

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 Southbound  
Junction: US 29 Off 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	70.3	mph
Volume on freeway	1699	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	159	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane		ft

\_\_\_\_\_ Adjacent Ramp Data (if one exists) \_\_\_\_\_

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	72	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2738	ft

\_\_\_\_\_ Conversion to pc/h Under Base Conditions \_\_\_\_\_

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1699	159	72	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	452	42	19	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	2621	169	77	pcph

#### Estimation of V12 Merge Areas

$$L = \text{(Equation 13-6 or 13-7)}$$

$$EQ$$

$$P = 1.000 \quad \text{Using Equation } 0$$

$$FM$$

$$v_{12} = v_F (P_{FM}) = 2621 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
$v_{FO}$	2790	4800	No
$v_3$ or $v_{av34}$	0 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2621$		(Equation 13-15, 13-16, 13-18, or 13-19)	

#### Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{R12}$	2790	4600	No

#### Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 17.8 \quad \text{pc/mi/ln}$$

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

#### Speed Estimation

Intermediate speed variable,	$M_S = 0.279$	
Space mean speed in ramp influence area,	$S_R = 62.4$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 62.4$	mph

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 Southbound  
 Junction: Tribal Rd 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	69.0	mph
Volume on freeway	1470	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	254	vph
Length of first accel/decel lane	1280	ft
Length of second accel/decel lane		ft

\_\_\_\_\_ Adjacent Ramp Data (if one exists) \_\_\_\_\_

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	388	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	1615	ft

\_\_\_\_\_ Conversion to pc/h Under Base Conditions \_\_\_\_\_

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1470	254	388	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	391	68	103	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	2268	270	413	pcph

Estimation of V12 Merge Areas

L

=

(Equation 13-6 or 13-7)

EQ

P

=

1.000

Using Equation

0

FM

v

=

v

(P

)

=

2268

pc/h

12

F

FM

Capacity Checks

v

FO

v

or v

3

av34

Actual

2538

0

pc/h

Maximum

4780

(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

= 2268

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

12A

Flow Entering Merge Influence Area

v

R12

Actual

2538

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

= 17.1

pc/mi/ln

R

R

12

A

Level of service for ramp-freeway junction areas of influence

B

Speed Estimation

Intermediate speed variable,

M

= 0.281

Space mean speed in ramp influence area,

S

= 61.4

mph

Space mean speed in outer lanes,

S

= N/A

mph

Space mean speed for all vehicles,

S

= 61.4

mph

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 Southbound  
Junction: Tribal Rd 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	69.0	mph
Volume on freeway	1470	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	254	vph
Length of first accel/decel lane	1280	ft
Length of second accel/decel lane		ft

### Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	99	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	3467	ft

### Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1470	254	99	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	391	68	26	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	2268	270	105	pcph

#### Estimation of V12 Merge Areas

$$L = \text{(Equation 13-6 or 13-7)}$$

$$EQ$$

$$P = 1.000 \quad \text{Using Equation } 0$$

$$FM$$

$$v_{12} = v_F (P_{FM}) = 2268 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
v <sub>FO</sub>	2538	4780	No
v <sub>3</sub> or v <sub>av34</sub>	0 pc/h	(Equation 13-14 or 13-17)	
Is v <sub>3</sub> or v <sub>av34</sub> > 2700 pc/h?		No	
Is v <sub>3</sub> or v <sub>av34</sub> > 1.5 v <sub>12</sub> / 2		No	
If yes, v <sub>12A</sub> = 2268		(Equation 13-15, 13-16, 13-18, or 13-19)	

#### Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v <sub>R12</sub>	2538	4600	No

#### Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 17.1 \quad \text{pc/mi/ln}$$

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

#### Speed Estimation

Intermediate speed variable,	M <sub>S</sub> = 0.281	
Space mean speed in ramp influence area,	S <sub>R</sub> = 61.4	mph
Space mean speed in outer lanes,	S <sub>0</sub> = N/A	mph
Space mean speed for all vehicles,	S = 61.4	mph

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 Southbound  
Junction: Welcome Cntr On Ramp to I-85 S  
Jurisdiction: SCCDOT  
Analysis Year: 2040 No Build 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	1625	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	99	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	99	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)	1625	99	99	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	432	26	26	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	2507	105	105	pcph

#### Estimation of V12 Merge Areas

$$L = \text{(Equation 13-6 or 13-7)}$$

$$EQ$$

$$P = 1.000 \quad \text{Using Equation } 0$$

$$FM$$

$$v_{12} = v_F (P_{FM}) = 2507 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
$v_{FO}$	2612	4788	No
$v_3$ or $v_{av34}$	0 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2507$		(Equation 13-15, 13-16, 13-18, or 13-19)	

#### Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{R12}$	2612	4600	No

#### Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 20.3 \quad \text{pc/mi/ln}$$

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

#### Speed Estimation

Intermediate speed variable,	$M_S = 0.313$	
Space mean speed in ramp influence area,	$S_R = 60.8$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 60.8$	mph

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 Southbound  
Junction: Welcome Cntr On Ramp to I-85 S  
Jurisdiction: SCCDOT  
Analysis Year: 2040 No Build 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	1625	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	99	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	96	vph
Position of adjacent Ramp	Downstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2216	ft

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

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1625	99	96	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	432	26	26	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	2507	105	102	pcph

#### Estimation of V12 Merge Areas

$$L = \text{(Equation 13-6 or 13-7)}$$

$$EQ$$

$$P = 1.000 \quad \text{Using Equation } 0$$

$$FM$$

$$v_{12} = v_F (P_{FM}) = 2507 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
$v_{FO}$	2612	4788	No
$v_3$ or $v_{av34}$	0 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2507$		(Equation 13-15, 13-16, 13-18, or 13-19)	

#### Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{R12}$	2612	4600	No

#### Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 20.3 \quad \text{pc/mi/ln}$$

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

#### Speed Estimation

Intermediate speed variable,	$M_S = 0.313$	
Space mean speed in ramp influence area,	$S_R = 60.8$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 60.8$	mph

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 Southbound  
Junction: SC 5 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	69.4	mph
Volume on freeway	1628	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	574	vph
Length of first accel/decel lane	675	ft
Length of second accel/decel lane		ft

-----Adjacent Ramp Data (if one exists)-----

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	96	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2290	ft

-----Conversion to pc/h Under Base Conditions-----

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1628	574	96	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	433	153	26	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	2511	611	102	pcph

#### Estimation of V12 Merge Areas

$$L = \text{(Equation 13-6 or 13-7)}$$

$$EQ$$

$$P = 1.000 \quad \text{Using Equation 0}$$

$$FM$$

$$v_{12} = v_F (P_{FM}) = 2511 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
$v_{FO}$	3122	4788	No
$v_3$ or $v_{av34}$	0 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 2511$		(Equation 13-15, 13-16, 13-18, or 13-19)	

#### Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{R12}$	3122	4600	No

#### Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 25.3 \quad \text{pc/mi/ln}$$

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

#### Speed Estimation

Intermediate speed variable,	$M_S = 0.362$	
Space mean speed in ramp influence area,	$S_R = 59.5$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 59.5$	mph

Phone: Fax:  
E-mail:

\_\_\_\_\_ Merge Analysis \_\_\_\_\_

Analyst:  
Agency/Co.: Stantec  
Date performed: 11/16/2016  
Analysis time period: 8:00AM-9:00AM  
Freeway/Dir of Travel: I-85 Southbound  
Junction: Blacksburg 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	69.8	mph
Volume on freeway	2079	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	254	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

\_\_\_\_\_ Adjacent Ramp Data (if one exists) \_\_\_\_\_

Does adjacent ramp exist?	Yes	
Volume on adjacent Ramp	123	vph
Position of adjacent Ramp	Upstream	
Type of adjacent Ramp	Off	
Distance to adjacent Ramp	2560	ft

\_\_\_\_\_ Conversion to pc/h Under Base Conditions \_\_\_\_\_

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2079	254	123	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	553	68	33	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	3207	270	131	pcph

#### Estimation of V12 Merge Areas

$$L = \text{(Equation 13-6 or 13-7)}$$

$$EQ$$

$$P = 1.000 \quad \text{Using Equation 0}$$

$$FM$$

$$v_{12} = v_F (P_{FM}) = 3207 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
$v_{FO}$	3477	4796	No
$v_3$ or $v_{av34}$	0 pc/h	(Equation 13-14 or 13-17)	
Is $v_3$ or $v_{av34} > 2700$ pc/h?		No	
Is $v_3$ or $v_{av34} > 1.5 v_{12} / 2$		No	
If yes, $v_{12A} = 3207$		(Equation 13-15, 13-16, 13-18, or 13-19)	

#### Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
$v_{R12}$	3477	4600	No

#### Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 29.3 \quad \text{pc/mi/ln}$$

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

#### Speed Estimation

Intermediate speed variable,	$M_S = 0.412$	
Space mean speed in ramp influence area,	$S_R = 58.3$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 58.3$	mph

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 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	2264	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	426	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	69	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)	2264	426	69	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	602	113	18	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	3492	453	73	pcph

#### Estimation of V12 Merge Areas

$$L = \text{(Equation 13-6 or 13-7)}$$

$$EQ$$

$$P = 1.000 \quad \text{Using Equation } 0$$

$$FM$$

$$v_{12} = v_F (P_{FM}) = 3492 \quad \text{pc/h}$$

#### Capacity Checks

		Actual	Maximum	LOS F?
v <sub>FO</sub>		3945	4800	No
v <sub>3</sub> or v <sub>av34</sub>	0	pc/h	(Equation 13-14 or 13-17)	
Is v <sub>3</sub> or v <sub>av34</sub> > 2700 pc/h?			No	
Is v <sub>3</sub> or v <sub>av34</sub> > 1.5 v <sub>12</sub> / 2			No	
If yes, v <sub>12A</sub> = 3492			(Equation 13-15, 13-16, 13-18, or 13-19)	

#### Flow Entering Merge Influence Area

	Actual	Max Desirable	Violation?
v <sub>R12</sub>	3945	4600	No

#### Level of Service Determination (if not F)

$$\text{Density, } D = 5.475 + 0.00734 v_R + 0.0078 v_{12} - 0.00627 L_A = 33.7 \quad \text{pc/mi/ln}$$

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

#### Speed Estimation

Intermediate speed variable,	M <sub>S</sub> = 0.497	
Space mean speed in ramp influence area,	S <sub>R</sub> = 56.4	mph
Space mean speed in outer lanes,	S <sub>0</sub> = N/A	mph
Space mean speed for all vehicles,	S = 56.4	mph