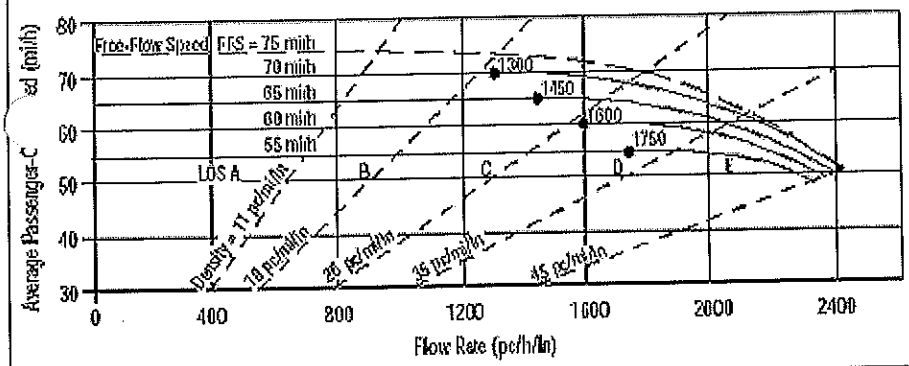
APPENDIX C

YEAR 2014
NO BUILD

BASIC FREEWAY SEGMENTS

I-595

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description WEST OF SW 136TH AVE

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6087 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	l/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1642	pc/h/ln
S	66.1	mi/h
D = v_p / S	24.9	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

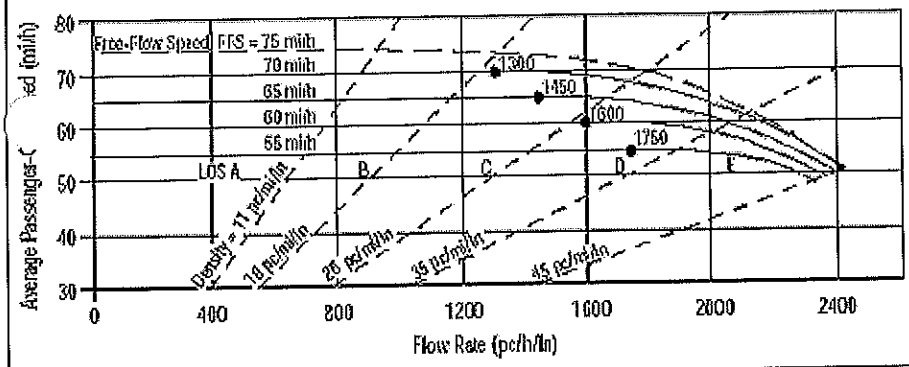
Glossary

N - Number of lanes	S - Speed
- Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description WEST OF SW 136TH AVE

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4815 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1299	pc/h/ln
S	66.4	mi/h
D = v_p / S	19.6	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

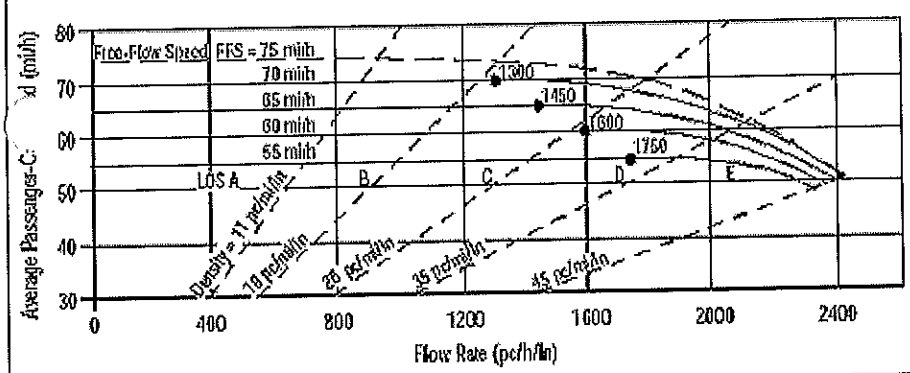
Glossary

N - Number of lanes	S - Speed
Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction of Travel	EASTBOUND
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description EB 595 EAST OF I95

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6516 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1758	pc/h/ln
S	65.4	mi/h
D = v_p / S	26.9	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

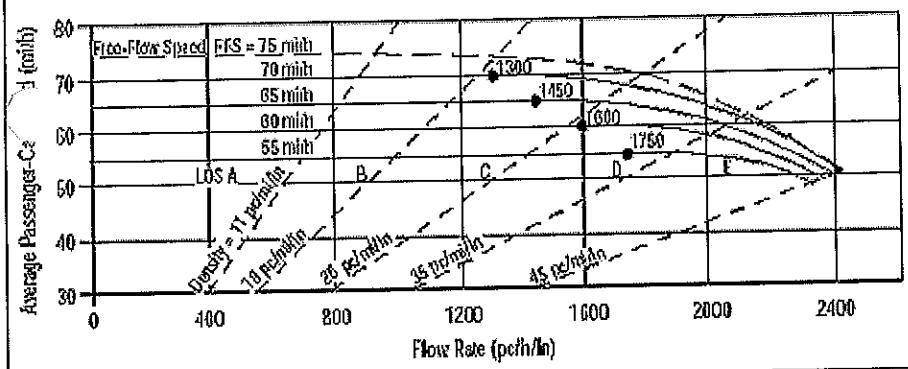
Glossary

N - Number of lanes	S - Speed
- Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (ft)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction of Travel	EASTBOUND
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description EB 595 EAST OF I95

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4601 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1241	pc/h/ln
S	66.4	mi/h
D = v_p / S	18.7	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

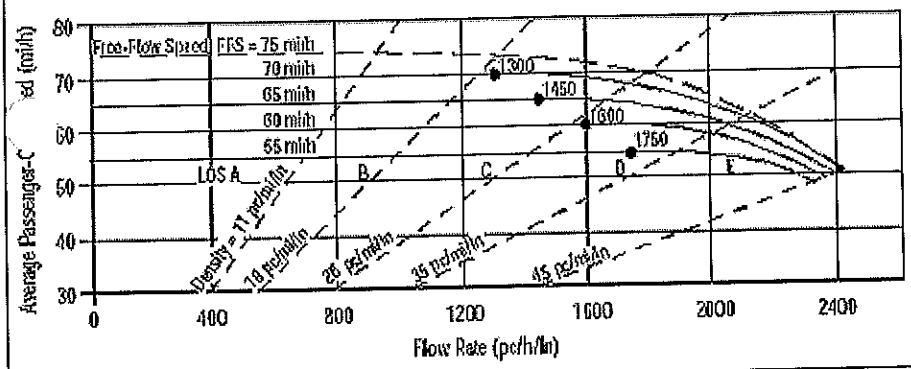
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction of Travel	WESTBOUND
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description WB 595 EAST OF SB 95 OFF RAMP

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4910 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	l/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1324	pc/h/ln
S	66.4	mi/h
D = v_p / S	19.9	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

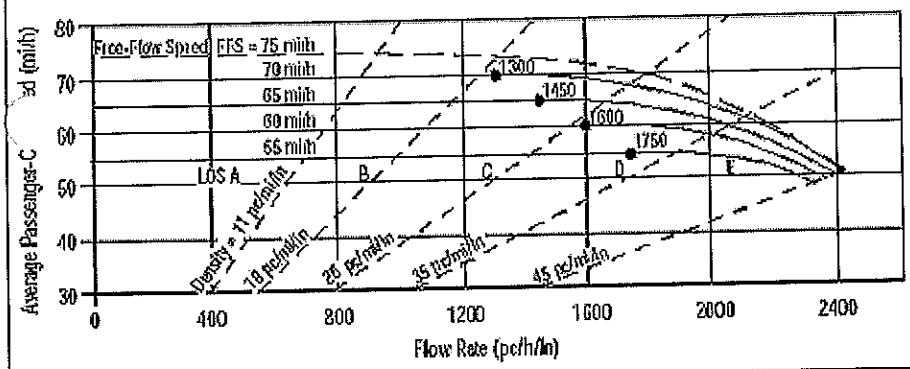
Glossary

N - Number of lanes	S - Speed
- Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction of Travel	WESTBOUND
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description WB 595 EAST OF SB 95 OFF RAMP

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6469 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1745	pc/h/ln
S	65.5	mi/h
D = v_p / S	26.6	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

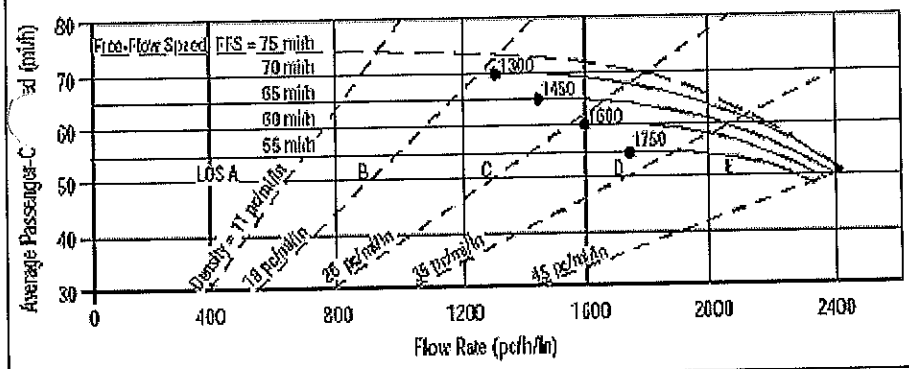
Glossary

N - Number of lanes	S - Speed
Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction of Travel	I-595 WB
From/To	Between I-95 SB and SR 7/TPKE
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description VIADUCT

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	7926 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	11.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	5	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	1.9	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	0.0	mi/h
FFS	66.0	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1710	pc/h/ln
S	65.4	mi/h
D = v_p / S	26.2	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

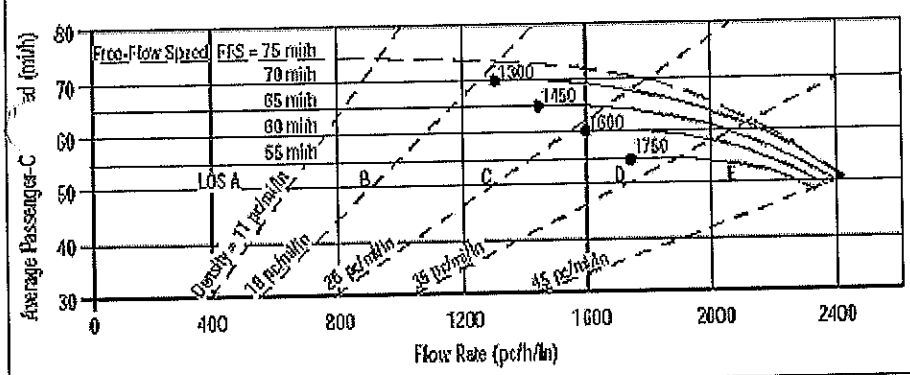
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction of Travel	I-595 WB
From/To	Between I-95 SB and SR 7/TPKE
Jurisdiction	
Analysis Year	2014 No Build

Project Description VIADUCT

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	10676 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length Up/Down %	mi
Driver type adjustment	1.00		

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	11.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	5	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	1.9	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	0.0	mi/h
FFS	66.0	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2304	pc/h/ln
S	54.5	mi/h
D = v_p / S	42.3	pc/mi/ln
LOS	E	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

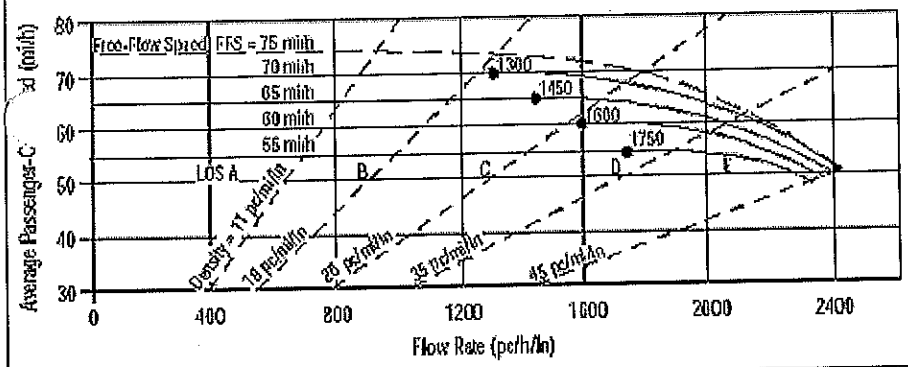
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	WESTBOUND
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description WB 595 BETWEEN DAVIE OFF RAMP AND UNIVERSITY OFF RAMP

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	8362 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	l/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2256	pc/h/ln
S	56.3	mi/h
D = v_p / S	40.1	pc/mi/ln
LOS	E	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

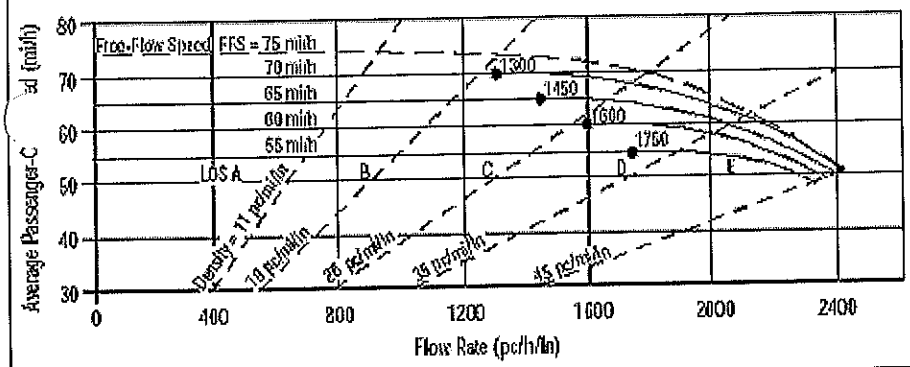
Glossary

N - Number of lanes	S - Speed
Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	WESTBOUND
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description WB 595 BETWEEN DAVIE OFF RAMP AND UNIVERSITY OFF RAMP

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	10310 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	l/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2781	pc/h/ln
S		mi/h
D = v_p / S		pc/mi/ln
LOS	F	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

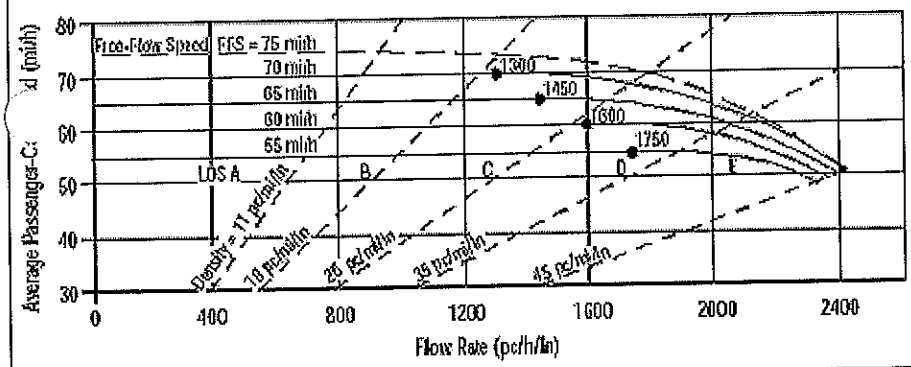
Glossary

N - Number of lanes	S - Speed
Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	WESTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description WEST OF SW 136TH AVE

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4894 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length Up/Down %	mi
Driver type adjustment	1.00		

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1320	pc/h/ln
S	66.4	mi/h
D = v_p / S	19.9	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

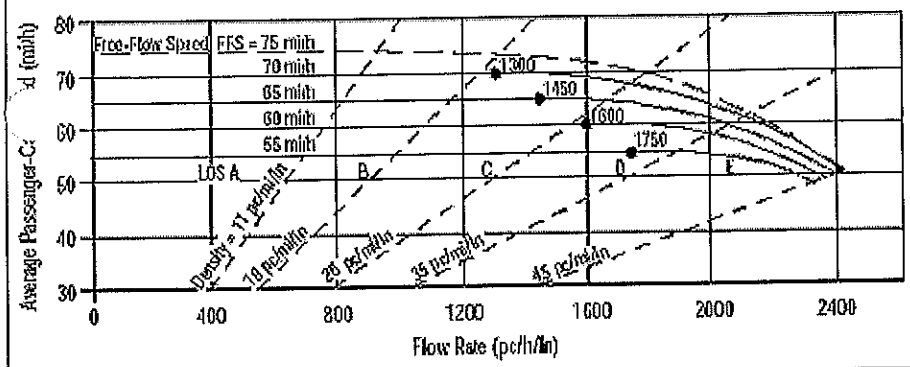
Glossary

N - Number of lanes	S - Speed
- Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	WESTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description WEST OF SW 136TH AVE

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6295 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1698	pc/h/ln
S	65.8	mi/h
D = v_p / S	25.8	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

RAMPS AND RAMP JUNCTIONS

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	EASTBOUND
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	2014 NO BUILD

Project Description EB 595 TO SR 7 OFF RAMP DIVERGE

Inputs

Upstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off

L_{up} = ft

Vu = veh/h

Terrain: Level

S_{FF} = 60.0 mph S_{FR} = 45.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp: ☑ Yes ☐ On ☐ No ☑ Off

L_{down} = 1276 ft

VD = 679 veh/h

Conversion to pc/h Under Base Conditions

	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	9929	0.95	Level	5	0	0.976	1.00	10713
Ramp	1216	0.95	Level	2	0	0.990	1.00	1293
UpStream								
DownStream	679	0.95	Level	2	0	0.990	1.00	722

Merge Areas | Diverge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 5400 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	10713	9200	Yes
V_{12}	5400	4400:All	Yes
$V_{FO} = V_F - V_R$	9420	9200	Yes
V_R	1293	2100	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 48.4 (pc/ mi /ln)

LOS= F (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Speed Estimation

D_s = 0.414 (Exhibit 25-19)

S_R= 52.5 mph (Exhibit 25-19)

S_0= 59.4 mph (Exhibit 25-19)

S = 55.7 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	EASTBOUND
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	2014 NO BUILD

Project Description EB 595 TO SR 7 OFF RAMP DIVERGE

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
Vu = veh/h

Terrain Level

S_{FF} = 60.0 mph S_{FR} = 45.0 mph
Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{down} = 1276 ft
VD = 858 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	7493	0.95	Level	5	0	0.976	1.00	8085
Ramp	958	0.95	Level	2	0	0.990	1.00	1019
UpStream								
DownStream	858	0.95	Level	2	0	0.990	1.00	912

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 4100 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	8085	9200	No
V_{12}	4100	4400:All	No
$V_{FO} = V_F - V_R$	7066	9200	No
V_R	1019	2100	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = 37.3 (pc/ mi /ln)

LOS= E (Exhibit 25-4)

Speed Estimation

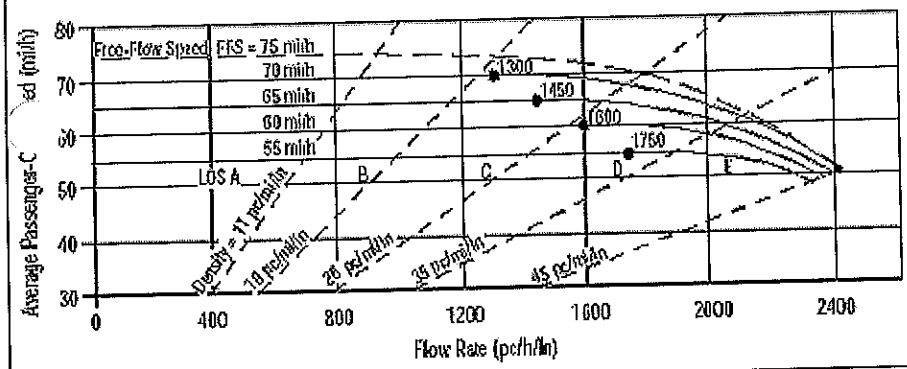
D_s = 0.390 (Exhibit 25-19)

S_R= 53.0 mph (Exhibit 25-19)

S_0= 62.0 mph (Exhibit 25-19)

S = 57.1 mph (Exhibit 25-15)

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction of Travel	EASTBOUND
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description EB 595 SR 84 OFF RAMP

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	8713 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	l/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2350	pc/h/ln
S	53.1	mi/h
D = v_p / S	44.3	pc/mi/ln
LOS	E	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

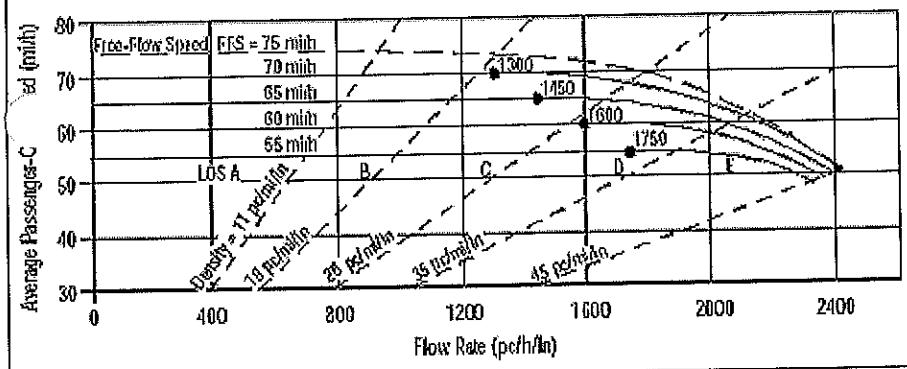
Glossary

N - Number of lanes	S - Speed
· Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (ft)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction of Travel	EASTBOUND
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description EB 595 SR 84 OFF RAMP

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6535 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	l/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1763	pc/h/ln
S	65.4	mi/h
D = v_p / S	27.0	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	EASTBOUND
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	2014 NO BUILD

Project Description TURNPIKE ON RAMP TO 595 EB

Inputs

01 Upstream Adj Ramp ☐ Yes ☐ On ☑ No ☐ Off L_{up} = ft Vu = veh/h	Terrain Level S_{FF} = 60.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	Downstream Adj Ramp ☑ Yes ☑ On ☐ No ☐ Off L_{down} = 1750 ft VD = 1015 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	8034	0.95	Level	5	0	0.976	1.00	8668
Ramp	1950	0.95	Level	2	0	0.990	1.00	2073
UpStream								
DownStream	1015	0.95	Level	2	0	0.990	1.00	1079

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.600 using Equation (Exhibit 25-5)

V_{12}= 5200 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	10741	6900	Yes
V_{R12}	7273	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 56.2 (pc/ mi /ln)

LOS = F (Exhibit 25-4)

Speed Estimation

M_S = 5.868 (Exibit 25-19)

S_R= -45.6 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	EASTBOUND
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	2014 NO BUILD

Project Description Turnpike On-Ramp

Inputs

01 Upstream Adj Ramp ☐ Yes ☐ On ☑ No ☐ Off L_{up} = ft Vu = veh/h	Terrain Level S_{FF} = 60.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	Downstream Adj Ramp ☑ Yes ☑ On ☐ No ☐ Off L_{down} = 1750 ft VD = 754 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	5677	0.95	Level	5	0	0.976	1.00	6125
Ramp	1510	0.95	Level	2	0	0.990	1.00	1605
UpStream								
DownStream	754	0.95	Level	2	0	0.990	1.00	802

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.600 using Equation (Exhibit 25-5)

V_{12}= 3674 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	7730	6900	Yes
V_{R12}	5279	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 40.9 (pc/ mi /ln)

LOS = F (Exhibit 25-4)

Speed Estimation

M_S = 1.014 (Exibit 25-19)

S_R= 41.7 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 44.7 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

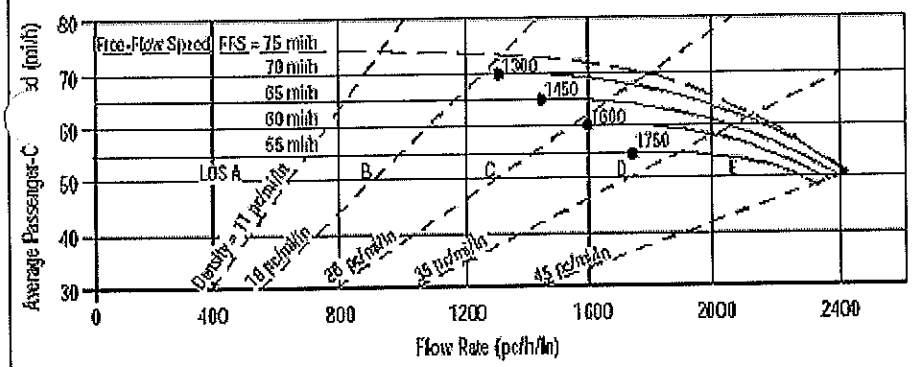
D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction of Travel	EASTBOUND
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description EB 595 SR7ON-Ramp

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	10999 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2967	pc/h/ln
S		mi/h
D = v_p / S		pc/mi/ln
LOS	F	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

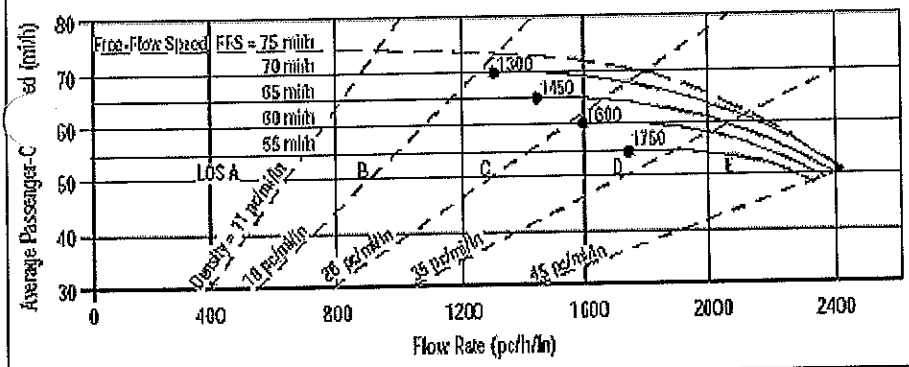
Glossary

N - Number of lanes	S - Speed
Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/7/04
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction of Travel	EASTBOUND
From/To	
Jurisdiction	
Analysis Year	2014 NO BUILD

Project Description EB 595 SR 7 ON RAMP

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	7941 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	l/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2142	pc/h/ln
S	59.4	mi/h
D = v_p / S	36.0	pc/mi/ln
LOS	E	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	WESTBOUND
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	AM Peak Volumes	Analysis Year	2014 NO BUILD

Project Description SR 84 ON RAMP TO WB 595 MERGE

Inputs

01 Upstream Adj Ramp ☐ Yes ☐ On ☑ No ☐ Off L_{up} = ft Vu = veh/h	Terrain Level S_{FF} = 60.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	Downstream Adj Ramp ☑ Yes ☑ On ☐ No ☐ Off L_{down} = 1243 ft VD = 1121 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	5020	0.95	Level	5	0	0.976	1.00	5416
Ramp	810	0.95	Level	2	0	0.990	1.00	861
UpStream								
DownStream	1121	0.95	Level	2	0	0.990	1.00	1192

Merge Areas | Diverge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.185 using Equation (Exhibit 25-5)

V_{12}= 999 pc/h

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	6277	9200	No
V_{R12}	1860	4600:All	No

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 17.7 (pc/ mi /ln)

LOS = B (Exhibit 25-4)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

M_S = 0.319 (Exibit 25-19)

S_R= 54.3 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 54.0 mph (Exhibit 25-14)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	WESTBOUND
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	PM Peak Volumes	Analysis Year	2014 NO BUILD

Project Description SR 84 ON RAMP TO WB 595 MERGE

Inputs

01 Upstream Adj Ramp ☐ Yes ☐ On ☑ No ☐ Off L_{up} = ft Vu = veh/h	Terrain Level S_{FF} = 60.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	Downstream Adj Ramp ☑ Yes ☑ On ☐ No ☐ Off L_{down} = 1243 ft VD = 860 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	6984	0.95	Level	5	0	0.976	1.00	7535
Ramp	1045	0.95	Level	2	0	0.990	1.00	1111
UpStream								
DownStream	860	0.95	Level	2	0	0.990	1.00	914

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.153 using Equation (Exhibit 25-5)

V_{12}= 1155 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	8646	9200	No
V_{R12}	2266	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 20.8 (pc/ mi /ln)

LOS = C (Exhibit 25-4)

Speed Estimation

M_S = 0.332 (Exibit 25-19)

S_R= 54.0 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 49.5 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	YLM	Freeway/Dir of Travel	WESTBOUND
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	AM Peak Volumes	Analysis Year	2014 NO BUILD

Project Description SR 7 SB ON RAMP TO WB 595 MERGE

Inputs

01

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

Vu = veh/h

Terrain Level

S_{FF} = 60.0 mph S_{FR} = 45.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp

☑ Yes ☑ On

☐ No ☐ Off

L_{down} = 1283 ft

VD = 536 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	5830	0.95	Level	5	0	0.976	1.00	6290
Ramp	1121	0.95	Level	2	0	0.990	1.00	1192
UpStream								
DownStream	536	0.95	Level	2	0	0.990	1.00	570

Merge Areas

Estimation of v_{12}

$$V_{12} = V_F (P_{FM})$$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.143 using Equation (Exhibit 25-5)

V_{12}= 900 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	7482	9200	No
V_{R12}	2092	4600:All	No

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$$

D_R = 19.4 (pc/ mi /ln)

LOS = B (Exhibit 25-4)

Speed Estimation

M_S = 0.326 (Exibit 25-19)

S_R= 54.1 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 51.9 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$$V_{12} = V_R + (V_F - V_R)P_{FD}$$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FI}=V_F		See Exhibit 25-14	
V_{12}		4400:All	
V_{FO} = V_F - V_R		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	WESTBOUND
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	PM Peak Volumes	Analysis Year	2014 NO BUILD

Project Description SR 7 SB ON RAMP TO WB 595 MERGE

Inputs

01 Upstream Adj Ramp ☐ Yes ☐ On ☑ No ☐ Off L_{up} = ft Vu = veh/h	Terrain Level S_{FF} = 60.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	Downstream Adj Ramp ☑ Yes ☑ On ☐ No ☐ Off L_{down} = 1283 ft VD = 679 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	8029	0.95	Level	5	0	0.976	1.00	8663
Ramp	860	0.95	Level	2	0	0.990	1.00	914
UpStream								
DownStream	679	0.95	Level	2	0	0.990	1.00	722

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.178 using Equation (Exhibit 25-5)

V_{12}= 1541 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	9577	9200	Yes
V_{R12}	2455	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 22.3 (pc/ mi /ln)

LOS = F (Exhibit 25-4)

Speed Estimation

M_S = 0.339 (Exibit 25-19)

S_R= 53.9 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 47.7 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	YLM	Freeway/Dir of Travel	WESTBOUND
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	AM Peak Volumes	Analysis Year	2014 NO BUILD

Project Description SR 7NB ON RAMP TO WB 595 MERGE

Inputs

01 Upstream Adj Ramp ☐ Yes ☐ On ☑ No ☐ Off L_{up} = ft Vu = veh/h	Terrain Level S_{FF} = 60.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	Downstream Adj Ramp ☑ Yes ☑ On ☐ No ☐ Off L_{down} = 1895 ft VD = 2200 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	6951	0.95	Level	5	0	0.976	1.00	7500
Ramp	536	0.95	Level	2	0	0.990	1.00	570
UpStream								
DownStream	2200	0.95	Level	2	0	0.990	1.00	2339

Merge Areas | Diverge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.221 using Equation (Exhibit 25-5)

V_{12}= 1657 pc/h

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	8070	9200	No
V_{R12}	2227	4600:All	No

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 20.7 (pc/ mi /ln)

LOS = C (Exhibit 25-4)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

M_S = 0.330 (Exibit 25-19)

S_R= 54.1 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 50.9 mph (Exhibit 25-14)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information | **Site Information**

Analyst	YLM	Freeway/Dir of Travel	WESTBOUND
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	PM Peak Volumes	Analysis Year	2014 NO BUILD

Project Description SR 7NB ON RAMP TO WB 595 MERGE

Inputs

01
Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
Vu = veh/h

Terrain Level

S_{FF} = 60.0 mph S_{FR} = 45.0 mph
Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1895 ft
VD = 2687 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	8889	0.95	Level	5	0	0.976	1.00	9591
Ramp	679	0.95	Level	2	0	0.990	1.00	722
UpStream								
DownStream	2687	0.95	Level	2	0	0.990	1.00	2857

Merge Areas | Diverge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM}= 0.202 using Equation (Exhibit 25-5)
V_{12}= 1936 pc/h

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-11)
V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	10313	9200	Yes
V_{R12}	2658	4600:All	No

Capacity Checks

	Actual	Maximum	LOS F?
V_{FI}=V_F		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 24.0 (pc/ mi /ln)
LOS = F (Exhibit 25-4)

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)
LOS= (Exhibit 25-4)

Speed Estimation

M_S = 0.350 (Exibit 25-19)
S_R= 53.7 mph (Exhibit 25-19)
S_0= N/A mph (Exhibit 25-19)
S= 46.4 mph (Exhibit 25-14)

Speed Estimation

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	YLM	Freeway/Dir of Travel	WESTBOUND
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	AM Peak Volumes	Analysis Year	2014 NO BUILD

Project Description: SR 84ON RAMP TO WB 595 MERGE (AFTER UNIVERSITY)

Inputs

01

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

Vu = veh/h

Terrain: Level

S_{FF} = 60.0 mph S_{FR} = 45.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp

☑ Yes ☑ On

☐ No ☐ Off

L_{down} = 2600 ft

VD = 747 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	6422	0.95	Level	5	0	0.976	1.00	6929
Ramp	810	0.95	Level	2	0	0.990	1.00	861
UpStream								
DownStream	747	0.95	Level	2	0	0.990	1.00	794

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.586 using Equation (Exhibit 25-5)

V_{12}= 4060 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	7790	6900	Yes
V_{R12}	4921	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 41.6 (pc/ mi /ln)

LOS = F (Exhibit 25-4)

Speed Estimation

M_S = 0.829 (Exibit 25-19)

S_R= 45.1 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 46.8 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	YLM	Freeway/Dir of Travel	WESTBOUND
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	PM Peak Volumes	Analysis Year	2014 NO BUILD

Project Description SR 84ON RAMP TO WB 595 MERGE (AFTER UNIVERSITY)

Inputs

01 Upstream Adj Ramp ☐ Yes ☐ On ☑ No ☐ Off L_{up} = ft Vu = veh/h	Terrain Level S_{FF} = 60.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	Downstream Adj Ramp ☑ Yes ☑ On ☐ No ☐ Off L_{down} = 2600 ft VD = 920 veh/h

Conversion to pc/h Under Base Conditions

	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	8690	0.95	Level	5	0	0.976	1.00	9376
Ramp	651	0.95	Level	2	0	0.990	1.00	692
UpStream								
DownStream	920	0.95	Level	2	0	0.990	1.00	978

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.586 using Equation (Exhibit 25-5)

V_{12}= 5493 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	10068	6900	Yes
V_{R12}	6185	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 51.5 (pc/ mi /ln)

LOS = F (Exhibit 25-4)

Speed Estimation

M_S = 2.187 (Exibit 25-19)

S_R= 20.6 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 25.9 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

D_s = (Exhibit 25-19)

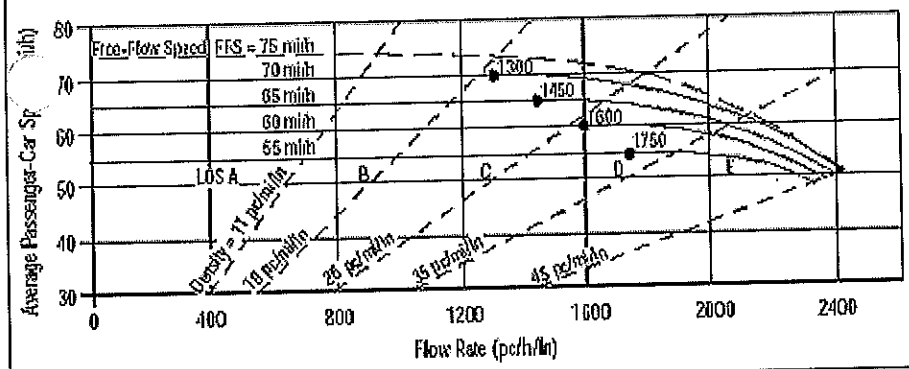
S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

TURNPIKE

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM PEAK VOLUMES

Site Information

Highway/Direction of Travel	TURNPIKE NB
From/To	
Jurisdiction	
Analysis Year	2014 No Build

Project Description GRIFFIN ON-RAMP

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6920 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.66	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	0.8	mi/h
f_N	1.5	mi/h
FFS	67.7	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1867	pc/h/ln
S	65.3	mi/h
D = v_p / S	28.6	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

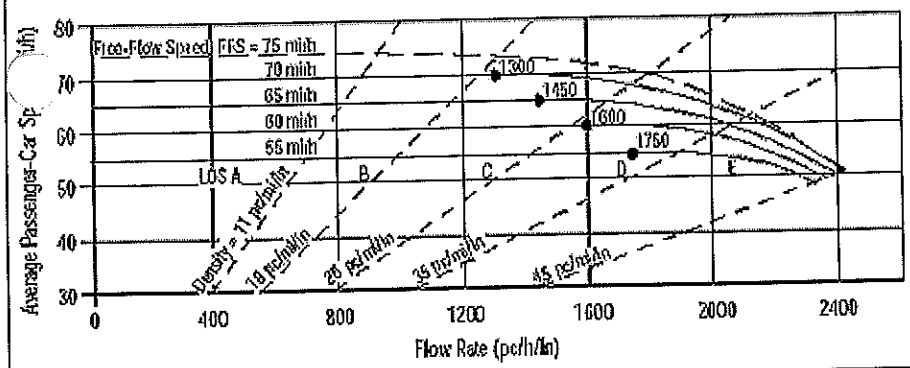
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM PEAK VOLUMES

Site Information

Highway/Direction of Travel	TURNPIKE NB
From/To	NB
Jurisdiction	
Analysis Year	2014 No Build

Project Description GRIFFIN ON-RAMP

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	7260 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.66	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	0.8	mi/h
f_N	1.5	mi/h
FFS	67.7	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1958	pc/h/ln
S	64.0	mi/h
D = v_p / S	30.6	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	TURNPIKE NB
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	AM Peak Volumes	Analysis Year	2014 No Build

Project Description I-595 ON RAMP MERGE TO NB TURNPIKE

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☐ No ☐ Off
L_{up} = ft
Vu = veh/h

Terrain

S_{FF} = 70.0 mph S_{FR} = 50.0 mph
Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☐ No ☐ Off
L_{down} = ft
VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	3920	0.95	Level	5	0	0.976	1.00	4229
Ramp	2190	0.95	Level	2	0	0.990	1.00	2328
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.555 using Equation (Exhibit 25-5)

V_{12}= 2347 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	6557	7200	No
V_{R12}	4675	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 22.7 (pc/ mi /ln)

LOS = F (Exhibit 25-4)

Speed Estimation

M_S = 0.449 (Exibit 25-19)

S_R= 57.4 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 59.4 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	YLM	Freeway/Dir of Travel	TURNPIKE NB
Agency or Company	RSH	Junction	
Date Performed	9/7/04	Jurisdiction	
Analysis Time Period	PM Peak Volumes	Analysis Year	2014 No Build

Project Description I-595 ON RAMP MERGE TO NB TURNPIKE

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☐ No ☐ Off
L_{up} = ft
Vu = veh/h

Terrain

S_{FF} = 70.0 mph S_{FR} = 50.0 mph
Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☐ No ☐ Off
L_{down} = ft
VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	4600	0.95	Level	5	0	0.976	1.00	4963
Ramp	2352	0.95	Level	2	0	0.990	1.00	2501
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.555 using Equation (Exhibit 25-5)

V_{12}= 2754 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	7464	7200	Yes
V_{R12}	5255	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 27.1 (pc/ mi /ln)

LOS = F (Exhibit 25-4)

Speed Estimation

M_S = 0.778 (Exibit 25-19)

S_R= 48.2 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 52.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

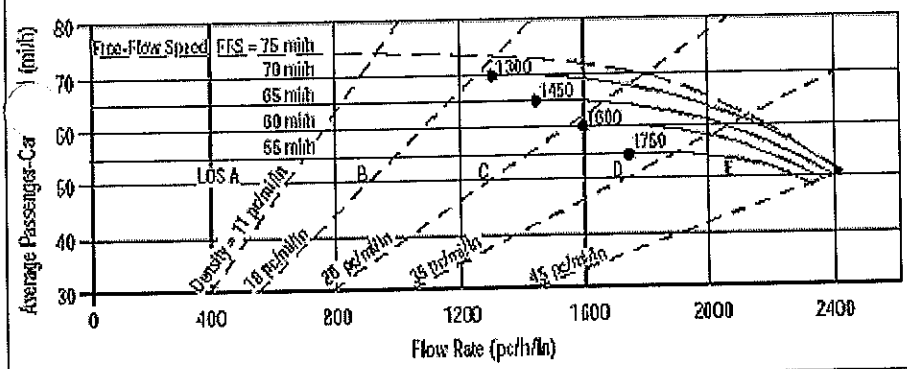
D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM PEAK VOLUMES

Site Information

Highway/Direction of Travel	TURNPIKE SB
From/To	SB
Jurisdiction	
Analysis Year	2014 No Build

Project Description GRIFFIN OFF-RAMP

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	7020 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.66	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	0.8	mi/h
f_N	1.5	mi/h
FFS	67.7	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1894	pc/h/ln
S	64.9	mi/h
D = v_p / S	29.2	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

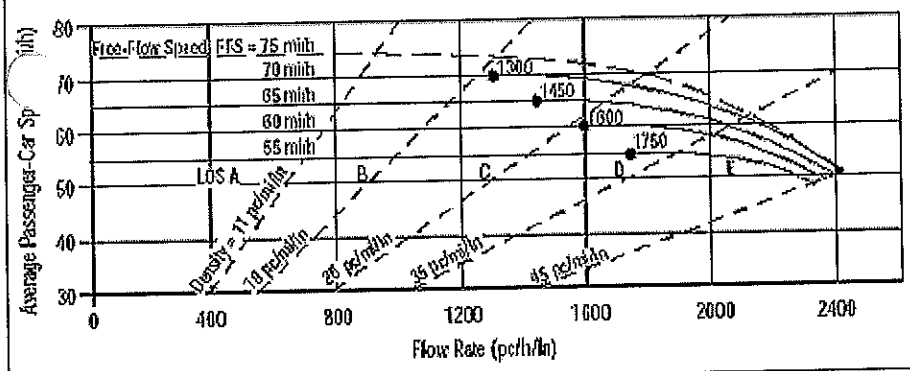
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM PEAK VOLUMES

Site Information

Highway/Direction of Travel	TURNPIKE SB
From/To	SB
Jurisdiction	
Analysis Year	2014 No Build

Project Description GRIFFIN OFF-RAMP

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6680 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.66	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	0.8	mi/h
f_N	1.5	mi/h
FFS	67.7	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1802	pc/h/ln
S	66.0	mi/h
D = v_p / S	27.3	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

MAJOR MERGE AND DIVERGE

Major Diverge Area Analysis

When a two-lane-off-ramp results in a lane drop, it is treated as a major diverge segment. In this case, the entering demand and the departing demand on each exit leg must be checked against the capacity of the approximate entry or departure leg. Equation 25-12 allows the density across all freeway lanes to be estimated for a distance of 1,500 ft upstream of the gore area.
This density can be compared with the LOS criteria in Exhibit 24-4 to determine the LOS in the diverge area.

$D = 0.0109 * (V_F / N)$ (25-12)

D = average density across all freeway lanes for a distance of 1,500 ft upstream of diverge (pc/mi/ln)
V_F = freeway flow rate approaching diverge area (pc/h)
N = number of freeway lanes

Exhibit 25-4. LOS Criteria for Merge and Diverge Areas

LOS	Density (pc/mi/ln)
A	<= 10
B	> 10 - 20
C	> 20 - 28
D	> 28 - 35
E	> 35
F	Demand exceeds capacity

Determining Flow Rate (pc/h)

$V_F = V_i / (PHF \times f_{hv} \times f_p)$

V_F = flow rate for movement i under base conditions during peak 15 min of hour (pc/h)
V_i = hourly volume for movement i (vph)

PHF = peak-hour factor
freeway - 0.95
ramp - 0.95

f_{hv} = adjustment factor for heavy vehicles
freeway - 0.976
ramp - 0.99

f_p = adjustment factor for drive population
freeway - 1.0
ramp - 1.0

Special Cases

When a two-lane, right-hand off-ramp has a single deceleration lane and the left-hand ramp lane splits from Lane 1 of the freeway at the gore area, without a deceleration lane, the following formula needs to be used:

$V_{12} = V_R + (V_F - V_R)(P_{FD})$ $\qquad$ $V_{12*} = V_{12} / (PHF \times f_{hv} \times f_p)$

V_{12} = hourly volume for movement (vph)

V_{12*} = flow rate for movement under base conditions during peak 15 min of hour (pc/h)

PHF = peak-hour factor
freeway - 0.95
ramp - 0.95

P_{FD}=0.450

f_{hv} = adjustment factor for heavy vehicles
freeway - 0.976
ramp - 0.99

f_p = adjustment factor for drive population
freeway - 1.0
ramp - 1.0

$D_R = 4.252 + 0.0086V_{12*} - 0.009L_D$ (Eq.25-10)

D_R= density of diverge influence area(pc/mi/ln)

V_{12*}= flow rate entering ramp influence area(pc/h)

L_D= Length of Deceleration Lane (Ft)

HIGHWAY CAPACITY MANUAL ANALYSIS

Major Merge Area Analysis

Where a two-lane on-ramp results in a lane addition, the junction is classified as a major merge area. The Highway Capacity Manual (HCM) analysis is limited to checking capacities on approaching legs and the departing freeway. The capacity of each entering leg and the departing freeway is computed using Exhibit 25-3 (p. 25-4) and Exhibit 25-7 (p. 25-8) in the HCM 2000.

Exhibit 25-3. Approximate Capacity of Ramp Roadways

Free Flow Speed of Ramp , S_{fr} (mi.h)	Capacity (pc/h)	
	Single-Lane Ramps	Two-Lane Ramps
> 50	2200	4400
> 40 - 50	2100	4100
> 30 - 40	2000	3800
>= 20 - 30	1900	3500
< 20	1800	3200

Exhibit 25-7. Capacity Values for Merge Areas

Freeway Free-Flow Speed (mi/h)	Maximum Downstream Freeway Flow, v (pc/h) Number of Lanes in One Direction				Max. Desirable Flow Entering Influence Area, V_{r12} (pc/h)
	2	3	4	> 4	
>= 70	4800	7200	9600	2400/ln	4600
65	4700	7050	9400	2350/ln	4600
60	4600	6900	9200	2300/ln	4600
55	4500	6750	9000	2250/ln	4600

Determining Flow Rate (pc/h)

$v_i = V_i / (PHF \times f_{hv} \times f_p)$ (25-1)

v_i = flow rate for movement i under base conditions during peak 15 min of hour (pc/h)
V_i = hourly volume for movement i (vph)

PHF = peak-hour factor
freeway - 0.95
ramp - 0.95

f_{hv} = adjustment factor for heavy vehicles
freeway - 0.976
ramp - 0.99

f_p = adjustment factor for drive population
freeway - 1.0
ramp - 1.0

2014 No Build Conditions
Major Merge/Diverge Analysis

MERGE ANALYSIS

A1.1) NB I-95 On-Ramp to EB I-595 (AM)

Approaching Freeway Volume:
Vi = 3,716 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 4008 (pc/h) < capacity = 6,900

Ramp Volume:
Vi = 1,267 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 1347 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 4,983 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 5374 (pc/h) < capacity = 9,200

A1.2) NB I-95 On-Ramp to EB I-595 (PM)

Approaching Freeway Volume:
Vi = 2,323 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 2505 (pc/h) < capacity = 6,900

Ramp Volume:
Vi = 1,029 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 1094 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 3,352 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 3615 (pc/h) < capacity = 9,200

A2.1) NB I-95 On-Ramp to WB I-595 (AM)

Approaching Freeway Volume:
Vi = 2,588 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 2791 (pc/h) < capacity = 4,600

Ramp Volume:
Vi = 2,595 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 2759 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 5,183 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 5590 (pc/h) < capacity = 6,900

2014 No Build Conditions
Major Merge/Diverge Analysis

A2.2) NB I-95 On-Ramp to WB I-595 (PM)

Approaching Freeway Volume:
Vi = 3,959 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 4270 (pc/h) < capacity = 4,600

Ramp Volume:
Vi = 3,250 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 3456 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 7,209 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 7775 (pc/h) > capacity = 6,900

A 3.1) SB I-95 On-Ramp to WB I-595 (AM)

Approaching Freeway Volume:
Vi = 5,183 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 5,590 (pc/h) < capacity = 6,900

Ramp Volume:
Vi = 2,743 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 2,917 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 7,926 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 8,548 (pc/h) < capacity = 11,500

A 3.2) SB I-95 On-Ramp to WB I-595 (PM)

Approaching Freeway Volume:
Vi = 7,209 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 7,775 (pc/h) < capacity = 6,900

Ramp Volume:
Vi = 3,467 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 3,686 (pc/h) < capacity = 4,100

A 4.1) I-595 On-Ramp to SB Turnpike (AM)
Departing Freeway Volume:
Vi = 10,676 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 11,514 (pc/h) < capacity = 11,500

2014 No Build Conditions
Major Merge/Diverge Analysis

Approaching Freeway Volume:
Vi = 4,360 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 4702 (pc/h) < capacity = 7,200

Ramp Volume:
Vi = 2,660 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 2828 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 7,020 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 7571 (pc/h) < capacity = 9,600

A4.2) I-595 On-Ramp to SB Turnpike (PM)

Approaching Freeway Volume:
Vi = 3,680 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 3969 (pc/h) < capacity = 7,200

Ramp Volume:
Vi = 3,000 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 3190 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 6,680 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 7204 (pc/h) < capacity = 9,600

2014 No Build Conditions
Major Merge/Diverge Analysis

DIVERGE ANALYSIS

B 1.1 EB I-595 Off-Ramp to NB I-95 (AM)

Vi = 10,999 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 11,863 (pc/h)

N = 4

Therefore **D = 32.33 pc/mi/ln**

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 32.33> 28 - 35 Exhibit 25-4 gives LOS as D in the diverge area.

Level of Service = D

B 1.2 EB I-595 Off-Ramp to NB I-95 (PM)

Vi = 7,941 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 8,564 (pc/h)

N = 4

Therefore **D = 23.34 pc/mi/ln**

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 23.34 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 2.1 EB I-595 Off-Ramp to SB I-95 (AM)

Vi = 7,166 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 7,729 (pc/h)

N = 3

Therefore **D = 28.08 pc/mi/ln**

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 28.08 > 28 - 5 Exhibit 25-4 gives LOS as D in the diverge area.

Level of Service = D

2014 No Build Conditions
Major Merge/Diverge Analysis

B 2.2 EB I-595 Off-Ramp to SB I-95 (PM)

Vi = 4,993 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 5,385 (pc/h)

N = 3

Therefore **D = 19.57 pc/mi/ln**

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 19.57 > 10 - 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 3.I WB I-595 Off-Ramp to SB I-95 (AM)

Vi= 4,910 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 5296 (pc/h)

N = 4

Therefore D= 14.43 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 14.43>10-20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 3.2 WB I-595 Off-Ramp to SB I-95 (PM)

Vi= 6,469 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 6977 (pc/h)

N = 4

Therefore D= 19.01 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 19.01> 10 -20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

2014 No Build Conditions
Major Merge/Diverge Analysis

B 4.1 WB I-595 Off-Ramp NB I-95 (AM)

Vi= 3,908 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 4215 (pc/h)

N = 3

Therefore D= 15.31 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 15.31> 10-20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 4.2 WB I-595 Off-Ramp NB I-95 (PM)

Vi= 5,176 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 5582 (pc/h)

N = 3

Therefore D= 20.28 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 20.28> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 5.1 WB I-595 Off-Ramp SR7/TURNPIKE (AM)

Vi= 7,926 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 8548 (pc/h)

N = 5

Therefore D= 18.64 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 18.64> 10-20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 5.2 WB I-595 Off-Ramp SR7/TURNPIKE (PM)

Vi= 10,676 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 11514 (pc/h)

N = 5

Therefore D= 25.10 pc/mi/ln

2014 No Build Conditions
Major Merge/Diverge Analysis

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 25.10> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 6.1 WB I-595 Off-Ramp University Drive (AM)

Vi= 8,362 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **9019 (pc/h)**

N = 4

Therefore D= 24.58 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 24.58> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 6.2 WB I-595 Off-Ramp University Drive (PM)

Vi= 10,310 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **11119 (pc/h)**

N = 4

Therefore D= 30.30 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 30.3> 28- 35 Exhibit 25-4 gives LOS as D in the diverge area.

Level of Service = D

B 7.1 NB Turnpike Off-Ramp I-595 (AM)

Vi= 6,920 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **7463 (pc/h)**

N = 4

Therefore D= 20.34 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 20.34> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

2014 No Build Conditions
Major Merge/Diverge Analysis

B 7.2 NB Turnpike Off-Ramp I-595 (PM)

Vi= 7,260 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 7830 (pc/h)

N = 4

Therefore D= 21.34 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 21.34> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 8.1 SB Turnpike Off-Ramp I-595 (AM)

V_F = 7,210 PHF = 0.95 fhv = 0.976 fp = 1.00 Pfd = 0.45

$V_{12}=V_R+(V_F-V_R)(P_{FD})$ V_R= 2850 V_{12}= 4812

V_{12}= 5189.819 $L_{D=}$ 2000

D = 30.88 pc/mi/ln

Therefore

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 30.88> 28-35 Exhibit 25-4 gives LOS as D in the diverge area.

Level of Service = D

B 8.2 SB Turnpike Off-Ramp I-595 (PM)

V_F = 6,440 PHF = 0.95 fhv = 0.976 fp = 1.00 Pfd = 0.45

$V_{12}=V_R+(V_F-V_R)(P_{FD})$ V_R= 2760 V_{12}= 4416

V_{12}= 4762.726 $L_{D=}$ 2000

D = 27.21 pc/mi/ln

Therefore

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 22.09> 20-28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

WEAVING

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM Peak Period

Site Information

Freeway/Dir of Travel	I-595 EB
Weaving Seg Location	Between SW 136 and Flamingo
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	5	Volume ratio, VR	0.35
Weaving seg length, L (ft)	650	Weaving ratio, R	0.38
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5060	0.95	5	0	1.5	1.2	0.976	1.00	5459
Vo2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw1	1689	0.95	2	0	1.5	1.2	0.990	1.00	1795
Vw2	1027	0.95	2	0	1.5	1.2	0.990	1.00	1091
Vw				2886	Vnw				5459
V									8345

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			5.05	0.79
Weaving and non-weaving speeds, Si (mi/h)			23.26	42.96

Number of lanes required for unconstrained operation, Nw 2.05
Maximum number of lanes, Nw (max) 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	33.23
Weaving segment density, D (pc/mi/ln)	50.22
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	8465
Capacity as a 15-minute flow rate, c (veh/h)	8259
Capacity as a full-hour volume, c_h (veh/h)	7846

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 EASTBOUND
Weaving Seg Location	BETWEEN SW136AVE AND FLAMINGO
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	5	Volume ratio, VR	0.35
Weaving seg length, L (ft)	650	Weaving ratio, R	0.39
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	fHV	fp	v
Vo1	3974	0.95	5	0	1.5	1.2	0.976	1.00	4287
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1337	0.95	2	0	1.5	1.2	0.990	1.00	1421
Vw2	841	0.95	2	0	1.5	1.2	0.990	1.00	894
Vw				2315	Vnw				4287
V									6602

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			4.06	0.59
Weaving and non-weaving speeds, Si (mi/h)			24.89	46.46

Number of lanes required for unconstrained operation, Nw 1.99

Maximum number of lanes, Nw (max) 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ If Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	35.63
Weaving segment density, D (pc/mi/ln)	37.06
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	8465
Capacity as a 15-minute flow rate, c (veh/h)	8259
Capacity as a full-hour volume, c_h (veh/h)	7846

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 EASTBOUND
Weaving Seg Location	BETWEEN FLAMINGO AND HIATUS
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.24
Weaving seg length, L (ft)	1100	Weaving ratio, R	0.21
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6319	0.95	5	0	1.5	1.2	0.976	1.00	6817
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1630	0.95	2	0	1.5	1.2	0.990	1.00	1732
Vw2	430	0.95	2	0	1.5	1.2	0.990	1.00	457
Vw				2189	Vnw				6817
V									9006

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			3.72	0.57
Weaving and non-weaving speeds, Si (mi/h)			25.59	46.84

Number of lanes required for unconstrained operation, Nw 1.45
Maximum number of lanes, Nw (max) 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	38.97
Weaving segment density, D (pc/mi/ln)	57.77
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7134
Capacity as a 15-minute flow rate, c (veh/h)	6960
Capacity as a full-hour volume, c_h (veh/h)	6612

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 EASTBOUND
Weaving Seg Location	BETWEEN FLAMINGO AND HIATUS
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.24
Weaving seg length, L (ft)	1100	Weaving ratio, R	0.21
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	4971	0.95	5	0	1.5	1.2	0.976	1.00	5363
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1289	0.95	2	0	1.5	1.2	0.990	1.00	1370
Vw2	340	0.95	2	0	1.5	1.2	0.990	1.00	361
Vw				1731	Vnw				5363
V									7094

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.15	0.00		
b (Exhibit 24-6)	2.20	4.00		
c (Exhibit 24-6)	0.97	1.30		
d (Exhibit 24-6)	0.80	0.75		
Weaving intensity factor, Wi	1.27	0.73		
Weaving and non-weaving speeds, Si (mi/h)	37.05	43.83		

Number of lanes required for unconstrained operation, Nw 1.40
Maximum number of lanes, Nw (max) 1.40

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	41.96
Weaving segment density, D (pc/mi/ln)	42.27
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	7128
Capacity as a 15-minute flow rate, c (veh/h)	6954
Capacity as a full-hour volume, c_h (veh/h)	6606

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 EASTBOUND
Weaving Seg Location	BETWEEN HIATUS AND NOB HILL
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.18
Weaving seg length, L (ft)	1030	Weaving ratio, R	0.44
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	7077	0.95	5	0	1.5	1.2	0.976	1.00	7635
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	872	0.95	2	0	1.5	1.2	0.990	1.00	927
Vw2	680	0.95	2	0	1.5	1.2	0.990	1.00	722
Vw				1649	Vnw				7635
V									9284

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.15	0.00		
b (Exhibit 24-6)	2.20	4.00		
c (Exhibit 24-6)	0.97	1.30		
d (Exhibit 24-6)	0.80	0.75		
Weaving intensity factor, Wi	1.54	0.88		
Weaving and non-weaving speeds, Si (mi/h)	34.71	41.61		

Number of lanes required for unconstrained operation, Nw 1.18
Maximum number of lanes, Nw (max) 1.40

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	40.19
Weaving segment density, D (pc/mi/ln)	57.75
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7476
Capacity as a 15-minute flow rate, c (veh/h)	7294
Capacity as a full-hour volume, c_h (veh/h)	6929

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 EASTBOUND
Weaving Seg Location	BETWEEN HIATUS AND NOB HILL
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.18
Weaving seg length, L (ft)	1030	Weaving ratio, R	0.43
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5550	0.95	5	0	1.5	1.2	0.976	1.00	5988
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	710	0.95	2	0	1.5	1.2	0.990	1.00	754
Vw2	540	0.95	2	0	1.5	1.2	0.990	1.00	574
Vw				1328	Vnw				5988
V									7316

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.15	0.00		
b (Exhibit 24-6)	2.20	4.00		
c (Exhibit 24-6)	0.97	1.30		
d (Exhibit 24-6)	0.80	0.75		
Weaving intensity factor, Wi	1.23	0.65		
Weaving and non-weaving speeds, Si (mi/h)	37.43	45.24		

Number of lanes required for unconstrained operation, Nw 1.16
Maximum number of lanes, Nw (max) 1.40

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	43.59
Weaving segment density, D (pc/mi/ln)	41.96
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	7452
Capacity as a 15-minute flow rate, c (veh/h)	7270
Capacity as a full-hour volume, c_h (veh/h)	6906

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 EASTBOUND
Weaving Seg Location	BETWEEN NOB HILL AND PINE IS
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.22
Weaving seg length, L (ft)	1000	Weaving ratio, R	0.40
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	fHV	fp	v
Vo1	6947	0.95	5	0	1.5	1.2	0.976	1.00	7495
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1223	0.95	2	0	1.5	1.2	0.990	1.00	1300
Vw2	810	0.95	2	0	1.5	1.2	0.990	1.00	861
Vw				2161	Vnw				7495
V									9656

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.15	0.00		
b (Exhibit 24-6)	2.20	4.00		
c (Exhibit 24-6)	0.97	1.30		
d (Exhibit 24-6)	0.80	0.75		
Weaving intensity factor, Wi	1.78	1.10		
Weaving and non-weaving speeds, Si (mi/h)	32.99	38.78		

Number of lanes required for unconstrained operation, Nw 1.37
Maximum number of lanes, Nw (max) 1.40

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	37.31
Weaving segment density, D (pc/mi/ln)	64.70
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7160
Capacity as a 15-minute flow rate, c (veh/h)	6985
Capacity as a full-hour volume, c_h (veh/h)	6636

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 EASTBOUND
Weaving Seg Location	BETWEEN NOB HILL AND PINE IS
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.23
Weaving seg length, L (ft)	1000	Weaving ratio, R	0.39
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5440	0.95	5	0	1.5	1.2	0.976	1.00	5869
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	997	0.95	2	0	1.5	1.2	0.990	1.00	1059
Vw2	650	0.95	2	0	1.5	1.2	0.990	1.00	691
Vw				1750	Vnw				5869
V									7619

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.15	0.00		
b (Exhibit 24-6)	2.20	4.00		
c (Exhibit 24-6)	0.97	1.30		
d (Exhibit 24-6)	0.80	0.75		
Weaving intensity factor, Wi	1.43	0.83		
Weaving and non-weaving speeds, Si (mi/h)	35.58	42.38		

Number of lanes required for unconstrained operation, Nw 1.35
Maximum number of lanes, Nw (max) 1.40

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	40.60
Weaving segment density, D (pc/mi/ln)	46.92
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7123
Capacity as a 15-minute flow rate, c (veh/h)	6949
Capacity as a full-hour volume, c_h (veh/h)	6602

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	EASTBOUND I-595
Weaving Seg Location	PINE ISLAND AND UNIVERSITY
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.34
Weaving seg length, L (ft)	500	Weaving ratio, R	0.45
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6330	0.95	5	0	1.5	1.2	0.976	1.00	6829
Vo2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw1	1840	0.95	2	0	1.5	1.2	0.990	1.00	1956
Vw2	1492	0.95	2	0	1.5	1.2	0.990	1.00	1586
Vw				3542	Vnw				6829
V									10371

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			9.48	1.68
Weaving and non-weaving speeds, Si (mi/h)			19.77	33.66

Number of lanes required for unconstrained operation, Nw: 1.68

Maximum number of lanes, Nw (max): 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	27.15
Weaving segment density, D (pc/mi/ln)	95.51
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	5711
Capacity as a 15-minute flow rate, c (veh/h)	5572
Capacity as a full-hour volume, c_h (veh/h)	5293

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	EASTBOUND I-595
Weaving Seg Location	PINE ISLAND AND UNIVERSITY
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.37
Weaving seg length, L (ft)	500	Weaving ratio, R	0.41
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	4759	0.95	5	0	1.5	1.2	0.976	1.00	5134
Vo2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw1	1678	0.95	2	0	1.5	1.2	0.990	1.00	1783
Vw2	1164	0.95	2	0	1.5	1.2	0.990	1.00	1237
Vw				3020	Vnw				5134
V									8154

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			7.87	1.34
Weaving and non-weaving speeds, Si (mi/h)			20.64	36.39

Number of lanes required for unconstrained operation, Nw 1.71
Maximum number of lanes, Nw (max) 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	28.37
Weaving segment density, D (pc/mi/ln)	71.85
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	5660
Capacity as a 15-minute flow rate, c (veh/h)	5522
Capacity as a full-hour volume, c_h (veh/h)	5246

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RSH
Date Performed	9/7/04
Analysis Time Period	AM Peak Hour

Site Information

Freeway/Dir of Travel	Eastbound
Weaving Seg Location	Between University and Davie
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	C
Weaving number of lanes, N	5	Volume ratio, VR	0.32
Weaving seg length, L (ft)	2300	Weaving ratio, R	0.14
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	fHV	fp	v
Vo1	7350	0.95	5	0	1.5	1.2	0.976	1.00	7930
Vo2	15	0.95	2	0	1.5	1.2	0.990	1.00	15
Vw1	3004	0.95	2	0	1.5	1.2	0.990	1.00	3193
Vw2	472	0.95	2	0	1.5	1.2	0.990	1.00	501
Vw				3694	Vnw				7945
V									11639

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.30	6.00		
c (Exhibit 24-6)	0.80	1.10		
d (Exhibit 24-6)	0.60	0.60		
Weaving intensity factor, Wi	0.72	0.51		
Weaving and non-weaving speeds, Si (mi/h)	44.14	48.16		

Number of lanes required for unconstrained operation, Nw: 2.51
Maximum number of lanes, Nw (max): 3.00

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	46.80
Weaving segment density, D (pc/mi/ln)	49.74
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	10184
Capacity as a 15-minute flow rate, c (veh/h)	9936
Capacity as a full-hour volume, c_h (veh/h)	9439

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RSH
Date Performed	9/7/04
Analysis Time Period	PM Peak Hour

Site Information

Freeway/Dir of Travel	Eastbound
Weaving Seg Location	Between University and Davie
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	C
Weaving number of lanes, N	5	Volume ratio, VR	0.33
Weaving seg length, L (ft)	2300	Weaving ratio, R	0.13
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5552	0.95	5	0	1.5	1.2	0.976	1.00	5990
Vo2	15	0.95	2	0	1.5	1.2	0.990	1.00	15
Vw1	2406	0.95	2	0	1.5	1.2	0.990	1.00	2557
Vw2	371	0.95	2	0	1.5	1.2	0.990	1.00	394
Vw				2951	Vnw				6005
V									8956

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.30	6.00		
c (Exhibit 24-6)	0.80	1.10		
d (Exhibit 24-6)	0.60	0.60		
Weaving intensity factor, Wi	0.59	0.40		
Weaving and non-weaving speeds, Si (mi/h)	46.39	50.65		

Number of lanes required for unconstrained operation, Nw 2.51
Maximum number of lanes, Nw (max) 3.00

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	49.16
Weaving segment density, D (pc/mi/ln)	36.43
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	9974
Capacity as a 15-minute flow rate, c (veh/h)	9731
Capacity as a full-hour volume, c_h (veh/h)	9244

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YM
Agency/Company	RSH
Date Performed	9/7/04
Analysis Time Period	AM Peak Hour

Site Information

Freeway/Dir of Travel	Eastbound
Weaving Seg Location	Between Davie and Turnpike
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.27
Weaving seg length, L (ft)	1960	Weaving ratio, R	0.44
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	8477	0.95	5	0	1.5	1.2	0.976	1.00	9146
Vo2	363	0.95	2	0	1.5	1.2	0.990	1.00	385
Vw1	1877	0.95	2	0	1.5	1.2	0.990	1.00	1995
Vw2	1452	0.95	2	0	1.5	1.2	0.990	1.00	1543
Vw				3538	Vnw				9531
V									13069

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.76	0.50		
Weaving and non-weaving speeds, Si (mi/h)	43.49	48.40		

Number of lanes required for unconstrained operation, Nw: 1.53
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	46.96
Weaving segment density, D (pc/mi/ln)	55.66
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	10568
Capacity as a 15-minute flow rate, c (veh/h)	10310
Capacity as a full-hour volume, c_h (veh/h)	9794

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YM
Agency/Company	RSH
Date Performed	9/7/04
Analysis Time Period	PM Peak Hour

Site Information

Freeway/Dir of Travel	Eastbound
Weaving Seg Location	Between Davie and Turnpike
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.29
Weaving seg length, L (ft)	1960	Weaving ratio, R	0.42
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6343	0.95	5	0	1.5	1.2	0.976	1.00	6843
Vo2	287	0.95	2	0	1.5	1.2	0.990	1.00	305
Vw1	1615	0.95	2	0	1.5	1.2	0.990	1.00	1717
Vw2	1150	0.95	2	0	1.5	1.2	0.990	1.00	1222
Vw				2939	Vnw				7148
V									10087

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.65	0.42		
Weaving and non-weaving speeds, Si (mi/h)	45.26	50.15		

Number of lanes required for unconstrained operation, Nw: 1.61
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	48.62
Weaving segment density, D (pc/mi/ln)	41.50
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	10399
Capacity as a 15-minute flow rate, c (veh/h)	10145
Capacity as a full-hour volume, c_h (veh/h)	9638

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RSH
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	595 WB
Weaving Seg Location	Between Turnpike and Davie
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.29
Weaving seg length, L (ft)	1550	Weaving ratio, R	0.35
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6492	0.95	5	0	1.5	1.2	0.976	1.00	7004
Vo2	330	0.95	2	0	1.5	1.2	0.990	1.00	350
Vw1	1870	0.95	2	0	1.5	1.2	0.990	1.00	1988
Vw2	995	0.95	2	0	1.5	1.2	0.990	1.00	1057
Vw				3045	Vnw				7354
V									10399

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.75	0.49		
Weaving and non-weaving speeds, Si (mi/h)	43.55	48.48		

Number of lanes required for unconstrained operation, Nw 1.77
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ If Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	46.93
Weaving segment density, D (pc/mi/ln)	44.32
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	10158
Capacity as a 15-minute flow rate, c (veh/h)	9910
Capacity as a full-hour volume, c_h (veh/h)	9414

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RSH
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	595 WB
Weaving Seg Location	Between Turnpike and Davie
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.29
Weaving seg length, L (ft)	1550	Weaving ratio, R	0.40
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	fHV	fp	v
Vo1	8158	0.95	5	0	1.5	1.2	0.976	1.00	8802
Vo2	535	0.95	2	0	1.5	1.2	0.990	1.00	568
Vw1	2152	0.95	2	0	1.5	1.2	0.990	1.00	2287
Vw2	1410	0.95	2	0	1.5	1.2	0.990	1.00	1499
Vw				3786	Vnw				9370
V									13156

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.88	0.61		
Weaving and non-weaving speeds, Si (mi/h)	41.62	46.06		

Number of lanes required for unconstrained operation, Nw 1.79
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	44.69
Weaving segment density, D (pc/mi/ln)	58.88
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	10200
Capacity as a 15-minute flow rate, c (veh/h)	9951
Capacity as a full-hour volume, c_h (veh/h)	9453

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	WESTBOUND I-595
Weaving Seg Location	UNIVERSITY AND PINE ISLAND
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	4	Volume ratio, VR	0.28
Weaving seg length, L (ft)	800	Weaving ratio, R	0.33
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5706	0.95	5	0	1.5	1.2	0.976	1.00	6156
Vo2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw1	1526	0.95	2	0	1.5	1.2	0.990	1.00	1622
Vw2	747	0.95	2	0	1.5	1.2	0.990	1.00	794
Vw				2416	Vnw				6156
V									8572

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	1.05	0.67		
Weaving and non-weaving speeds, Si (mi/h)	39.41	44.90		

Number of lanes required for unconstrained operation, Nw: 1.91
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	43.20
Weaving segment density, D (pc/mi/ln)	49.60
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7605
Capacity as a 15-minute flow rate, c (veh/h)	7420
Capacity as a full-hour volume, c_h (veh/h)	7049

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	WESTBOUND I-595
Weaving Seg Location	UNIVERSITY AND PINE ISLAND
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	4	Volume ratio, VR	0.27
Weaving seg length, L (ft)	800	Weaving ratio, R	0.32
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	fHV	fp	v
Vo1	7411	0.95	5	0	1.5	1.2	0.976	1.00	7996
Vo2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw1	1930	0.95	2	0	1.5	1.2	0.990	1.00	2051
Vw2	920	0.95	2	0	1.5	1.2	0.990	1.00	978
Vw				3029	Vnw				7996
V									11025

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	1.24	0.84		
Weaving and non-weaving speeds, Si (mi/h)	37.37	42.23		

Number of lanes required for unconstrained operation, Nw: 1.94
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ If Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	40.77
Weaving segment density, D (pc/mi/ln)	67.60
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7656
Capacity as a 15-minute flow rate, c (veh/h)	7469
Capacity as a full-hour volume, c_h (veh/h)	7096

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 WESTBOUND
Weaving Seg Location	BETWEEN PINE AND NOB HILL
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.27
Weaving seg length, L (ft)	1080	Weaving ratio, R	0.50
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5445	0.95	5	0	1.5	1.2	0.976	1.00	5874
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1008	0.95	2	0	1.5	1.2	0.990	1.00	1071
Vw2	1002	0.95	2	0	1.5	1.2	0.990	1.00	1065
Vw				2136	Vnw				5874
V									8010

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			3.51	0.54
Weaving and non-weaving speeds, Si (mi/h)			26.08	47.57

Number of lanes required for unconstrained operation, Nw: 1.50
Maximum number of lanes, Nw (max): 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	39.00
Weaving segment density, D (pc/mi/ln)	51.35
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	6965
Capacity as a 15-minute flow rate, c (veh/h)	6795
Capacity as a full-hour volume, c_h (veh/h)	6455

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 WESTBOUND
Weaving Seg Location	BETWEEN PINE AND NOB HILL
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.27
Weaving seg length, L (ft)	1080	Weaving ratio, R	0.49
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	7038	0.95	5	0	1.5	1.2	0.976	1.00	7593
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1350	0.95	2	0	1.5	1.2	0.990	1.00	1435
Vw2	1293	0.95	2	0	1.5	1.2	0.990	1.00	1374
Vw				2809	Vnw				7593
V									10402

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			4.55	0.76
Weaving and non-weaving speeds, Si (mi/h)			24.00	43.41

Number of lanes required for unconstrained operation, Nw 1.58
Maximum number of lanes, Nw (max) 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	35.63
Weaving segment density, D (pc/mi/ln)	72.99
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	6944
Capacity as a 15-minute flow rate, c (veh/h)	6775
Capacity as a full-hour volume, c_h (veh/h)	6436

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 WESTBOUND
Weaving Seg Location	BETWEEN NOB HILL AND HIATUS
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.18
Weaving seg length, L (ft)	1000	Weaving ratio, R	0.39
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5656	0.95	5	0	1.5	1.2	0.976	1.00	6102
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	791	0.95	2	0	1.5	1.2	0.990	1.00	840
Vw2	513	0.95	2	0	1.5	1.2	0.990	1.00	545
Vw				1385	Vnw				6102
V									7487

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.15	0.00		
b (Exhibit 24-6)	2.20	4.00		
c (Exhibit 24-6)	0.97	1.30		
d (Exhibit 24-6)	0.80	0.75		
Weaving intensity factor, Wi	1.30	0.70		
Weaving and non-weaving speeds, Si (mi/h)	36.78	44.47		

Number of lanes required for unconstrained operation, Nw: 1.17
Maximum number of lanes, Nw (max): 1.40

☑ If Nw < Nw(max) unconstrained operation ☐ If Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	42.82
Weaving segment density, D (pc/mi/ln)	43.71
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7402
Capacity as a 15-minute flow rate, c (veh/h)	7221
Capacity as a full-hour volume, c_h (veh/h)	6860

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 WESTBOUND
Weaving Seg Location	BETWEEN NOB HILL AND HIATUS
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.18
Weaving seg length, L (ft)	1000	Weaving ratio, R	0.38
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	fHV	fp	v
Vo1	7385	0.95	5	0	1.5	1.2	0.976	1.00	7968
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1003	0.95	2	0	1.5	1.2	0.990	1.00	1066
Vw2	608	0.95	2	0	1.5	1.2	0.990	1.00	646
Vw				1712	Vnw				7968
V									9680

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.15	0.00		
b (Exhibit 24-6)	2.20	4.00		
c (Exhibit 24-6)	0.97	1.30		
d (Exhibit 24-6)	0.80	0.75		
Weaving intensity factor, Wi	1.64	0.95		
Weaving and non-weaving speeds, Si (mi/h)	33.96	40.69		

Number of lanes required for unconstrained operation, Nw 1.18
Maximum number of lanes, Nw (max) 1.40

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	39.31
Weaving segment density, D (pc/mi/ln)	61.55
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7451
Capacity as a 15-minute flow rate, c (veh/h)	7269
Capacity as a full-hour volume, c_h (veh/h)	6906

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 WESTBOUND
Weaving Seg Location	BETWEEN HIATUS AND FLAMINGO
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.24
Weaving seg length, L (ft)	1050	Weaving ratio, R	0.33
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5078	0.95	5	0	1.5	1.2	0.976	1.00	5478
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1091	0.95	2	0	1.5	1.2	0.990	1.00	1159
Vw2	536	0.95	2	0	1.5	1.2	0.990	1.00	569
Vw				1728	Vnw				5478
V									7206

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.15	0.00		
b (Exhibit 24-6)	2.20	4.00		
c (Exhibit 24-6)	0.97	1.30		
d (Exhibit 24-6)	0.80	0.75		
Weaving intensity factor, Wi	1.33	0.77		
Weaving and non-weaving speeds, Si (mi/h)	36.50	43.32		

Number of lanes required for unconstrained operation, Nw: 1.38
Maximum number of lanes, Nw (max): 1.40

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	41.46
Weaving segment density, D (pc/mi/ln)	43.45
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7107
Capacity as a 15-minute flow rate, c (veh/h)	6934
Capacity as a full-hour volume, c_h (veh/h)	6587

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 WESTBOUND
Weaving Seg Location	BETWEEN HIATUS AND FLAMINGO
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.23
Weaving seg length, L (ft)	1050	Weaving ratio, R	0.32
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6613	0.95	5	0	1.5	1.2	0.976	1.00	7135
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1380	0.95	2	0	1.5	1.2	0.990	1.00	1467
Vw2	660	0.95	2	0	1.5	1.2	0.990	1.00	701
Vw				2168	Vnw				7135
V									9303

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			3.92	0.60
Weaving and non-weaving speeds, Si (mi/h)			25.17	46.32

Number of lanes required for unconstrained operation, Nw: 1.41
Maximum number of lanes, Nw (max): 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	38.73
Weaving segment density, D (pc/mi/ln)	60.04
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7150
Capacity as a 15-minute flow rate, c (veh/h)	6976
Capacity as a full-hour volume, c_h (veh/h)	6627

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM Peak Period

Site Information

Freeway/Dir of Travel	I-595 WB
Weaving Seg Location	Between Flamingo and SW 136th
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	4	Volume ratio, VR	0.28
Weaving seg length, L (ft)	1250	Weaving ratio, R	0.30
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	4370	0.95	5	0	1.5	1.2	0.976	1.00	4714
Vo2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw1	1244	0.95	2	0	1.5	1.2	0.990	1.00	1322
Vw2	524	0.95	2	0	1.5	1.2	0.990	1.00	557
Vw				1879	Vnw				4714
V									6593

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.70	0.42		
Weaving and non-weaving speeds, Si (mi/h)	44.38	50.22		

Number of lanes required for unconstrained operation, Nw: 1.47
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	48.40
Weaving segment density, D (pc/mi/ln)	34.05
Level of service, LOS	D
Capacity of base condition, c_b (pc/h)	7984
Capacity as a 15-minute flow rate, c (veh/h)	7789
Capacity as a full-hour volume, c_h (veh/h)	7400

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM Peak Period

Site Information

Freeway/Dir of Travel	I-595 WB
Weaving Seg Location	Between Flamingo and SW 136th
Jurisdiction	
Analysis Year	2014 NO BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	4	Volume ratio, VR	0.27
Weaving seg length, L (ft)	1250	Weaving ratio, R	0.27
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	fHV	fp	v
Vo1	5702	0.95	5	0	1.5	1.2	0.976	1.00	6152
Vo2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw1	1571	0.95	2	0	1.5	1.2	0.990	1.00	1670
Vw2	593	0.95	2	0	1.5	1.2	0.990	1.00	630
Vw				2300	Vnw				6152
V									8452

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.82	0.51		
Weaving and non-weaving speeds, Si (mi/h)	42.52	48.19		

Number of lanes required for unconstrained operation, Nw: 1.45
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	46.50
Weaving segment density, D (pc/mi/ln)	45.44
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	8074
Capacity as a 15-minute flow rate, c (veh/h)	7877
Capacity as a full-hour volume, c_h (veh/h)	7483

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

TURNPIKE

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	TURNPIKE SB
Weaving Seg Location	FROM I-595
Jurisdiction	
Analysis Year	2014 No Build

Inputs

Freeway free-flow speed, SFF (mi/h)	45	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.49
Weaving seg length, L (ft)	650	Weaving ratio, R	0.49
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	fHV	fp	v
Vo1	1440	0.95	2	0	1.5	1.2	0.990	1.00	1530
Vo2	1020	0.95	2	0	1.5	1.2	0.990	1.00	1084
Vw1	1220	0.95	2	0	1.5	1.2	0.990	1.00	1297
Vw2	1170	0.95	2	0	1.5	1.2	0.990	1.00	1243
Vw				2540	Vnw				2614
V									5154

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			4.94	0.85
Weaving and non-weaving speeds, Si (mi/h)			20.90	33.90

Number of lanes required for unconstrained operation, Nw 2.15
Maximum number of lanes, Nw (max) 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	25.94
Weaving segment density, D (pc/mi/ln)	49.67
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	5635
Capacity as a 15-minute flow rate, c (veh/h)	5579
Capacity as a full-hour volume, c_h (veh/h)	5300

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	TURNPIKE SB
Weaving Seg Location	FROM I-595
Jurisdiction	
Analysis Year	2014 No Build

Inputs

Freeway free-flow speed, SFF (mi/h)	45	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.42
Weaving seg length, L (ft)	650	Weaving ratio, R	0.40
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	fHV	fp	v
Vo1	2100	0.95	2	0	1.5	1.2	0.990	1.00	2232
Vo2	1002	0.95	2	0	1.5	1.2	0.990	1.00	1065
Vw1	1350	0.95	2	0	1.5	1.2	0.990	1.00	1435
Vw2	900	0.95	2	0	1.5	1.2	0.990	1.00	956
Vw				2391	Vnw				3297
V									5688

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			4.87	0.79
Weaving and non-weaving speeds, Si (mi/h)			20.96	34.51

Number of lanes required for unconstrained operation, Nw 1.96
Maximum number of lanes, Nw (max) 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	27.14
Weaving segment density, D (pc/mi/ln)	52.40
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	5635
Capacity as a 15-minute flow rate, c (veh/h)	5579
Capacity as a full-hour volume, c_h (veh/h)	5300

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	TURNPIKE NB
Weaving Seg Location	TO I-595
Jurisdiction	
Analysis Year	2014 No Build

Inputs

Freeway free-flow speed, SFF (mi/h)	45	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.48
Weaving seg length, L (ft)	750	Weaving ratio, R	0.38
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	1920	0.95	2	0	1.5	1.2	0.990	1.00	2041
Vo2	1120	0.95	2	0	1.5	1.2	0.990	1.00	1190
Vw1	1730	0.95	2	0	1.5	1.2	0.990	1.00	1839
Vw2	1080	0.95	2	0	1.5	1.2	0.990	1.00	1148
Vw				2987	Vnw				3231
V									6218

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			5.18	0.94
Weaving and non-weaving speeds, Si (mi/h)			20.66	33.00

Number of lanes required for unconstrained operation, Nw 2.21
Maximum number of lanes, Nw (max) 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	25.64
Weaving segment density, D (pc/mi/ln)	60.62
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	5765
Capacity as a 15-minute flow rate, c (veh/h)	5708
Capacity as a full-hour volume, c_h (veh/h)	5423

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	TURNPIKE NB
Weaving Seg Location	TO I-595
Jurisdiction	
Analysis Year	2014 No Build

Inputs

Freeway free-flow speed, SFF (mi/h)	45	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.46
Weaving seg length, L (ft)	750	Weaving ratio, R	0.49
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	1490	0.95	2	0	1.5	1.2	0.990	1.00	1584
Vo2	1463	0.95	2	0	1.5	1.2	0.990	1.00	1555
Vw1	1270	0.95	2	0	1.5	1.2	0.990	1.00	1350
Vw2	1197	0.95	2	0	1.5	1.2	0.990	1.00	1272
Vw				2622	Vnw				3139
V									5761

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			4.64	0.80
Weaving and non-weaving speeds, Si (mi/h)			21.21	34.46

Number of lanes required for unconstrained operation, Nw: 2.11
Maximum number of lanes, Nw (max): 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	26.83
Weaving segment density, D (pc/mi/ln)	53.68
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	5765
Capacity as a 15-minute flow rate, c (veh/h)	5708
Capacity as a full-hour volume, c_h (veh/h)	5423

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

SIGNALIZED INTERSECTIONS

HCS2000™ DETAILED REPORT

General Information

Analyst	*YLM*
Agency or Co.	*RSH*
Date Performed	*10/15/04*
Time Period	*PM Peak Hour*

Site Information

Intersection	*SR 84 EB- Pine Island Road*
Area Type	*All other areas*
Jurisdiction	
Analysis Year	*Opening Year 2014 No Build*
Project ID	*I - 595 SIMR*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*1*	*2*	*1*	*0*	*0*	*0*	*0*	*3*	*1*	*2*	*2*	*0*
Lane group	*L*	*LT*	*R*					*T*	*R*	*L*	*T*	
Volume, V (vph)	*636*	*418*	*590*					*1293*	*444*	*868*	*1699*	
% Heavy vehicles, %HV	*2*	*2*	*2*					*2*	*2*	*2*	*2*	
Peak-hour factor, PHF	*0.95*	*0.95*	*0.95*					*0.95*	*0.95*	*0.95*	*0.95*	
Pretimed (P) or actuated (A)	*P*	*P*	*P*					*P*	*P*	*P*	*P*	
Start-up lost time, l_1	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Extension of effective green, e	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type, AT	*3*	*3*	*3*					*3*	*3*	*3*	*3*	
Unit extension, UE	*3.0*	*3.0*	*3.0*					*3.0*	*3.0*	*3.0*	*3.0*	
Filtering/metering, I	*1.000*	*1.000*	*1.000*					*1.000*	*1.000*	*1.000*	*1.000*	
Initial unmet demand, Q_b	*0.0*	*0.0*	*0.0*					*0.0*	*0.0*	*0.0*	*0.0*	
Ped / Bike / RTOR volumes	*0*	*0*	*50*	*0*			*0*	*0*	*50*			
Lane width	*12.0*	*12.0*	*12.0*					*12.0*	*12.0*	*12.0*	*12.0*	
Parking / Grade / Parking	*N*	*0*	*N*	*N*		*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B	*0*	*0*	*0*					*0*	*0*	*0*	*0*	
Min. time for pedestrians, G_p												

Phasing	EB Only	02	03	04	SB Only	Thru & RT	07	08
Timing	G = *32.0*	G =	G =	G =	G = *36.0*	G = *43.0*	G =	G =
	Y = *7*	Y =	Y =	Y =	Y = *5*	Y = *7*	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *130.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	*335*	*774*	*568*					*1361*	*415*	*914*	*1788*	
Lane group capacity, c	*436*	*855*	*1583*					*1678*	*999*	*952*	*2292*	
v/c ratio, X	*0.77*	*0.91*	*0.36*					*0.81*	*0.42*	*0.96*	*0.78*	
Total green ratio, g/C	*0.25*	*0.25*	*1.00*					*0.33*	*0.63*	*0.28*	*0.65*	
Uniform delay, d_1	*45.6*	*47.5*	*0.0*					*39.8*	*12.0*	*46.3*	*16.4*	
Progression factor, PF	*1.000*	*1.000*	*0.950*					*1.000*	*1.000*	*1.000*	*1.000*	
Delay calibration, k	*0.50*	*0.50*	*0.50*					*0.50*	*0.50*	*0.50*	*0.50*	
Incremental delay, d_2	*12.3*	*14.9*	*0.6*					*4.4*	*1.3*	*21.0*	*2.7*	
Initial queue delay, d_3												

Control delay	57.8	62.4	0.6					44.2	13.3	67.3	19.1	
Lane group LOS	E	E	A					D	B	E	B	
Approach delay	40.6						36.9			35.4		
Approach LOS	D						D			D		
Intersection delay	37.3			X_c = 0.89			Intersection LOS			D		

HCS2000™ DETAILED REPORT

General Information

Analyst	YLM
Agency or Co.	RSH
Date Performed	9/9/04
Time Period	PM Peak Hour

Site Information

Intersection	SR 84 WB- Pine Island Road
Area Type	All other areas
Jurisdiction	
Analysis Year	Opening Year 2014 No Build
Project ID	I - 595 SIMR

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	0	1	2	1	2	2	0	0	4	1
Lane group				L	LTR	R	L	T			TR	R
Volume, V (vph)				968	621	1181	485	1444			1599	999
% Heavy vehicles, %HV				2	2	2	2	2			2	2
Peak-hour factor, PHF				0.95	0.95	0.95	0.95	0.95			0.95	0.95
Pretimed (P) or actuated (A)				P	P	P	P	P			P	P
Start-up lost time, l_1				2.0	2.0	2.0	2.0	2.0			2.0	2.0
Extension of effective green, e				2.0	2.0	2.0	2.0	2.0			2.0	2.0
Arrival type, AT				3	3	3	3	3			3	3
Unit extension, UE				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Filtering/metering, I				1.000	1.000	1.000	1.000	1.000			1.000	1.000
Initial unmet demand, Q_b				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Ped / Bike / RTOR volumes	0			0	0	50				0	0	50
Lane width				12.0	12.0	12.0	12.0	12.0			12.0	12.0
Parking / Grade / Parking	N		N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B				0	0	0	0	0			0	0
Min. time for pedestrians, G_p												

Phasing	WB Only	02	03	04	NB Only	Thru & RT	07	08
Timing	G = 47.0	G =	G =	G =	G = 35.0	G = 30.0	G =	G =
	Y = 6	Y =	Y =	Y =	Y = 7	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 130.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				510	1758	596	511	1520			1683	999
Lane group capacity, c				640	1200	1583	925	1964			1561	999
v/c ratio, X				0.80	1.47	0.38	0.55	0.77			1.08	1.00
Total green ratio, g/C				0.36	0.36	1.00	0.27	0.55			0.23	0.63
Uniform delay, d_1				37.2	41.5	0.0	40.8	22.6			50.0	24.0
Progression factor, PF				1.000	1.000	0.950	1.000	1.000			1.000	1.000
Delay calibration, k				0.50	0.50	0.50	0.50	0.50			0.50	0.50
Incremental delay, d_2				10.0	213.9	0.7	2.4	3.0			47.1	28.5

Initial queue delay, d_3													
Control delay				47.2	255.4	0.7	43.2	25.7			97.1	52.5	
Lane group LOS				D	F	A	D	C			F	D	
›roach delay				165.3			30.1			80.5			
Approach LOS				F			C			F			
Intersection delay	99.0			X_c = 1.05			Intersection LOS			F			

HCS2000™ DETAILED REPORT

General Information

Analyst	*YLM*
Agency or Co.	*RSH*
Date Performed	*10/15/04*
Time Period	*AM Peak Hour*

Site Information

Intersection	*SR 84 EB- University Drive*
Area Type	*All other areas*
Jurisdiction	
Analysis Year	*Opening Year 2014 No Build*
Project ID	*I - 595 SIMR*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*1*	*2*	*1*	*0*	*0*	*0*	*0*	*3*	*1*	*2*	*3*	*0*
Lane group	*L*	*LTR*	*R*					*T*	*R*	*L*	*T*	
Volume, V (vph)	*858*	*1532*	*803*					*1112*	*1187*	*345*	*2100*	
% Heavy vehicles, %HV	*2*	*2*	*2*					*2*	*2*	*2*	*2*	
Peak-hour factor, PHF	*0.95*	*0.95*	*0.95*					*0.95*	*0.95*	*0.95*	*0.95*	
Pretimed (P) or actuated (A)	*P*	*P*	*P*					*P*	*P*	*P*	*P*	
Start-up lost time, l_1	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Extension of effective green, e	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type, AT	*3*	*3*	*3*					*3*	*3*	*3*	*3*	
Unit extension, UE	*3.0*	*3.0*	*3.0*					*3.0*	*3.0*	*3.0*	*3.0*	
Filtering/metering, I	*1.000*	*1.000*	*1.000*					*1.000*	*1.000*	*1.000*	*1.000*	
Initial unmet demand, Q_b	*0.0*	*0.0*	*0.0*					*0.0*	*0.0*	*0.0*	*0.0*	
Ped / Bike / RTOR volumes	*0*	*0*	*50*	*0*			*0*	*0*	*50*			
Lane width	*12.0*	*12.0*	*12.0*					*12.0*	*12.0*	*12.0*	*12.0*	
Parking / Grade / Parking	*N*	*0*	*N*	*N*		*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B	*0*	*0*	*0*					*0*	*0*	*0*	*0*	
Min. time for pedestrians, G_p												

Phasing	EB Only	02	03	04	NS Perm	Thru & RT	07	08
Timing	G = *57.0*	G =	G =	G =	G = *20.0*	G = *35.0*	G =	G =
	Y = *6*	Y =	Y =	Y =	Y = *6*	Y = *6*	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *130.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	*452*	*2460*	*397*					*1171*	*1197*	*363*	*2211*	
Lane group capacity, c	*776*	*1503*	*1583*					*1366*	*1583*	*529*	*2381*	
v/c ratio, X	*0.58*	*1.64*	*0.25*					*0.86*	*0.76*	*0.69*	*0.93*	
Total green ratio, g/C	*0.44*	*0.44*	*1.00*					*0.27*	*1.00*	*0.15*	*0.47*	
Uniform delay, d_1	*27.5*	*36.5*	*0.0*					*45.1*	*0.0*	*52.0*	*32.5*	
Progression factor, PF	*1.000*	*1.000*	*0.950*					*1.000*	*0.950*	*1.000*	*1.000*	
Delay calibration, k	*0.50*	*0.50*	*0.50*					*0.50*	*0.50*	*0.50*	*0.50*	
Incremental delay, d_2	*3.2*	*289.6*	*0.4*					*7.1*	*3.4*	*7.1*	*7.9*	
Initial queue delay, d_3												

Control delay	30.7	326.1	0.4					52.2	3.4	59.1	40.3	
Lane group LOS	C	F	A					D	A	E	D	
Approach delay	246.7						27.6			43.0		
Approach LOS	F						C			D		
Intersection delay	120.2			X_c = 1.27			Intersection LOS			F		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	YLM	Intersection	SR 84 WB- University Drive
Agency or Co.	RSH	Area Type	All other areas
Date Performed	10/15/04	Jurisdiction	
Time Period	AM Peak Hour	Analysis Year	Opening Year 2014 No Build
		Project ID	I - 595 SIMR

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	0	1	2	1	2	3	0	0	4	0
Lane group				L	LTR	R	L	T			TR	
Volume, V (vph)				870	12	1665	76	1894			1575	435
% Heavy vehicles, %HV				2	2	2	2	2			2	2
Peak-hour factor, PHF				0.95	0.95	0.95	0.95	0.95			0.95	0.95
Pretimed (P) or actuated (A)				P	P	P	P	P			P	P
Start-up lost time, l_1				2.0	2.0	2.0	2.0	2.0			2.0	
Extension of effective green, e				2.0	2.0	2.0	2.0	2.0			2.0	
Arrival type, AT				3	3	3	3	3			3	
Unit extension, UE				3.0	3.0	3.0	3.0	3.0			3.0	
Filtering/metering, I				1.000	1.000	1.000	1.000	1.000			1.000	
Initial unmet demand, Q_b				0.0	0.0	0.0	0.0	0.0			0.0	
Ped / Bike / RTOR volumes	0			0	0	50				0	0	50
Lane width				12.0	12.0	12.0	12.0	12.0			12.0	
Parking / Grade / Parking	N		N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B				0	0	0	0	0			0	
Min. time for pedestrians, G_p												

Phasing	WB Only	02	03	04	Thru & RT	NB Only	07	08
Timing	G = 45.0	G =	G =	G =	G = 47.0	G = 20.0	G =	G =
	Y = 6	Y =	Y =	Y =	Y = 6	Y = 6	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 130.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				614	876	1139	80	1994			2063	
Lane group capacity, c				613	1091	1583	529	2849			2374	
v/c ratio, X				1.00	0.80	0.72	0.15	0.70			0.87	
Total green ratio, g/C				0.35	0.35	1.00	0.15	0.56			0.36	
Uniform delay, d_1				42.5	38.5	0.0	47.6	20.6			38.6	
Progression factor, PF				1.000	1.000	0.950	1.000	1.000			1.000	
Delay calibration, k				0.50	0.50	0.50	0.50	0.50			0.50	
Incremental delay, d_2				36.7	6.3	2.9	0.6	1.5			4.7	
Initial queue delay, d_3												

Control delay				79.2	44.8	2.9	48.3	22.0			43.3		
Lane group LOS				E	D	A	D	C			D		
Approach delay				34.7			23.1			43.3			
,proach LOS				C			C			D			
Intersection delay	33.7			X_c = 0.82			Intersection LOS			C			

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	*YLM*	Intersection	*SR 84 EB- University Drive*
Agency or Co.	*RSH*	Area Type	*All other areas*
Date Performed	*10/15/04*	Jurisdiction	
Time Period	*PM Peak Hour*	Analysis Year	*Opening Year 2014 No Builld*
		Project ID	*I - 595 SIMR*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*1*	*2*	*1*	*0*	*0*	*0*	*0*	*3*	*1*	*2*	*3*	*0*
Lane group	*L*	*LTR*	*R*					*T*	*R*	*L*	*T*	
Volume, V (vph)	*862*	*317*	*761*					*1248*	*982*	*272*	*2193*	
% Heavy vehicles, %HV	*2*	*2*	*2*					*2*	*2*	*2*	*2*	
Peak-hour factor, PHF	*0.95*	*0.95*	*0.95*					*0.95*	*0.95*	*0.95*	*0.95*	
Pretimed (P) or actuated (A)	*P*	*P*	*P*					*P*	*P*	*P*	*P*	
Start-up lost time, l_1	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Extension of effective green, e	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type, AT	*3*	*3*	*3*					*3*	*3*	*3*	*3*	
Unit extension, UE	*3.0*	*3.0*	*3.0*					*3.0*	*3.0*	*3.0*	*3.0*	
Filtering/metering, I	*1.000*	*1.000*	*1.000*					*1.000*	*1.000*	*1.000*	*1.000*	
Initial unmet demand, Q_b	*0.0*	*0.0*	*0.0*					*0.0*	*0.0*	*0.0*	*0.0*	
Ped / Bike / RTOR volumes	*0*	*0*	*50*	*0*			*0*	*0*	*50*			
Lane width	*12.0*	*12.0*	*12.0*					*12.0*	*12.0*	*12.0*	*12.0*	
Parking / Grade / Parking	*N*	*0*	*N*	*N*		*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B	*0*	*0*	*0*					*0*	*0*	*0*	*0*	
Min. time for pedestrians, G_p												

Phasing	EB Only	02	03	04	NS Perm	Thru & RT	07	08
Timing	G = *45.0*	G =	G =	G =	G = *22.0*	G = *45.0*	G =	G =
	Y = *6*	Y =	Y =	Y =	Y = *6*	Y = *6*	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *130.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	*454*	*1161*	*374*					*1314*	*981*	*286*	*2308*	
Lane group capacity, c	*613*	*1146*	*1583*					*1756*	*1583*	*582*	*2849*	
v/c ratio, X	*0.74*	*1.01*	*0.24*					*0.75*	*0.62*	*0.49*	*0.81*	
Total green ratio, g/C	*0.35*	*0.35*	*1.00*					*0.35*	*1.00*	*0.17*	*0.56*	
Uniform delay, d_1	*37.4*	*42.5*	*0.0*					*37.5*	*0.0*	*48.9*	*22.9*	
Progression factor, PF	*1.000*	*1.000*	*0.950*					*1.000*	*0.950*	*1.000*	*1.000*	
Delay calibration, k	*0.50*	*0.50*	*0.50*					*0.50*	*0.50*	*0.50*	*0.50*	
Incremental delay, d_2	*7.9*	*29.9*	*0.4*					*3.0*	*1.8*	*3.0*	*2.6*	
Initial queue delay, d_3												

Control delay	45.2	72.4	0.4					40.5	1.8	51.9	25.5	
Lane group LOS	D	E	A					D	A	D	C	
Approach delay	52.6						24.0			28.4		
,proach LOS	D						C			C		
Intersection delay	33.9			X_c = 0.89			Intersection LOS			C		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	*YLM*	Intersection	*SR 84 WB- University Drive*
Agency or Co.	*RSH*	Area Type	*All other areas*
Date Performed	*10/15/04*	Jurisdiction	
Time Period	*PM Peak Hour*	Analysis Year	*Opening Year 2014 No Build*
		Project ID	*I - 595 SIMR*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*0*	*0*	*0*	*1*	*2*	*1*	*2*	*3*	*0*	*0*	*4*	*0*
Lane group				*L*	*LTR*	*R*	*L*	*T*			*TR*	
Volume, V (vph)				*893*	*53*	*1197*	*280*	*1830*			*1572*	*354*
% Heavy vehicles, %HV				*2*	*2*	*2*	*2*	*2*			*2*	*2*
Peak-hour factor, PHF				*0.95*	*0.95*	*0.95*	*0.95*	*0.95*			*0.95*	*0.95*
Pretimed (P) or actuated (A)				*P*	*P*	*P*	*P*	*P*			*P*	*P*
Start-up lost time, l_1				*2.0*	*2.0*	*2.0*	*2.0*	*2.0*			*2.0*	
Extension of effective green, e				*2.0*	*2.0*	*2.0*	*2.0*	*2.0*			*2.0*	
Arrival type, AT				*3*	*3*	*3*	*3*	*3*			*3*	
Unit extension, UE				*3.0*	*3.0*	*3.0*	*3.0*	*3.0*			*3.0*	
Filtering/metering, I				*1.000*	*1.000*	*1.000*	*1.000*	*1.000*			*1.000*	
Initial unmet demand, Q_b				*0.0*	*0.0*	*0.0*	*0.0*	*0.0*			*0.0*	
Ped / Bike / RTOR volumes	*0*			*0*	*0*	*50*				*0*	*0*	*50*
Lane width				*12.0*	*12.0*	*12.0*	*12.0*	*12.0*			*12.0*	
Parking / Grade / Parking	*N*		*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B				*0*	*0*	*0*	*0*	*0*			*0*	
Min. time for pedestrians, G_p												

Phasing	WB Only	02	03	04	Thru & RT	NB Only	07	08
Timing	G = *45.0*	G =	G =	G =	G = *47.0*	G = *20.0*	G =	G =
	Y = *6*	Y =	Y =	Y =	Y = *6*	Y = *6*	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *130.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				*630*	*764*	*809*	*295*	*1926*			*1975*	
Lane group capacity, c				*613*	*1109*	*1583*	*529*	*2849*			*2387*	
v/c ratio, X				*1.03*	*0.69*	*0.51*	*0.56*	*0.68*			*0.83*	
Total green ratio, g/C				*0.35*	*0.35*	*1.00*	*0.15*	*0.56*			*0.36*	
Uniform delay, d_1				*42.5*	*36.5*	*0.0*	*50.9*	*20.1*			*37.8*	
Progression factor, PF				*1.000*	*1.000*	*0.950*	*1.000*	*1.000*			*1.000*	
Delay calibration, k				*0.50*	*0.50*	*0.50*	*0.50*	*0.50*			*0.50*	
Incremental delay, d_2				*43.6*	*3.5*	*1.2*	*4.2*	*1.3*			*3.5*	
Initial queue delay, d_3												

Control delay				86.1	40.0	1.2	55.1	21.4			41.3		
Lane group LOS				F	D	A	E	C			D		
Approach delay				38.9			25.9			41.3			
›roach LOS				D			C			D			
Intersection delay	35.1			X_c = 0.86			Intersection LOS			D			

HCS2000™ DETAILED REPORT

General Information

Analyst	*YLM*
Agency or Co.	*RSH*
Date Performed	*10/15/04*
Time Period	*AM Peak*

Site Information

Intersection	*SR 84 EB/136th Avenue*
Area Type	*All other areas*
Jurisdiction	
Analysis Year	*Opening Year 2014 No Build*
Project ID	*I - 595 SIMR*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*2*	*2*	*1*	*0*	*0*	*0*	*0*	*2*	*1*	*2*	*2*	*0*
Lane group	*L*	*T*	*R*					*T*	*R*	*L*	*T*	
Volume, V (vph)	*653*	*1571*	*241*					*499*	*896*	*615*	*711*	
% Heavy vehicles, %HV	*2*	*2*	*2*					*2*	*2*	*2*	*2*	
Peak-hour factor, PHF	*0.95*	*0.95*	*0.95*					*0.95*	*0.95*	*0.95*	*0.95*	
Pretimed (P) or actuated (A)	*P*	*P*	*P*					*P*	*P*	*P*	*P*	
Start-up lost time, l_1	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Extension of effective green, e	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type, AT	*3*	*3*	*3*					*3*	*3*	*3*	*3*	
Unit extension, UE	*3.0*	*3.0*	*3.0*					*3.0*	*3.0*	*3.0*	*3.0*	
Filtering/metering, I	*1.000*	*1.000*	*1.000*					*1.000*	*1.000*	*1.000*	*1.000*	
Initial unmet demand, Q_b	*0.0*	*0.0*	*0.0*					*0.0*	*0.0*	*0.0*	*0.0*	
Ped / Bike / RTOR volumes	*0*	*0*	*50*	*0*			*0*	*0*	*50*			
Lane width	*12.0*	*12.0*	*12.0*					*12.0*	*12.0*	*12.0*	*12.0*	
Parking / Grade / Parking	*N*	*0*	*N*	*N*		*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B	*0*	*0*	*0*					*0*	*0*	*0*	*0*	
Min. time for pedestrians, G_p												

Phasing	EB Only	02	03	04	NB Only	SB Only	07	08
Timing	G = *66.0*	G =	G =	G =	G = *20.0*	G = *38.0*	G =	G =
	Y = *6*	Y =	Y =	Y =	Y = *5*	Y = *5*	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *140.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	*687*	*1654*	*201*					*525*	*891*	*647*	*748*	
Lane group capacity, c	*1619*	*1671*	*1583*					*506*	*1040*	*932*	*962*	
v/c ratio, X	*0.42*	*0.99*	*0.13*					*1.04*	*0.86*	*0.69*	*0.78*	
Total green ratio, g/C	*0.47*	*0.47*	*1.00*					*0.14*	*0.66*	*0.27*	*0.27*	
Uniform delay, d_1	*24.4*	*36.7*	*0.0*					*60.0*	*18.8*	*45.8*	*47.1*	
Progression factor, PF	*1.000*	*1.000*	*0.950*					*1.000*	*1.000*	*1.000*	*1.000*	
Delay calibration, k	*0.50*	*0.50*	*0.50*					*0.50*	*0.50*	*0.50*	*0.50*	
Incremental delay, d_2	*0.8*	*19.7*	*0.2*					*50.1*	*9.1*	*4.3*	*6.2*	
Initial queue delay, d_3												

Control delay	25.3	56.4	0.2					110.1	27.9	50.0	53.3	
Lane group LOS	C	E	A					F	C	D	D	
Approach delay	43.5						58.4			51.8		
Approach LOS	D						E			D		
Intersection delay	49.6			X_c = 0.93			Intersection LOS			D		

HCS2000™ DETAILED REPORT

General Information

Analyst	*YLM*
Agency or Co.	*RSH*
Date Performed	*9/9/04*
Time Period	*AM Peak Hour*

Site Information

Intersection	*SR 84 WB/136th Avenue*
Area Type	*All other areas*
Jurisdiction	
Analysis Year	*Opening Year 2014 No Build*
Project ID	*I - 595 SIMR*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*0*	*0*	*0*	*2*	*2*	*1*	*1*	*3*	*0*	*0*	*2*	*1*
Lane group				*L*	*T*	*R*	*L*	*T*			*T*	*R*
Volume, V (vph)				*390*	*719*	*1084*	*184*	*968*			*936*	*436*
% Heavy vehicles, %HV				*2*	*2*	*2*	*2*	*2*			*2*	*2*
Peak-hour factor, PHF				*0.95*	*0.95*	*0.95*	*0.95*	*0.95*			*0.95*	*0.95*
Pretimed (P) or actuated (A)				*P*	*P*	*P*	*P*	*P*			*P*	*P*
Start-up lost time, l_1				*2.0*	*2.0*	*2.0*	*2.0*	*2.0*			*2.0*	*2.0*
Extension of effective green, e				*2.0*	*2.0*	*2.0*	*2.0*	*2.0*			*2.0*	*2.0*
Arrival type, AT				*3*	*3*	*3*	*3*	*3*			*3*	*3*
Unit extension, UE				*3.0*	*3.0*	*3.0*	*3.0*	*3.0*			*3.0*	*3.0*
Filtering/metering, I				*1.000*	*1.000*	*1.000*	*1.000*	*1.000*			*1.000*	*1.000*
Initial unmet demand, Q_b				*0.0*	*0.0*	*0.0*	*0.0*	*0.0*			*0.0*	*0.0*
Ped / Bike / RTOR volumes	*0*			*0*	*0*	*50*				*0*	*0*	*50*
Lane width				*12.0*	*12.0*	*12.0*	*12.0*	*12.0*			*12.0*	*12.0*
Parking / Grade / Parking	*N*		*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B				*0*	*0*	*0*	*0*	*0*			*0*	*0*
Min. time for pedestrians, G_p												

Phasing	WB Only	02	03	04	SB Only	NB Only	07	08
Timing	G = *40.0*	G =	G =	G =	G = *43.0*	G = *41.0*	G =	G =
	Y = *6*	Y =	Y =	Y =	Y = *5*	Y = *5*	Y =	Y =
Duration of Analysis, T = *1.00*						Cycle Length, C = *140.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				*411*	*757*	*1088*	*194*	*1019*			*985*	*406*
Lane group capacity, c				*981*	*1013*	*1583*	*518*	*1485*			*1089*	*1006*
v/c ratio, X				*0.42*	*0.75*	*0.69*	*0.37*	*0.69*			*0.90*	*0.40*
Total green ratio, g/C				*0.29*	*0.29*	*1.00*	*0.29*	*0.29*			*0.31*	*0.64*
Uniform delay, d_1				*40.6*	*45.4*	*0.0*	*39.3*	*43.8*			*46.5*	*12.5*
Progression factor, PF				*1.000*	*1.000*	*0.950*	*1.000*	*1.000*			*1.000*	*1.000*
Delay calibration, k				*0.50*	*0.50*	*0.50*	*0.50*	*0.50*			*0.50*	*0.50*
Incremental delay, d_2				*1.3*	*5.2*	*2.5*	*2.1*	*2.6*			*14.4*	*1.2*
Initial queue delay, d_3												

Control delay				41.9	50.6	2.5	41.4	46.4			61.0	13.7	
Lane group LOS				D	D	A	D	D			E	B	
Approach delay				25.8			45.6			47.2			
Approach LOS				C			D			D			
Intersection delay	36.9			X_c = 0.78			Intersection LOS			D			

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	YLM	Intersection	SR 84 EB/136th Avenue
Agency or Co.	RSH	Area Type	All other areas
Date Performed	10/15/04	Jurisdiction	
Time Period	PM Peak	Analysis Year	Opening Year 2014 No Build
		Project ID	I - 595 SIMR

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	2	2	1	0	0	0	0	2	1	2	2	0
Lane group	L	T	R					T	R	L	T	
Volume, V (vph)	681	1206	146					337	545	972	1320	
% Heavy vehicles, %HV	2	2	2					2	2	2	2	
Peak-hour factor, PHF	0.95	0.95	0.95					0.95	0.95	0.95	0.95	
Pretimed (P) or actuated (A)	P	P	P					P	P	P	P	
Start-up lost time, l_1	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Extension of effective green, e	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Arrival type, AT	3	3	3					3	3	3	3	
Unit extension, UE	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Filtering/metering, I	1.000	1.000	1.000					1.000	1.000	1.000	1.000	
Initial unmet demand, Q_b	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Ped / Bike / RTOR volumes	0	0	50	0			0	0	50			
Lane width	12.0	12.0	12.0					12.0	12.0	12.0	12.0	
Parking / Grade / Parking	N	0	N	N		N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0	0					0	0	0	0	
Min. time for pedestrians, G_p												

Phasing	EB Only	02	03	04	NB Only	SB Only	07	08
Timing	G = 50.0	G =	G =	G =	G = 15.0	G = 59.0	G =	G =
	Y = 6	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 140.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	717	1269	101					355	521	1023	1389	
Lane group capacity, c	1227	1266	1583					380	803	1448	1494	
v/c ratio, X	0.58	1.00	0.06					0.93	0.65	0.71	0.93	
Total green ratio, g/C	0.36	0.36	1.00					0.11	0.51	0.42	0.42	
Uniform delay, d_1	36.6	45.0	0.0					62.0	25.3	33.4	38.5	
Progression factor, PF	1.000	1.000	0.950					1.000	1.000	1.000	1.000	
Delay calibration, k	0.50	0.50	0.50					0.50	0.50	0.50	0.50	
Incremental delay, d_2	2.0	25.9	0.1					32.2	4.0	2.9	11.6	
Initial queue delay, d_3												

Control delay	38.6	70.9	0.1					94.2	29.4	36.3	50.2	
Lane group LOS	D	E	A					F	C	D	D	
Approach delay	56.4						55.7			44.3		
Approach LOS	E						E			D		
Intersection delay	50.8			X_c = 0.96			Intersection LOS			D		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	YLM	Intersection	SR 84 WB/136th Avenue
Agency or Co.	RSH	Area Type	All other areas
Date Performed	9/9/04	Jurisdiction	
Time Period	PM Peak Hour	Analysis Year	Opening Year 2014 No Build
		Project ID	I - 595 SIMR

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	0	2	2	1	1	3	0	0	2	1
Lane group				L	T	R	L	T			T	R
Volume, V (vph)				854	1097	542	131	887			1438	591
% Heavy vehicles, %HV				2	2	2	2	2			2	2
Peak-hour factor, PHF				0.95	0.95	0.95	0.95	0.95			0.95	0.95
Pretimed (P) or actuated (A)				P	P	P	P	P			P	P
Start-up lost time, l_1				2.0	2.0	2.0	2.0	2.0			2.0	2.0
Extension of effective green, e				2.0	2.0	2.0	2.0	2.0			2.0	2.0
Arrival type, AT				3	3	3	3	3			3	3
Unit extension, UE				3.0	3.0	3.0	3.0	3.0			3.0	3.0
Filtering/metering, I				1.000	1.000	1.000	1.000	1.000			1.000	1.000
Initial unmet demand, Q_b				0.0	0.0	0.0	0.0	0.0			0.0	0.0
Ped / Bike / RTOR volumes	0			0	0	50				0	0	50
Lane width				12.0	12.0	12.0	12.0	12.0			12.0	12.0
Parking / Grade / Parking	N		N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B				0	0	0	0	0			0	0
Min. time for pedestrians, G_p												

Phasing	WB Only	02	03	04	SB Only	NB Only	07	08
Timing	G = 40.0	G =	G =	G =	G = 59.0	G = 25.0	G =	G =
	Y = 6	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 1.00						Cycle Length, C = 140.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				899	1155	518	138	934			1514	569
Lane group capacity, c				981	1013	1583	316	906			1494	1187
v/c ratio, X				0.92	1.14	0.33	0.44	1.03			1.01	0.48
Total green ratio, g/C				0.29	0.29	1.00	0.18	0.18			0.42	0.75
Uniform delay, d_1				48.4	50.0	0.0	51.2	57.5			40.5	6.8
Progression factor, PF				1.000	1.000	0.950	1.000	1.000			1.000	1.000
Delay calibration, k				0.50	0.50	0.50	0.50	0.50			0.50	0.50
Incremental delay, d_2				18.0	266.0	0.6	4.4	94.6			60.5	1.4
Initial queue delay, d_3												

Control delay				66.4	316.0	0.6	55.6	152.1			101.0	8.2	
Lane group LOS				E	F	A	E	F			F	A	
Approach delay				165.2			139.7			75.6			
Approach LOS				F			F			E			
Intersection delay	127.9			X_c = 1.06			Intersection LOS			F			

HCS2000™ DETAILED REPORT

General Information

Analyst	*YLM*
Agency or Co.	*RSH*
Date Performed	*10/15/04*
Time Period	*AM Peak Hour*

Site Information

Intersection	*SR 84 EB- Nob Hill Road*
Area Type	*All other areas*
Jurisdiction	
Analysis Year	*Opening Year 2014 No Build*
Project ID	*I - 595 SIMR*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*1*	*2*	*1*	*0*	*0*	*0*	*0*	*3*	*1*	*2*	*2*	*0*
Lane group	*L*	*LT*	*R*					*T*	*R*	*L*	*T*	
Volume, V (vph)	*675*	*1676*	*300*					*719*	*679*	*1244*	*987*	
% Heavy vehicles, %HV	*2*	*2*	*2*					*2*	*2*	*2*	*2*	
Peak-hour factor, PHF	*0.95*	*0.95*	*0.95*					*0.95*	*0.95*	*0.95*	*0.95*	
Pretimed (P) or actuated (A)	*P*	*P*	*P*					*P*	*P*	*P*	*P*	
Start-up lost time, l_1	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Extension of effective green, e	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type, AT	*3*	*3*	*3*					*3*	*3*	*3*	*3*	
Unit extension, UE	*3.0*	*3.0*	*3.0*					*3.0*	*3.0*	*3.0*	*3.0*	
Filtering/metering, I	*1.000*	*1.000*	*1.000*					*1.000*	*1.000*	*1.000*	*1.000*	
Initial unmet demand, Q_b	*0.0*	*0.0*	*0.0*					*0.0*	*0.0*	*0.0*	*0.0*	
Ped / Bike / RTOR volumes	*0*	*0*	*50*	*0*			*0*	*0*	*50*			
Lane width	*12.0*	*12.0*	*12.0*					*12.0*	*12.0*	*12.0*	*12.0*	
Parking / Grade / Parking	*N*	*0*	*N*	*N*		*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B	*0*	*0*	*0*					*0*	*0*	*0*	*0*	
Min. time for pedestrians, G_p												

Phasing	EB Only	02	03	04	SB Only	Thru & RT	07	08
Timing	G = *69.9*	G =	G =	G =	G = *42.8*	G = *19.3*	G =	G =
	Y = *5.5*	Y =	Y =	Y =	Y = *5.5*	Y = *5.5*	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *148.5*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	*356*	*2119*	*263*					*757*	*662*	*1309*	*1039*	
Lane group capacity, c	*833*	*1655*	*1583*					*659*	*1009*	*991*	*1615*	
v/c ratio, X	*0.43*	*1.28*	*0.17*					*1.15*	*0.66*	*1.32*	*0.64*	
Total green ratio, g/C	*0.47*	*0.47*	*1.00*					*0.13*	*0.64*	*0.29*	*0.46*	
Uniform delay, d_1	*26.0*	*39.3*	*0.0*					*64.6*	*16.8*	*52.8*	*31.2*	
Progression factor, PF	*1.000*	*1.000*	*0.950*					*1.000*	*1.000*	*1.000*	*1.000*	
Delay calibration, k	*0.50*	*0.50*	*0.50*					*0.50*	*0.50*	*0.50*	*0.50*	
Incremental delay, d_2	*1.6*	*130.9*	*0.2*					*83.8*	*3.3*	*151.5*	*2.0*	
Initial queue delay, d_3												

Control delay	27.6	170.2	0.2					148.4	20.1	204.4	33.1	
Lane group LOS	C	F	A					F	C	F	C	
Approach delay	135.4						88.5			128.6		
roach LOS	F						F			F		
Intersection delay	122.7			X_c = 1.27			Intersection LOS			F		

HCS2000™ DETAILED REPORT

General Information

Analyst	*YLM*
Agency or Co.	*RSH*
Performed	*10/15/04*
Time Period	*AM Peak Hour*

Site Information

Intersection	*SR 84 WB - Nob Hill Road*
Area Type	*All other areas*
Jurisdiction	
Analysis Year	*Opening Year 2014 No Build*
Project ID	*I - 595 SIMR*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*0*	*0*	*0*	*1*	*2*	*1*	*1*	*2*	*0*	*0*	*4*	*1*
Lane group				*L*	*LTR*	*R*	*L*	*T*			*T*	*R*
Volume, V (vph)				*440*	*120*	*626*	*280*	*1114*			*1791*	*456*
% Heavy vehicles, %HV				*2*	*2*	*2*	*2*	*2*			*2*	*2*
Peak-hour factor, PHF				*0.95*	*0.95*	*0.95*	*0.95*	*0.95*			*0.95*	*0.95*
Pretimed (P) or actuated (A)				*P*	*P*	*P*	*P*	*P*			*P*	*P*
Start-up lost time, l_1				*2.0*	*2.0*	*2.0*	*2.0*	*2.0*			*2.0*	*2.0*
Extension of effective green, e				*2.0*	*2.0*	*2.0*	*2.0*	*2.0*			*2.0*	*2.0*
Arrival type, AT				*3*	*3*	*3*	*3*	*3*			*3*	*3*
Unit extension, UE				*3.0*	*3.0*	*3.0*	*3.0*	*3.0*			*3.0*	*3.0*
Filtering/metering, I				*1.000*	*1.000*	*1.000*	*1.000*	*1.000*			*1.000*	*1.000*
Initial unmet demand, Q_b				*0.0*	*0.0*	*0.0*	*0.0*	*0.0*			*0.0*	*0.0*
Ped / Bike / RTOR volumes	*0*			*0*	*0*	*50*				*0*	*0*	*50*
Lane width				*12.0*	*12.0*	*12.0*	*12.0*	*12.0*			*12.0*	*12.0*
Parking / Grade / Parking	*N*		*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B				*0*	*0*	*0*	*0*	*0*			*0*	*0*
Min. time for pedestrians, G_p												

Phasing	WB Only	02	03	04	Thru & RT	NB Only	07	08
Timing	G = *40.0*	G =	G =	G =	G = *42.0*	G = *50.0*	G =	G =
	Y = *5.5*	Y =	Y =	Y =	Y = *5.5*	Y = *5.5*	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *148.5*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				*310*	*479*	*406*	*295*	*1173*			*1885*	*427*
Lane group capacity, c				*477*	*881*	*1583*	*596*	*2329*			*1913*	*933*
v/c ratio, X				*0.65*	*0.54*	*0.26*	*0.49*	*0.50*			*0.99*	*0.46*
Total green ratio, g/C				*0.27*	*0.27*	*1.00*	*0.34*	*0.66*			*0.28*	*0.59*
Uniform delay, d_1				*48.0*	*46.4*	*0.0*	*39.2*	*13.1*			*52.9*	*17.2*
Progression factor, PF				*1.000*	*1.000*	*0.950*	*1.000*	*1.000*			*1.000*	*1.000*
Delay calibration, k				*0.50*	*0.50*	*0.50*	*0.50*	*0.50*			*0.50*	*0.50*
Incremental delay, d_2				*6.7*	*2.4*	*0.4*	*2.9*	*0.8*			*17.4*	*1.6*
Initial queue delay, d_3												

Control delay				54.8	48.8	0.4	42.1	13.9			70.3	18.8	
Lane group LOS				D	D	A	D	B			E	B	
Approach delay				33.9			19.5			60.8			
ıroach LOS				C			B			E			
Intersection delay	42.2			X_c = 0.70			Intersection LOS			D			

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	YLM	Intersection	SR 84 EB- Nob Hill Road
Agency or Co.	RSH	Area Type	All other areas
Date Performed	10/15/04	Jurisdiction	
Time Period	PM Peak Hour	Analysis Year	Opening Year 2014 No Build
		Project ID	I - 595 SIMR

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	2	1	0	0	0	0	3	1	2	2	0
Lane group	L	LT	R					T	R	L	T	
Volume, V (vph)	600	557	250					1048	451	791	1557	
% Heavy vehicles, %HV	2	2	2					2	2	2	2	
Peak-hour factor, PHF	0.95	0.95	0.95					0.95	0.95	0.95	0.95	
Pretimed (P) or actuated (A)	P	P	P					P	P	P	P	
Start-up lost time, l_1	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Extension of effective green, e	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Arrival type, AT	3	3	3					3	3	3	3	
Unit extension, UE	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Filtering/metering, I	1.000	1.000	1.000					1.000	1.000	1.000	1.000	
Initial unmet demand, Q_b	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Ped / Bike / RTOR volumes	0	0	50	0			0	0	50			
Lane width	12.0	12.0	12.0					12.0	12.0	12.0	12.0	
Parking / Grade / Parking	N	0	N	N		N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0	0					0	0	0	0	
Min. time for pedestrians, G_p												

Phasing	EB Only	02	03	04	SB Only	Thru & RT	07	08
Timing	G = 45.0	G =	G =	G =	G = 48.0	G = 39.0	G =	G =
	Y = 5.5	Y =	Y =	Y =	Y = 5.5	Y = 5.5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 148.5		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	316	902	211					1103	422	833	1639	
Lane group capacity, c	536	1056	1583					1333	954	1111	2209	
v/c ratio, X	0.59	0.85	0.13					0.83	0.44	0.75	0.74	
Total green ratio, g/C	0.30	0.30	1.00					0.26	0.60	0.32	0.62	
Uniform delay, d_1	43.9	48.7	0.0					51.6	16.0	44.9	19.6	
Progression factor, PF	1.000	1.000	0.950					1.000	1.000	1.000	1.000	
Delay calibration, k	0.50	0.50	0.50					0.50	0.50	0.50	0.50	
Incremental delay, d_2	4.7	8.8	0.2					6.0	1.5	4.7	2.3	
Initial queue delay, d_3												

Control delay	48.6	57.5	0.2					57.6	17.5	49.5	21.9	
Lane group LOS	D	E	A					E	B	D	C	
Approach delay	47.1						46.5			31.2		
Approach LOS	D						D			C		
Intersection delay	39.7			X_c = 0.78			Intersection LOS			D		

HCS2000™ DETAILED REPORT

General Information

Analyst	*YLM*
Agency or Co.	*RSH*
Date Performed	*10/15/04*
Time Period	*PM Peak Hour*

Site Information

Intersection	*SR 84 WB - Nob Hill Road*
Area Type	*All other areas*
Jurisdiction	
Analysis Year	*Opening Year 2014 No Build*
Project ID	*I - 595 SIMR*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*0*	*0*	*0*	*1*	*2*	*1*	*1*	*2*	*0*	*0*	*4*	*1*
Lane group				*L*	*LTR*	*R*	*L*	*T*			*T*	*R*
Volume, V (vph)				*607*	*269*	*1329*	*338*	*1310*			*1741*	*541*
% Heavy vehicles, %HV				*2*	*2*	*2*	*2*	*2*			*2*	*2*
Peak-hour factor, PHF				*0.95*	*0.95*	*0.95*	*0.95*	*0.95*			*0.95*	*0.95*
Pretimed (P) or actuated (A)				*P*	*P*	*P*	*P*	*P*			*P*	*P*
Start-up lost time, l_1				*2.0*	*2.0*	*2.0*	*2.0*	*2.0*			*2.0*	*2.0*
Extension of effective green, e				*2.0*	*2.0*	*2.0*	*2.0*	*2.0*			*2.0*	*2.0*
Arrival type, AT				*3*	*3*	*3*	*3*	*3*			*3*	*3*
Unit extension, UE				*3.0*	*3.0*	*3.0*	*3.0*	*3.0*			*3.0*	*3.0*
Filtering/metering, I				*1.000*	*1.000*	*1.000*	*1.000*	*1.000*			*1.000*	*1.000*
Initial unmet demand, Q_b				*0.0*	*0.0*	*0.0*	*0.0*	*0.0*			*0.0*	*0.0*
Ped / Bike / RTOR volumes	*0*			*0*	*0*	*50*				*0*	*0*	*50*
Lane width				*12.0*	*12.0*	*12.0*	*12.0*	*12.0*			*12.0*	*12.0*
Parking / Grade / Parking	*N*		*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B				*0*	*0*	*0*	*0*	*0*			*0*	*0*
Min. time for pedestrians, G_p												

Phasing	WB Only	02	03	04	Thru & RT	NB Only	07	08
Timing	G = *40.0*	G =	G =	G =	G = *42.0*	G = *50.0*	G =	G =
	Y = *5.5*	Y =	Y =	Y =	Y = *5.5*	Y = *5.5*	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *148.5*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				*428*	*938*	*902*	*356*	*1379*			*1833*	*517*
Lane group capacity, c				*477*	*878*	*1583*	*596*	*2329*			*1913*	*933*
v/c ratio, X				*0.90*	*1.07*	*0.57*	*0.60*	*0.59*			*0.96*	*0.55*
Total green ratio, g/C				*0.27*	*0.27*	*1.00*	*0.34*	*0.66*			*0.28*	*0.59*
Uniform delay, d_1				*52.3*	*54.3*	*0.0*	*40.9*	*14.3*			*52.4*	*18.6*
Progression factor, PF				*1.000*	*1.000*	*0.950*	*1.000*	*1.000*			*1.000*	*1.000*
Delay calibration, k				*0.50*	*0.50*	*0.50*	*0.50*	*0.50*			*0.50*	*0.50*
Incremental delay, d_2				*22.3*	*50.3*	*1.5*	*4.4*	*1.1*			*12.8*	*2.4*
Initial queue delay, d_3												

Control delay				74.5	104.6	1.5	45.3	15.4			65.2	21.0	
Lane group LOS				E	F	A	D	B			E	C	
Approach delay				57.9			21.6			55.5			
Approach LOS				E			C			E			
Intersection delay	47.1			X_c = 0.85			Intersection LOS			D			

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	*YLM*	Intersection	*SR 84 EB- Pine Island Road*
Agency or Co.	*RSH*	Area Type	*All other areas*
Date Performed	*10/15/04*	Jurisdiction	
Time Period	*AM Peak Hour*	Analysis Year	*Opening Year 2014 No Build*
		Project ID	*I - 595 SIMR*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*1*	*2*	*1*	*0*	*0*	*0*	*0*	*3*	*1*	*2*	*2*	*0*
Lane group	*L*	*LT*	*R*					*T*	*R*	*L*	*T*	
Volume, V (vph)	*802*	*1240*	*507*					*1362*	*674*	*1145*	*1231*	
% Heavy vehicles, %HV	*2*	*2*	*2*					*2*	*2*	*2*	*2*	
Peak-hour factor, PHF	*0.95*	*0.95*	*0.95*					*0.95*	*0.95*	*0.95*	*0.95*	
Pretimed (P) or actuated (A)	*P*	*P*	*P*					*P*	*P*	*P*	*P*	
Start-up lost time, l_1	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Extension of effective green, e	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type, AT	*3*	*3*	*3*					*3*	*3*	*3*	*3*	
Unit extension, UE	*3.0*	*3.0*	*3.0*					*3.0*	*3.0*	*3.0*	*3.0*	
Filtering/metering, I	*1.000*	*1.000*	*1.000*					*1.000*	*1.000*	*1.000*	*1.000*	
Initial unmet demand, Q_b	*0.0*	*0.0*	*0.0*					*0.0*	*0.0*	*0.0*	*0.0*	
Ped / Bike / RTOR volumes	*0*	*0*	*50*	*0*			*0*	*0*	*50*			
Lane width	*12.0*	*12.0*	*12.0*					*12.0*	*12.0*	*12.0*	*12.0*	
Parking / Grade / Parking	*N*	*0*	*N*	*N*		*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B	*0*	*0*	*0*					*0*	*0*	*0*	*0*	
Min. time for pedestrians, G_p												

Phasing	EB Only	02	03	04	SB Only	Thru & RT	07	08
Timing	G = *53.0*	G =	G =	G =	G = *28.0*	G = *30.0*	G =	G =
	Y = *7*	Y =	Y =	Y =	Y = *5*	Y = *7*	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *130.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	*422*	*1727*	*481*					*1434*	*657*	*1205*	*1296*	
Lane group capacity, c	*722*	*1429*	*1583*					*1171*	*1096*	*740*	*1719*	
v/c ratio, X	*0.58*	*1.21*	*0.30*					*1.22*	*0.60*	*1.63*	*0.75*	
Total green ratio, g/C	*0.41*	*0.41*	*1.00*					*0.23*	*0.69*	*0.22*	*0.48*	
Uniform delay, d_1	*29.9*	*38.5*	*0.0*					*50.0*	*10.5*	*51.0*	*27.2*	
Progression factor, PF	*1.000*	*1.000*	*0.950*					*1.000*	*1.000*	*1.000*	*1.000*	
Delay calibration, k	*0.50*	*0.50*	*0.50*					*0.50*	*0.50*	*0.50*	*0.50*	
Incremental delay, d_2	*3.4*	*100.6*	*0.5*					*108.8*	*2.4*	*288.9*	*3.1*	
Initial queue delay, d_3												

Control delay	33.4	139.1	0.5					158.8	12.9	339.9	30.3	
Lane group LOS	C	F	A					F	B	F	C	
Approach delay	96.8						113.0			179.5		
,roach LOS	F						F			F		
Intersection delay	130.1			X_c = 1.32			Intersection LOS			F		

HCS2000™ DETAILED REPORT

General Information

Analyst	*YLM*
ency or Co.	*RSH*
ate Performed	*10/15/04*
Time Period	*AM Peak Hour*

Site Information

Intersection	*SR 84 WB- Pine Island Road*
Area Type	*All other areas*
Jurisdiction	
Analysis Year	*Opening Year 2014 No Build*
Project ID	*I - 595 SIMR*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*0*	*0*	*0*	*1*	*2*	*1*	*2*	*2*	*0*	*0*	*4*	*1*
Lane group				*L*	*LTR*	*R*	*L*	*T*			*TR*	*R*
Volume, V (vph)				*515*	*363*	*897*	*427*	*1737*			*1861*	*644*
% Heavy vehicles, %HV				*2*	*2*	*2*	*2*	*2*			*2*	*2*
Peak-hour factor, PHF				*0.95*	*0.95*	*0.95*	*0.95*	*0.95*			*0.95*	*0.95*
Pretimed (P) or actuated (A)				*P*	*P*	*P*	*P*	*P*			*P*	*P*
Start-up lost time, l_1				*2.0*	*2.0*	*2.0*	*2.0*	*2.0*			*2.0*	*2.0*
Extension of effective green, e				*2.0*	*2.0*	*2.0*	*2.0*	*2.0*			*2.0*	*2.0*
Arrival type, AT				*3*	*3*	*3*	*3*	*3*			*3*	*3*
Unit extension, UE				*3.0*	*3.0*	*3.0*	*3.0*	*3.0*			*3.0*	*3.0*
Filtering/metering, I				*1.000*	*1.000*	*1.000*	*1.000*	*1.000*			*1.000*	*1.000*
al unmet demand, Q_b				*0.0*	*0.0*	*0.0*	*0.0*	*0.0*			*0.0*	*0.0*
Ped / Bike / RTOR volumes	*0*			*0*	*0*	*50*				*0*	*0*	*50*
Lane width				*12.0*	*12.0*	*12.0*	*12.0*	*12.0*			*12.0*	*12.0*
Parking / Grade / Parking	*N*		*N*	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B				*0*	*0*	*0*	*0*	*0*			*0*	*0*
Min. time for pedestrians, G_p												

Phasing	WB Only	02	03	04	NB Only	Thru & RT	07	08
Timing	G = *42.0*	G =	G =	G =	G = *35.0*	G = *35.0*	G =	G =
	Y = *6*	Y =	Y =	Y =	Y = *7*	Y = *5*	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *130.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				*271*	*1099*	*446*	*449*	*1828*			*1959*	*625*
Lane group capacity, c				*572*	*1063*	*1583*	*925*	*2101*			*1821*	*999*
v/c ratio, X				*0.47*	*1.03*	*0.28*	*0.49*	*0.87*			*1.08*	*0.63*
Total green ratio, g/C				*0.32*	*0.32*	*1.00*	*0.27*	*0.59*			*0.27*	*0.63*
form delay, d_1				*35.2*	*44.0*	*0.0*	*39.9*	*22.3*			*47.5*	*14.6*
Progression factor, PF				*1.000*	*1.000*	*0.950*	*1.000*	*1.000*			*1.000*	*1.000*
Delay calibration, k				*0.50*	*0.50*	*0.50*	*0.50*	*0.50*			*0.50*	*0.50*
Incremental delay, d_2				*2.8*	*36.7*	*0.4*	*1.8*	*5.3*			*44.8*	*3.0*

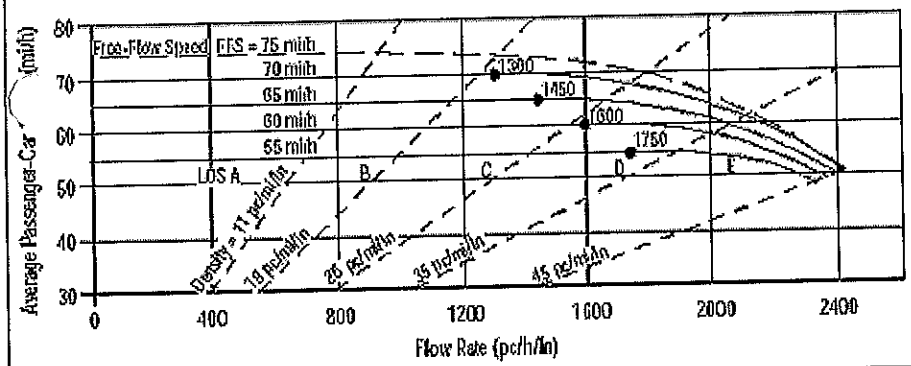
Initial queue delay, d_3													
Control delay				38.0	80.7	0.4	41.8	27.6			92.3	17.6	
Lane group LOS				D	F	A	D	C			F	B	
ıroach delay				54.6			30.4			74.2			
Approach LOS				D			C			E			
Intersection delay	53.9			X_c = 0.93			Intersection LOS			D			

YEAR 2014
BUILD

BASIC FREEWAY SEGMENTS

I-595

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2014 BUILD

Project Description WEST OF SW 136TH AVE

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6986 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1884	pc/h/ln
S	64.2	mi/h
D = v_p / S	29.4	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

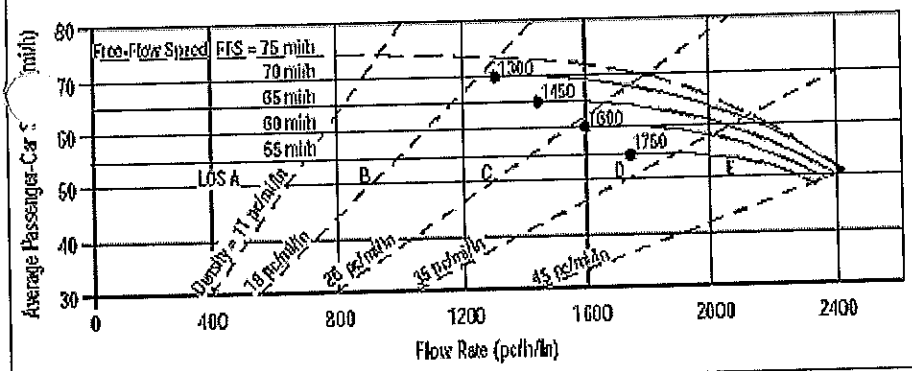
Glossary

N - Number of lanes	S - Speed
v - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2014 BUILD

Project Description WEST OF SW 136TH AVE

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	5580 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1505	pc/h/ln
S	66.4	mi/h
D = v_p / S	22.7	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

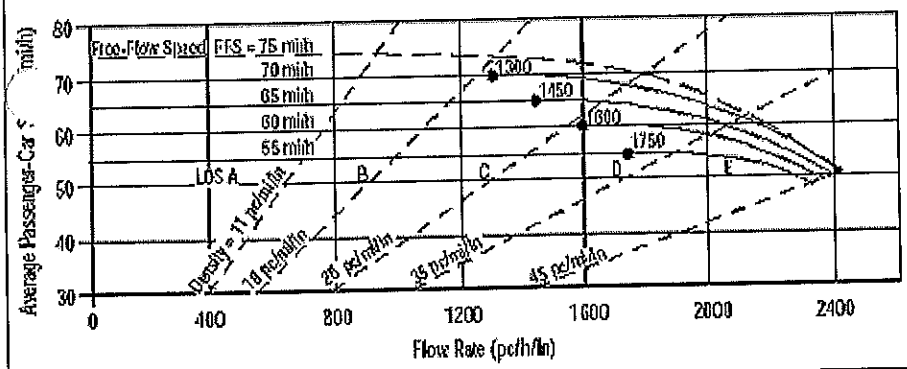
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RS&H
Date Performed	9/1/04
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction of Travel	I-595 EB
From/To	Between SR 7 On &I-95 Off
Jurisdiction	
Analysis Year	2014 BUILD

Project Description VIADUCT

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	11066 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	l/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2985	pc/h/ln
S		mi/h
D = v_p / S		pc/mi/ln
LOS	F	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

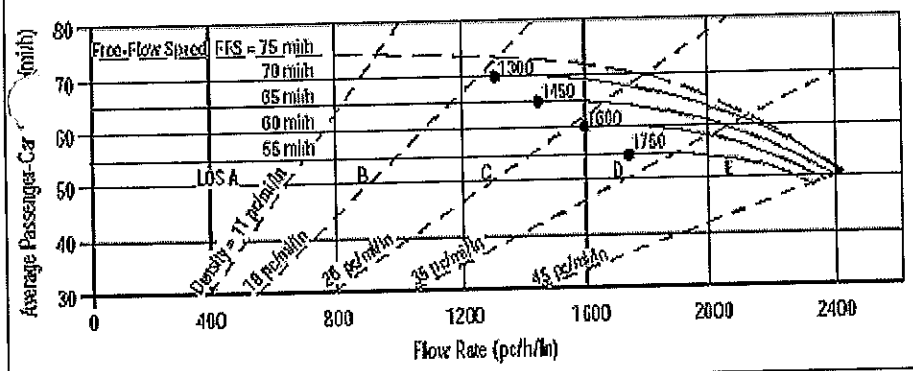
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RS&H
Date Performed	
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction of Travel	I-595 EB
From/To	Between SR 7 On &I-95 Off
Jurisdiction	
Analysis Year	2014 BUILD

Project Description VIADUCT

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	8087 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2181	pc/h/ln
S	58.4	mi/h
D = v_p / S	37.3	pc/mi/ln
LOS	E	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

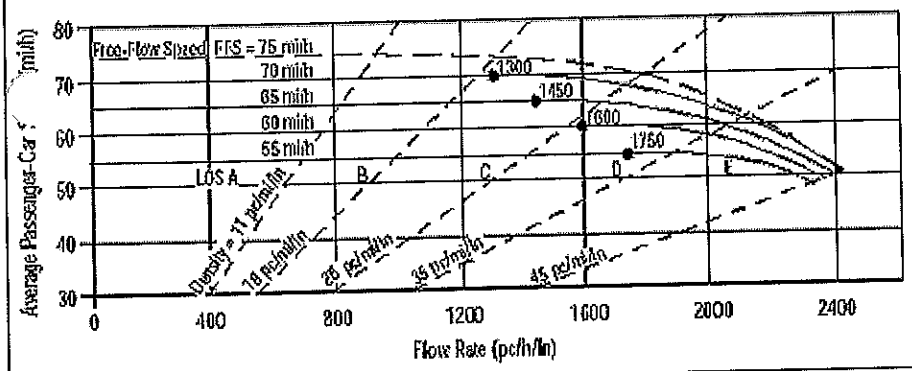
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YM
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction of Travel	EASTBOUND
From/To	EB 595 EAST OF I95
Jurisdiction	
Analysis Year	2014 BUILD

Project Description I-595 SIMR

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6583 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1776	pc/h/ln
S	65.3	mi/h
D = v_p / S	27.2	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

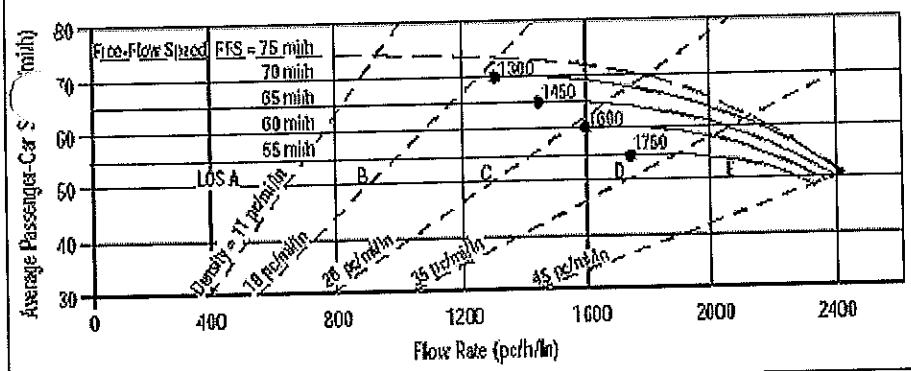
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YM
Agency or Company	RSH
Date Performed	
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction of Travel	EASTBOUND
From/To	EB 595 EAST OF I95
Jurisdiction	
Analysis Year	2014 BUILD

Project Description I-595 SIMR

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4747 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	l/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1280	pc/h/ln
S	66.4	mi/h
D = v_p / S	19.3	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

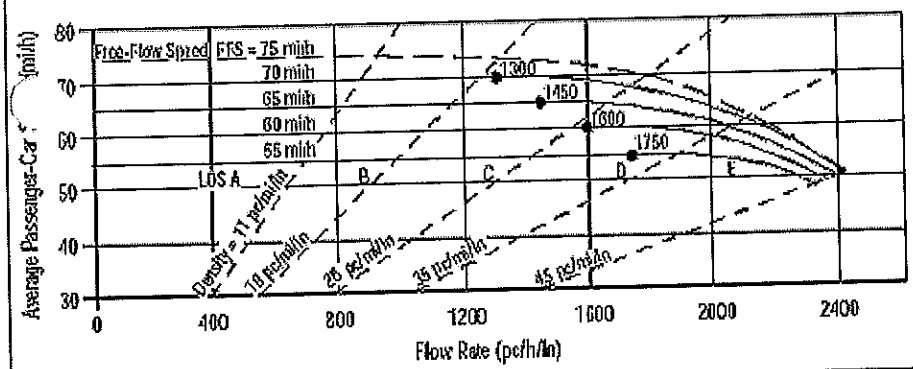
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	PJ
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction of Travel	WESTBOUND
From/To	WB 595 EAST OF SB 95 OFF RAMP
Jurisdiction	
Analysis Year	2014 BUILD

Project Description I-595 SIMR

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	5065 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.81	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.6	mi/h
f_N	1.5	mi/h
FFS	66.9	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1366	pc/h/ln
S	66.9	mi/h
D = v_p / S	20.4	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

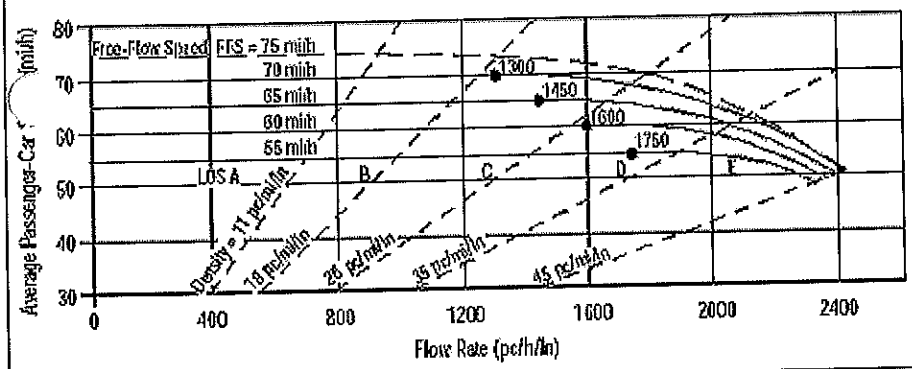
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	PJ
Agency or Company	RSH
Date Performed	
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction of Travel	WESTBOUND
From/To	WB 595 EAST OF SB 95 OFF RAMP
Jurisdiction	
Analysis Year	2014 BUILD

Project Description I-595 SIMR

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6535 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.81	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.6	mi/h
f_N	1.5	mi/h
FFS	66.9	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1763	pc/h/ln
S	65.8	mi/h
D = v_p / S	26.8	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

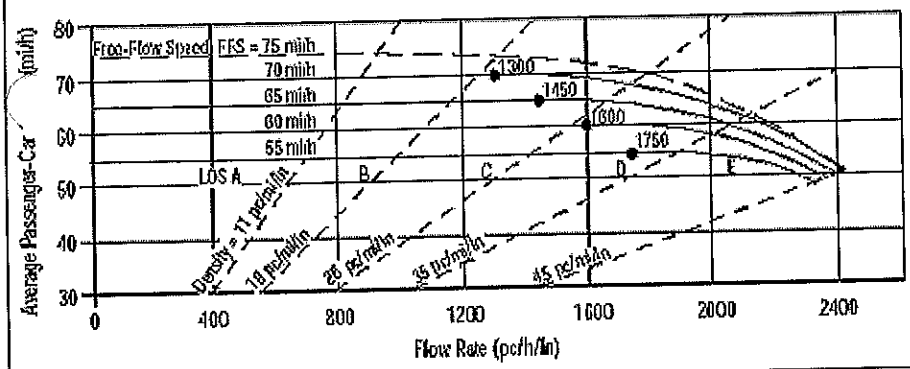
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RS&H
Date Performed	
Analysis Time Period	AM Peak Period

Site Information

Highway/Direction of Travel	I-595 WB
From/To	Between I-95 SB and SR 7/TPKE
Jurisdiction	
Analysis Year	2014 BUILD

Project Description VIADUCT

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	8238 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	11.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.81	I/mi
Number of Lanes, N	5	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	1.9	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.6	mi/h
f_N	0.0	mi/h
FFS	66.5	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1778	pc/h/ln
S	65.3	mi/h
D = v_p / S	27.2	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

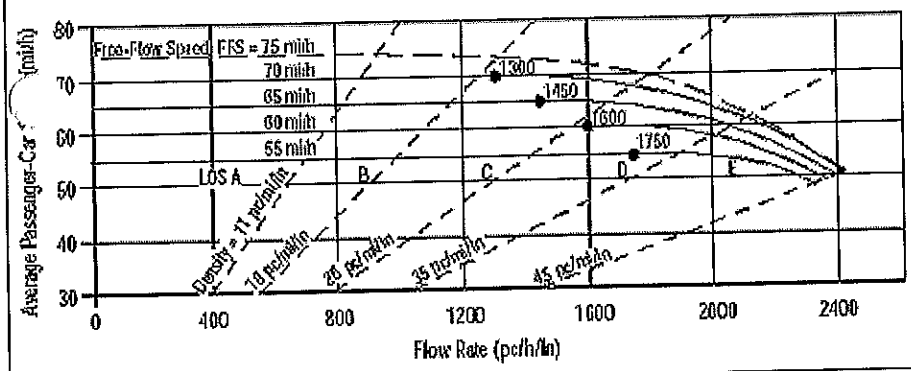
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RS&H
Date Performed	
Analysis Time Period	PM Peak Period

Site Information

Highway/Direction of Travel	I-595 WB
From/To	Between I-95 SB and SR 7/TPKE
Jurisdiction	
Analysis Year	2014 BUILD

Project Description VIADUCT

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	10935 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	11.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.81	l/mi
Number of Lanes, N	5	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	1.9	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.6	mi/h
f_N	0.0	mi/h
FFS	66.5	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2360	pc/h/ln
S	52.8	mi/h
D = v_p / S	44.7	pc/mi/ln
LOS	E	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

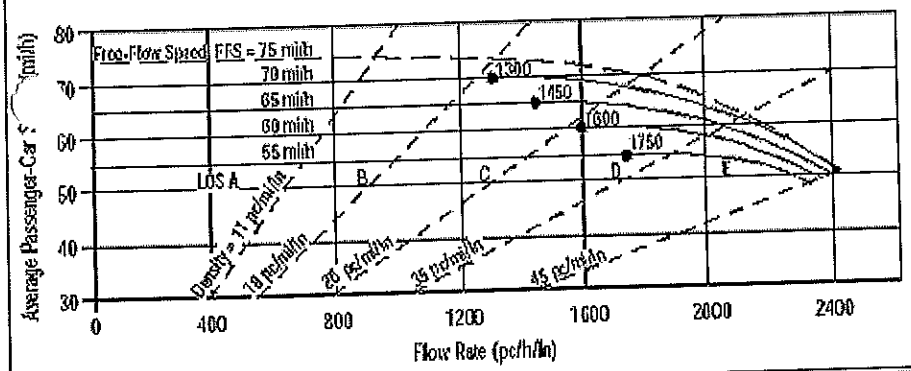
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	WESTBOUND
From/To	WB 595 BETWEEN DAVIE OFF RAMP
Jurisdiction	
Analysis Year	2014 BUILD

Project Description I-595 SIMR

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	7307 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.81	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.6	mi/h
f_N	1.5	mi/h
FFS	66.9	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1971	pc/h/ln
S	63.3	mi/h
D = v_p / S	31.2	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

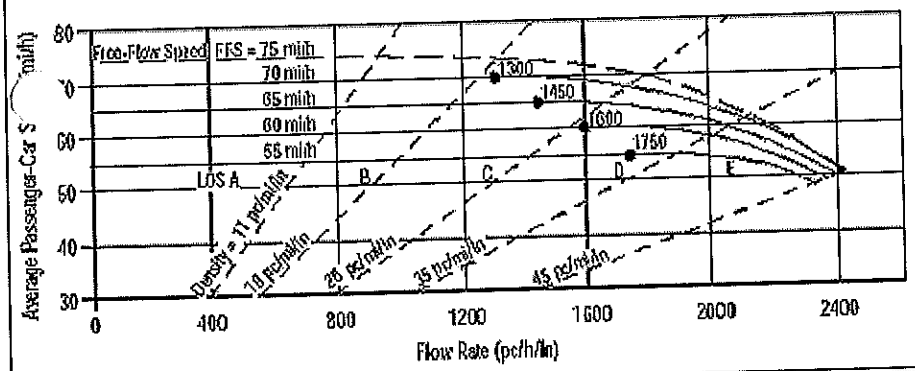
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	WESTBOUND
From/To	WB 595 BETWEEN DAVIE OFF RAMP
Jurisdiction	
Analysis Year	2014BUILD

Project Description I-595 SIMR

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	9243 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.81	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.6	mi/h
f_N	1.5	mi/h
FFS	66.9	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2493	pc/h/ln
S		mi/h
D = v_p / S		pc/mi/ln
LOS	F	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

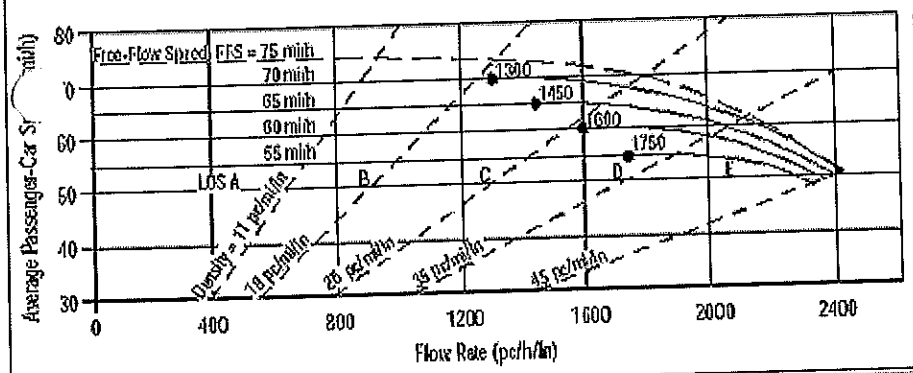
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	WESTBOUND I-595
From/To	WEST OF SW 136TH AVE
Jurisdiction	
Analysis Year	2014 BUILD

Project Description I-595 SIMR

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4894 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.81	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.6	mi/h
f_N	1.5	mi/h
FFS	66.9	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1320	pc/h/ln
S	66.9	mi/h
D = v_p / S	19.7	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

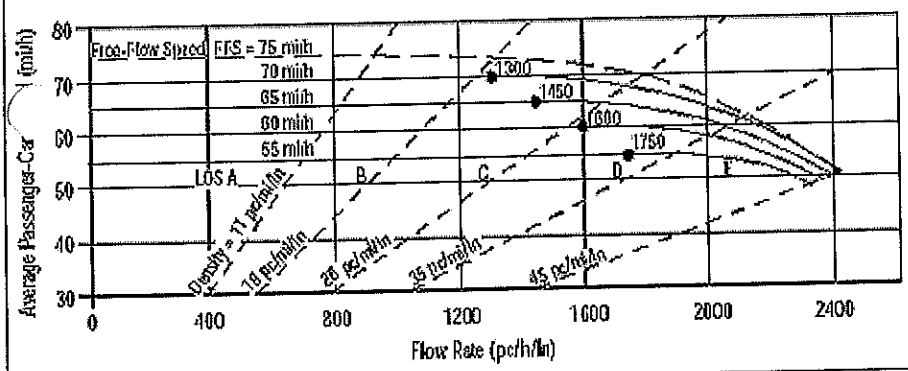
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	WESTBOUND I-595
From/To	WEST OF SW 136TH AVE
Jurisdiction	
Analysis Year	2014 BUILD

Project Description

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6302 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.81	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.6	mi/h
f_N	1.5	mi/h
FFS	66.9	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1700	pc/h/ln
S	66.2	mi/h
D = v_p / S	25.7	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

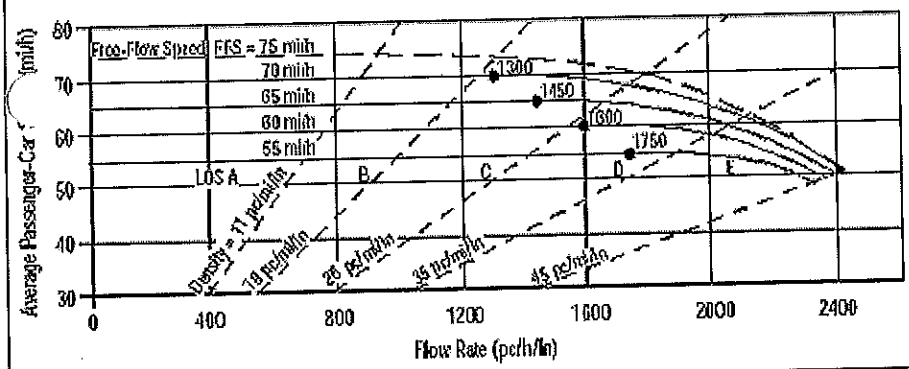
N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

RAMPS AND RAMP JUNCTIONS

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	I-595 EB
From/To	NOB HILL ON-RAMP
Jurisdiction	
Analysis Year	2014 BUILD

Project Description NOB HILL ON -RAMP (LANE ADDITION)

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	8170 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2204	pc/h/ln
S	57.8	mi/h
D = v_p / S	38.1	pc/mi/ln
LOS	E	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

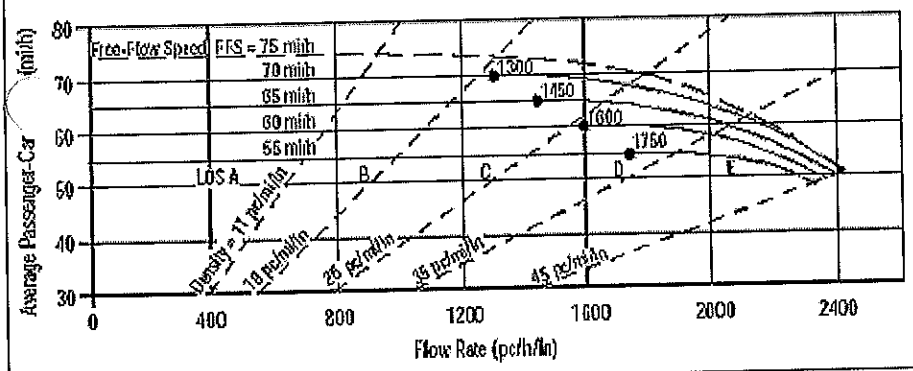
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	I-595 EB
From/To	NOB HILL ON-RAMP
Jurisdiction	
Analysis Year	2014 BUILD

Project Description NOB HILL ON -RAMP (LANE ADDITION)

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6365 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1717	pc/h/ln
S	65.7	mi/h
D = v_p / S	26.1	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
v - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	EASTBOUND
Agency or Company	RSH	Junction	EB 595 TO SR 7 OFF RAMP DIVERG
Date Performed	9/1/04	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	2014BUILD

Project Description I-595 SIMR

Inputs

Upstream Adj Ramp	Terrain Level	Downstream Adj Ramp
☐ Yes ☐ On		☑ Yes ☐ On
☑ No ☐ Off		☐ No ☑ Off
L_{up} = ft	S_{FF} = 60.0 mph S_{FR} = 45.0 mph	L_{down} = 1276 ft
Vu = veh/h	Sketch (show lanes, L_A, L_D, V_R, V_f)	VD = 679 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	9996	0.95	Level	5	0	0.976	1.00	10785
Ramp	1216	0.95	Level	2	0	0.990	1.00	1293
UpStream								
DownStream	679	0.95	Level	2	0	0.990	1.00	722

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 5432 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	10785	9200	Yes
V_{12}	5432	4400:All	Yes
$V_{FO} = V_F - V_R$	9492	9200	Yes
V_R	1293	2100	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = 48.7 (pc/ mi /ln)

LOS= F (Exhibit 25-4)

Speed Estimation

D_s = 0.414 (Exhibit 25-19)

S_R= 52.5 mph (Exhibit 25-19)

S_0= 59.3 mph (Exhibit 25-19)

S = 55.7 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	YLM	Freeway/Dir of Travel	EASTBOUND
Agency or Company	RSH	Junction	EB 595 TO SR 7 OFF RAMP DIVERG
Date Performed	9/1/04	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	2014BUILD

Project Description

Inputs

Upstream Adj Ramp	Terrain Level	Downstream Adj Ramp
☐ Yes ☐ On		☑ Yes ☐ On
☑ No ☐ Off		☐ No ☑ Off
L_{up} = ft	S_{FF} = 60.0 mph	S_{FR} = 45.0 mph	L_{down} = 1276 ft
Vu = veh/h	Sketch (show lanes, L_A, L_D, V_R, V_f)		VD = 858 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	7639	0.95	Level	5	0	0.976	1.00	8242
Ramp	958	0.95	Level	2	0	0.990	1.00	1019
UpStream								
DownStream	858	0.95	Level	2	0	0.990	1.00	912

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 4168 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	8242	9200	No
V_{12}	4168	4400:All	No
$V_{FO} = V_F - V_R$	7223	9200	No
V_R	1019	2100	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 37.8 (pc/ mi /ln)

LOS= E (Exhibit 25-4)

Speed Estimation

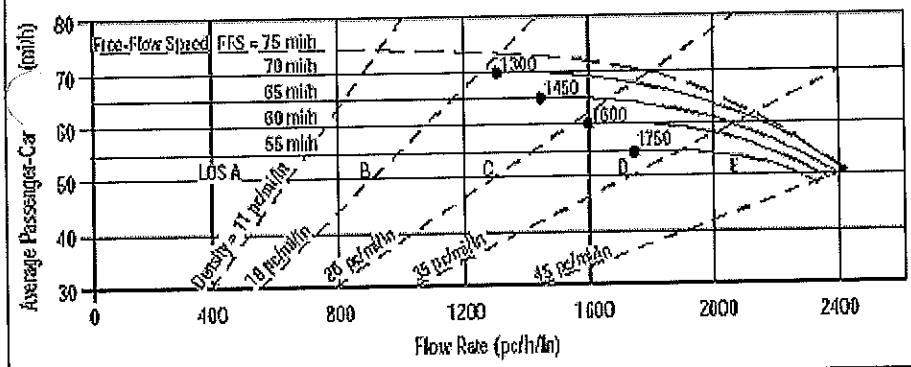
D_s = 0.390 (Exhibit 25-19)

S_R= 53.0 mph (Exhibit 25-19)

S_0= 61.8 mph (Exhibit 25-19)

S = 57.0 mph (Exhibit 25-15)

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	AM Peak Hour

Site Information

Highway/Direction of Travel	EASTBOUND
From/To	SR 84 OFF RAMP (lane drop)
Jurisdiction	
Analysis Year	2014BUILD

Project Description I-595 SIMR

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	8780 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2368	pc/h/ln
S		mi/h
D = v_p / S		pc/mi/ln
LOS	F	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

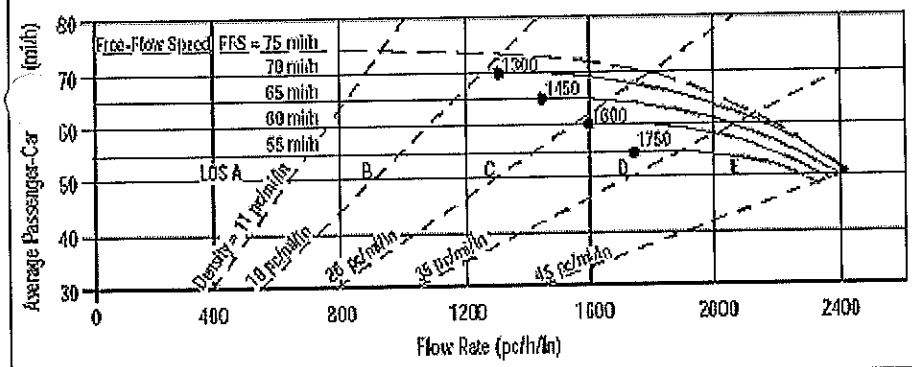
Glossary

N - Number of lanes	S - Speed
v - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	PM Peak Hour

Site Information

Highway/Direction of Travel	EASTBOUND
From/To	SR 84 Off Ramp (lane drop)
Jurisdiction	
Analysis Year	2014 BUILD

Project Description I-595 SIMR

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6681 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.91	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	2.1	mi/h
f_N	1.5	mi/h
FFS	66.4	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1802	pc/h/ln
S	65.0	mi/h
D = v_p / S	27.7	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
v - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	YLM	Freeway/Dir of Travel	EASTBOUND
Agency or Company	RSH	Junction	Turnpike On-Ramp
Date Performed	9/1/04	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	2014 BUILD

Project Description

Inputs

01 Upstream Adj Ramp ☐ Yes ☐ On ☑ No ☐ Off L_{up} = ft Vu = veh/h	Terrain Level S_{FF} = 60.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	Downstream Adj Ramp ☑ Yes ☑ On ☐ No ☐ Off L_{down} = 1750 ft VD = 1015 veh/h

Conversion to pc/h Under Base Conditions

	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	8101	0.95	Level	5	0	0.976	1.00	8741
Ramp	1950	0.95	Level	2	0	0.990	1.00	2073
UpStream								
DownStream	1015	0.95	Level	2	0	0.990	1.00	1079

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.600 using Equation (Exhibit 25-5)

V_{12}= 5244 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	10814	6900	Yes
V_{R12}	7317	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 56.6 (pc/ mi /ln)

LOS = F (Exhibit 25-4)

Speed Estimation

M_S = 6.121 (Exibit 25-19)

S_R= -50.2 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{Fi}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	EASTBOUND
Agency or Company	RSH	Junction	Turnpike On-Ramp
Date Performed		Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	2014 BUILD

Project Description I-595 SIMR

Inputs

01 Upstream Adj Ramp ☐ Yes ☐ On ☑ No ☐ Off L_{up} = ft Vu = veh/h	Terrain Level S_{FF} = 60.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D,V_R,V_f)	Downstream Adj Ramp ☑ Yes ☑ On ☐ No ☐ Off L_{down} = 1750 ft VD = 754 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	5823	0.95	Level	5	0	0.976	1.00	6283
Ramp	1510	0.95	Level	2	0	0.990	1.00	1605
UpStream								
DownStream	754	0.95	Level	2	0	0.990	1.00	802

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.600 using Equation (Exhibit 25-5)

V_{12}= 3769 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	7888	6900	Yes
V_{R12}	5374	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 41.6 (pc/ mi /ln)

LOS = F (Exhibit 25-4)

Speed Estimation

M_S = 1.090 (Exibit 25-19)

S_R= 40.4 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 43.5 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

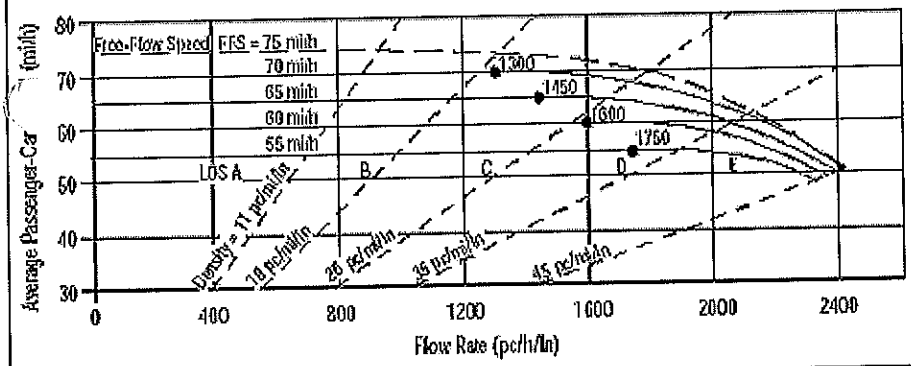
D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	Westbound I-595
From/To	Davie On-Ramp
Jurisdiction	
Analysis Year	2034

Project Description I-595 SIMR

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6574 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.81	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.6	mi/h
f_N	1.5	mi/h
FFS	66.9	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1773	pc/h/ln
S	65.7	mi/h
D = v_p / S	27.0	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

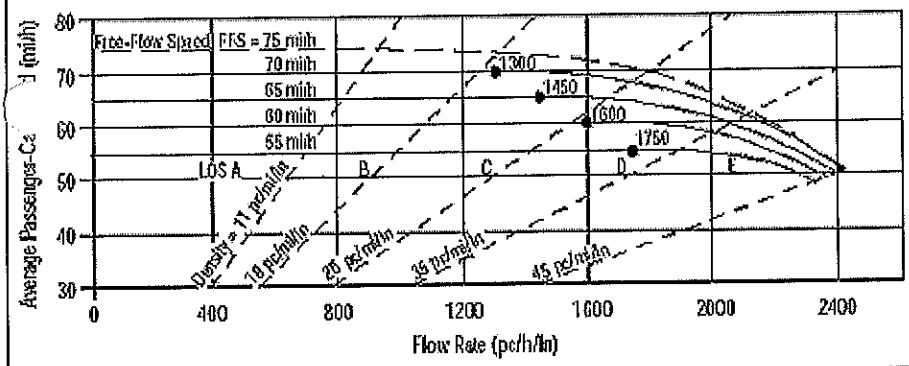
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	Westbound I-595
From/To	Davie On-Ramp
Jurisdiction	
Analysis Year	2034

Project Description I-595 SIMR

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	8593 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.81	l/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.6	mi/h
f_N	1.5	mi/h
FFS	66.9	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2318	pc/h/ln
S	54.5	mi/h
D = v_p / S	42.5	pc/mi/ln
LOS	E	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

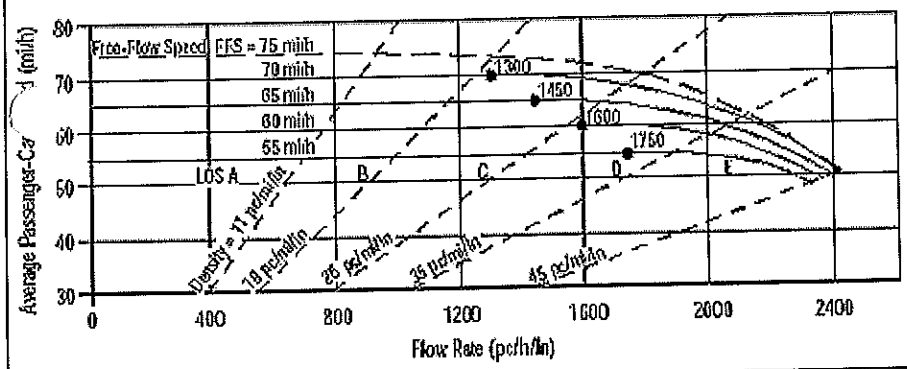
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	I-595 WB
From/To	PINE ISLAND ON-RAMP
Jurisdiction	
Analysis Year	2014 BUILD

Project Description I-595 SIMR

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6447 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.81	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.6	mi/h
f_N	1.5	mi/h
FFS	66.9	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1739	pc/h/ln
S	65.9	mi/h
D = v_p / S	26.4	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

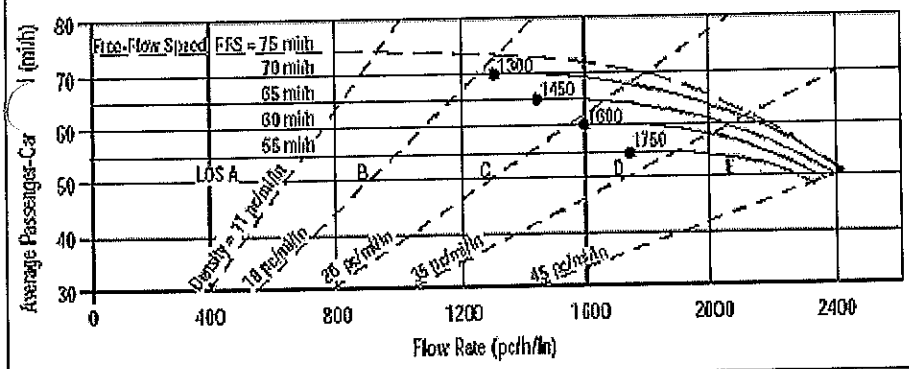
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	9/1/04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	I-595 WB
From/To	PINE ISLAND ON-RAMP
Jurisdiction	
Analysis Year	2014 BUILD

Project Description I-595 SIMR

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	8395 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.81	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.6	mi/h
f_N	1.5	mi/h
FFS	66.9	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2264	pc/h/ln
S	56.3	mi/h
D = v_p / S	40.2	pc/mi/ln
LOS	E	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

TURNPIKE

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	YLM	Freeway/Dir of Travel	Turnpike NB
Agency or Company	RS&H	Junction	I-595 EB to TPKE
Date Performed	9/20/2004	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2014 BUILD

Project Description I-595 SIMR

Inputs

00 Upstream Adj Ramp ☑ Yes ☐ On ☐ No ☑ Off L_{up} = 1650 ft Vu = 1600 veh/h	Terrain Level S_{FF} = 70.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	Downstream Adj Ramp ☐ Yes ☐ On ☑ No ☑ Off L_{down} = ft VD = veh/h

Conversion to pc/h Under Base Conditions

	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	3950	0.95	Level	2	0	0.990	1.00	4199
Ramp	1260	0.95	Level	2	0	0.990	1.00	1340
UpStream	1600	0.95	Level	2	0	0.990	1.00	1701
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.323 using Equation (Exhibit 25-5)

V_{12}= 1356 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	5539	9600	No
V_{R12}	2696	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 19.0 (pc/ mi /ln)

LOS = B (Exhibit 25-4)

Speed Estimation

M_S = 0.280 (Exibit 25-19)

S_R= 62.2 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 64.4 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	Turnpike NB
Agency or Company	RS&H	Junction	I-595 EB to TPKE
Date Performed	9/20/2004	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2014 BUILD

Project Description I-595 SIMR

Inputs

00 Upstream Adj Ramp ☑ Yes ☐ On ☐ No ☑ Off L_{up} = 1650 ft Vu = 1330 veh/h	Terrain Level S_{FF} = 70.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	Downstream Adj Ramp ☐ Yes ☐ On ☑ No ☑ Off L_{down} = ft VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	4787	0.95	Level	2	0	0.990	1.00	5089
Ramp	1000	0.95	Level	2	0	0.990	1.00	1063
UpStream	1330	0.95	Level	2	0	0.990	1.00	1414
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.357 using Equation (Exhibit 25-5)

V_{12}= 1819 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	6152	9600	No
V_{R12}	2882	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 20.6 (pc/ mi /ln)

LOS = C (Exhibit 25-4)

Speed Estimation

M_S = 0.292 (Exibit 25-19)

S_R= 61.8 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 63.9 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

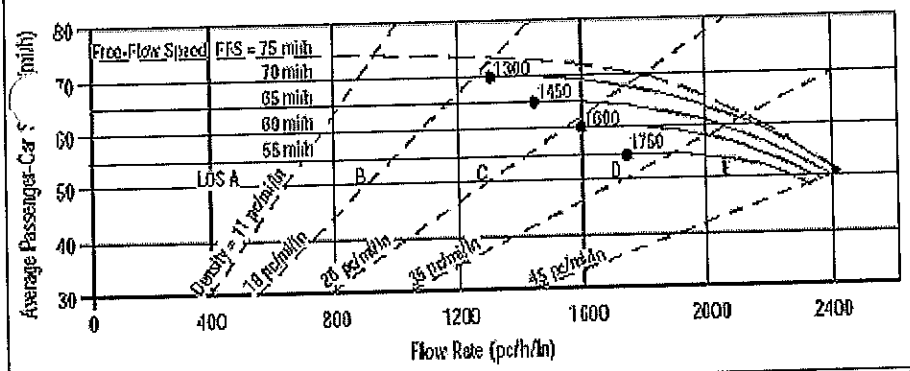
D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RS&H
Date Performed	9/7/04
Analysis Time Period	AM PEAK VOLUMES

Site Information

Highway/Direction of Travel	TURNPIKE NB
From/To	
Jurisdiction	
Analysis Year	2014 BUILD

Project Description I-595 WB ON-ramp to NB

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6470 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.66	I/mi
Number of Lanes, N	5	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	0.8	mi/h
f_N	0.0	mi/h
FFS	69.2	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1396	pc/h/ln
S	69.2	mi/h
D = v_p / S	20.2	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

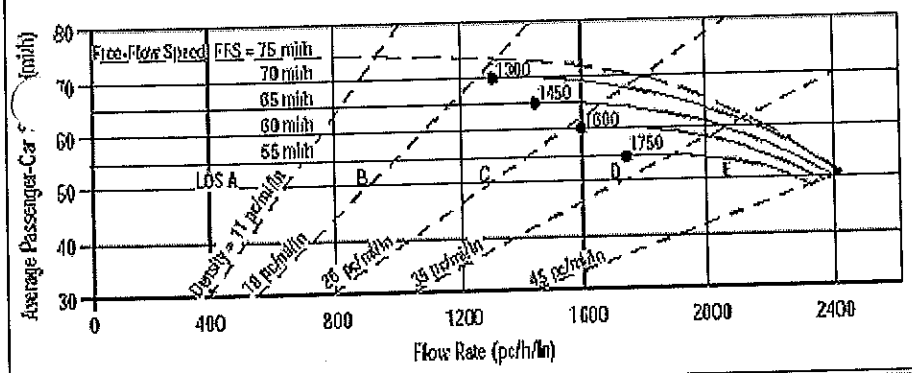
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RS&H
Date Performed	9/7/04
Analysis Time Period	PM PEAK VOLUMES

Site Information

Highway/Direction of Travel	TURNPIKE NB
From/To	
Jurisdiction	
Analysis Year	2014 BUILD

Project Description I-595 WB ON-ramp

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	7307 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.66	l/mi
Number of Lanes, N	5	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	0.8	mi/h
f_N	0.0	mi/h
FFS	69.2	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1577	pc/h/ln
S	68.8	mi/h
D = v_p / S	22.9	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h
S		mi/h
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	YLM	Freeway/Dir of Travel	SB Turnpike
Agency or Company	RSH	Junction	Griffin Rd
Date Performed	9/20/2004	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2014

Project Description I-595 SIMR

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 850 ft
Vu = 2850 veh/h

Terrain Level

S_{FF} = 70.0 mph S_{FR} = 55.0 mph
Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☑ Off
L_{down} = ft
VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	4610	0.95	Level	5	0	0.976	1.00	4974
Ramp	530	0.95	Level	2	0	0.990	1.00	563
UpStream	2850	0.95	Level	2	0	0.990	1.00	3030
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 2486 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	4974	9600	No
V_{12}	2486	4400:All	No
$V_{FO} = V_F - V_R$	4411	9600	No
V_R	563	2200	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = 24.3 (pc/ mi /ln)

LOS= C (Exhibit 25-4)

Speed Estimation

D_s = 0.219 (Exhibit 25-19)

S_R= 63.9 mph (Exhibit 25-19)

S_0= 75.8 mph (Exhibit 25-19)

S = 69.3 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	SB Turnpike
Agency or Company	RSH	Junction	Griffin Rd
Date Performed	9/20/2004	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2014

Project Description I-595 SIMR

Inputs

Upstream Adj Ramp	Terrain Level	Downstream Adj Ramp
☑ Yes ☐ On		☐ Yes ☐ On
☐ No ☑ Off		☑ No ☑ Off
L_{up} = 850 ft		L_{down} = ft
Vu = 2760 veh/h	S_{FF} = 70.0 mph S_{FR} = 55.0 mph	VD = veh/h
	Sketch (show lanes, L_A, L_D, V_R, V_f)	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	3900	0.95	Level	5	0	0.976	1.00	4208
Ramp	550	0.95	Level	2	0	0.990	1.00	585
UpStream	2760	0.95	Level	2	0	0.990	1.00	2934
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 2165 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	4208	9600	No
V_{12}	2165	4400:All	No
$V_{FO} = V_F - V_R$	3623	9600	No
V_R	585	2200	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 21.5 (pc/ mi /ln)

LOS= C (Exhibit 25-4)

Speed Estimation

D_s = 0.221 (Exhibit 25-19)

S_R= 63.8 mph (Exhibit 25-19)

S_0= 76.7 mph (Exhibit 25-19)

S = 69.5 mph (Exhibit 25-15)

MAJOR MERGE AND DIVERGE

2014 Build Conditions
Major Merge/Diverge Analysis

MERGE ANALYSIS

A1.1) NB I-95 On-Ramp to EB I-595 (AM)

Approaching Freeway Volume:
Vi = 3,783 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 4080 (pc/h) < capacity = 6,900

Ramp Volume:
Vi = 1,267 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 1347 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 5,050 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 5447 (pc/h) < capacity = 9,200

A1.2) NB I-95 On-Ramp to EB I-595 (PM)

Approaching Freeway Volume:
Vi = 2,469 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 2663 (pc/h) < capacity = 6,900

Ramp Volume:
Vi = 1,029 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 1094 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 3,498 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 3773 (pc/h) < capacity = 9,200

A2.1) NB I-95 On-Ramp to WB I-595 (AM)

Approaching Freeway Volume:
Vi = 2,743 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 2958 (pc/h) < capacity = 4,600

Ramp Volume:
Vi = 2,595 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 2759 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 5,338 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 5757 (pc/h) < capacity = 6,900

2014 Build Conditions
Major Merge/Diverge Analysis

A2.2) NB I-95 On-Ramp to WB I-595 (PM)

Approaching Freeway Volume:
Vi = 4,025 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 4341 (pc/h) < capacity = 4,600

Ramp Volume:
Vi = 3,250 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 3456 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 7,275 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 7846 (pc/h) > capacity = 6,900

A 3.1 Griffin Rd to NB Turnpike (AM)

Approaching Freeway Volume:
Vi = 6,320 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 6816 (pc/h) < capacity = 9,600

Ramp Volume:
Vi = 920 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 978 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 7,240 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 7808 (pc/h) < capacity = 6 14,400

A 3.2 Griffin Rd to NB Turnpike (PM)

Approaching Freeway Volume:
Vi = 6,780 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 7312 (pc/h) < capacity = 9,600

Ramp Volume:
Vi = 880 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 936 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 7,660 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 8261 (pc/h) < capacity = 6 14,400

2014 Build Conditions
Major Merge/Diverge Analysis

A4.1) I-595 On-Ramp to SB Turnpike (AM)

Approaching Freeway Volume:
Vi = 4,610 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 4972 (pc/h) < capacity = 9,600

Ramp Volume:
Vi = 2,750 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 2924 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 7,360 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 7938 (pc/h) < capacity = 14,400

A4.2) I-595 On-Ramp to SB Turnpike (PM)

Approaching Freeway Volume:
Vi = 3,900 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 4206 (pc/h) < capacity = 9,600

Ramp Volume:
Vi = 3,040 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 3232 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 6,940 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 7485 (pc/h) < capacity = 14,400

2014 Build Conditions
Major Merge/Diverge Analysis

DIVERGE ANALYSIS

B 1.1 EB I-595 Off-Ramp to NB I-95 (AM)

Vi = 11,066 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 11,935 (pc/h)

N = 4

Therefore **D = 32.52 pc/mi/ln**

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 32.52 > 28 - 35 Exhibit 25-4 gives LOS as D in the diverge area.

Level of Service = D

B 1.2 EB I-595 Off-Ramp to NB I-95 (PM)

Vi = 8,087 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 8,722 (pc/h)

N = 4

Therefore **D = 23.77 pc/mi/ln**

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 23.77 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 2.1 EB I-595 Off-Ramp to SB I-95 (AM)

Vi = 7,233 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 7,801 (pc/h)

N = 3

Therefore **D = 28.34 pc/mi/ln**

2014 Build Conditions
Major Merge/Diverge Analysis

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 28.34 > 28 - 35 Exhibit 25-4 gives LOS as D in the diverge area.

Level of Service = D

B 2.2 EB I-595 Off-Ramp to SB I-95 (PM)

Vi = 5,139 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 5,542 (pc/h)

N = 3

Therefore **D = 20.14 pc/mi/ln**

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 20.14 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 3.1 EB I-595 Off-Ramp Pine Island Road (AM)

Vi= 7,757 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 8366 (pc/h)

N = 4

Therefore D= 22.80 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 22.80> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 3.2 EB I-595 Off-Ramp Pine Island Rd (PM)

Vi= 6,090 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 6568 (pc/h)

2014 Build Conditions
Major Merge/Diverge Analysis

N = 4

Therefore D= 17.90 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 17.90 > 10 - 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 4.1 WB I-595 Off-Ramp to SB I-95 (AM)

Vi= 5,065 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 5463 (pc/h)

N = 4

Therefore D= 14.89 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 14.89> 10-20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 4.2 WB I-595 Off-Ramp to SB I-95 (PM)

Vi= 6,535 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 7048 (pc/h)

N = 4

Therefore D= 19.21 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 19.21> 10 -20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 5.1 WB I-595 Off-Ramp NB I-95 (AM)

Vi= 4,063 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 4382 (pc/h)

N = 3

Therefore D= 15.92 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4

(p.25-5) of the HCM 2000.

For D 15.92> 10-20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 5.2 WB I-595 Off-Ramp NB I-95 (PM)

Vi= 5,242 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **5654 (pc/h)**

N = 3

Therefore D= 20.54 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000

For D 20.54> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 6.1 WB I-595 Off-Ramp SR7/TURNPIKE (AM)

Vi= 8,238 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **8885 (pc/h)**

N = 5

Therefore D= 19.37 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 19.37> 10-20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 6.2 WB I-595 Off-Ramp SR7/TURNPIKE (PM)

Vi= 10,935 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **11794 (pc/h)**

N = 5

Therefore D= 25.71 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 25.10> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

2014 Build Conditions
Major Merge/Diverge Analysis

Level of Service = C

B 7.1 WB I-595 Off-Ramp University Drive (AM)

Vi= 7,307 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 7881 (pc/h)

N = 4

Therefore D= 21.47 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 21.47> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 7.2 WB I-595 Off-Ramp University Drive (PM)

Vi= 9,243 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 9969 (pc/h)

N = 4

Therefore D= 27.16 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 27.16> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 8.1 WB I-595 Off-Ramp Pine Island Rd (AM)

Vi= 6,574 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 7090 (pc/h)

N = 4

Therefore D= 19.32 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 19.32> 10- 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

2014 Build Conditions
Major Merge/Diverge Analysis

B 8.2 WB I-595 Off-Ramp Pine Island Rd (PM)

Vi= 8,593 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 9268 (pc/h)

N = 4

Therefore D= 25.25 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 25.25> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 9.1 WB I-595 Off-Ramp Nob Hill Rd (AM)

Vi= 5,946 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 6413 (pc/h)

N = 4

Therefore D= 17.48 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 17.48> 10- 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 9.2 WB I-595 Off-Ramp Nob Hill Rd (PM)

Vi= 7,799 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 8411 (pc/h)

N = 4

Therefore D= 22.92 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 22.92> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 10.1 NB Turnpike Off-Ramp I-595EB (AM)

Vi= 7,240 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 7808 (pc/h)

N = 6

2014 Build Conditions
Major Merge/Diverge Analysis

Therefore D= 14.19 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 14.19> 10- 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 10.2 NB Turnpike Off-Ramp I-595EB (PM)

Vi= 7,660 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 8261 (pc/h)

N =6

Therefore D= 15.01 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 15.01> 10- 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 11.1 NB Turnpike Off-Ramp I-595WB (AM)

Vi= 5,550 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 5986 (pc/h)

N = 5

Therefore D= 13.05 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 13.05> 10- 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B11.2 NB Turnpike Off-Ramp I-595WB (PM)

Vi= 6,117 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 6597 (pc/h)

N = 5

Therefore D= 14.38 pc/mi/ln

2014 Build Conditions
Major Merge/Diverge Analysis

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 14.38> 10- 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 12.1 SB Turnpike Off-Ramp I-595 (AM)

Vi= 7,460 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 8046 (pc/h)

N = 5

Therefore D= 17.54 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 17.54> 10- 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B12.2 SB Turnpike Off-Ramp I-595 (PM)

Vi= 6,660 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 7183 (pc/h)

N = 5

Therefore D= 15.66 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 15.66> 10- 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

WEAVING

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/01/04
Analysis Time Period	AM Peak Period

Site Information

Freeway/Dir of Travel	I-595 EB
Weaving Seg Location	Between SW 136 and Flamingo
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	5	Volume ratio, VR	0.23
Weaving seg length, L (ft)	650	Weaving ratio, R	0.43
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5959	0.95	5	0	1.5	1.2	0.976	1.00	6429
Vo2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw1	1027	0.95	2	0	1.5	1.2	0.990	1.00	1091
Vw2	790	0.95	2	0	1.5	1.2	0.990	1.00	839
Vw				1930	Vnw				6429
V									8359

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			4.16	0.55
Weaving and non-weaving speeds, Si (mi/h)			24.70	47.21

Number of lanes required for unconstrained operation, Nw: 1.58
Maximum number of lanes, Nw (max): 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	39.00
Weaving segment density, D (pc/mi/ln)	42.87
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	8465
Capacity as a 15-minute flow rate, c (veh/h)	8259
Capacity as a full-hour volume, c_h (veh/h)	7846

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/01/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 EASTBOUND
Weaving Seg Location	BEWTEEN SW136AVE AND FLAMINGO
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	5	Volume ratio, VR	0.18
Weaving seg length, L (ft)	650	Weaving ratio, R	0.40
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6145	0.95	5	0	1.5	1.2	0.976	1.00	6630
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	841	0.95	2	0	1.5	1.2	0.990	1.00	894
Vw2	572	0.95	2	0	1.5	1.2	0.990	1.00	608
Vw				1502	Vnw				6630
V									8132

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.15	0.00		
b (Exhibit 24-6)	2.20	4.00		
c (Exhibit 24-6)	0.97	1.30		
d (Exhibit 24-6)	0.80	0.75		
Weaving intensity factor, Wi	1.59	0.80		
Weaving and non-weaving speeds, Si (mi/h)	34.27	42.77		

Number of lanes required for unconstrained operation, Nw: 1.37
Maximum number of lanes, Nw (max): 1.40

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	40.90
Weaving segment density, D (pc/mi/ln)	39.77
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	8569
Capacity as a 15-minute flow rate, c (veh/h)	8360
Capacity as a full-hour volume, c_h (veh/h)	7942

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/01/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 EASTBOUND
Weaving Seg Location	BEWTEEN FLAMINGO AND HIATUS
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.24
Weaving seg length, L (ft)	1100	Weaving ratio, R	0.21
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6319	0.95	5	0	1.5	1.2	0.976	1.00	6817
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1630	0.95	2	0	1.5	1.2	0.990	1.00	1732
Vw2	430	0.95	2	0	1.5	1.2	0.990	1.00	457
Vw				2189	Vnw				6817
V									9006

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			3.72	0.57
Weaving and non-weaving speeds, Si (mi/h)			25.59	46.84

Number of lanes required for unconstrained operation, Nw 1.45
Maximum number of lanes, Nw (max) 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	38.97
Weaving segment density, D (pc/mi/ln)	57.77
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7134
Capacity as a 15-minute flow rate, c (veh/h)	6960
Capacity as a full-hour volume, c_h (veh/h)	6612

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/01/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 EASTBOUND
Weaving Seg Location	BEWTEEN FLAMINGO AND HIATUS
Jurisdiction	
Analysis Year	2014BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.24
Weaving seg length, L (ft)	1100	Weaving ratio, R	0.21
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	4971	0.95	5	0	1.5	1.2	0.976	1.00	5363
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1289	0.95	2	0	1.5	1.2	0.990	1.00	1370
Vw2	340	0.95	2	0	1.5	1.2	0.990	1.00	361
Vw				1731	Vnw				5363
V									7094

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.15	0.00		
b (Exhibit 24-6)	2.20	4.00		
c (Exhibit 24-6)	0.97	1.30		
d (Exhibit 24-6)	0.80	0.75		
Weaving intensity factor, Wi	1.27	0.73		
Weaving and non-weaving speeds, Si (mi/h)	37.05	43.83		

Number of lanes required for unconstrained operation, Nw 1.40
Maximum number of lanes, Nw (max) 1.40

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	41.96
Weaving segment density, D (pc/mi/ln)	42.27
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	7128
Capacity as a 15-minute flow rate, c (veh/h)	6954
Capacity as a full-hour volume, c_h (veh/h)	6606

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	7/18/2003
Analysis Time Period	AM Peak Period

Site Information

Freeway/Dir of Travel	I-595 EB
Weaving Seg Location	Between Hiatus On and Nob Hill
Jurisdiction	
Analysis Year	2014 Build

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	4	Volume ratio, VR	0.18
Weaving seg length, L (ft)	1030	Weaving ratio, R	0.44
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	7077	0.95	5	0	1.5	1.2	0.976	1.00	7635
Vo2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw1	872	0.95	2	0	1.5	1.2	0.990	1.00	927
Vw2	680	0.95	2	0	1.5	1.2	0.990	1.00	722
Vw				1649	Vnw				7635
V									9284

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.81	0.39		
Weaving and non-weaving speeds, Si (mi/h)	42.61	51.08		

Number of lanes required for unconstrained operation, Nw: 1.14
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	49.34
Weaving segment density, D (pc/mi/ln)	47.04
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	8607
Capacity as a 15-minute flow rate, c (veh/h)	8397
Capacity as a full-hour volume, c_h (veh/h)	7977

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/01/04
Analysis Time Period	PM Peak Period

Site Information

Freeway/Dir of Travel	I-595 EB
Weaving Seg Location	Between Hiatus On and Nob Hill
Jurisdiction	
Analysis Year	2014 Build

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	4	Volume ratio, VR	0.18
Weaving seg length, L (ft)	1030	Weaving ratio, R	0.43
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5550	0.95	5	0	1.5	1.2	0.976	1.00	5988
Vo2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw1	710	0.95	2	0	1.5	1.2	0.990	1.00	754
Vw2	540	0.95	2	0	1.5	1.2	0.990	1.00	574
Vw				1328	Vnw				5988
V									7316

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.69	0.31		
Weaving and non-weaving speeds, Si (mi/h)	44.57	53.17		

Number of lanes required for unconstrained operation, Nw: 1.14
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	51.37
Weaving segment density, D (pc/mi/ln)	35.61
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	8578
Capacity as a 15-minute flow rate, c (veh/h)	8369
Capacity as a full-hour volume, c_h (veh/h)	7951

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/1/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 Eastbound
Weaving Seg Location	Between Pine On/Uni. Off
Jurisdiction	
Analysis Year	2014 Build

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	4	Volume ratio, VR	0.35
Weaving seg length, L (ft)	500	Weaving ratio, R	0.46
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6330	0.95	5	0	1.5	1.2	0.976	1.00	6829
Vo2	0	0.90	2	0	1.5	1.2	0.990	1.00	0
Vw1	1840	0.95	2	0	1.5	1.2	0.990	1.00	1956
Vw2	1547	0.95	2	0	1.5	1.2	0.990	1.00	1644
Vw				3600	Vnw				6829
V									10429

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	1.69	1.38		
Weaving and non-weaving speeds, Si (mi/h)	33.58	35.99		

Number of lanes required for unconstrained operation, Nw: 3.02
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	35.12
Weaving segment density, D (pc/mi/ln)	74.24
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	6844
Capacity as a 15-minute flow rate, c (veh/h)	6677
Capacity as a full-hour volume, c_h (veh/h)	6343

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/1/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 Eastbound
Weaving Seg Location	Between Pine On/Uni. Off
Jurisdiction	
Analysis Year	2014 Build

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	4	Volume ratio, VR	0.38
Weaving seg length, L (ft)	500	Weaving ratio, R	0.43
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	4687	0.95	5	0	1.5	1.2	0.976	1.00	5057
Vo2	0	0.90	2	0	1.5	1.2	0.990	1.00	0
Vw1	1678	0.95	2	0	1.5	1.2	0.990	1.00	1783
Vw2	1286	0.95	2	0	1.5	1.2	0.990	1.00	1367
Vw				3150	Vnw				5057
V									8207

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	1.52	1.29		
Weaving and non-weaving speeds, Si (mi/h)	34.82	36.85		

Number of lanes required for unconstrained operation, Nw: 3.15
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	36.04
Weaving segment density, D (pc/mi/ln)	56.92
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	6609
Capacity as a 15-minute flow rate, c (veh/h)	6448
Capacity as a full-hour volume, c_h (veh/h)	6126

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	PJ
Agency/Company	RSH
Date Performed	9/1/04
Analysis Time Period	AM Peak Hour

Site Information

Freeway/Dir of Travel	Eastbound
Weaving Seg Location	Between Univer and Davie
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	C
Weaving number of lanes, N	5	Volume ratio, VR	0.34
Weaving seg length, L (ft)	2300	Weaving ratio, R	0.12
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	7390	0.95	5	0	1.5	1.2	0.976	1.00	7973
Vo2	15	0.95	2	0	1.5	1.2	0.990	1.00	15
Vw1	3451	0.95	2	0	1.5	1.2	0.990	1.00	3668
Vw2	487	0.95	2	0	1.5	1.2	0.990	1.00	517
Vw				4185	Vnw				7988
V									12173

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.30	6.00		
c (Exhibit 24-6)	0.80	1.10		
d (Exhibit 24-6)	0.60	0.60		
Weaving intensity factor, Wi	0.78	0.60		
Weaving and non-weaving speeds, Si (mi/h)	43.14	46.23		

Number of lanes required for unconstrained operation, Nw: 2.54
Maximum number of lanes, Nw (max): 3.00

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	45.12
Weaving segment density, D (pc/mi/ln)	53.96
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	9726
Capacity as a 15-minute flow rate, c (veh/h)	9489
Capacity as a full-hour volume, c_h (veh/h)	9015

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	PJ
Agency/Company	RSH
Date Performed	9/1/04
Analysis Time Period	PM Peak Hour

Site Information

Freeway/Dir of Travel	Eastbound
Weaving Seg Location	Between Univers and Davie
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	C
Weaving number of lanes, N	5	Volume ratio, VR	0.35
Weaving seg length, L (ft)	2300	Weaving ratio, R	0.12
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5587	0.95	5	0	1.5	1.2	0.976	1.00	6028
Vo2	15	0.95	2	0	1.5	1.2	0.990	1.00	15
Vw1	2725	0.95	2	0	1.5	1.2	0.990	1.00	2897
Vw2	386	0.95	2	0	1.5	1.2	0.990	1.00	410
Vw				3307	Vnw				6043
V									9350

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.30	6.00		
c (Exhibit 24-6)	0.80	1.10		
d (Exhibit 24-6)	0.60	0.60		
Weaving intensity factor, Wi	0.64	0.47		
Weaving and non-weaving speeds, Si (mi/h)	45.49	49.01		

Number of lanes required for unconstrained operation, Nw: 2.54
Maximum number of lanes, Nw (max): 3.00

☑ If Nw < Nw(max) unconstrained operation ☐ If Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	47.71
Weaving segment density, D (pc/mi/ln)	39.20
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	9554
Capacity as a 15-minute flow rate, c (veh/h)	9321
Capacity as a full-hour volume, c_h (veh/h)	8855

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YM
Agency/Company	RSH
Date Performed	9/1/04
Analysis Time Period	AM Peak Hour

Site Information

Freeway/Dir of Travel	Eastbound
Weaving Seg Location	Between Davie and Turnpike
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.34
Weaving seg length, L (ft)	1960	Weaving ratio, R	0.41
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	8181	0.95	5	0	1.5	1.2	0.976	1.00	8826
Vo2	363	0.95	2	0	1.5	1.2	0.990	1.00	385
Vw1	2660	0.95	2	0	1.5	1.2	0.990	1.00	2828
Vw2	1815	0.95	2	0	1.5	1.2	0.990	1.00	1929
Vw				4757	Vnw				9211
V									13968

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.89	0.73		
Weaving and non-weaving speeds, Si (mi/h)	41.46	43.86		

Number of lanes required for unconstrained operation, Nw: 2.00
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	43.01
Weaving segment density, D (pc/mi/ln)	64.95
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	10026
Capacity as a 15-minute flow rate, c (veh/h)	9781
Capacity as a full-hour volume, c_h (veh/h)	9292

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YM
Agency/Company	RSH
Date Performed	9/1/04
Analysis Time Period	PM Peak Hour

Site Information

Freeway/Dir of Travel	Eastbound
Weaving Seg Location	Between Davie and Turnpike
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.35
Weaving seg length, L (ft)	1960	Weaving ratio, R	0.41
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6202	0.95	5	0	1.5	1.2	0.976	1.00	6691
Vo2	287	0.95	2	0	1.5	1.2	0.990	1.00	305
Vw1	2110	0.95	2	0	1.5	1.2	0.990	1.00	2243
Vw2	1437	0.95	2	0	1.5	1.2	0.990	1.00	1527
Vw				3770	Vnw				6996
V									10766

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.75	0.59		
Weaving and non-weaving speeds, Si (mi/h)	43.52	46.46		

Number of lanes required for unconstrained operation, Nw: 1.99
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	45.39
Weaving segment density, D (pc/mi/ln)	47.44
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	9955
Capacity as a 15-minute flow rate, c (veh/h)	9712
Capacity as a full-hour volume, c_h (veh/h)	9226

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RSH
Date Performed	9/1/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	595 WB
Weaving Seg Location	Between Turnpike and Davie
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.36
Weaving seg length, L (ft)	1550	Weaving ratio, R	0.32
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5147	0.95	5	0	1.5	1.2	0.976	1.00	5553
Vo2	330	0.95	2	0	1.5	1.2	0.990	1.00	350
Vw1	2160	0.95	2	0	1.5	1.2	0.990	1.00	2296
Vw2	995	0.95	2	0	1.5	1.2	0.990	1.00	1057
Vw				3353	Vnw				5903
V									9256

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.78	0.60		
Weaving and non-weaving speeds, Si (mi/h)	43.13	46.23		

Number of lanes required for unconstrained operation, Nw: 2.18

Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	45.06
Weaving segment density, D (pc/mi/ln)	41.08
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	9615
Capacity as a 15-minute flow rate, c (veh/h)	9380
Capacity as a full-hour volume, c_h (veh/h)	8911

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RSH
Date Performed	9/1/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	595 WB
Weaving Seg Location	Between Turnpike and Davie
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.33
Weaving seg length, L (ft)	1550	Weaving ratio, R	0.37
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6878	0.95	5	0	1.5	1.2	0.976	1.00	7420
Vo2	535	0.95	2	0	1.5	1.2	0.990	1.00	568
Vw1	2365	0.95	2	0	1.5	1.2	0.990	1.00	2514
Vw2	1410	0.95	2	0	1.5	1.2	0.990	1.00	1499
Vw				4013	Vnw				7988
V									12001

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.89	0.69		
Weaving and non-weaving speeds, Si (mi/h)	41.45	44.61		

Number of lanes required for unconstrained operation, Nw: 2.07

Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	43.50
Weaving segment density, D (pc/mi/ln)	55.17
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	9831
Capacity as a 15-minute flow rate, c (veh/h)	9591
Capacity as a full-hour volume, c_h (veh/h)	9111

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/1/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 WB
Weaving Seg Location	University On-NOb Hill Off
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.32
Weaving seg length, L (ft)	2200	Weaving ratio, R	0.47
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	4040	0.95	5	0	1.5	1.2	0.976	1.00	4358
Vo2	0	0.95	0	0	1.5	1.2	1.000	1.00	0
Vw1	1008	0.95	2	0	1.5	1.2	0.990	1.00	1071
Vw2	898	0.95	2	0	1.5	1.2	0.990	1.00	954
Vw				2025	Vnw				4358
V									6383

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.47	0.28		
Weaving and non-weaving speeds, Si (mi/h)	49.08	53.93		

Number of lanes required for unconstrained operation, Nw: 1.64
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	52.29
Weaving segment density, D (pc/mi/ln)	24.41
Level of service, LOS	C
Capacity of base condition, c_b (pc/h)	10307
Capacity as a 15-minute flow rate, c (veh/h)	10056
Capacity as a full-hour volume, c_h (veh/h)	9553

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/1/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 WB
Weaving Seg Location	University On-NOb Hill Off
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.31
Weaving seg length, L (ft)	2200	Weaving ratio, R	0.46
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5323	0.95	5	0	1.5	1.2	0.976	1.00	5743
Vo2	0	0.95	0	0	1.5	1.2	1.000	1.00	0
Vw1	1340	0.95	2	0	1.5	1.2	0.990	1.00	1424
Vw2	1136	0.95	2	0	1.5	1.2	0.990	1.00	1207
Vw				2631	Vnw				5743
V									8374

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.56	0.37		
Weaving and non-weaving speeds, Si (mi/h)	47.01	51.55		

Number of lanes required for unconstrained operation, Nw: 1.65
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	50.03
Weaving segment density, D (pc/mi/ln)	33.47
Level of service, LOS	D
Capacity of base condition, c_b (pc/h)	10330
Capacity as a 15-minute flow rate, c (veh/h)	10078
Capacity as a full-hour volume, c_h (veh/h)	9574

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	
Date Performed	9/1/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 WB
Weaving Seg Location	Between Nob Hill and Hiatus
Jurisdiction	
Analysis Year	2014 Build

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	4	Volume ratio, VR	0.18
Weaving seg length, L (ft)	1000	Weaving ratio, R	0.39
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	fHV	fp	v
Vo1	5656	0.95	5	0	1.5	1.2	0.976	1.00	6102
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	791	0.95	2	0	1.5	1.2	0.990	1.00	840
Vw2	513	0.95	2	0	1.5	1.2	0.990	1.00	545
Vw				1385	Vnw				6102
V									7487

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.72	0.33		
Weaving and non-weaving speeds, Si (mi/h)	44.11	52.66		

Number of lanes required for unconstrained operation, Nw: 1.18

Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	50.84
Weaving segment density, D (pc/mi/ln)	36.82
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	8536
Capacity as a 15-minute flow rate, c (veh/h)	8328
Capacity as a full-hour volume, c_h (veh/h)	7912

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/1/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 WB
Weaving Seg Location	Between Nob Hill and Hiatus
Jurisdiction	
Analysis Year	2014 Build

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	4	Volume ratio, VR	0.18
Weaving seg length, L (ft)	1000	Weaving ratio, R	0.38
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	7392	0.95	5	0	1.5	1.2	0.976	1.00	7975
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1003	0.95	2	0	1.5	1.2	0.990	1.00	1066
Vw2	608	0.95	2	0	1.5	1.2	0.990	1.00	646
Vw				1712	Vnw				7975
V									9687

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.85	0.41		
Weaving and non-weaving speeds, Si (mi/h)	42.08	50.55		

Number of lanes required for unconstrained operation, Nw: 1.17
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	48.81
Weaving segment density, D (pc/mi/ln)	49.62
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	8599
Capacity as a 15-minute flow rate, c (veh/h)	8389
Capacity as a full-hour volume, c_h (veh/h)	7970

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/1/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 WESTBOUND
Weaving Seg Location	BETWEEN HIATUS AND FLAMINGO
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.24
Weaving seg length, L (ft)	1050	Weaving ratio, R	0.33
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	5078	0.95	5	0	1.5	1.2	0.976	1.00	5478
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1091	0.95	2	0	1.5	1.2	0.990	1.00	1159
Vw2	536	0.95	2	0	1.5	1.2	0.990	1.00	569
Vw				1728	Vnw				5478
V									7206

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.15	0.00		
b (Exhibit 24-6)	2.20	4.00		
c (Exhibit 24-6)	0.97	1.30		
d (Exhibit 24-6)	0.80	0.75		
Weaving intensity factor, Wi	1.33	0.77		
Weaving and non-weaving speeds, Si (mi/h)	36.50	43.32		

Number of lanes required for unconstrained operation, Nw: 1.38

Maximum number of lanes, Nw (max): 1.40

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	41.46
Weaving segment density, D (pc/mi/ln)	43.45
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7107
Capacity as a 15-minute flow rate, c (veh/h)	6934
Capacity as a full-hour volume, c_h (veh/h)	6587

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/1/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 WESTBOUND
Weaving Seg Location	BETWEEN HIATUS AND FLAMINGO
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.24
Weaving seg length, L (ft)	1050	Weaving ratio, R	0.33
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	fHV	fp	v
Vo1	5078	0.95	5	0	1.5	1.2	0.976	1.00	5478
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1091	0.95	2	0	1.5	1.2	0.990	1.00	1159
Vw2	536	0.95	2	0	1.5	1.2	0.990	1.00	569
Vw				1728	Vnw				5478
V									7206

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.15	0.00		
b (Exhibit 24-6)	2.20	4.00		
c (Exhibit 24-6)	0.97	1.30		
d (Exhibit 24-6)	0.80	0.75		
Weaving intensity factor, Wi	1.33	0.77		
Weaving and non-weaving speeds, Si (mi/h)	36.50	43.32		

Number of lanes required for unconstrained operation, Nw: 1.38

Maximum number of lanes, Nw (max): 1.40

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	41.46
Weaving segment density, D (pc/mi/ln)	43.45
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7107
Capacity as a 15-minute flow rate, c (veh/h)	6934
Capacity as a full-hour volume, c_h (veh/h)	6587

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	10/30/2003
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 WESTBOUND
Weaving Seg Location	BETWEEN HIATUS AND FLAMINGO
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	4	Volume ratio, VR	0.23
Weaving seg length, L (ft)	1050	Weaving ratio, R	0.32
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6620	0.95	5	0	1.5	1.2	0.976	1.00	7142
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1380	0.95	2	0	1.5	1.2	0.990	1.00	1467
Vw2	660	0.95	2	0	1.5	1.2	0.990	1.00	701
Vw				2168	Vnw				7142
V									9310

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			3.92	0.60
Weaving and non-weaving speeds, Si (mi/h)			25.17	46.31

Number of lanes required for unconstrained operation, Nw: 1.41
Maximum number of lanes, Nw (max): 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	38.74
Weaving segment density, D (pc/mi/ln)	60.09
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7151
Capacity as a 15-minute flow rate, c (veh/h)	6977
Capacity as a full-hour volume, c_h (veh/h)	6628

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/1/04
Analysis Time Period	AM Peak Period

Site Information

Freeway/Dir of Travel	I-595 WB
Weaving Seg Location	Between Flamingo and SW 136th
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	4	Volume ratio, VR	0.28
Weaving seg length, L (ft)	1250	Weaving ratio, R	0.30
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	4370	0.95	5	0	1.5	1.2	0.976	1.00	4714
Vo2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw1	1244	0.95	2	0	1.5	1.2	0.990	1.00	1322
Vw2	524	0.95	2	0	1.5	1.2	0.990	1.00	557
Vw				1879	Vnw				4714
V									6593

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.70	0.42		
Weaving and non-weaving speeds, Si (mi/h)	44.38	50.22		

Number of lanes required for unconstrained operation, Nw: 1.47
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	48.40
Weaving segment density, D (pc/mi/ln)	34.05
Level of service, LOS	D
Capacity of base condition, c_b (pc/h)	7984
Capacity as a 15-minute flow rate, c (veh/h)	7789
Capacity as a full-hour volume, c_h (veh/h)	7400

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9/1/04
Analysis Time Period	PM Peak Period

Site Information

Freeway/Dir of Travel	I-595 WB
Weaving Seg Location	Between Flamingo and SW 136th
Jurisdiction	
Analysis Year	2014 BUILD

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	4	Volume ratio, VR	0.27
Weaving seg length, L (ft)	1250	Weaving ratio, R	0.27
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	fHV	fp	v
Vo1	5709	0.95	5	1	1.5	1.2	0.974	1.00	6171
Vo2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw1	1571	0.95	2	0	1.5	1.2	0.990	1.00	1670
Vw2	593	0.95	2	0	1.5	1.2	0.990	1.00	630
Vw				2300	Vnw				6171
V									8471

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.82	0.51		
Weaving and non-weaving speeds, Si (mi/h)	42.52	48.19		

Number of lanes required for unconstrained operation, Nw 1.45
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	46.51
Weaving segment density, D (pc/mi/ln)	45.53
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	8078
Capacity as a 15-minute flow rate, c (veh/h)	7866
Capacity as a full-hour volume, c_h (veh/h)	7473

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

SIGNALIZED INTERSECTIONS

YEAR 2034
REVISED LPA

BASIC FREEWAY SEGMENTS

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	YLM	Intersection	SR 84 EB/136th Avenue
Agency or Co.	RSH	Area Type	All other areas
Date Performed	10/15/04	Jurisdiction	
Time Period	AM Peak	Analysis Year	Opening Year 2014 Build
		Project ID	I - 595 SIMR

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	2	2	1	0	0	0	0	2	1	2	2	0
Lane group	L	T	R					T	R	L	T	
Volume, V (vph)	653	672	241					499	896	615	711	
% Heavy vehicles, %HV	2	2	2					2	2	2	2	
Peak-hour factor, PHF	0.95	0.95	0.95					0.95	0.95	0.95	0.95	
Pretimed (P) or actuated (A)	P	P	P					P	P	P	P	
Start-up lost time, l_1	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Extension of effective green, e	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Arrival type, AT	3	3	3					3	3	3	3	
Unit extension, UE	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Filtering/metering, I	1.000	1.000	1.000					1.000	1.000	1.000	1.000	
Initial unmet demand, Q_b	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Ped / Bike / RTOR volumes	0	0	50	0			0	0	50			
Lane width	12.0	12.0	12.0					12.0	12.0	12.0	12.0	
Parking / Grade / Parking	N	0	N	N		N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0	0					0	0	0	0	
Min. time for pedestrians, G_p												

Phasing	EB Only	02	03	04	NB Only	SB Only	07	08
Timing	G = 45.0	G =	G =	G =	G = 35.0	G = 44.0	G =	G =
	Y = 6	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 140.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	687	707	201					525	891	647	748	
Lane group capacity, c	1104	1139	1583					886	972	1080	1114	
v/c ratio, X	0.62	0.62	0.13					0.59	0.92	0.60	0.67	
Total green ratio, g/C	0.32	0.32	1.00					0.25	0.61	0.31	0.31	
Uniform delay, d_1	40.3	40.3	0.0					46.2	23.8	40.5	41.7	
Progression factor, PF	1.000	1.000	0.950					1.000	1.000	1.000	1.000	
Delay calibration, k	0.50	0.50	0.50					0.50	0.50	0.50	0.50	
Incremental delay, d_2	2.6	2.5	0.2					2.9	14.6	2.5	3.2	
Initial queue delay, d_3												

Control delay	42.9	42.8	0.2					49.1	38.5	43.0	44.9	
Lane group LOS	D	D	A					D	D	D	D	
Approach delay	37.5						42.4			44.0		
Approach LOS	D						D			D		
Intersection delay	41.2			X_c = 0.83			Intersection LOS			D		

HCS2000™ DETAILED REPORT

General Information

Analyst	*YLM*
Agency or Co.	*RSH*
Date Performed	*10/15/04*
Time Period	*PM Peak*

Site Information

Intersection	*SR 84 EB/136th Avenue*
Area Type	*All other areas*
Jurisdiction	
Analysis Year	*Opening Year 2014Build*
Project ID	*I - 595 SIMR*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*2*	*2*	*1*	*0*	*0*	*0*	*0*	*2*	*1*	*2*	*2*	*0*
Lane group	*L*	*T*	*R*					*T*	*R*	*L*	*T*	
Volume, V (vph)	*681*	*441*	*146*					*337*	*545*	*972*	*1320*	
% Heavy vehicles, %HV	*2*	*2*	*2*					*2*	*2*	*2*	*2*	
Peak-hour factor, PHF	*0.95*	*0.95*	*0.95*					*0.95*	*0.95*	*0.95*	*0.95*	
Pretimed (P) or actuated (A)	*P*	*P*	*P*					*P*	*P*	*P*	*P*	
Start-up lost time, l_1	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Extension of effective green, e	*2.0*	*2.0*	*2.0*					*2.0*	*2.0*	*2.0*	*2.0*	
Arrival type, AT	*3*	*3*	*3*					*3*	*3*	*3*	*3*	
Unit extension, UE	*3.0*	*3.0*	*3.0*					*3.0*	*3.0*	*3.0*	*3.0*	
Filtering/metering, I	*1.000*	*1.000*	*1.000*					*1.000*	*1.000*	*1.000*	*1.000*	
Initial unmet demand, Q_b	*0.0*	*0.0*	*0.0*					*0.0*	*0.0*	*0.0*	*0.0*	
Ped / Bike / RTOR volumes	*0*	*0*	*50*	*0*			*0*	*0*	*50*			
Lane width	*12.0*	*12.0*	*12.0*					*12.0*	*12.0*	*12.0*	*12.0*	
Parking / Grade / Parking	*N*	*0*	*N*	*N*		*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B	*0*	*0*	*0*					*0*	*0*	*0*	*0*	
Min. time for pedestrians, G_p												

Phasing	EB Only	02	03	04	NB Only	SB Only	07	08
Timing	G = *40.0*	G =	G =	G =	G = *22.0*	G = *62.0*	G =	G =
	Y = *6*	Y =	Y =	Y =	Y = *5*	Y = *5*	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *140.0*		

Lane Group Capacity, Control Delay, and LOS Determination

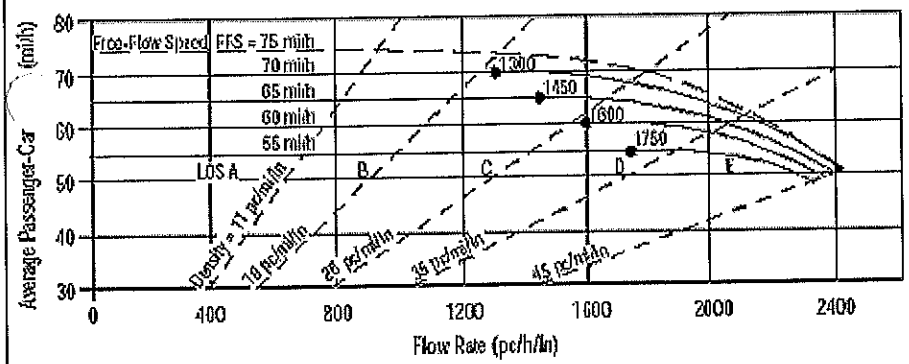
	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	*717*	*464*	*101*					*355*	*521*	*1023*	*1389*	
Lane group capacity, c	*981*	*1013*	*1583*					*557*	*769*	*1521*	*1570*	
v/c ratio, X	*0.73*	*0.46*	*0.06*					*0.64*	*0.68*	*0.67*	*0.88*	
Total green ratio, g/C	*0.29*	*0.29*	*1.00*					*0.16*	*0.49*	*0.44*	*0.44*	
Uniform delay, d_1	*45.1*	*41.1*	*0.0*					*55.3*	*27.6*	*30.9*	*35.7*	
Progression factor, PF	*1.000*	*1.000*	*0.950*					*1.000*	*1.000*	*1.000*	*1.000*	
Delay calibration, k	*0.50*	*0.50*	*0.50*					*0.50*	*0.50*	*0.50*	*0.50*	
Incremental delay, d_2	*4.8*	*1.5*	*0.1*					*5.5*	*4.8*	*2.4*	*7.7*	
Initial queue delay, d_3												

Control delay	49.9	42.6	0.1					60.8	32.4	33.3	43.4	
Lane group LOS	D	D	A					E	C	C	D	
Approach delay	43.3						43.9			39.1		
proach LOS	D						D			D		
Intersection delay	41.2			X_c = 0.78			Intersection LOS			D		

I-595

RAMPS AND RAMP JUNCTIONS

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2034

Project Description Hiatus/Nob Hill Off-ramp (Braid)

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	5720 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.69	l/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.0	mi/h
f_N	1.5	mi/h
FFS	67.5	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1543	pc/h/ln
S	67.4	mi/h
D = v_p / S	22.9	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

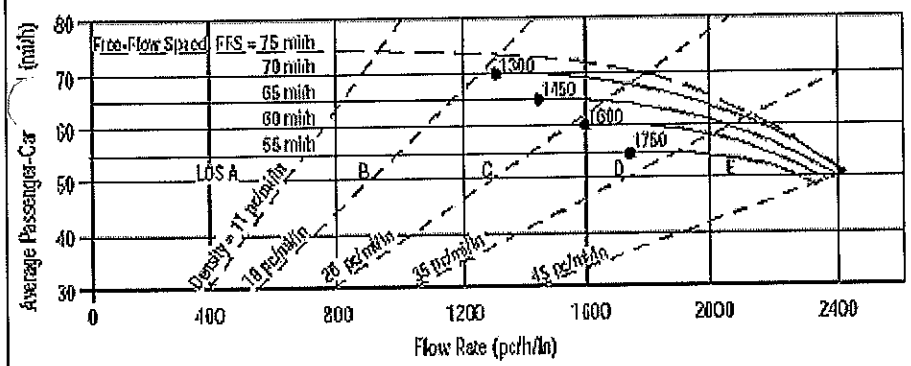
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	8/26/04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2034

Project Description Hiatus/Nob Hill Off-ramp (Braid)

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	8140 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.69	l/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.0	mi/h
f_N	1.5	mi/h
FFS	67.5	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2196	pc/h/ln
S	58.7	mi/h
D = v_p / S	37.4	pc/mi/ln
LOS	E	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

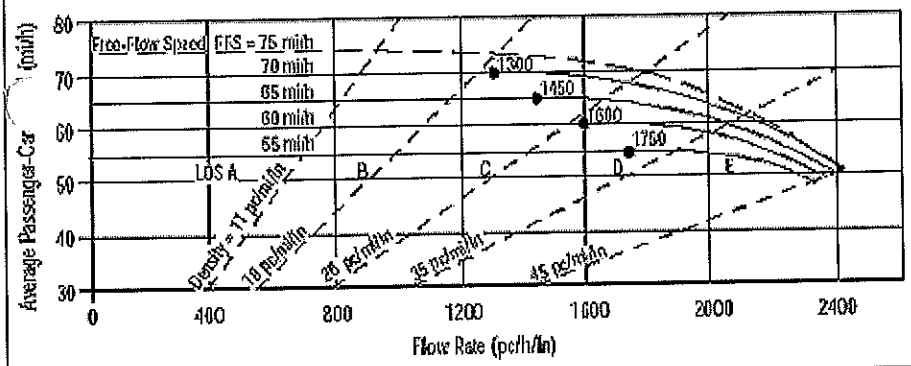
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	8/24/04
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2034

Project Description FLAMINGO ON

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6110 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.69	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.0	mi/h
f_N	1.5	mi/h
FFS	67.5	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1648	pc/h/ln
S	67.0	mi/h
D = v_p / S	24.6	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

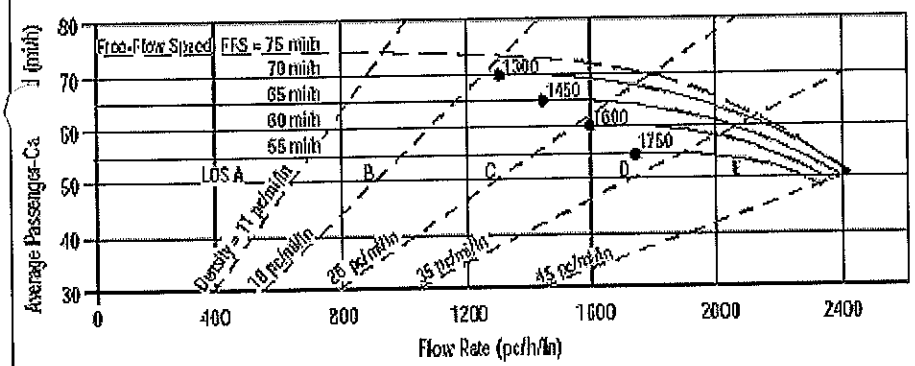
Glossary

N - Number of lanes	S - Speed
v - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	8/26/04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2034

Project Description FLAMINGO ON

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	8040 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.69	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.0	mi/h
f_N	1.5	mi/h
FFS	67.5	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2169	pc/h/ln
S	59.4	mi/h
D = v_p / S	36.5	pc/mi/ln
LOS	E	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	I-595EB
Agency or Company	RS&H	Junction	Hiatus ON
Date Performed	9-22-04	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2034

Project Description

Inputs

Upstream Adj Ramp	Terrain	Downstream Adj Ramp
☐ Yes ☐ On		☐ Yes ☐ On
☐ No ☐ Off		☐ No ☐ Off
L_{up} = ft		L_{down} = ft
Vu = veh/h	S_{FF} = 60.0 mph S_{FR} = 50.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	6110	0.95	Level	5	0	0.976	1.00	6592
Ramp	1450	0.95	Level	2	0	0.990	1.00	1542
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.170 using Equation (Exhibit 25-5)

V_{12}= 1121 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	8134	9200	No
V_{R12}	2663	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 21.5 (pc/ mi /ln)

LOS = C (Exhibit 25-4)

Speed Estimation

M_S = 0.312 (Exibit 25-19)

S_R= 54.4 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 52.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	I-595EB
Agency or Company	RS&H	Junction	Hiatus ON
Date Performed	9-22-04	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2034

Project Description I-595 SIMR

Inputs

Upstream Adj Ramp	Terrain	Downstream Adj Ramp
☐ Yes ☐ On		☐ Yes ☐ On
☐ No ☐ Off		☐ No ☐ Off
L_{up} = ft	S_{FF} = 60.0 mph S_{FR} = 50.0 mph	L_{down} = ft
Vu = veh/h	Sketch (show lanes, L_A, L_D, V_R, V_f)	VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	8040	0.95	Level	5	0	0.976	1.00	8675
Ramp	960	0.95	Level	2	0	0.990	1.00	1021
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.235 using Equation (Exhibit 25-5)

V_{12}= 2040 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	9696	9200	Yes
V_{R12}	3061	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 24.8 (pc/ mi /ln)

LOS = F (Exhibit 25-4)

Speed Estimation

M_S = 0.339 (Exibit 25-19)

S_R= 53.9 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 49.3 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

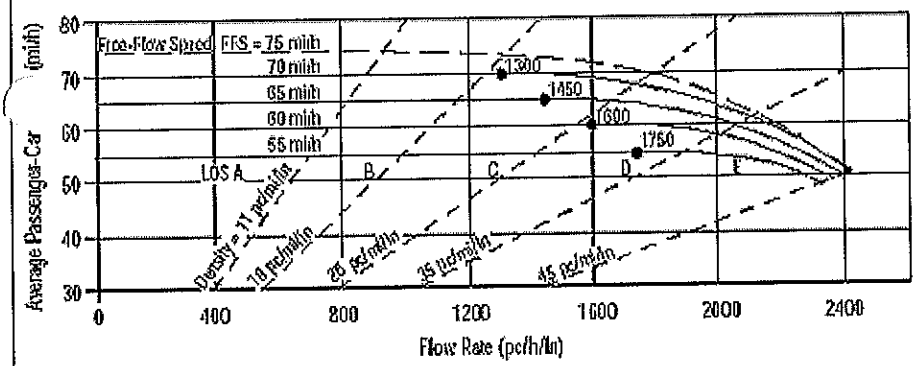
D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	8/24/04
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2034

Project Description NOB HILL ON

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	6200 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.69	l/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.0	mi/h
f_N	1.5	mi/h
FFS	67.5	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1672	pc/h/ln
S	66.9	mi/h
D = v_p / S	25.0	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

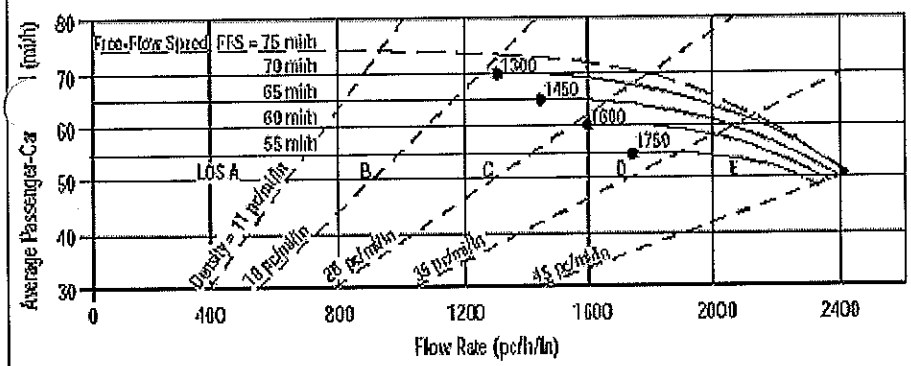
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	8/26/04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2034

Project Description NOB HILL ON

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	7240 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.69	I/mi
Number of Lanes, N	4	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.0	mi/h
f_N	1.5	mi/h
FFS	67.5	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1953	pc/h/ln
S	64.0	mi/h
D = v_p / S	30.5	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

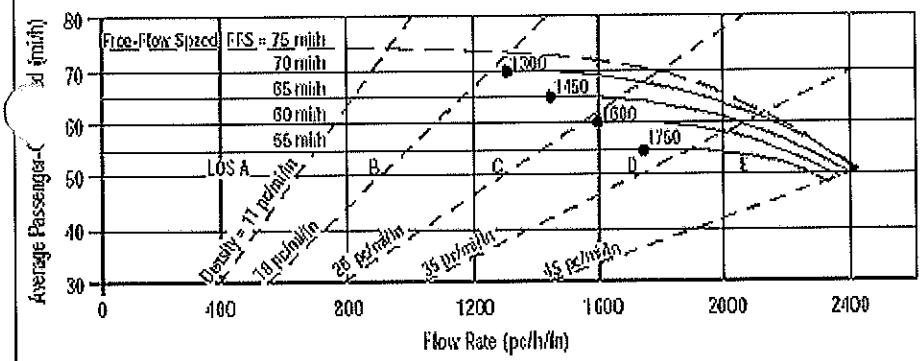
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	12-13-04
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2034

Project Description Pine Island On

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	8630 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.69	I/mi
Number of Lanes, N	5	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.0	mi/h
f_N	0.0	mi/h
FFS	69.0	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1862	pc/h/ln
S	66.4	mi/h
D = v_p / S	28.1	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

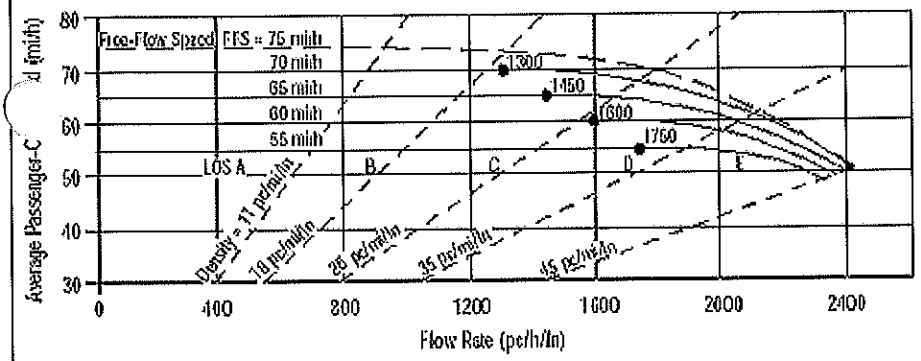
Glossary

N - Number of lanes	S - Speed
Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	12-13-04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2034

Project Description Pine Island On

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	9070 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.69	I/mi
Number of Lanes, N	5	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.0	mi/h
f_N	0.0	mi/h
FFS	69.0	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1957	pc/h/ln
S	65.0	mi/h
D = v_p / S	30.1	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

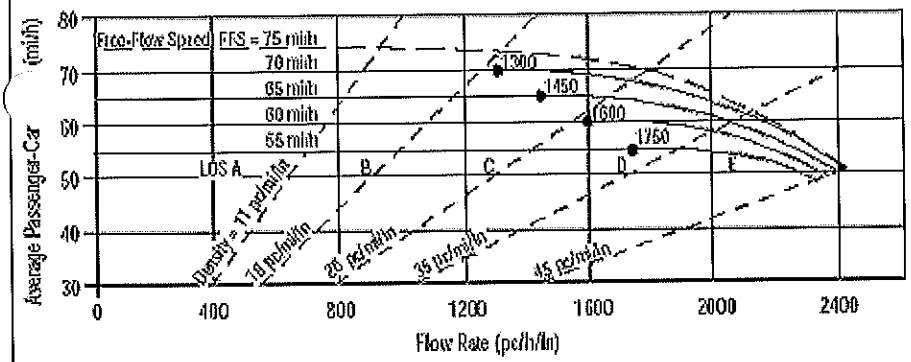
Glossary

N - Number of lanes	S - Speed
Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	12-13-04
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2034

Project Description Davie Off

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	8630 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.69	I/mi
Number of Lanes, N	5	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.0	mi/h
f_N	0.0	mi/h
FFS	69.0	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1862	pc/h/ln
S	66.4	mi/h
D = v_p / S	28.1	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

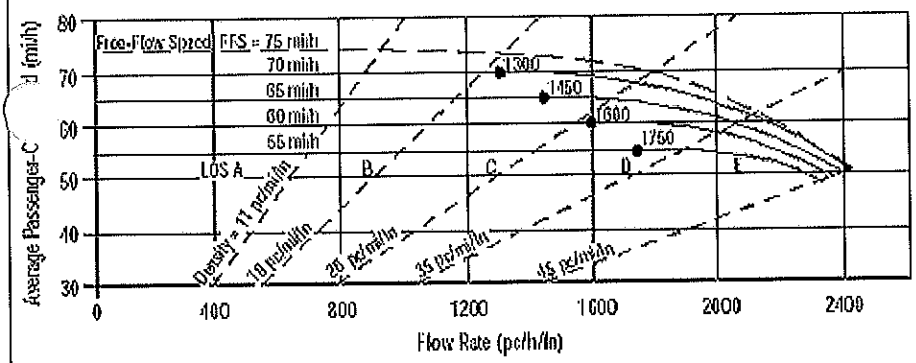
Glossary

N - Number of lanes	S - Speed
v - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	12-13-04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	EASTBOUND I-595
From/To	
Jurisdiction	
Analysis Year	2034

Project Description Davie Off

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	9070 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.69	l/mi
Number of Lanes, N	5	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	1.0	mi/h
f_N	0.0	mi/h
FFS	69.0	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1957	pc/h/ln
S	65.0	mi/h
D = v_p / S	30.1	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	I-595 EB
Agency or Company	RS&H	Junction	SR 84 Off-Ramp
Date Performed	8/24/04	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2034

Project Description

Inputs

Upstream Adj Ramp	Terrain	Downstream Adj Ramp
☐ Yes ☐ On		☐ Yes ☐ On
☐ No ☐ Off		☐ No ☐ Off
L_{up} = ft	S_{FF} = 60.0 mph S_{FR} = 45.0 mph	L_{down} = ft
Vu = veh/h	Sketch (show lanes, L_A, L_D, V_R, V_f)	VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	7210	0.95	Level	5	0	0.976	1.00	7779
Ramp	1620	0.95	Level	2	0	0.990	1.00	1722
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 4363 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	7779	9200	No
V_{12}	4363	4400:All	No
$V_{FO} = V_F - V_R$	6057	9200	No
V_R	1722	2100	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 40.9 (pc/ mi /ln)

LOS= E (Exhibit 25-4)

Speed Estimation

D_s = 0.453 (Exhibit 25-19)

S_R= 51.8 mph (Exhibit 25-19)

S_0= 63.1 mph (Exhibit 25-19)

S = 56.2 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	I-595 EB
Agency or Company	RS&H	Junction	SR 84 Off-Ramp
Date Performed	8/26/04	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2034

Project Description

Inputs

Upstream Adj Ramp	Terrain	Downstream Adj Ramp
☐ Yes ☐ On		☐ Yes ☐ On
☐ No ☐ Off		☐ No ☐ Off
L_{up} = ft	S_{FF} = 60.0 mph S_{FR} = 45.0 mph	L_{down} = ft
Vu = veh/h	Sketch (show lanes, L_A, L_D, V_R, V_f)	VD = veh/h

Conversion to pc/h Under Base Conditions

	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	6900	0.95	Level	5	0	0.976	1.00	7445
Ramp	1560	0.95	Level	2	0	0.990	1.00	1659
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 4182 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	7445	9200	No
V_{12}	4182	4400:All	No
$V_{FO} = V_F - V_R$	5786	9200	No
V_R	1659	2100	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 39.3 (pc/ mi /ln)

LOS= E (Exhibit 25-4)

Speed Estimation

D_s = 0.447 (Exhibit 25-19)

S_R= 51.9 mph (Exhibit 25-19)

S_0= 63.4 mph (Exhibit 25-19)

S = 56.4 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	I595EB
Agency or Company	RSH	Junction	Tpke and SR7 On
Date Performed	9-22-04	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2034

Project Description

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☐ No ☐ Off
L_{up} = ft
Vu = veh/h

Terrain

S_{FF} = 60.0 mph S_{FR} = 50.0 mph
Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☐ No ☐ Off
L_{down} = ft
VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	9590	0.95	Level	5	0	0.976	1.00	10347
Ramp	1220	0.95	Level	2	0	0.990	1.00	1297
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 4341 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	8278	9200	No
V_{12}	4341	4400:All	No
$V_{FO} = V_F - V_R$	6981	9200	No
V_R	1297	2100	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 41.6 (pc/ mi /ln)

LOS= E (Exhibit 25-4)

Speed Estimation

D_s = 0.350 (Exhibit 25-19)

S_R= 53.7 mph (Exhibit 25-19)

S_0= 62.0 mph (Exhibit 25-19)

S = 57.4 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	I595EB
Agency or Company	RSH	Junction	Tpke and SR7 On
Date Performed	9-22-04	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2034

Project Description I-595 SIMR

Inputs

Upstream Adj Ramp	Terrain	Downstream Adj Ramp
☐ Yes ☐ On		☐ Yes ☐ On
☐ No ☐ Off		☐ No ☐ Off
L_{up} = ft		L_{down} = ft
Vu = veh/h	S_{FF} = 60.0 mph S_{FR} = 50.0 mph	VD = veh/h
	Sketch (show lanes, L_A, L_D, V_R, V_f)	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	5340	0.95	Level	5	0	0.976	1.00	5762
Ramp	1360	0.95	Level	2	0	0.990	1.00	1446
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 2951 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	4898	9200	No
V_{12}	2951	4400:All	No
$V_{FO} = V_F - V_R$	3452	9200	No
V_R	1446	2100	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 29.6 (pc/ mi /ln)

LOS= D (Exhibit 25-4)

Speed Estimation

D_s = 0.363 (Exhibit 25-19)

S_R= 53.5 mph (Exhibit 25-19)

S_0= 65.8 mph (Exhibit 25-19)

S = 57.8 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	I-595 WB
Agency or Company	RS&H	Junction	
Date Performed	8/24/04	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2034

Project Description CD Off-Ramp

Inputs

Upstream Adj Ramp	Terrain	Downstream Adj Ramp
☒ Yes ☒ On		☒ Yes ☒ On
☒ No ☒ Off		☒ No ☒ Off
L_{up} = ft	S_{FF} = 60.0 mph S_{FR} = 50.0 mph	L_{down} = ft
Vu = veh/h	Sketch (show lanes, L_A, L_D, V_R, V_f)	VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	4290	0.95	Level	5	0	0.976	1.00	4629
Ramp	750	0.95	Level	2	0	0.990	1.00	797
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.608 using Equation (Exhibit 25-11)

V_{12} = 3125 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	4629	6900	No
V_{12}	3125	4400:All	No
$V_{FO} = V_F - V_R$	3832	6900	No
V_R	797	2100	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = 17.6 (pc/ mi /ln)

LOS= B (Exhibit 25-4)

Speed Estimation

D_s = 0.305 (Exhibit 25-19)

S_R= 54.5 mph (Exhibit 25-19)

S_0= 63.9 mph (Exhibit 25-19)

S = 57.2 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	YLM	Freeway/Dir of Travel	I-595 WB
Agency or Company	RS&H	Junction	
Date Performed	8/26/04	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2034

Project Description CD Off-Ramp

Inputs

Upstream Adj Ramp	Terrain	Downstream Adj Ramp
☐ Yes ☐ On		☐ Yes ☐ On
☐ No ☐ Off		☐ No ☐ Off
L_{up} = ft	S_{FF} = 60.0 mph S_{FR} = 50.0 mph	L_{down} = ft
Vu = veh/h	Sketch (show lanes, L_A, L_D, V_R, V_f)	VD = veh/h

Conversion to pc/h Under Base Conditions

	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	4850	0.95	Level	5	0	0.976	1.00	5233
Ramp	2170	0.95	Level	2	0	0.990	1.00	2307
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$$V_{12} = V_F (P_{FM})$$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$$V_{12} = V_R + (V_F - V_R)P_{FD}$$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.523 using Equation (Exhibit 25-11)

V_{12} = 3837 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	5233	6900	No
V_{12}	3837	4400:All	No
$V_{FO} = V_F - V_R$	2926	6900	No
V_R	2307	2100	Yes

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\, V_{12} - 0.0009\, L_D$$

D_R = 23.8 (pc/ mi /ln)

LOS= F (Exhibit 25-4)

Speed Estimation

D_s = 0.441 (Exhibit 25-19)

S_R= 52.1 mph (Exhibit 25-19)

S_0= 64.3 mph (Exhibit 25-19)

S = 54.8 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	I-595 WB
Agency or Company	RS&H	Junction	
Date Performed	9/20/04	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2034

Project Description I-95 SB ON

Inputs

00 Upstream Adj Ramp ☑ Yes ☑ On ☐ No ☐ Off L_{up} = 1480 ft Vu = 1290 veh/h	Terrain Level S_{FF} = 60.0 mph S_{FR} = 60.0 mph Sketch (show lanes, L_A, L_D,V_R,V_f)	Downstream Adj Ramp ☐ Yes ☐ On ☑ No ☐ Off L_{down} = ft VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	4830	0.95	Level	5	0	0.976	1.00	5211
Ramp	2180	0.95	Level	2	0	0.990	1.00	2318
UpStream	1290	0.90	Level	2	0	0.990	1.00	1448
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.209 using Equation (Exhibit 25-5)

V_{12}= 850 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	6383	9200	No
V_{R12}	3168	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 10.9 (pc/ mi /ln)

LOS = B (Exhibit 25-4)

Speed Estimation

M_S = 0.066 (Exibit 25-19)

S_R= 58.8 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 57.4 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	YLM	Freeway/Dir of Travel	I-595 WB
Agency or Company	RS&H	Junction	
Date Performed	9/20/04	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2034

Project Description I-95 SB ON

Inputs

00 Upstream Adj Ramp ☑ Yes ☑ On ☐ No ☐ Off L_{up} = 1480 ft Vu = 3150 veh/h	Terrain Level S_{FF} = 60.0 mph S_{FR} = 60.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	Downstream Adj Ramp ☐ Yes ☐ On ☑ No ☐ Off L_{down} = ft VD = veh/h

Conversion to pc/h Under Base Conditions

	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	5830	0.95	Level	5	0	0.976	1.00	6290
Ramp	3320	0.95	Level	2	0	0.990	1.00	3530
UpStream	3150	0.90	Level	2	0	0.990	1.00	3535
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.209 using Equation (Exhibit 25-5)

V_{12}= 999 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	8311	9200	No
V_{R12}	4529	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 21.0 (pc/ mi /ln)

LOS = C (Exhibit 25-4)

Speed Estimation

M_S = 0.334 (Exibit 25-19)

S_R= 54.0 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 54.4 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

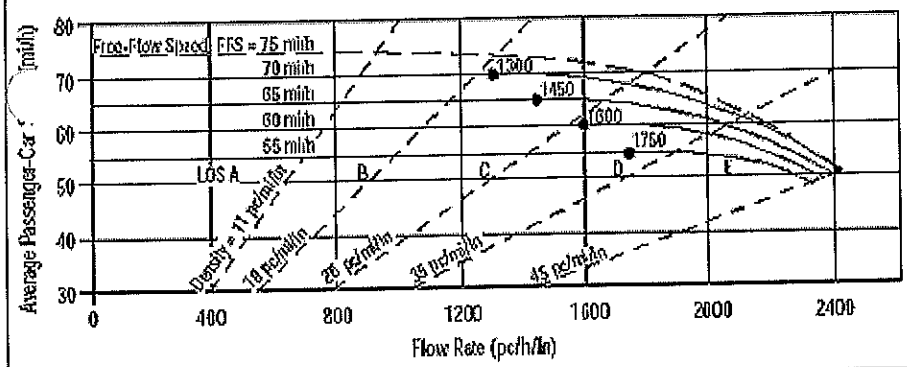
D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (ft)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	08/24/04
Analysis Time Period	AM

Site Information

Highway/Direction of Travel	Westbound I-595
From/To	
Jurisdiction	
Analysis Year	2034

Project Description Davie On-Ramp

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	10230 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.60	I/mi
Number of Lanes, N	5	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	0.5	mi/h
f_N	0.0	mi/h
FFS	69.5	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2208	pc/h/ln
S	59.6	mi/h
D = v_p / S	37.1	pc/mi/ln
LOS	E	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

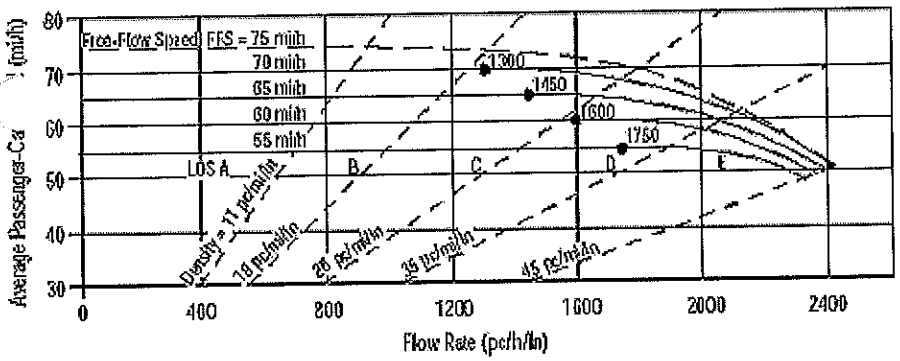
Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

BASIC FREEWAY SEGMENTS WORKSHEET



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	YLM
Agency or Company	RSH
Date Performed	08/26/04
Analysis Time Period	PM

Site Information

Highway/Direction of Travel	Westbound I-595
From/To	
Jurisdiction	
Analysis Year	2034

Project Description Davie On-Ramp

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	9350 veh/h	Peak-Hour Factor, PHF	0.95
AADT	veh/day	%Trucks and Buses, P_T	5
Peak-Hr Prop. of AADT, K		%RVs, P_R	0
Peak-Hr Direction Prop, D		General Terrain:	Level
DDHV = AADT x K x D	veh/h	Grade % Length	mi
Driver type adjustment	1.00	Up/Down %	

Calculate Flow Adjustments

	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs

Lane Width	12.0	ft
Rt-Shoulder Lat. Clearance	6.0	ft
Interchange Density	0.60	I/mi
Number of Lanes, N	5	
FFS (measured)		mi/h
Base free-flow Speed, BFFS	70.0	mi/h

Calc Speed Adj and FFS

f_{LW}	0.0	mi/h
f_{LC}	0.0	mi/h
f_{ID}	0.5	mi/h
f_N	0.0	mi/h
FFS	69.5	mi/h

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2018	pc/h/ln
S	64.2	mi/h
D = v_p / S	31.5	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h
S	mi/h
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits23-8, 23-10	f_{LW} - Exhibit 23-4
E_T - Exhibits 23-8, 23-10, 23-11	f_{LC} - Exhibit 23-5
f_p - Page 23-12	f_N - Exhibit 23-6
LOS, S, FFS, v_p - Exhibits 23-2, 23-3	f_{ID} - Exhibit 23-7

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	I-595 WB
Agency or Company	RS&H	Junction	Hiatus Off-Ramp
Date Performed	8/24/04	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2034

Project Description LPA

Inputs

Upstream Adj Ramp	Terrain	Downstream Adj Ramp
☐ Yes ☐ On		☐ Yes ☐ On
☐ No ☐ Off		☐ No ☐ Off
L_{up} = ft	S_{FF} = 60.0 mph S_{FR} = 45.0 mph	L_{down} = ft
Vu = veh/h	Sketch (show lanes, L_A, L_D, V_R, V_f)	VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	9860	0.95	Level	5	0	0.976	1.00	10638
Ramp	840	0.95	Level	2	0	0.990	1.00	893
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 4214 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	8511	9200	No
V_{12}	4214	4400:All	No
$V_{FO} = V_F - V_R$	7618	9200	No
V_R	893	2100	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 38.7 (pc/ mi /ln)

LOS= E (Exhibit 25-4)

Speed Estimation

D_s = 0.378 (Exhibit 25-19)

S_R= 53.2 mph (Exhibit 25-19)

S_0= 61.3 mph (Exhibit 25-19)

S = 57.0 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	I-595 WB
Agency or Company	RS&H	Junction	Hiatus Off-Ramp
Date Performed	8/26/04	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2034

Project Description LPA

Inputs

Upstream Adj Ramp	Terrain	Downstream Adj Ramp
☐ Yes ☐ On		☐ Yes ☐ On
☐ No ☐ Off		☐ No ☐ Off
L_{up} = ft		L_{down} = ft
Vu = veh/h	S_{FF} = 60.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	7350	0.95	Level	5	0	0.976	1.00	7930
Ramp	1670	0.95	Level	2	0	0.990	1.00	1775
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 3767 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	6344	9200	No
V_{12}	3767	4400:All	No
$V_{FO} = V_F - V_R$	4569	9200	No
V_R	1775	2100	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = 34.8 (pc/ mi /ln)

LOS= D (Exhibit 25-4)

Speed Estimation

D_s = 0.458 (Exhibit 25-19)

S_R= 51.8 mph (Exhibit 25-19)

S_0= 64.7 mph (Exhibit 25-19)

S = 56.3 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	I-595WB
Agency or Company	RS&H	Junction	
Date Performed	8/24/04	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2034

Project Description Hiatus On

Inputs

Upstream Adj Ramp	Terrain	Downstream Adj Ramp
☐ Yes ☐ On		☐ Yes ☐ On
☐ No ☐ Off		☐ No ☐ Off
L_{up} = ft	S_{FF} = 60.0 mph S_{FR} = 45.0 mph	L_{down} = ft
Vu = veh/h	Sketch (show lanes, L_A, L_D, V_R, V_f)	VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	7530	0.95	Level	5	0	0.976	1.00	8124
Ramp	810	0.95	Level	2	0	0.990	1.00	861
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.160 using Equation (Exhibit 25-5)

V_{12}= 1298 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	8985	9200	No
V_{R12}	2159	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 20.7 (pc/ mi /ln)

LOS = C (Exhibit 25-4)

Speed Estimation

M_S = 0.337 (Exibit 25-19)

S_R= 53.9 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 48.3 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	I-595WB
Agency or Company	RS&H	Junction	
Date Performed	8/26/04	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2034

Project Description Hiatus On

Inputs

Upstream Adj Ramp	Terrain	Downstream Adj Ramp
☐ Yes ☐ On		☐ Yes ☐ On
☐ No ☐ Off		☐ No ☐ Off
L_{up} = ft		L_{down} = ft
Vu = veh/h	S_{FF} = 60.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	3310	0.95	Level	5	0	0.976	1.00	3571
Ramp	460	0.95	Level	2	0	0.990	1.00	489
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= 0.206 using Equation (Exhibit 25-5)

V_{12}= 736 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}	4060	9200	No
V_{R12}	1225	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 13.6 (pc/ mi /ln)

LOS = B (Exhibit 25-4)

Speed Estimation

M_S = 0.316 (Exibit 25-19)

S_R= 54.3 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S= 56.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-11)

V_{12} = pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$		See Exhibit 25-14	
V_{12}		4400:All	
$V_{FO} = V_F - V_R$		See Exhibit 25-14	
V_R		See Exhibit 25-3	

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/ mi /ln)

LOS= (Exhibit 25-4)

Speed Estimation

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

TURNPIKE

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	SB Turnpike
Agency or Company	RSH	Junction	Griffin Rd
Date Performed	9/15/2004	Jurisdiction	
Analysis Time Period	AM	Analysis Year	2034

Project Description I-595 SIMR

Inputs

Upstream Adj Ramp	Terrain Level	Downstream Adj Ramp
☑ Yes ☐ On		☐ Yes ☐ On
☐ No ☑ Off		☑ No ☑ Off
L_{up} = 850 ft		L_{down} = ft
Vu = 3930 veh/h	S_{FF} = 70.0 mph S_{FR} = 55.0 mph	VD = veh/h
	Sketch (show lanes, L_A, L_D, V_R, V_f)	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	6860	0.95	Level	5	0	0.976	1.00	7402
Ramp	880	0.95	Level	2	0	0.990	1.00	936
UpStream	3930	0.95	Level	2	0	0.990	1.00	4178
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 3755 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	7402	9600	No
V_{12}	3755	4400:All	No
$V_{FO} = V_F - V_R$	6466	9600	No
V_R	936	2200	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 35.2 (pc/ mi /ln)

LOS= E (Exhibit 25-4)

Speed Estimation

D_s = 0.252 (Exhibit 25-19)

S_R= 62.9 mph (Exhibit 25-19)

S_0= 73.6 mph (Exhibit 25-19)

S = 67.8 mph (Exhibit 25-15)

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	YLM	Freeway/Dir of Travel	SB Turnpike
Agency or Company	RSH	Junction	Griffin Rd
Date Performed	9/15/2004	Jurisdiction	
Analysis Time Period	PM	Analysis Year	2034

Project Description I-595 SIMR

Inputs

Upstream Adj Ramp: ☑ Yes ☐ On ☐ No ☑ Off

L_{up} = 850 ft

Vu = 3150 veh/h

Terrain Level

S_{FF} = 70.0 mph S_{FR} = 55.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp: ☐ Yes ☐ On ☑ No ☑ Off

L_{down} = ft

VD = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	Truck	%Rv	f_{HV}	f_p	v=V/PHF f_{HV} f_p
Freeway	6380	0.95	Level	5	0	0.976	1.00	6884
Ramp	1000	0.95	Level	2	0	0.990	1.00	1063
UpStream	3150	0.95	Level	2	0	0.990	1.00	3349
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM}= using Equation (Exhibit 25-5)

V_{12}= pc/h

Capacity Checks

	Actual	Maximum	LOS F?
V_{FO}		See Exhibit 25-7	
V_{R12}		4600:All	

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/ mi /ln)

LOS = (Exhibit 25-4)

Speed Estimation

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S= mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} =0.436 using Equation (Exhibit 25-11)

V_{12} = 3601 pc/h

Capacity Checks

	Actual	Maximum	LOS F?
$V_{FI}=V_F$	6884	9600	No
V_{12}	3601	4400:All	No
$V_{FO} = V_F - V_R$	5821	9600	No
V_R	1063	2200	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 33.9 (pc/ mi /ln)

LOS= D (Exhibit 25-4)

Speed Estimation

D_s = 0.264 (Exhibit 25-19)

S_R= 62.6 mph (Exhibit 25-19)

S_0= 74.3 mph (Exhibit 25-19)

S = 67.7 mph (Exhibit 25-15)

MAJOR MERGE AND DIVERGE

Major Diverge Area Analysis

When a two-lane-off-ramp results in a lane drop, it is treated as a major diverge segment. In this case, the entering demand and the departing demand on each exit leg must be checked against the capacity of the approximate entry or departure leg. Equation 25-12 allows the density across all freeway lanes to be estimated for a distance of 1,500 ft upstream of the gore area. This density can be compared with the LOS criteria in Exhibit 24-4 to determine the LOS in the diverge area.

$D = 0.0109 * (V_F / N)$ (25-12)

D = average density across all freeway lanes for a distance of 1,500 ft upstream of diverge (pc/mi/ln)
V_F = freeway flow rate approaching diverge area (pc/h)
N = number of freeway lanes

Exhibit 25-4. LOS Criteria for Merge and Diverge Areas

LOS	Density (pc/mi/ln)
A	<= 10
B	> 10 - 20
C	> 20 - 28
D	> 28 - 35
E	> 35
F	Demand exceeds capacity

Determining Flow Rate (pc/h)

$V_F = V_i / (PHF \times f_{hv} \times f_p)$

V_F = flow rate for movement i under base conditions during peak 15 min of hour (pc/h)
V_i = hourly volume for movement i (vph)

PHF = peak-hour factor
freeway - 0.95
ramp - 0.95

f_{hv} = adjustment factor for heavy vehicles
freeway - 0.976
ramp - 0.99

f_p = adjustment factor for drive population
freeway - 1.0
ramp - 1.0

Special Cases

When a two-lane, right-hand off-ramp has a single deceleration lane and the left-hand ramp lane splits from Lane 1 of the freeway at the gore area, without a deceleration lane, the following formula needs to be used:

$V_{12} = V_R + (V_F - V_R)(P_{FD})$

$V_{12^*} = V_{12} / (PHF \times f_{hv} \times f_p)$

V_{12} = hourly volume for movement (vph)

V_{12^*} = flow rate for movement under base conditions during peak 15 min of hour (pc/h)

P_{FD}=0.450

PHF = peak-hour factor
freeway - 0.95
ramp - 0.95

f_{hv} = adjustment factor for heavy vehicles
freeway - 0.976
ramp - 0.99

f_p = adjustment factor for drive population
freeway - 1.0
ramp - 1.0

$D_R = 4.252 + 0.0086V_{12^*} - 0.009L_D$ (Eq.25-10)

D_R= density of diverge influence area(pc/mi/ln)

V_{12^*}= flow rate entering ramp influence area(pc/h)

L_D= Length of Deceleration Lane (Ft)

HIGHWAY CAPACITY MANUAL ANALYSIS

Major Merge Area Analysis

Where a two-lane on-ramp results in a lane addition, the junction is classified as a major merge area. The Highway Capacity Manual (HCM) analysis is limited to checking capacities on approaching legs and the departing freeway. The capacity of each entering leg and the departing freeway is computed using Exhibit 25-3 (p. 25-4) and Exhibit 25-7 (p. 25-8) in the HCM 2000.

Exhibit 25-3. Approximate Capacity of Ramp Roadways

Free Flow Speed of Ramp , S_{fr} (mi.h)	Capacity (pc/h)	
	Single-Lane Ramps	Two-Lane Ramps
> 50	2200	4400
> 40 - 50	2100	4100
> 30 - 40	2000	3800
>= 20 - 30	1900	3500
< 20	1800	3200

Exhibit 25-7. Capacity Values for Merge Areas

Freeway Free-Flow Speed (mi/h)	Maximum Downstream Freeway Flow, v (pc/h) Number of Lanes in One Direction				Max. Desirable Flow Entering Influence Area, V_{r12} (pc/h)
	2	3	4	> 4	
>= 70	4800	7200	9600	2400/ln	4600
65	4700	7050	9400	2350/ln	4600
60	4600	6900	9200	2300/ln	4600
55	4500	6750	9000	2250/ln	4600

Determining Flow Rate (pc/h)

$v_i = V_i / (PHF \times f_{hv} \times f_p)$ (25-1)

v_i = flow rate for movement i under base conditions during peak 15 min of hour (pc/h)
V_i = hourly volume for movement i (vph)

PHF = peak-hour factor
freeway - 0.95
ramp - 0.95

f_{hv} = adjustment factor for heavy vehicles
freeway - 0.976
ramp - 0.99

f_p = adjustment factor for drive population
freeway - 1.0
ramp - 1.0

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MERGE ANALYSIS

A 1.1 NB I-95 On-Ramp to EB I-595 (AM)

Approaching Freeway Volume:
Vi = 5,330 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 5,748 (pc/h) < capacity = 7,200

Ramp Volume:
Vi = 2,220 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 2,360 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 7,550 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 8,143 (pc/h) < capacity = 9,600

A 1.2 NB I-95 On-Ramp to EB I-595 (PM)

Approaching Freeway Volume:
Vi = 4,080 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 4,400 (pc/h) < capacity = 7,200

Ramp Volume:
Vi = 1,900 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 2,020 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 5,980 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 6,450 (pc/h) < capacity = 9,600

A 2.1 University On-Ramp to EB I-595 (AM)

Approaching Freeway Volume:
Vi = 7,360 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 7,938 (pc/h) < capacity = 9,600

Ramp Volume:
Vi = 4,870 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 5,178 (pc/h) > capacity = 4,400

Departing Freeway Volume:

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Vi = 12,230 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 13,190 (pc/h) < capacity = 14,400

A 2.2 University On-Ramp to EB I-595 (PM)

Approaching Freeway Volume:
Vi = 7,900 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 8,520 (pc/h) < capacity = 9,600

Ramp Volume:
Vi = 4,120 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 4,381 (pc/h) < capacity = 4,400

Departing Freeway Volume:
Vi = 12,020 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 12,964 (pc/h) < capacity = 14,400

A 3.1 NB I-95 On-Ramp to WB I-595 (AM)

Approaching Freeway Volume:
Vi = 3,540 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 3,818 (pc/h) < capacity = 4,800

Ramp Volume:
Vi = 1,290 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 1,372 (pc/h) < capacity = 4,400

Departing Freeway Volume:
Vi = 4,830 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 5,209 (pc/h) < capacity = 9,600

A 3.2 NB I-95 On-Ramp to WB I-595 (PM)

Approaching Freeway Volume:
Vi = 2,680 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 2,890 (pc/h) < capacity = 4,800

Ramp Volume:
Vi = 3,150 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 3,349 (pc/h) < capacity = 4,400

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Departing Freeway Volume:
Vi = 5,830 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 6,288 (pc/h) < capacity = 9,600

A 4.1 Pine Island On-Ramp to WB I-595 (AM)

Approaching Freeway Volume:
Vi = 7,770 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 8,380 (pc/h) < capacity = 9,200

Ramp Volume:
Vi = 2,090 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 2,222 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 9,860 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 10,634 (pc/h) < capacity = 11,500

A 4.2 Pine Island On-Ramp to WB I-595 (PM)

Approaching Freeway Volume:
Vi = 4,850 PHF = 0.95 fhv = 0.976 fp = 1.00
vi = 5,231 (pc/h) < capacity = 9,200

Ramp Volume:
Vi = 2,500 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 2,658 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 7,350 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 7,927 (pc/h) < capacity = 11,500

A5.1 I-595 On-Ramp to SB Turnpike (AM)

Approaching Freeway Volume:
Vi = 5,980 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 6450 (pc/h) < capacity = 9,600

Ramp Volume:
Vi = 4,600 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 4891 (pc/h) < capacity = 6,600

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Departing Freeway Volume:
Vi = 10,580 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 11411 (pc/h) < capacity = 14,400

A5.2 I-595 On-Ramp to SB Turnpike (PM)

Approaching Freeway Volume:
Vi = 5,380 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 5802 (pc/h) < capacity = 9,600

Ramp Volume:
Vi = 4,620 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 4912 (pc/h) < capacity = 6,600

Departing Freeway Volume:
Vi = 10,000 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 10785 (pc/h) < capacity = 14,400

A 6.1 Griffin Rd to NB Turnpike (AM)

Approaching Freeway Volume:
Vi = 8,930 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 9631 (pc/h) > capacity = 9,600

Ramp Volume:
Vi = 1,660 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 1765 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 10,590 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 11421 (pc/h) < capacity = 14,400

A 6.2 Griffin Rd to NB Turnpike (PM)

Approaching Freeway Volume:
Vi = 11,590 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 12500 (pc/h) > capacity = 9,600

Ramp Volume:
Vi = 1,460 PHF = 0.95 fhv = 0.99 fp = 1.00

vi = 1552 (pc/h) < capacity = 4,100

Departing Freeway Volume:
Vi = 13,050 PHF = 0.95 fhv = 0.976 fp = 1.00

vi = 14075 (pc/h) < capacity = 14,400

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DIVERGE ANALYSIS

B 1.1 WB I-595 Off-Ramp to SB I-95 (AM)

Vi = 7,810 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **8,423 (pc/h)**

N = 4

Therefore D = 22.95 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 22.95 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 1.2 WB I-595 Off-Ramp to SB I-95 (PM)

Vi = 8,370 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **9,027 (pc/h)**

N = 4

Therefore D = 24.60 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 24.6 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 2.1 WB I-595 Off-Ramp NB I-95 (AM)

Vi = 5,860 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **6,320 (pc/h)**

N = 4

Therefore D = 17.22 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 17.22 > 10 - 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

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B 2.2 WB I-595 Off-Ramp NB I-95 (PM)

Vi = 6,560 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 7,075 (pc/h)

N = 4

Therefore D = 19.28 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 19.28 > 10 - 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 3.1 WB I-595 Off-Ramp University Drive (AM)

Vi = 10,180 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 10,979 (pc/h)

N = 5

Therefore D = 23.93 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 23.93 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 3.2 WB I-595 Off-Ramp University Drive (PM)

Vi = 8,440 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 9,103 (pc/h)

N = 5

Therefore D= 19.84 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 19.84 > 10 - 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 4.1 WB I-595 Off-Ramp Pine Island Road (AM)

Vi = 10,230 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 11,033 (pc/h)

N = 5

Therefore D = 24.05 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 24.05 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 4.2 WB I-595 Off-Ramp Pine Island Road (PM)

Vi = 9,350 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 10,084 (pc/h)

N =5

Therefore D= 21.98 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 21.98 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 5.1 WB I-595 Off-Ramp Flamingo Road (AM)

Vi = 9,020 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 9,728 (pc/h)

N =5

Therefore D = 21.21 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 21.21 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 5.2 WB I-595 Off-Ramp Flamingo Road (PM)

Vi = 5,680 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 6,126 (pc/h)

N =5

Therefore D = 13.35 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 13.35 > 10 - 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 6.1 EB I-595 Off-Ramp Pine Island Road (AM)

Vi= 7,560 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 8154 (pc/h)

N = 4

Therefore D= 22.22 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 22.22> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 6.2 EB I-595 Off-Ramp Pine Island Rd (PM)

Vi= 9,000 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 9707 (pc/h)

N = 4

Therefore D= 26.45 pc/mi/ln
To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D 26.45> 20- 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 7.1 EB I-595 CD/Turnpike Off-Ramp (AM)

Vi = 12,230 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 13,190 (pc/h)

N = 6

Therefore D = 23.96 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 23.96 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 7.2 EB I-595 CD/Turnpike Off-Ramp (PM)

Vi = 12,020 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 12,964 (pc/h)

N = 6

Therefore D = 23.55 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 23.55 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 8.1 EB I-595 Off-Ramp NB I-95 (AM)

Vi = 10,810 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 11,659 (pc/h)

N = 5

Therefore D = 25.42 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 25.42 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 8.2 EB I-595 Off-Ramp NB I-95 (PM)

Vi = 6,700 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 7,226 (pc/h)

N = 5

Therefore D = 15.75 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 15.75 > 10 - 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

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B 9.1 EB I-595 Off-Ramp to SB I-95 (AM)

Vi = 8,280 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **8,930** (pc/h)

N = 4

Therefore **D = 24.33** **pc/mi/ln**

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 24.33 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 9.2 EB I-595 Off-Ramp to SB I-95 (PM)

Vi = 5,700 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **6,148** (pc/h)

N = 4

Therefore **D = 16.75** **pc/mi/ln**

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 16.75 > 10 - 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 10.1 NB Turnpike Off-Ramp I-595 EB (AM)

Vi = 10,590 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 11,421 (pc/h)

N = 6

Therefore D = 20.75 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 20.75 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 10.2 NB Turnpike Off-Ramp I-595 EB (PM)

Vi = 13,050 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **14,075 (pc/h)**

N = 6

Therefore D = 25.57 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 25.57 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 11.1 NB Turnpike Off-Ramp I-595 WB (AM)

Vi = 8,200 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **8,844 (pc/h)**

N = 5

Therefore D = 19.28 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 19.28 > 10 - 20 Exhibit 25-4 gives LOS as B in the diverge area.

Level of Service = B

B 11.2 NB Turnpike Off-Ramp I-595 WB (PM)

Vi = 10,190 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **10,990 (pc/h)**

N = 5

Therefore D = 23.96 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 23.96 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 12.1 SB Turnpike Off-Ramp I-595 (AM)

Vi = 10,790 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = **11,637 (pc/h)**

N = 5

Therefore D = 25.37 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 25.37 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

B 12.2 SB Turnpike Off-Ramp I-595 (PM)

Vi = 9,530 PHF = 0.95 fhv = 0.976 fp = 1.00

V_F = 10,278 (pc/h)

N = 5

Therefore D = 22.41 pc/mi/ln

To determine the LOS in the diverge area, the above calculated density is compared with Exhibit 25-4 (p.25-5) of the HCM 2000.

For D = 22.41 > 20 - 28 Exhibit 25-4 gives LOS as C in the diverge area.

Level of Service = C

WEAVING

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9-22-04
Analysis Time Period	AM Peak Period

Site Information

Freeway/Dir of Travel	I-595 EB
Weaving Seg Location	Between SW 136th Ave and Flami
Jurisdiction	
Analysis Year	2034

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.33
Weaving seg length, L (ft)	1500	Weaving ratio, R	0.41
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	4740	0.95	5	0	1.5	1.2	0.976	1.00	5114
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1420	0.95	2	0	1.5	1.2	0.990	1.00	1509
Vw2	980	0.95	2	0	1.5	1.2	0.990	1.00	1041
Vw				2550	Vnw				5114
V									7664

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.66	0.44		
Weaving and non-weaving speeds, Si (mi/h)	45.13	49.64		

Number of lanes required for unconstrained operation, Nw: 1.97
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	48.04
Weaving segment density, D (pc/mi/ln)	31.91
Level of service, LOS	D
Capacity of base condition, c_b (pc/h)	9815
Capacity as a 15-minute flow rate, c (veh/h)	9576
Capacity as a full-hour volume, c_h (veh/h)	9097

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9-22-04
Analysis Time Period	PM Peak Period

Site Information

Freeway/Dir of Travel	I-595 EB
Weaving Seg Location	Between SW 136th Ave and Flami
Jurisdiction	
Analysis Year	2034

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.23
Weaving seg length, L (ft)	1500	Weaving ratio, R	0.41
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	7230	0.95	5	0	1.5	1.2	0.976	1.00	7800
Vo2	0	0.90	0	0	1.5	1.2	1.000	1.00	0
Vw1	1320	0.95	2	0	1.5	1.2	0.990	1.00	1403
Vw2	910	0.95	2	0	1.5	1.2	0.990	1.00	967
Vw				2370	Vnw				7800
V									10170

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.68	0.37		
Weaving and non-weaving speeds, Si (mi/h)	44.80	51.52		

Number of lanes required for unconstrained operation, Nw: 1.42
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	49.78
Weaving segment density, D (pc/mi/ln)	40.86
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	10632
Capacity as a 15-minute flow rate, c (veh/h)	10373
Capacity as a full-hour volume, c_h (veh/h)	9854

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9-22-04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 EB
Weaving Seg Location	Between Pine Island/Davie Off
Jurisdiction	
Analysis Year	2034

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	5	Volume ratio, VR	0.43
Weaving seg length, L (ft)	2200	Weaving ratio, R	0.34
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	4930	0.95	5	0	1.5	1.2	0.976	1.00	5319
Vo2	0	0.95	0	0	1.5	1.2	1.000	1.00	0
Vw1	2430	0.95	2	0	1.5	1.2	0.990	1.00	2583
Vw2	1270	0.95	2	0	1.5	1.2	0.990	1.00	1350
Vw				3933	Vnw				5319
V									9252

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			2.39	0.45
Weaving and non-weaving speeds, Si (mi/h)			29.76	49.39

Number of lanes required for unconstrained operation, Nw: 2.74
Maximum number of lanes, Nw (max): 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	38.58
Weaving segment density, D (pc/mi/ln)	47.97
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	10344
Capacity as a 15-minute flow rate, c (veh/h)	10092
Capacity as a full-hour volume, c_h (veh/h)	9587

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9-22-04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 EB
Weaving Seg Location	Between Pine Island/Davie Off
Jurisdiction	
Analysis Year	2034

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	A
Weaving number of lanes, N	5	Volume ratio, VR	0.33
Weaving seg length, L (ft)	2200	Weaving ratio, R	0.39
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6070	0.95	5	0	1.5	1.2	0.976	1.00	6549
Vo2	0	0.95	0	0	1.5	1.2	1.000	1.00	0
Vw1	1830	0.95	2	0	1.5	1.2	0.990	1.00	1945
Vw2	1170	0.95	2	0	1.5	1.2	0.990	1.00	1243
Vw				3188	Vnw				6549
V									9737

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)			0.15	0.00
b (Exhibit 24-6)			4.00	4.00
c (Exhibit 24-6)			0.97	1.30
d (Exhibit 24-6)			0.80	0.75
Weaving intensity factor, Wi			2.15	0.37
Weaving and non-weaving speeds, Si (mi/h)			30.90	51.62

Number of lanes required for unconstrained operation, Nw: 2.33

Maximum number of lanes, Nw (max): 1.40

☐ If Nw < Nw(max) unconstrained operation ☑ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	42.33
Weaving segment density, D (pc/mi/ln)	46.01
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	10344
Capacity as a 15-minute flow rate, c (veh/h)	10092
Capacity as a full-hour volume, c_h (veh/h)	9587

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RSH
Date Performed	12/9/04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	595 WB
Weaving Seg Location	Between Turnpike and Davie
Jurisdiction	
Analysis Year	2034

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.08
Weaving seg length, L (ft)	1400	Weaving ratio, R	0.00
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6215	0.95	5	0	1.5	1.2	0.976	1.00	6705
Vo2	3485	0.95	2	0	1.5	1.2	0.990	1.00	3705
Vw1	795	0.95	2	0	1.5	1.2	0.990	1.00	845
Vw2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw				845	Vnw				10410
V									11255

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.56	0.19		
Weaving and non-weaving speeds, Si (mi/h)	47.11	57.17		

Number of lanes required for unconstrained operation, Nw: 0.62
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	56.27
Weaving segment density, D (pc/mi/ln)	40.01
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	11498
Capacity as a 15-minute flow rate, c (veh/h)	11218
Capacity as a full-hour volume, c_h (veh/h)	10657

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RSH
Date Performed	12/9/04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	595 WB
Weaving Seg Location	Between Turnpike and Davie
Jurisdiction	
Analysis Year	2034

Inputs

Freeway free-flow speed, SFF (mi/h)	60	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.14
Weaving seg length, L (ft)	1400	Weaving ratio, R	0.00
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	455	0.95	5	0	1.5	1.2	0.976	1.00	490
Vo2	3680	0.95	2	0	1.5	1.2	0.990	1.00	3912
Vw1	695	0.95	2	0	1.5	1.2	0.990	1.00	738
Vw2	0	0.95	2	0	1.5	1.2	0.990	1.00	0
Vw				738	Vnw				4402
V									5140

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.37	0.12		
Weaving and non-weaving speeds, Si (mi/h)	51.53	59.53		

Number of lanes required for unconstrained operation, Nw 1.05
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	58.23
Weaving segment density, D (pc/mi/ln)	17.65
Level of service, LOS	B
Capacity of base condition, c_b (pc/h)	11209
Capacity as a 15-minute flow rate, c (veh/h)	10936
Capacity as a full-hour volume, c_h (veh/h)	10389

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9-22-04
Analysis Time Period	AM

Site Information

Freeway/Dir of Travel	I-595 WB
Weaving Seg Location	University On-NOb Hill Off
Jurisdiction	
Analysis Year	2034

Inputs

Freeway free-flow speed, SFF (mi/h)	65	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.23
Weaving seg length, L (ft)	2200	Weaving ratio, R	0.40
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	6930	0.95	5	0	1.5	1.2	0.976	1.00	7477
Vo2	0	0.95	0	0	1.5	1.2	1.000	1.00	0
Vw1	1240	0.95	2	0	1.5	1.2	0.990	1.00	1318
Vw2	840	0.95	2	0	1.5	1.2	0.990	1.00	893
Vw				2211	Vnw				7477
V									9688

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.54	0.28		
Weaving and non-weaving speeds, Si (mi/h)	50.80	57.85		

Number of lanes required for unconstrained operation, Nw: 1.13
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	56.07
Weaving segment density, D (pc/mi/ln)	34.56
Level of service, LOS	D
Capacity of base condition, c_b (pc/h)	11546
Capacity as a 15-minute flow rate, c (veh/h)	11264
Capacity as a full-hour volume, c_h (veh/h)	10701

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

FREEWAY WEAVING WORKSHEET

General Information

Analyst	YLM
Agency/Company	RS&H
Date Performed	9-22-04
Analysis Time Period	PM

Site Information

Freeway/Dir of Travel	I-595 WB
Weaving Seg Location	University On-NOb Hill Off
Jurisdiction	
Analysis Year	2034

Inputs

Freeway free-flow speed, SFF (mi/h)	65	Weaving type	B
Weaving number of lanes, N	5	Volume ratio, VR	0.47
Weaving seg length, L (ft)	2200	Weaving ratio, R	0.27
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
Vo1	3890	0.95	5	0	1.5	1.2	0.976	1.00	4197
Vo2	0	0.95	0	0	1.5	1.2	1.000	1.00	0
Vw1	2560	0.95	2	0	1.5	1.2	0.990	1.00	2721
Vw2	960	0.95	2	0	1.5	1.2	0.990	1.00	1020
Vw				3741	Vnw				4197
V									7938

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.00		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.69	0.69		
Weaving and non-weaving speeds, Si (mi/h)	47.47	47.61		

Number of lanes required for unconstrained operation, Nw: 2.60
Maximum number of lanes, Nw (max): 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ If Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	47.54
Weaving segment density, D (pc/mi/ln)	33.39
Level of service, LOS	D
Capacity of base condition, c_b (pc/h)	8574
Capacity as a 15-minute flow rate, c (veh/h)	8365
Capacity as a full-hour volume, c_h (veh/h)	7947

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

SIGNALIZED INTERSECTIONS