

Phone: Fax:
E-mail:

_____Merge Analysis_____

Analyst:
Agency/Co.: Stantec
Date performed: 11/10/2016
Analysis time period: 2:00PM-3:00PM
Freeway/Dir of Travel: I-85 Southbound
Junction: Shelby Hwy On Ramp to I-85 SB
Jurisdiction: SCDOT
Analysis Year: 2040 No Build Conditions
Description:

_____Freeway Data_____

Type of analysis	Merge	
Number of lanes in freeway	2	
Free-flow speed on freeway	70.7	mph
Volume on freeway	3457	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	250	vph
Length of first accel/decel lane	365	ft
Length of second accel/decel lane		ft

_____Adjacent Ramp Data (if one exists)_____

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	131	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1322	ft

_____Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3457	250	131	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	919	66	35	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	5333	266	139	pcph

Estimation of V12 Merge Areas

L

=

(Equation 13-6 or 13-7)

EQ

P

=

1.000

Using Equation

0

FM

v

=

v

(P

)

=

5333

pc/h

12

F

FM

Capacity Checks

v

FO

v

or v

3

av34

Actual

5599

0

pc/h

Maximum

4800

(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

=

5333

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

12A

Flow Entering Merge Influence Area

v

R12

Actual

5599

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

=

46.7

pc/mi/ln

R

R

12

A

Level of service for ramp-freeway junction areas of influence

F

Speed Estimation

Intermediate speed variable,

M

=

1.349

S

Space mean speed in ramp influence area,

S

=

32.0

mph

R

Space mean speed in outer lanes,

S

=

N/A

mph

0

Space mean speed for all vehicles,

S

=

32.0

mph