

Phone: Fax:  
E-mail:

### Diverge 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: I-85 Off Ramp to US 29  
Jurisdiction: SCDOT  
Analysis Year: 2040 No Build Conditions  
Description:

### Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	70.3	mph
Volume on freeway	1699	vph

### Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	72	vph
Length of first accel/decel lane	228	ft
Length of second accel/decel lane		ft

### Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	159	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	2738	ft

### Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1699	72	159	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	452	19	42	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 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	77	169	pcph

#### Estimation of V12 Diverge Areas

$$L = \text{(Equation 13-12 or 13-13)}$$

$$EQ$$

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

$$FD$$

$$v_{12} = v_R + (v_F - v_R) P_{FD} = 2621 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2621	4800	No
$v_{FO} = v_F - v_R$	2544	4800	No
$v_R$	77	2000	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 Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	2621	4400	No

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

$$\text{Density, } D = 4.252 + 0.0086 v_R - 0.009 L_D = 24.7 \quad \text{pc/mi/ln}$$

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

#### Speed Estimation

Intermediate speed variable,	$D_S = 0.435$	
Space mean speed in ramp influence area,	$S_R = 58.0$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 58.0$	mph

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### Diverge 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: I-85 Off Ramp to Tribal Rd  
Jurisdiction: SCDOT  
Analysis Year: 2040 No Build Conditions  
Description:

### Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	69.0	mph
Volume on freeway	1470	vph

### Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	388	vph
Length of first accel/decel lane	700	ft
Length of second accel/decel lane		ft

### Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	254	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1615	ft

### Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1470	388	254	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	391	103	68	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 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	413	270	pcph

#### Estimation of V12 Diverge Areas

$$L = \text{(Equation 13-12 or 13-13)}$$

$$EQ$$

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

$$FD$$

$$v_{12} = v_R + (v_F - v_R) P = 2268 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
$v_F = v_{Fi}$	2268	4780	No
$v_F = v_F - v_R$	1855	4780	No
$v_R$	413	2000	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, $v_{12A} = 2268$		(Equation 13-15, 13-16, 13-18, or 13-19)	

#### Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	2268	4400	No

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

Density,	$D = 4.252 + 0.0086 v_R - 0.009 L_D$	$= 17.5$	pc/mi/ln
Level of service for ramp-freeway junction areas of influence B			

#### Speed Estimation

Intermediate speed variable,	$D_S = 0.465$	
Space mean speed in ramp influence area,	$S_R = 56.4$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 56.4$	mph

Phone: Fax:  
E-mail:

### Diverge 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: I-85 SB Off Ramp to Welcome Cn  
Jurisdiction: SCDOT  
Analysis Year: 2040 No Build Conditions  
Description:

### Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	69.4	mph
Volume on freeway	1625	vph

### Off 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	255	ft
Length of second accel/decel lane		ft

### Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	254	vph
Position of adjacent ramp	Upstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	3467	ft

### Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1625	99	254	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	432	26	68	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 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	270	pcph

#### Estimation of V12 Diverge Areas

$$L = \text{(Equation 13-12 or 13-13)}$$

$$EQ$$

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

$$FD$$

$$v_{12} = v_R + (v_F - v_R) P_{FD} = 2507 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
$v_F = v_{Fi}$	2507	4788	No
$v_F = v_F - v_R$	2402	4788	No
$v_R$	105	2000	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 Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	2507	4400	No

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

$$\text{Density, } D = 4.252 + 0.0086 v_R - 0.009 L_D = 23.5 \quad \text{pc/mi/ln}$$

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

#### Speed Estimation

Intermediate speed variable,	$D_S = 0.437$	
Space mean speed in ramp influence area,	$S_R = 57.4$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 57.4$	mph

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge 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: I-85 SB Off Ramp to Welcome Cn  
 Jurisdiction: SCDOT  
 Analysis Year: 2040 No Build Conditions  
 Description: \_\_\_\_\_

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	69.4	mph
Volume on freeway	1625	vph

-----Off 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	255	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	On	
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	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 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 Diverge Areas

$$L = \text{(Equation 13-12 or 13-13)}$$

$$EQ$$

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

$$FD$$

$$v_{12} = v_R + (v_F - v_R) P_{FD} = 2507 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
$v_F = v_{Fi}$	2507	4788	No
$v_F = v_F - v_R$	2402	4788	No
$v_R$	105	2000	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 Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	2507	4400	No

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

$$\text{Density, } D = 4.252 + 0.0086 v_{12} - 0.009 L_D = 23.5 \quad \text{pc/mi/ln}$$

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

#### Speed Estimation

Intermediate speed variable,	$D_S = 0.437$	
Space mean speed in ramp influence area,	$S_R = 57.4$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 57.4$	mph

Phone: Fax:  
E-mail:

### Diverge 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: I-85 SB Off Ramp to SC 5  
Jurisdiction: SCDOT  
Analysis Year: 2015 Existing Conditions  
Description:

### Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	69.4	mph
Volume on freeway	1628	vph

### Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	96	vph
Length of first accel/decel lane	465	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	On	
Distance to adjacent ramp	2216	ft

### Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1628	96	99	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	433	26	26	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 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	102	105	pcph

#### Estimation of V12 Diverge Areas

$$L = \text{(Equation 13-12 or 13-13)}$$

$$EQ$$

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

$$FD$$

$$v_{12} = v_R + (v_F - v_R) P = 2511 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2511	4788	No
$v_{FO} = v_F - v_R$	2409	4788	No
$v_R$	102	2000	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 Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	2511	4400	No

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

$$\text{Density, } D = 4.252 + 0.0086 v_R - 0.009 L_D = 21.7 \quad \text{pc/mi/ln}$$

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

#### Speed Estimation

Intermediate speed variable,	$D_S = 0.437$	
Space mean speed in ramp influence area,	$S_R = 57.4$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 57.4$	mph

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-mail: \_\_\_\_\_

-----Diverge 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: I-85 SB Off Ramp to SC 5  
 Jurisdiction: SCDOT  
 Analysis Year: 2040 No Build Conditions  
 Description: \_\_\_\_\_

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	69.4	mph
Volume on freeway	1628	vph

-----Off Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	75	vph
Length of first accel/decel lane	465	ft
Length of second accel/decel lane		ft

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

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	574	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	2290	ft

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

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	1628	75	574	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	433	20	153	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 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	80	611	pcph

#### Estimation of V12 Diverge Areas

$$L = \text{(Equation 13-12 or 13-13)}$$

$$EQ$$

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

$$FD$$

$$v_{12} = v_R + (v_F - v_R) P = 2511 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	2511	4788	No
$v_{FO} = v_F - v_R$	2431	4788	No
$v_R$	80	2000	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 Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	2511	4400	No

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

$$\text{Density, } D = 4.252 + 0.0086 v_R - 0.009 \frac{L}{D} = 21.7 \quad \text{pc/mi/ln}$$

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

#### Speed Estimation

Intermediate speed variable,	$D_S = 0.435$	
Space mean speed in ramp influence area,	$S_R = 57.5$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 57.5$	mph

Phone: Fax:  
E-mail:

### Diverge 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: I-85 Off Ramp to Blacksburg  
Jurisdiction: SCDOT  
Analysis Year: 2040 No Build Conditions  
Description:

### Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	69.4	mph
Volume on freeway	2079	vph

### Off Ramp Data

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	123	vph
Length of first accel/decel lane	164	ft
Length of second accel/decel lane		ft

### Adjacent Ramp Data (if one exists)

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	254	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	2560	ft

### Conversion to pc/h Under Base Conditions

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2079	123	254	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	553	33	68	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 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	131	270	pcph

#### Estimation of V12 Diverge Areas

$$L = \text{(Equation 13-12 or 13-13)}$$

$$EQ$$

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

$$FD$$

$$v_{12} = v_R + (v_F - v_R) P_{FD} = 3207 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3207	4788	No
$v_{FO} = v_F - v_R$	3076	4788	No
$v_R$	131	2000	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 Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	3207	4400	No

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

$$\text{Density, } D = 4.252 + 0.0086 v_R - 0.009 L_D = 30.4 \quad \text{pc/mi/ln}$$

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

#### Speed Estimation

Intermediate speed variable,	$D_S = 0.440$	
Space mean speed in ramp influence area,	$S_R = 57.3$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 57.3$	mph

Phone: Fax:  
E-mail:

-----Diverge 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: I-85 SB Off Ramp to Shelby Hwy  
Jurisdiction: SCDOT  
Analysis Year: 2040 No Build Conditions  
Description:

-----Freeway Data-----

Type of analysis	Diverge	
Number of lanes in freeway	2	
Free-flow speed on freeway	70.7	mph
Volume on freeway	2264	vph

-----Off Ramp Data-----

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	35.0	mph
Volume on ramp	69	vph
Length of first accel/decel lane	295	ft
Length of second accel/decel lane		ft

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

Does adjacent ramp exist?	Yes	
Volume on adjacent ramp	426	vph
Position of adjacent ramp	Downstream	
Type of adjacent ramp	On	
Distance to adjacent ramp	1322	ft

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

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	2264	69	426	vph
Peak-hour factor, PHF	0.94	0.94	0.94	
Peak 15-min volume, v15	602	18	113	v
Trucks and buses	30	0	0	%
Recreational vehicles	0	0	0	%
Terrain type:	Rolling	Level	Level	
Grade	0.00 %	0.00 %	0.00 %	
Length	0.00 mi	0.00 mi	0.00 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	73	453	pcph

#### Estimation of V12 Diverge Areas

$$L = \text{(Equation 13-12 or 13-13)}$$

$$EQ$$

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

$$FD$$

$$v_{12} = v_R + (v_F - v_R) P = 3492 \quad \text{pc/h}$$

#### Capacity Checks

	Actual	Maximum	LOS F?
$v_{Fi} = v_F$	3492	4800	No
$v_{FO} = v_F - v_R$	3419	4800	No
$v_R$	73	2000	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, $v_{12A} = 3492$		(Equation 13-15, 13-16, 13-18, or 13-19)	

#### Flow Entering Diverge Influence Area

	Actual	Max Desirable	Violation?
$v_{12}$	3492	4400	No

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

Density,	$D = 4.252 + 0.0086 v_R - 0.009 L_D$	$= 31.6$	pc/mi/ln
Level of service for ramp-freeway junction areas of influence D			

#### Speed Estimation

Intermediate speed variable,	$D_S = 0.435$	
Space mean speed in ramp influence area,	$S_R = 58.2$	mph
Space mean speed in outer lanes,	$S_0 = \text{N/A}$	mph
Space mean speed for all vehicles,	$S = 58.2$	mph