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### \_\_\_\_\_Merge Analysis\_\_\_\_\_

Analyst: JP  
Agency/Co.: Florence & Hutcheson  
Date performed: 4/5/2011  
Analysis time period: PM  
Freeway/Dir of Travel: I-85 SB  
Junction: US 276  
Jurisdiction: Greenville, SC  
Analysis Year: 2035  
Description: I-85/I-385 No-Build

### \_\_\_\_\_Freeway Data\_\_\_\_\_

Type of analysis	Merge	
Number of lanes in freeway	4	
Free-flow speed on freeway	60.0	mph
Volume on freeway	8183	vph

### \_\_\_\_\_On Ramp Data\_\_\_\_\_

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	25.0	mph
Volume on ramp	826	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

### \_\_\_\_\_Adjacent Ramp Data (if one exists)\_\_\_\_\_

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	714	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	470	ft

### \_\_\_\_\_Conversion to pc/h Under Base Conditions\_\_\_\_\_

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	8183	826	714	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	2273	229	198	v
Trucks and buses	18	18	18	%
Recreational vehicles	0	0	0	%
Terrain type:	Level	Level	Level	
Grade	%	%	%	
Length	mi	mi	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	9911	1000	865	pcph

#### Estimation of V12 Merge Areas

L = (Equation 13-6 or 13-7)

EQ

P = 0.093 Using Equation 4

FM

v = v (P ) = 920 pc/h

12 F FM

#### Capacity Checks

		Actual	Maximum	LOS F?
v		10911	9200	Yes
FO				
v or v		4495 pc/h	(Equation 13-14 or 13-17)	
3 av34				
Is v or v	> 2700 pc/h?	Yes		
3 av34				
Is v or v	> 1.5 v /2	Yes		
3 av34	12			
If yes, v	= 3964	(Equation 13-15, 13-16, 13-18, or 13-19)		
12A				

#### Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	10911	4600	Yes
12A			

#### Level of Service Determination (if not F)

Density, D =  $5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$  = 40.6 pc/mi/ln

Level of service for ramp-freeway junction areas of influence F

#### Speed Estimation

Intermediate speed variable,	M = 0.854	
	S	
Space mean speed in ramp influence area,	S = 44.6	mph
	R	
Space mean speed in outer lanes,	S = 49.4	mph
	0	
Space mean speed for all vehicles,	S = 47.1	mph