

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/4/2011
 Analysis Time Period: AM
 Freeway/Dir of Travel: I-85NB
 Weaving Location: US-276
 Analysis Year: 2010
 Description: I-85/I-385 Existing

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	4	ln
Weaving segment length, LS	420	ft
Freeway free-flow speed, FFS	60	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2300	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	3301	214	577	0	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	917	59	160	0	
Trucks and buses	18	15	15	15	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.930	0.930	0.930	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	3998	256	689	0	pc/h

Volume ratio, VR 0.191

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	68	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	281	lc/h
Total lane changes, LCALL	349	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.195

Average weaving speed, SW	52.6	mi/h
Average non-weaving speed, SNW	54.1	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S	53.8	mi/h
Weaving segment density, D	23.0	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.620	
Weaving segment flow rate, v	4943	pc/h
Weaving segment capacity, cW	7310	veh/h

_____Limitations on Weaving Segments_____				
If limit reached, see note.				

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4446	420	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2300	1992	c
		Maximum	Analyzed	
v/c ratio		1.00	0.620	d

Notes:

- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
- The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
- Volumes exceed the weaving segment capacity. The level of service is F.

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

 Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/4/2011
 Analysis Time Period: AM
 Freeway/Dir of Travel: I-85SB
 Weaving Location: US-276
 Analysis Year: 2010
 Description: I-85/I-385 Existing

 Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	4	ln
Weaving segment length, LS	420	ft
Freeway free-flow speed, FFS	60	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2300	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

 Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	3210	681	1046	0	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	892	189	291	0	
Trucks and buses	18	15	15	15	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.930	0.930	0.930	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	3888	813	1249	0	pc/h

Volume ratio, VR 0.347

 Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	68	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	258	lc/h
Total lane changes, LCALL	326	lc/h

 Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.185

Average weaving speed, SW	53.0	mi/h
Average non-weaving speed, SNW	52.9	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S	52.9	mi/h
Weaving segment density, D	28.1	pc/mi/ln
Level of service, LOS	D	
Weaving segment v/c ratio	0.859	
Weaving segment flow rate, v	5950	pc/h
Weaving segment capacity, cW	6354	veh/h

_____Limitations on Weaving Segments_____				
If limit reached, see note.				

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	6089	420	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2300	1866	c
		Maximum	Analyzed	
v/c ratio		1.00	0.859	d

Notes:

- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
- The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
- Volumes exceed the weaving segment capacity. The level of service is F.

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/4/2011
 Analysis Time Period: AM
 Freeway/Dir of Travel: I-85NB C-D
 Weaving Location: b/t Woodruff & I-385
 Analysis Year: 2010
 Description: I-85/I-385 Existing

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	840	ft
Freeway free-flow speed, FFS	45	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2250	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	510	413	465	52	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	142	115	129	14	
Trucks and buses	18	18	18	18	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.917	0.917	0.917	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	618	500	563	63	pc/h
Volume ratio, VR		0.610			

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	82	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	18	lc/h
Total lane changes, LCALL	100	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.042
-----------------------------	-------

Average weaving speed, SW	43.8	mi/h
Average non-weaving speed, SNW	42.2	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S	43.2	mi/h
Weaving segment density, D	13.5	pc/mi/ln
Level of service, LOS	B	
Weaving segment v/c ratio	0.443	
Weaving segment flow rate, v	1744	pc/h
Weaving segment capacity, cW	3612	veh/h

_____Limitations on Weaving Segments_____				
If limit reached, see note.				

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	9134	840	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2250	1615	c
		Maximum	Analyzed	
v/c ratio		1.00	0.443	d

Notes:

- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
- The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
- Volumes exceed the weaving segment capacity. The level of service is F.

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

 Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/4/2011
 Analysis Time Period: AM
 Freeway/Dir of Travel: I-85SB C-D
 Weaving Location: I-385
 Analysis Year: 2010
 Description: I-85/I-385 Existing

 Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	2	ln
Weaving segment length, LS	483	ft
Freeway free-flow speed, FFS	45	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2250	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

 Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	452	853	1107	0	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	126	237	308	0	
Trucks and buses	18	18	18	18	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.917	0.917	0.917	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	547	1033	1341	0	pc/h
Volume ratio, VR	0.813				

 Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN		lc/h
Weaving lane changes, LCW		lc/h
Non-weaving vehicle index, INW		
Non-weaving lane change, LCNW		lc/h
Total lane changes, LCALL		lc/h

 Weaving and Non-Weaving Speeds

Weaving intensity factor, W

Average weaving speed, SW	mi/h
Average non-weaving speed, SNW	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S		mi/h
Weaving segment density, D		pc/mi/ln
Level of service, LOS	F	
Weaving segment v/c ratio	1.049	
Weaving segment flow rate, v	2921	pc/h
Weaving segment capacity, cW	2554	veh/h

_____Limitations on Weaving Segments_____

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	11705	483	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2250	1392	c
		Maximum	Analyzed	
v/c ratio		1.00	1.049	d

- Notes:
- a. In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
 - b. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
 - c. The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
 - d. Volumes exceed the weaving segment capacity. The level of service is F.

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/4/2011
 Analysis Time Period: AM
 Freeway/Dir of Travel: I-85SB C-D
 Weaving Location: b/t I-385 & Woodruff
 Analysis Year: 2010
 Description: I-85/I-385 Existing

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	2	ln
Weaving segment length, LS	556	ft
Freeway free-flow speed, FFS	45	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2250	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	832	473	537	21	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	231	131	149	6	
Trucks and buses	18	18	18	18	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.917	0.917	0.917	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	1008	573	650	25	pc/h

Volume ratio, VR 0.542

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	25	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	129	lc/h
Total lane changes, LCALL	154	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.082

Average weaving speed, SW	42.7	mi/h
Average non-weaving speed, SNW	39.6	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S	41.2	mi/h
Weaving segment density, D	27.4	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.681	
Weaving segment flow rate, v	2256	pc/h
Weaving segment capacity, cW	3039	veh/h

_____Limitations on Weaving Segments_____				
If limit reached, see note.				

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	8323	556	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2250	1656	c
		Maximum	Analyzed	
v/c ratio		1.00	0.681	d

Notes:

- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
- The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
- Volumes exceed the weaving segment capacity. The level of service is F.

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 3/17/2011
 Analysis Time Period: AM
 Freeway/Dir of Travel: I-385NB
 Weaving Location: Woodruff to I-85
 Analysis Year: 2010
 Description: I-85/I-385 Existing

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	1240	ft
Freeway free-flow speed, FFS	55	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2250	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2397	749	866	217	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	666	208	241	60	
Trucks and buses	18	18	18	18	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.917	0.917	0.917	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	2903	907	1049	263	pc/h
Volume ratio, VR		0.382			

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	108	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	746	lc/h
Total lane changes, LCALL	854	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.168
-----------------------------	-------

Average weaving speed, SW	49.2	mi/h
Average non-weaving speed, SNW	46.8	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S	47.7	mi/h
Weaving segment density, D	35.8	pc/mi/ln
Level of service, LOS	E	
Weaving segment v/c ratio	0.923	
Weaving segment flow rate, v	5122	pc/h
Weaving segment capacity, cW	5089	veh/h

_____Limitations on Weaving Segments_____				
If limit reached, see note.				

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	6479	1240	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2250	1849	c
		Maximum	Analyzed	
v/c ratio		1.00	0.923	d

Notes:

- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
 - Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
 - The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
 - Volumes exceed the weaving segment capacity. The level of service is F.
-

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/4/2011
 Analysis Time Period: AM
 Freeway/Dir of Travel: I-385SB
 Weaving Location: I-85 & Woodruff
 Analysis Year: 2010
 Description: I-85/I-385 Existing

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	909	ft
Freeway free-flow speed, FFS	55	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2250	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	1572	425	1147	40	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	437	118	319	11	
Trucks and buses	18	18	18	18	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.917	0.917	0.917	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	1904	515	1389	48	pc/h

Volume ratio, VR 0.494

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	87	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	317	lc/h
Total lane changes, LCALL	404	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.119

Average weaving speed, SW	50.7	mi/h
Average non-weaving speed, SNW	48.8	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S	49.8	mi/h
Weaving segment density, D	25.8	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.793	
Weaving segment flow rate, v	3856	pc/h
Weaving segment capacity, cW	4459	veh/h

_____Limitations on Weaving Segments_____				
If limit reached, see note.				

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	7754	909	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2250	1726	c
		Maximum	Analyzed	
v/c ratio		1.00	0.793	d

Notes:

- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
- The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
- Volumes exceed the weaving segment capacity. The level of service is F.

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

 Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/4/2011
 Analysis Time Period: PM
 Freeway/Dir of Travel: I-85NB
 Weaving Location: US-276
 Analysis Year: 2010
 Description: I-85/I-385 Existing

 Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	4	ln
Weaving segment length, LS	420	ft
Freeway free-flow speed, FFS	60	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2300	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

 Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2765	355	407	0	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	768	99	113	0	
Trucks and buses	18	15	15	15	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.930	0.930	0.930	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	3349	424	486	0	pc/h

Volume ratio, VR 0.214

 Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	68	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	147	lc/h
Total lane changes, LCALL	215	lc/h

 Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.133

Average weaving speed, SW	54.7	mi/h
Average non-weaving speed, SNW	54.9	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S	54.9	mi/h
Weaving segment density, D	19.4	pc/mi/ln
Level of service, LOS	B	
Weaving segment v/c ratio	0.539	
Weaving segment flow rate, v	4259	pc/h
Weaving segment capacity, cW	7244	veh/h

_____Limitations on Weaving Segments_____				
If limit reached, see note.				

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4676	420	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2300	1974	c
		Maximum	Analyzed	
v/c ratio		1.00	0.539	d

- Notes:
- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
 - Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
 - The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
 - Volumes exceed the weaving segment capacity. The level of service is F.

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

 Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/4/2011
 Analysis Time Period: PM
 Freeway/Dir of Travel: I-85SB
 Weaving Location: US-276
 Analysis Year: 2010
 Description: I-85/I-385 Existing

 Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	4	ln
Weaving segment length, LS	420	ft
Freeway free-flow speed, FFS	60	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2300	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

 Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	4830	438	624	0	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	1342	122	173	0	
Trucks and buses	18	15	15	15	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.930	0.930	0.930	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	5850	523	745	0	pc/h

Volume ratio, VR 0.178

 Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	68	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	662	lc/h
Total lane changes, LCALL	730	lc/h

 Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.350

Average weaving speed, SW	48.3	mi/h
Average non-weaving speed, SNW	51.5	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S	50.9	mi/h
Weaving segment density, D	35.0	pc/mi/ln
Level of service, LOS	D	
Weaving segment v/c ratio	0.889	
Weaving segment flow rate, v	7118	pc/h
Weaving segment capacity, cW	7347	veh/h

_____Limitations on Weaving Segments_____				
If limit reached, see note.				

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	4314	420	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2300	2002	c
		Maximum	Analyzed	
v/c ratio		1.00	0.889	d

Notes:

- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
- The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
- Volumes exceed the weaving segment capacity. The level of service is F.

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

 Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/4/2011
 Analysis Time Period: PM
 Freeway/Dir of Travel: I-85NB C-D
 Weaving Location: b/t Woodruff & I-385
 Analysis Year: 2010
 Description: I-85/I-385 Existing

 Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	840	ft
Freeway free-flow speed, FFS	45	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2250	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

 Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	955	531	555	348	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	265	148	154	97	
Trucks and buses	18	18	18	18	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.917	0.917	0.917	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	1157	643	672	421	pc/h

Volume ratio, VR 0.455

 Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	82	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	203	lc/h
Total lane changes, LCALL	285	lc/h

 Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.096

Average weaving speed, SW	42.4	mi/h
Average non-weaving speed, SNW	40.4	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S	41.3	mi/h
Weaving segment density, D	23.4	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.549	
Weaving segment flow rate, v	2893	pc/h
Weaving segment capacity, cW	4833	veh/h

_____Limitations on Weaving Segments_____				
If limit reached, see note.				

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	7300	840	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2250	1756	c
		Maximum	Analyzed	
v/c ratio		1.00	0.549	d

Notes:

- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
- The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
- Volumes exceed the weaving segment capacity. The level of service is F.

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/4/2011
 Analysis Time Period: PM
 Freeway/Dir of Travel: I-85SB C-D
 Weaving Location: I-385
 Analysis Year: 2010
 Description: I-85/I-385 Existing

Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	2	ln
Weaving segment length, LS	483	ft
Freeway free-flow speed, FFS	45	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2250	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	213	645	787	0	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	59	179	219	0	
Trucks and buses	18	18	18	18	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.917	0.917	0.917	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	258	781	953	0	pc/h
Volume ratio, VR	0.870				

Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	21	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	0	lc/h
Total lane changes, LCALL	21	lc/h

Weaving and Non-Weaving Speeds

Weaving intensity factor, W	0.019
-----------------------------	-------

Average weaving speed, SW	44.4	mi/h
Average non-weaving speed, SNW	40.2	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S	43.8	mi/h
Weaving segment density, D	22.7	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.747	
Weaving segment flow rate, v	1992	pc/h
Weaving segment capacity, cW	2446	veh/h

_____Limitations on Weaving Segments_____				
If limit reached, see note.				

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	12468	483	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2250	1333	c
		Maximum	Analyzed	
v/c ratio		1.00	0.747	d

Notes:

- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
- The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
- Volumes exceed the weaving segment capacity. The level of service is F.

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

 Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/4/2011
 Analysis Time Period: PM
 Freeway/Dir of Travel: I-85SB C-D
 Weaving Location: b/t I-385 & Woodruff
 Analysis Year: 2010
 Description: I-85/I-385 Existing

 Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	2	ln
Weaving segment length, LS	556	ft
Freeway free-flow speed, FFS	45	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2250	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

 Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	679	321	685	135	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	189	89	190	38	
Trucks and buses	18	18	18	18	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.917	0.917	0.917	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	822	389	830	164	pc/h

Volume ratio, VR 0.553

 Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN	0	lc/h
Weaving lane changes, LCW	25	lc/h
Non-weaving vehicle index, INW	0	
Non-weaving lane change, LCNW	119	lc/h
Total lane changes, LCALL	144	lc/h

 Weaving and Non-Weaving Speeds

Weaving intensity factor, W 0.078

Average weaving speed, SW	42.8	mi/h
Average non-weaving speed, SNW	39.7	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S	41.4	mi/h
Weaving segment density, D	26.6	pc/mi/ln
Level of service, LOS	C	
Weaving segment v/c ratio	0.670	
Weaving segment flow rate, v	2205	pc/h
Weaving segment capacity, cW	3020	veh/h

_____Limitations on Weaving Segments_____				
If limit reached, see note.				

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	8451	556	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2250	1646	c
		Maximum	Analyzed	
v/c ratio		1.00	0.670	d

Notes:

- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
- The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
- Volumes exceed the weaving segment capacity. The level of service is F.

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

 Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/4/2011
 Analysis Time Period: PM
 Freeway/Dir of Travel: I-385NB
 Weaving Location: b/t Woodruff & I-85
 Analysis Year: 2010
 Description: I-85/I-385 Existing

 Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	1240	ft
Freeway free-flow speed, FFS	55	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2250	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

 Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	2820	821	868	181	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	783	228	241	50	
Trucks and buses	18	18	18	18	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.917	0.917	0.917	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	3415	994	1051	219	pc/h

Volume ratio, VR 0.360

 Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN		lc/h
Weaving lane changes, LCW		lc/h
Non-weaving vehicle index, INW		
Non-weaving lane change, LCNW		lc/h
Total lane changes, LCALL		lc/h

 Weaving and Non-Weaving Speeds

Weaving intensity factor, W

Average weaving speed, SW	mi/h
Average non-weaving speed, SNW	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S		mi/h
Weaving segment density, D		pc/mi/ln
Level of service, LOS	F	
Weaving segment v/c ratio	1.013	
Weaving segment flow rate, v	5679	pc/h
Weaving segment capacity, cW	5141	veh/h

_____Limitations on Weaving Segments_____

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	6237	1240	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2250	1868	c
		Maximum	Analyzed	
v/c ratio		1.00	1.013	d

- Notes:
- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
 - Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
 - The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
 - Volumes exceed the weaving segment capacity. The level of service is F.

Phone: (803)254-5800

Fax: (803)929-0334

E-mail:

 Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/4/2011
 Analysis Time Period: PM
 Freeway/Dir of Travel: I-385SB
 Weaving Location: b/t I-85 & Woodruff
 Analysis Year: 2010
 Description: I-85/I-385 Existing

 Inputs

Segment Type	Freeway	
Weaving configuration	One-Sided	
Number of lanes, N	3	ln
Weaving segment length, LS	909	ft
Freeway free-flow speed, FFS	55	mi/h
Minimum segment speed, SMIN	15	mi/h
Freeway maximum capacity, cIFL	2250	pc/h/ln
Terrain type	Level	
Grade	0.00	%
Length	0.00	mi

 Conversion to pc/h Under Base Conditions

	Volume Components				
	VFF	VRF	VFR	VRR	
Volume, V	3277	611	652	268	veh/h
Peak hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	910	170	181	74	
Trucks and buses	18	18	18	18	%
Recreational vehicles	0	0	0	0	%
Trucks and buses PCE, ET	1.5	1.5	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	1.2	1.2	
Heavy vehicle adjustment, fHV	0.917	0.917	0.917	0.917	
Driver population adjustment, fP	1.00	1.00	1.00	1.00	
Flow rate, v	3969	740	790	325	pc/h

Volume ratio, VR 0.263

 Configuration Characteristics

Number of maneuver lanes, NWL	2	ln
Interchange density, ID	0.00	int/mi
Minimum RF lane changes, LCRF	0	lc/pc
Minimum FR lane changes, LCFR	0	lc/pc
Minimum RR lane changes, LCRR		lc/pc
Minimum weaving lane changes, LCMIN		lc/h
Weaving lane changes, LCW		lc/h
Non-weaving vehicle index, INW		
Non-weaving lane change, LCNW		lc/h
Total lane changes, LCALL		lc/h

 Weaving and Non-Weaving Speeds

Weaving intensity factor, W

Average weaving speed, SW	mi/h
Average non-weaving speed, SNW	mi/h

_____Weaving Segment Speed, Density, Level of Service and Capacity_____		
Weaving segment speed, S		mi/h
Weaving segment density, D		pc/mi/ln
Level of service, LOS	F	
Weaving segment v/c ratio	1.009	
Weaving segment flow rate, v	5824	pc/h
Weaving segment capacity, cW	5293	veh/h

_____Limitations on Weaving Segments_____

If limit reached, see note.

	Minimum	Maximum	Actual	Note
Weaving length (ft)	300	5187	909	a,b
		Maximum	Analyzed	
Density-based capacity, cIWL (pc/h/ln)		2250	1923	c
		Maximum	Analyzed	
v/c ratio		1.00	1.009	d

- Notes:
- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
 - Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments."
 - The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
 - Volumes exceed the weaving segment capacity. The level of service is F.