

Phone: Fax:
E-mail:

_____ Merge Analysis _____

Analyst:
Agency/Co.: Stantec
Date performed: 11/9/2016
Analysis time period: 8:00AM-9:00AM
Freeway/Dir of Travel: I-85 Northbound
Junction: Shelby Hwy On Ramp to I-85 NB
Jurisdiction: SCDOT
Analysis Year: 2015 Existing Conditions
Description:

_____ Freeway Data _____

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	69.5	mph
Volume on freeway	1446	vph

_____ On Ramp Data _____

Side of freeway	Right	
Number of lanes in ramp	1	
Free-flow speed on ramp	35.0	mph
Volume on ramp	154	vph
Length of first accel/decel lane	560	ft
Length of second accel/decel lane		ft

_____ Adjacent Ramp Data (if one exists) _____

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	184	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1675	ft

_____ Conversion to pc/h Under Base Conditions _____

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1446	154	184	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	385	41	49	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	%	%	%	
Length	mi	mi	mi	
Trucks and buses PCE, ET	2.5	1.5	1.5	
Recreational vehicle PCE, ER	2.0	1.2	1.2	

Heavy vehicle adjustment, fHV	0.690	1.000	1.000	
Driver population factor, fP	1.00	1.00	1.00	
Flow rate, vp	2231	164	196	pcph

Estimation of V12 Merge Areas

L

=

(Equation 13-6 or 13-7)

EQ

P

=

1.000

Using Equation

0

FM

v

=

v

(P

)

=

2231

pc/h

12

F

FM

Capacity Checks

v

FO

v

or v

3

av34

Actual

2395

0

pc/h

Maximum

4790

(Equation 13-14 or 13-17)

LOS F?

No

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

= 2231

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

12A

Flow Entering Merge Influence Area

v

R12

Actual

2395

Max Desirable

4600

Violation?

No

Level of Service Determination (if not F)

Density, D = 5.475 + 0.00734 v

+ 0.0078 v

- 0.00627 L

= 20.6

pc/mi/ln

R

R

12

A

Level of service for ramp-freeway junction areas of influence

C

Speed Estimation

Intermediate speed variable,

M

= 0.325

Space mean speed in ramp influence area,

S

= 60.6

mph

Space mean speed in outer lanes,

S

= N/A

mph

Space mean speed for all vehicles,

S

= 60.6

mph