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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 SB  
Junction: C-D ROAD  
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	3949	vph

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

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	45.0	mph
Volume on ramp	2055	vph
Length of first accel/decel lane	900	ft
Length of second accel/decel lane		ft

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

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	836	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	On	
Distance to adjacent Ramp	2250	ft

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

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3949	2055	836	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1097	571	232	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	4783	2489	1012	pcph

# Estimation of V12 Merge Areas

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

EQ

P = -0.093 Using Equation 4

FM

v = v (P ) = -445 pc/h

12 F FM

# Capacity Checks

	Actual	Maximum	LOS F?
v	7272	9200	No
FO			
v or v	2614 pc/h	(Equation 13-14 or 13-17)	
3 av34			
Is v or v	> 2700 pc/h?	No	
3 av34			
Is v or v	> 1.5 v /2	Yes	
3 av34	12		
If yes, v	= 1913	(Equation 13-15, 13-16, 13-18, or 13-19)	
12A			

# Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v	7272	4600	No
12A			

# Level of Service Determination (if not F)

Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 33.0 pc/mi/ln

R R 12 A

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

# Speed Estimation

Intermediate speed variable,	M = 0.558	
	S	
Space mean speed in ramp influence area,	S = 50.0	mph
	R	
Space mean speed in outer lanes,	S = 56.6	mph
	0	
Space mean speed for all vehicles,	S = 52.4	mph