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-----Diverge Analysis-----

Analyst: JP
Agency/Co.: Florence & Hutcheson
Date performed: 9/23/2011
Analysis time period: PM
Freeway/Dir of Travel: I-85 SB C-D
Junction: I-385
Jurisdiction: Greenville, SC
Analysis Year: 2015
Description: I-85/I-385 Alternate 4A

-----Freeway Data-----

Type of analysis	Diverge		
Number of lanes in freeway	3		
Free-flow speed on freeway	55.0	mph	
Volume on freeway	2475	vph	

-----Off Ramp Data-----

Side of freeway	Left		
Number of lanes in ramp	2		
Free-Flow speed on ramp	45.0	mph	
Volume on ramp	1471	vph	
Length of first accel/decel lane	0	ft	
Length of second accel/decel lane	1500	ft	

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes		
Volume on adjacent ramp	254	vph	
Position of adjacent ramp	Downstream		
Type of adjacent ramp	Off		
Distance to adjacent ramp	1850	ft	

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	2475		1471		254	vph
Peak-hour factor, PHF	0.90		0.90		0.90	
Peak 15-min volume, v15	688		409		71	v
Trucks and buses	18		18		18	%
Recreational vehicles	0		0		0	%
Terrain type:	Level		Level		Level	
Grade	0.00	%	0.00	%	0.00	%
Length	0.00	mi	0.00	mi	0.00	mi
Trucks and buses PCE, ET	1.5		1.5		1.5	
Recreational vehicle PCE, ER	1.2		1.2		1.2	

Heavy vehicle adjustment, fHV	0.917	0.917	0.917	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2998	1782	308	pcph

Estimation of V12 Diverge Areas

$$L = \text{(Equation 13-12 or 13-13)}$$

EQ

$$P = 0.450 \quad \text{Using Equation 0}$$

FD

$$v_{12} = v_R + (v_F - v_R) P_{FD} = 2329 \quad \text{pc/h}$$

Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2998	6750	No
$v_{FO} = v_F - v_R$	1216	6750	No
v_R	1782	4200	No
v_3 or v_{av34}	669 pc/h	(Equation 13-14 or 13-17)	
Is v_3 or $v_{av34} > 2700$ pc/h?		No	
Is v_3 or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2329$		(Equation 13-15, 13-16, 13-18, or 13-19)	

Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
v_{12}	2329	4400	No

Level of Service Determination (if not F)

Density,	$D = 4.252 + 0.0086 v_R - 0.009 L_D$	$= 11.8$	pc/mi/ln
Level of service for ramp-freeway junction areas of influence B			

Speed Estimation

Intermediate speed variable,	$D = 0.458$	
Space mean speed in ramp influence area,	$S_R = 49.0$	mph
Space mean speed in outer lanes,	$S_0 = 60.3$	mph
Space mean speed for all vehicles,	$S = 50.8$	mph