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

Analyst: JP  
Agency/Co.: Florence & Hutcheson  
Date performed: 4/5/2011  
Analysis time period: AM  
Freeway/Dir of Travel: I-85 NB  
Junction: I385  
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	4384	vph

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

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	55.0	mph
Volume on ramp	3480	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane		ft

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

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	641	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	1060	ft

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

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	4384	3480	641	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1218	967	178	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	5310	4215	776	pcph

#### Estimation of V12 Merge Areas

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

EQ

P = -0.309 Using Equation 4

FM

v = v (P ) = -1640 pc/h

12 F FM

#### Capacity Checks

		Actual	Maximum	LOS F?
v		9525	9200	Yes
FO				
v or v		3475 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	= 2124	(Equation 13-15, 13-16, 13-18, or 13-19)		
12A				

#### Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	9525	4600	Yes
12A			

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

Density, D =  $5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A$  = 43.6 pc/mi/ln

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

#### Speed Estimation

Intermediate speed variable,	M	= 2.364	
	S		
Space mean speed in ramp influence area,	S	= 17.4	mph
	R		
Space mean speed in outer lanes,	S	= 56.1	mph
	0		
Space mean speed for all vehicles,	S	= 22.7	mph