

Florence & Hutcheson
501 Huger Street
Columbia, SC 29201

Phone: (803)254-5800
E-mail:

Fax: (803)929-0334

_____Merge Analysis_____

Analyst: NJ
Agency/Co.: Florence & Hutcheson
Date performed: 3/29/2011
Analysis time period: PM
Freeway/Dir of Travel: I-385 SB
Junction: I-85
Jurisdiction: Greenville, SC
Analysis Year: 2010
Description: I-85/I-385 Existing

_____Freeway Data_____

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	55.0	mph
Volume on freeway	3929	vph

_____On Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	30.0	mph
Volume on ramp	879	vph
Length of first accel/decel lane	920	ft
Length of second accel/decel lane		ft

_____Adjacent Ramp Data (if one exists)_____

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	920	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	920	ft

_____Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3929	879	920	vph
Peak-hour factor, PHF	0.90	0.90	0.90	
Peak 15-min volume, v15	1091	244	256	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	4758	1065	1114	pcph

Estimation of V12 Merge Areas

L

=

(Equation 13-6 or 13-7)

EQ

P

=

1.000

Using Equation

0

FM

v

=

v

(P

)

=

4758

pc/h

12

F

FM

Capacity Checks

v

FO

v

or v

3

av34

Actual

5823

0

pc/h

Maximum

4500

(Equation 13-14 or 13-17)

LOS F?

Yes

Is

v

or v

3

av34

> 2700 pc/h?

No

Is

v

or v

3

av34

> 1.5 v

/2

12

No

If yes, v

= 4758

(Equation 13-15, 13-16, 13-18, or 13-19)

12A

Flow Entering Merge Influence Area

v

R12

Actual

5823

Max Desirable

4600

Violation?

Yes

Level of Service Determination (if not F)

Density, D = 5.475 + 0.00734 v

+ 0.0078 v

- 0.00627 L

= 44.6

pc/mi/ln

R

R

12

A

Level of service for ramp-freeway junction areas of influence

F

Speed Estimation

Intermediate speed variable,

M

= 1.584

Space mean speed in ramp influence area,

S

= 34.4

mph

Space mean speed in outer lanes,

R

S

= N/A

mph

Space mean speed for all vehicles,

0

S

= 34.4

mph