driver Population			Balanced Mix	Balanced N	Мix	
Weather Type			Non-Severe Weather	Non-Sever	Non-Severe Weather	
Incident Type			No Incident	-		
Final Speed Adjustment Factor (SAF)			0.950	0.950		
Final Capacity Adjustment Factor (CA	AF)		0.939	0.939		
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Demand and Capacity				·		
Demand Volume (Vi)			2988	1860		
Peak Hour Factor (PHF)			0.97	0.97		
Total Trucks, %			5.76	7.58	7.58	
Single-Unit Trucks (SUT), %			-	-	-	
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fH	V)		0.946	0.930		
Flow Rate (vi),pc/h			3256	2062		
Capacity (c), pc/h			5634	2066	2066	
Volume-to-Capacity Ratio (v/c)			0.58	1.00		
Speed and Density						
Upstream Equilibrium Distance (LEQ)	, ft	-	Number of Outer Lanes on	Freeway (NO)	1	
Distance to Upstream Ramp (LUP), ft		1370	Speed Index (DS)		0.390	
Downstream Equilibrium Distance (L	.EQ), ft	1549.8	Flow Outer Lanes (vOA), pc/h/ln		493	
Distance to Downstream Ramp (LDOWN), ft 1400		Off-Ramp Influence Area Sp	peed (SR), mi/h	48.2		
Prop. Freeway Vehicles in Lane 1 and	d 2 (PFD)	0.587	Outer Lanes Freeway Speed (SO), mi/h		57.3	
Flow in Lanes 1 and 2 (v12), pc/h		2763	Ramp Junction Speed (S), mi/h 49.4		49.4	
Flow Entering Ramp-Infl. Area (vR12)	, pc/h	-	Average Density (D), pc/mi/ln 22.0		22.0	
Level of Service (LOS)		С	Density in Ramp Influence A	Area (DR), pc/mi/ln	25.0	

	HCS7 Basic F	reeway Report					
Project Information							
Analyst	Cameron Manley	Date	3/10/2020				
Agency	WSP	Analysis Year	2020				
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour				
Project Description I-65/264 Interchange Study							
Geometric Data							
Number of Lanes, In	2	Terrain Type	Level				
Segment Length (L), ft	-	Percent Grade, %	-				
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-				
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	6.00				
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	40.5				
Right-Side Lateral Clearance, ft	10						
Adjustment Factors							
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950				
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939				
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000				
Demand and Capacity							
Demand Volume veh/h	1128	Heavy Vehicle Adjustment Factor (fHV)	0.973				
Peak Hour Factor	0.94	Flow Rate (V _p), pc/h/ln	616				
Total Trucks, %	2.75	Capacity (c), pc/h/ln	2200				
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066				
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.30				
Passenger Car Equivalent (ET)	2.000						
Speed and Density							
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	38.5				
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	16.0				
Total Ramp Density Adjustment	14.5	Level of Service (LOS)	В				
Adjusted Free-Flow Speed (FFSadj), mi/h	38.5						
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	HCS7 Free	eway Diverge Report			
Project Information					
Analyst	Cameron Manley	Date	Date 3/10/2020		
Agency	WSP	Analysis Year	2020		
Jurisdiction	D05	Time Period Analyzed	PM Peak I	Hour	
Project Description	I-65/264 Interchange Study	y Unit	United Sta	ates Customary	
Geometric Data					
		Freeway	Ramp		
Number of Lanes (N), In		2	1		
Free-Flow Speed (FFS), mi/h		55.0	20.0		
Segment Length (L) / Deceleration	Length (LA),ft	1400	320		
Terrain Type		Level	Level		
Percent Grade, %		-	-		
Segment Type / Ramp Type		Freeway	Right-Side	ed One-Lane	
Adjustment Factors		<u> </u>			
Driver Population		Balanced Mix	Balanced	Mix	
Weather Type		Non-Severe Weather	Non-Seve	re Weather	
Incident Type		No Incident	-		
Final Speed Adjustment Factor (SAF	·)	0.950	0.950		
Final Capacity Adjustment Factor (C	AF)	0.939	0.939		
Demand Adjustment Factor (DAF)		1.000	1.000	1.000	
Demand and Capacity					
Demand Volume (Vi)		1128	334		
Peak Hour Factor (PHF)		0.94	0.77		
Total Trucks, %		2.75	1.80		
Single-Unit Trucks (SUT), %		-	-		
Tractor-Trailers (TT), %		-	-		
Heavy Vehicle Adjustment Factor (fi	HV)	0.973	0.982		
Flow Rate (vi),pc/h		1233	442		
Capacity (c), pc/h		4226	1690	1690	
Volume-to-Capacity Ratio (v/c)		0.29	0.26		
Speed and Density					
Upstream Equilibrium Distance (LEC	ı), ft -	Number of Outer Lanes of	on Freeway (NO)	0	
Distance to Upstream Ramp (LUP), f	t -	Speed Index (Ds)	Speed Index (DS) 0.67		
Downstream Equilibrium Distance (LEQ), ft -	Flow Outer Lanes (vOA), p	oc/h/ln	-	
Distance to Downstream Ramp (LDOWN), ft -		Off-Ramp Influence Area	Speed (SR), mi/h	45.3	
Prop. Freeway Vehicles in Lane 1 an	d 2 (PFD) 1.000	Outer Lanes Freeway Spe	Outer Lanes Freeway Speed (SO), mi/h		
Flow in Lanes 1 and 2 (v12), pc/h	1233	Ramp Junction Speed (S)	, mi/h	45.3	
Flow Entering Ramp-Infl. Area (vR12), pc/h -	Average Density (D), pc/r	Average Density (D), pc/mi/ln 13.6		
Level of Service (LOS)	В	Density in Ramp Influenc	e Area (DR), pc/mi/ln	12.0	

		HCS7 Freeway	Merge Report			
Project Information						
Analyst C	Cameron N	Manley	Date	3/10/2020		
Agency V	VSP		Analysis Year	2020		
Jurisdiction D	005		Time Period Analyzed	PM Peak H	our	
Project Description I-	-65/264 In	terchange Study		'		
Geometric Data						
			Freeway	Ramp		
Number of Lanes (N), In			3	1		
Free-Flow Speed (FFS), mi/h			55.0	25.0		
Segment Length (L) / Acceleration Le	ngth (LA),	ft	1500	530		
Terrain Type			Level	Level		
Percent Grade, %			-	-		
Segment Type / Ramp Side			Highway/CD Roadway	Right		
Adjustment Factors						
Driver Population			Balanced Mix	Balanced N	Лix	
Weather Type			Non-Severe Weather	Non-Sever	e Weather	
Incident Type			No Incident	-		
Final Speed Adjustment Factor (SAF)			0.950	0.950		
Final Capacity Adjustment Factor (CA	.F)		0.939	0.939		
Demand Adjustment Factor (DAF)			1.000	1.000	1.000	
Demand and Capacity				<u>'</u>		
Demand Volume (Vi)			1561	133		
Peak Hour Factor (PHF)			0.94	0.81		
Total Trucks, %			5.64	0.75		
Single-Unit Trucks (SUT), %			-	-		
Tractor-Trailers (TT), %			-	-		
Heavy Vehicle Adjustment Factor (fhv	/)		0.947	0.993		
Flow Rate (vi),pc/h			1754	165		
Capacity (c), pc/h			5634	1784		
Volume-to-Capacity Ratio (v/c)			0.34	0.09		
Speed and Density						
Upstream Equilibrium Distance (LEQ),	ft	-	Number of Outer Lanes on F	reeway (No)	1	
Distance to Upstream Ramp (LUP), ft		220	Speed Index (MS)		0.309	
Downstream Equilibrium Distance (LE	Q), ft	-	Flow Outer Lanes (vOA), pc/mi/ln 716		716	
Distance to Downstream Ramp (LDOV	vn), ft	1250	On-Ramp Influenece Area Speed (SR), mi/h		49.0	
Prop. Freeway Vehicles in Lane 1 and	2 (PFM)	0.592	Outer Lanes Freeway Speed (SO), mi/h 51.4		51.4	
Flow in Lanes 1 and 2 (v12), pc/h		1038	Ramp Junction Speed (S), mi/h 49.9		49.9	
Flow Entering Ramp-Infl. Area (vR12),	pc/h	1203	Average Density (D), pc/mi/ln 12.8		12.8	
Level of Service (LOS)		В	Density in Ramp Influence Ar	rea (DR), pc/mi/ln	11.5	

	HCS7 Basic Fi	reeway Report	
Project Information			
Analyst	Cameron Manley	Date	3/10/2020
Agency	WSP	Analysis Year	2020
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour
Project Description	I-65/264 Interchange Study		
Geometric Data			
Number of Lanes, In	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	6.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	40.5
Right-Side Lateral Clearance, ft	10		
Adjustment Factors			
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000
Demand and Capacity			
Demand Volume veh/h	1694	Heavy Vehicle Adjustment Factor (fHV)	0.950
Peak Hour Factor	0.94	Flow Rate (V _P), pc/h/ln	632
Total Trucks, %	5.25	Capacity (c), pc/h/ln	2200
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.31
Passenger Car Equivalent (ET)	2.000		
Speed and Density			
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	38.5
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	16.4
Total Ramp Density Adjustment	14.5	Level of Service (LOS)	В
Adjusted Free-Flow Speed (FFSadj), mi/h	38.5		

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ŀ	HCS7 Freeway	Weaving Repo	rt	
Project Information				
Analyst	Cameron Manley	Date	3/10/2020	
Agency	WSP	Analysis Year		2020
Jurisdiction	D05	Time Period Analyzed		PM Peak Hour
Project Description	I-65/264 Interchange S	Study		
Geometric Data				
Number of Lanes (N), In	4	Segment Type		Highway/CD Roadway
Segment Length (Ls), ft	0	Number of Maneuver	Lanes (NWL), In	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lan	e Changes (LCRF), lc	1
Terrain Type	Level	Freeway-to-Ramp Lan	e Changes (LCFR), lc	0
Percent Grade, %	-	Ramp-to-Ramp Lane (Changes (LCRR), Ic	0
Interchange Density (ID), int/mi	4.00	Cross Weaving Manag	ed Lane	No
Adjustment Factors				
Driver Population	Balanced Mix	Final Speed Adjustmer	nt Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustm	nent Factor (CAF)	0.939
Incident Type	No Incident	Demand Adjustment F	actor (DAF)	1.000
Demand and Capacity				•
	FF	RF	RR	FR
Demand Volume (Vi), veh/h	1601	208	48	93
Peak Hour Factor (PHF)	0.94	0.94	0.94	0.94
Total Trucks, %	4.72	2.73	2.73	0.53
Heavy Vehicle Adjustment Factor (fHV)	0.955	0.973	0.973	0.995
Flow Rate (vi), pc/h	1783	227	52	99
Weaving Flow Rate (vw), pc/h	326	Freeway Max Capacity	(cIFL), pc/h/ln	2222
Non-Weaving Flow Rate (vNW), pc/h	1835	Density-Based Capacit	y (cIWL), pc/h/ln	1913
Total Flow Rate (v), pc/h	2161	Demand Flow-Based C	apacity (cIW), pc/h	15894
Volume Ratio (VR)	0.151	Weaving Segment Cap	acity (cw), veh/h	7340
Minimum Lane Change Rate (LCMIN), lc/h	227	Adjusted Weaving Are	a Capacity, pc/h	7185
Maximum Weaving Length (LMAX), ft	4041	Volume-to-Capacity Ratio (v/c)		0.30
Speed and Density				
Non-Weaving Vehicle Index (INW)	0	Average Weaving Spee	ed (Sw),mi/h	52.2
Non-Weaving Lane Change Rate (LCNW), lc/h	0	Average Non-Weaving	48.0	
Weaving Lane Change Rate (LCW), lc/h	227	Average Speed (S), mi,	/h	48.6
Weaving Lane Change Rate (LCAII), lc/h	227	Density (D), pc/mi/ln		11.1
Weaving Intensity Factor (W)	0.000	Level of Service (LOS)		А

	HCS7 Basic Fi	reeway Report	
Project Information			
Analyst	Cameron Manley	Date	3/10/2020
Agency	WSP	Analysis Year	2020
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour
Project Description	I-65/264 Interchange Study		
Geometric Data			
Number of Lanes, In	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	6.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	40.5
Right-Side Lateral Clearance, ft	10		
Adjustment Factors			
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000
Demand and Capacity			
Demand Volume veh/h	2592	Heavy Vehicle Adjustment Factor (fHV)	0.930
Peak Hour Factor	0.94	Flow Rate (V _p), pc/h/ln	988
Total Trucks, %	7.52	Capacity (c), pc/h/ln	2200
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.48
Passenger Car Equivalent (ET)	2.000		
Speed and Density			
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	38.5
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	25.7
Total Ramp Density Adjustment	14.5	Level of Service (LOS)	С
Adjusted Free-Flow Speed (FFSadj), mi/h	38.5		

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ŀ	HCS/ Freeway	Weaving Repo	rt	
Project Information				
Analyst	Cameron Manley	Date	3/10/2020	
Agency	WSP	Analysis Year		2020
Jurisdiction	D05	Time Period Analyzed		PM Peak Hour
Project Description	I-65/264 Interchange S	Study		
Geometric Data				
Number of Lanes (N), In	4	Segment Type		Highway/CD Roadway
Segment Length (Ls), ft	0	Number of Maneuver	Lanes (NWL), In	2
Weaving Configuration	One-Sided	Ramp-to-Freeway Lane	e Changes (LCRF), lc	1
Terrain Type	Level	Freeway-to-Ramp Lane	e Changes (LCFR), lc	1
Percent Grade, %	-	Ramp-to-Ramp Lane C	Changes (LCRR), lc	0
Interchange Density (ID), int/mi	4.00	Cross Weaving Manag	ed Lane	No
Adjustment Factors				
Driver Population	Balanced Mix	Final Speed Adjustmer	nt Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)		0.939
Incident Type	No Incident	Demand Adjustment F	actor (DAF)	1.000
Demand and Capacity				
	FF	RF	RR	FR
Demand Volume (Vi), veh/h	2283	433	196	309
Peak Hour Factor (PHF)	0.94	0.94	0.94	0.94
Total Trucks, %	7.06	3.02	0.16	0.46
Heavy Vehicle Adjustment Factor (fHV)	0.934	0.971	0.998	0.995
Flow Rate (vi), pc/h	2600	474	209	330
Weaving Flow Rate (vw), pc/h	804	Freeway Max Capacity	(cIFL), pc/h/ln	2222
Non-Weaving Flow Rate (vNW), pc/h	2809	Density-Based Capacity	y (cIWL), pc/h/ln	1857
Total Flow Rate (v), pc/h	3613	Demand Flow-Based C	apacity (c৷W), pc/h	10762
Volume Ratio (VR)	0.223	Weaving Segment Cap	acity (cw), veh/h	7043
Minimum Lane Change Rate (LCMIN), lc/h	804	Adjusted Weaving Area	a Capacity, pc/h	6975
Maximum Weaving Length (LMAX), ft	4773	Volume-to-Capacity Ratio (v/c)		0.52
Speed and Density				
Non-Weaving Vehicle Index (INW)	0	Average Weaving Spee	ed (Sw),mi/h	52.2
Non-Weaving Lane Change Rate (LCNW), lc/h	0	Average Non-Weaving	42.1	
Weaving Lane Change Rate (LCW), lc/h	804	Average Speed (S), mi/	'h	44.0
Weaving Lane Change Rate (LCAII), lc/h	804	Density (D), pc/mi/ln		20.5
Weaving Intensity Factor (W)	0.000	Level of Service (LOS)		В

	HCS7 Basic Fr	eeway Report	
Project Information			
Analyst	Cameron Manley	Cameron Manley Date	
Agency	WSP	Analysis Year	2020
Jurisdiction	D05	Time Period Analyzed	PM Peak Hour
Project Description	I-65/264 Interchange Study		
Geometric Data			
Number of Lanes, In	3	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	55.0	Total Ramp Density (TRD), ramps/mi	6.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	40.5
Right-Side Lateral Clearance, ft	10		
Adjustment Factors	-		-
Driver Population	Balanced Mix	Final Speed Adjustment Factor (SAF)	0.950
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	0.939
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000
Demand and Capacity			
Demand Volume veh/h	1652	Heavy Vehicle Adjustment Factor (fHV)	0.951
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	616
Total Trucks, %	5.15	Capacity (c), pc/h/ln	2200
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2066
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.30
Passenger Car Equivalent (ET)	2.000		
Speed and Density			
Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	38.5
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	16.0
Total Ramp Density Adjustment	14.5	Level of Service (LOS)	В
Adjusted Free-Flow Speed (FFSadj), mi/h	38.5		
	Description LICCEN Francis		C

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	HCS	7 Freeway	Diverge Repoi	rt			
Project Information							
_	Cameron Manley		Date 3/10/202		3/10/2020	0	
Agency	WSP		Analysis Year		2020		
Jurisdiction	D05		Time Period Analyzed		PM Peak H	lour	
Project Description	I-65/264 Intercha	nge Study	Unit		United Sta	tes Customary	
Geometric Data							
			Freeway		Ramp		
Number of Lanes (N), In			3		1		
Free-Flow Speed (FFS), mi/h			55.0		55.0		
Segment Length (L) / Deceleration L	ength (LA),ft		1400		1400		
Terrain Type			Level		Level		
Percent Grade, %			-		-		
Segment Type / Ramp Type			Highway/CD Roadway	,	Right-Side	d One-Lane	
Adjustment Factors							
Driver Population			Balanced Mix		Balanced N	Лix	
Weather Type			Non-Severe Weather		Non-Severe Weather		
Incident Type			No Incident		-		
Final Speed Adjustment Factor (SAF))		0.950		0.950		
Final Capacity Adjustment Factor (Ca	AF)		0.939		0.939		
Demand Adjustment Factor (DAF)			1.000		1.000		
Demand and Capacity							
Demand Volume (Vi)			1652		238		
Peak Hour Factor (PHF)			0.94 0.92				
Total Trucks, %			5.15 3.78				
Single-Unit Trucks (SUT), %			-		-		
Tractor-Trailers (TT), %			-		-		
Heavy Vehicle Adjustment Factor (f	IV)		0.951		0.964		
Flow Rate (vi),pc/h			1848		268		
Capacity (c), pc/h			5634		2066		
Volume-to-Capacity Ratio (v/c)			0.33		0.13		
Speed and Density							
Upstream Equilibrium Distance (LEQ), ft -		Number of Outer Lane	es on Freewa	y (No)	1	
Distance to Upstream Ramp (LUP), ft	t 1400		Speed Index (Ds)			0.229	
Downstream Equilibrium Distance (L	_EQ), ft -		Flow Outer Lanes (vOA), pc/h/ln 472		472		
Distance to Downstream Ramp (LDOWN), ft -			Off-Ramp Influence A	rea Speed (Si	R), mi/h	49.9	
Prop. Freeway Vehicles in Lane 1 and	d 2 (PFD) 0.701		Outer Lanes Freeway Speed (SO), mi/h		ni/h	57.3	
Flow in Lanes 1 and 2 (v12), pc/h	1376		Ramp Junction Speed	(S), mi/h		51.6	
Flow Entering Ramp-Infl. Area (vR12)), pc/h -		Average Density (D), pc/mi/ln 11.9		11.9		
Level of Service (LOS)	А		Density in Ramp Influe	ence Area (Di	R), pc/mi/ln	3.5	