

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: Welcome Cntr On Ramp to I-85 S
 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 | 69.4 | mph |
| Volume on freeway | 2093 | 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 | 109 | vph |
| Length of first accel/decel lane | 875 | ft |
| Length of second accel/decel lane | | ft |

_____ Adjacent Ramp Data (if one exists) _____

| | | |
|---------------------------|----------|-----|
| Does adjacent ramp exist? | Yes | |
| Volume on adjacent Ramp | 109 | vph |
| Position of adjacent Ramp | Upstream | |
| Type of adjacent Ramp | Off | |
| Distance to adjacent Ramp | 2352 | ft |

_____ Conversion to pc/h Under Base Conditions _____

| Junction Components | Freeway | Ramp | Adjacent Ramp | |
|------------------------------|---------|-------|---------------|-----|
| Volume, V (vph) | 2093 | 109 | 109 | vph |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | |
| Peak 15-min volume, v15 | 557 | 29 | 29 | v |
| Trucks and buses | 30 | 0 | 0 | % |
| Recreational vehicles | 0 | 0 | 0 | % |
| Terrain type: | Rolling | Level | Level | |
| Grade | % | % | % | % |
| Length | mi | 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 | 3229 | 116 | 116 | pcph |

Estimation of V12 Merge Areas

L

=

(Equation 13-6 or 13-7)

EQ

P

=

1.000

Using Equation

0

FM

v

=

v

(P

)

=

3229

pc/h

12

F

FM

Capacity Checks

v

FO

3

av34

Actual

3345

Maximum

4788

LOS F?

No

v

or v

3

av34

0

pc/h

(Equation 13-14 or 13-17)

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

=

3229

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

12A

Flow Entering Merge Influence Area

v

R12

Actual

3345

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

=

26.0

pc/mi/ln

R

R

12

A

Level of service for ramp-freeway junction areas of influence

C

Speed Estimation

Intermediate speed variable,

M

=

0.370

S

Space mean speed in ramp influence area,

S

=

59.3

mph

R

Space mean speed in outer lanes,

S

=

N/A

mph

0

Space mean speed for all vehicles,

S

=

59.3

mph