

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>																	
<b>General Information</b>			<b>Site Information</b>														
Analyst	JRE		Highway/Direction of Travel <i>I-80 Eastbound</i>														
Agency or Company	AECOM		From/To <i>Between Ints. 302 and 303</i>														
Date Performed	9/11/2014		Jurisdiction														
Analysis Time Period	A.M. Peak Hour		Analysis Year <i>Alt B1 Ph II 2045</i>														
Project Description <i>Interstate 80 Reconstruction</i>																	
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data													
<b>Flow Inputs</b>																	
Volume, V	2689	veh/h	Peak-Hour Factor, PHF	0.94													
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>	10													
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>	1													
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>														
DDHV = AADT x K x D		veh/h	Grade %	Length	mi												
			Up/Down %														
<b>Calculate Flow Adjustments</b>																	
f <sub>p</sub>	0.95		E <sub>R</sub>	2.0													
E <sub>T</sub>	2.5		f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <b>0.862</b>														
<b>Speed Inputs</b>			<b>Calc Speed Adj and FFS</b>														
Lane Width	12.0	ft	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">f<sub>LW</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">f<sub>LC</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">TRD Adjustment</td> <td style="padding: 5px;">5.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">FFS</td> <td style="padding: 5px;">70.4</td> <td style="padding: 5px;">mph</td> </tr> </table>			f <sub>LW</sub>	0.0	mph	f <sub>LC</sub>	0.0	mph	TRD Adjustment	5.0	mph	FFS	70.4	mph
f <sub>LW</sub>	0.0	mph															
f <sub>LC</sub>	0.0	mph															
TRD Adjustment	5.0	mph															
FFS	70.4	mph															
Rt-Side Lat. Clearance	6.0	ft															
Number of Lanes, N	2																
Total Ramp Density, TRD	1.67	ramps/mi															
FFS (measured)		mph															
Base free-flow Speed, BFFS	75.4	mph															
<b>LOS and Performance Measures</b>			<b>Design (N)</b>														
<u>Operational (LOS)</u>			<u>Design (N)</u>														
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	1746	pc/h/ln	Design LOS														
S	66.5	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )														
D = v <sub>p</sub> / S	26.2	pc/mi/ln	S														
LOS	D		D = v <sub>p</sub> / S														
			Required Number of Lanes, N														
<b>Glossary</b>			<b>Factor Location</b>														
N - Number of lanes	S - Speed		E <sub>R</sub> - Exhibits 11-10, 11-12		f <sub>LW</sub> - Exhibit 11-8												
V - Hourly volume	D - Density		E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13		f <sub>LC</sub> - Exhibit 11-9												
v <sub>p</sub> - Flow rate	FFS - Free-flow speed		f <sub>p</sub> - Page 11-18		TRD - Page 11-11												
LOS - Level of service	BFFS - Base free-flow speed		LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3														
DDHV - Directional design hour volume																	

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>																	
<b>General Information</b>			<b>Site Information</b>														
Analyst	JRE		Highway/Direction of Travel <i>I-80 Eastbound</i>														
Agency or Company	AECOM		From/To <i>Between Ints. 302 and 303</i>														
Date Performed	9/11/2014		Jurisdiction														
Analysis Time Period	P.M. Peak Hour		Analysis Year <i>Alt B1 Ph II 2045</i>														
Project Description <i>Interstate 80 Reconstruction</i>																	
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data													
<b>Flow Inputs</b>																	
Volume, V	3390	veh/h	Peak-Hour Factor, PHF	0.94													
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>	12													
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>	1													
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>														
DDHV = AADT x K x D		veh/h	Grade %	Length	mi												
			Up/Down %														
<b>Calculate Flow Adjustments</b>																	
f <sub>p</sub>	0.95		E <sub>R</sub>	2.0													
E <sub>T</sub>	2.5		f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <b>0.840</b>														
<b>Speed Inputs</b>			<b>Calc Speed Adj and FFS</b>														
Lane Width	12.0	ft	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">f<sub>LW</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">f<sub>LC</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">TRD Adjustment</td> <td style="padding: 5px;">5.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">FFS</td> <td style="padding: 5px;">70.4</td> <td style="padding: 5px;">mph</td> </tr> </table>			f <sub>LW</sub>	0.0	mph	f <sub>LC</sub>	0.0	mph	TRD Adjustment	5.0	mph	FFS	70.4	mph
f <sub>LW</sub>	0.0	mph															
f <sub>LC</sub>	0.0	mph															
TRD Adjustment	5.0	mph															
FFS	70.4	mph															
Rt-Side Lat. Clearance	6.0	ft															
Number of Lanes, N	2																
Total Ramp Density, TRD	1.67	ramps/mi															
FFS (measured)		mph															
Base free-flow Speed, BFFS	75.4	mph															
<b>LOS and Performance Measures</b>			<b>Design (N)</b>														
<u>Operational (LOS)</u>			<u>Design (N)</u>														
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	2259	pc/h/ln	Design LOS														
S	57.0	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )														
D = v <sub>p</sub> / S	39.6	pc/mi/ln	S														
LOS	E		D = v <sub>p</sub> / S														
			Required Number of Lanes, N														
<b>Glossary</b>			<b>Factor Location</b>														
N - Number of lanes	S - Speed		E <sub>R</sub> - Exhibits 11-10, 11-12		f <sub>LW</sub> - Exhibit 11-8												
V - Hourly volume	D - Density		E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13		f <sub>LC</sub> - Exhibit 11-9												
v <sub>p</sub> - Flow rate	FFS - Free-flow speed		f <sub>p</sub> - Page 11-18		TRD - Page 11-11												
LOS - Level of service	BFFS - Base free-flow speed		LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3														
DDHV - Directional design hour volume																	

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>																	
<b>General Information</b>			<b>Site Information</b>														
Analyst	JRE		Highway/Direction of Travel <i>I-80 Eastbound</i>														
Agency or Company	AECOM		From/To <i>Between Ints. 303 and 304</i>														
Date Performed	9/11/2014		Jurisdiction														
Analysis Time Period	A.M. Peak Hour		Analysis Year <i>Alt B1 Ph II 2045</i>														
Project Description <i>Interstate 80 Reconstruction</i>																	
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data													
<b>Flow Inputs</b>																	
Volume, V	2302	veh/h	Peak-Hour Factor, PHF	0.94													
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>	10													
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>	1													
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>														
DDHV = AADT x K x D		veh/h	Grade %	Length	mi												
			Up/Down %														
<b>Calculate Flow Adjustments</b>																	
f <sub>p</sub>	0.95		E <sub>R</sub>	2.0													
E <sub>T</sub>	2.5		f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <b>0.862</b>														
<b>Speed Inputs</b>			<b>Calc Speed Adj and FFS</b>														
Lane Width	12.0	ft	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">f<sub>LW</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">f<sub>LC</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">TRD Adjustment</td> <td style="padding: 5px;">5.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">FFS</td> <td style="padding: 5px;">70.4</td> <td style="padding: 5px;">mph</td> </tr> </table>			f <sub>LW</sub>	0.0	mph	f <sub>LC</sub>	0.0	mph	TRD Adjustment	5.0	mph	FFS	70.4	mph
f <sub>LW</sub>	0.0	mph															
f <sub>LC</sub>	0.0	mph															
TRD Adjustment	5.0	mph															
FFS	70.4	mph															
Rt-Side Lat. Clearance	6.0	ft															
Number of Lanes, N	3																
Total Ramp Density, TRD	1.67	ramps/mi															
FFS (measured)		mph															
Base free-flow Speed, BFFS	75.4	mph															
<b>LOS and Performance Measures</b>			<b>Design (N)</b>														
<u>Operational (LOS)</u>			<u>Design (N)</u>														
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	997	pc/h/ln	Design LOS														
S	70.0	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )														
D = v <sub>p</sub> / S	14.2	pc/mi/ln	pc/h/ln														
LOS	B		S														
			mph														
			D = v <sub>p</sub> / S														
			pc/mi/ln														
			Required Number of Lanes, N														
<b>Glossary</b>			<b>Factor Location</b>														
N - Number of lanes	S - Speed		E <sub>R</sub> - Exhibits 11-10, 11-12		f <sub>LW</sub> - Exhibit 11-8												
V - Hourly volume	D - Density		E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13		f <sub>LC</sub> - Exhibit 11-9												
v <sub>p</sub> - Flow rate	FFS - Free-flow speed		f <sub>p</sub> - Page 11-18		TRD - Page 11-11												
LOS - Level of service	BFFS - Base free-flow speed		LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3														
DDHV - Directional design hour volume																	

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	JRE	Highway/Direction of Travel <i>I-80 Eastbound</i>	
Agency or Company	AECOM	From/To <i>Between Ints. 303 and 304</i>	
Date Performed	9/11/2014	Jurisdiction	
Analysis Time Period	P.M. Peak Hour	Analysis Year <i>Alt B1 Ph II 2045</i>	
Project Description <i>Interstate 80 Reconstruction</i>			
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)	
<input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	2898	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>12</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>1</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	0.95	E <sub>R</sub>	2.0
E <sub>T</sub>	2.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.840</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	12.0	ft	
Rt-Side Lat. Clearance	6.0	ft	f <sub>LW</sub> <i>0.0</i> mph
Number of Lanes, N	3		f <sub>LC</sub> <i>0.0</i> mph
Total Ramp Density, TRD	1.67	ramps/mi	TRD Adjustment <i>5.0</i> mph
FFS (measured)		mph	FFS <i>70.4</i> mph
Base free-flow Speed, BFFS	75.4	mph	
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	1287	pc/h/ln	Design LOS
S	69.9	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	18.4	pc/mi/ln	S
LOS	C		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	JRE	Highway/Direction of Travel <i>I-80 Eastbound</i>	
Agency or Company	AECOM	From/To <i>Between Ints. 304 and 307</i>	
Date Performed	9/11/2014	Jurisdiction	
Analysis Time Period	A.M. Peak Hour	Analysis Year <i>Alt B1 Ph II 2045</i>	
Project Description <i>Interstate 80 Reconstruction</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	4204	veh/h	Peak-Hour Factor, PHF <i>0.94</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>10</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>1</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	0.95	E <sub>R</sub>	2.0
E <sub>T</sub>	2.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.862</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	ft		
Rt-Side Lat. Clearance	ft	f <sub>LW</sub>	mph
Number of Lanes, N	4	f <sub>LC</sub>	mph
Total Ramp Density, TRD	ramps/mi	TRD Adjustment	mph
FFS (measured)	70.0	FFS	70.0
Base free-flow Speed, BFFS	mph		
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	1365	Design LOS	
S	69.7	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	pc/h/ln
D = v <sub>p</sub> / S	19.6	S	mph
LOS	C	D = v <sub>p</sub> / S	pc/mi/ln
		Required Number of Lanes, N	
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>																	
<b>General Information</b>			<b>Site Information</b>														
Analyst	JRE		Highway/Direction of Travel <i>I-80 Eastbound</i>														
Agency or Company	AECOM		From/To <i>Between Ints. 304 and 307</i>														
Date Performed	9/11/2014		Jurisdiction														
Analysis Time Period	P.M. Peak Hour		Analysis Year <i>Alt B1 Ph II 2045</i>														
Project Description <i>Interstate 80 Reconstruction</i>																	
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data													
<b>Flow Inputs</b>																	
Volume, V	4686	veh/h	Peak-Hour Factor, PHF	0.94													
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>	12													
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>	1													
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>														
DDHV = AADT x K x D		veh/h	Grade %	Length	mi												
			Up/Down %														
<b>Calculate Flow Adjustments</b>																	
f <sub>p</sub>	0.95		E <sub>R</sub>	2.0													
E <sub>T</sub>	2.5		f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <b>0.840</b>														
<b>Speed Inputs</b>			<b>Calc Speed Adj and FFS</b>														
Lane Width	12.0	ft	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">f<sub>LW</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">f<sub>LC</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">TRD Adjustment</td> <td style="padding: 5px;">5.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">FFS</td> <td style="padding: 5px;">70.4</td> <td style="padding: 5px;">mph</td> </tr> </table>			f <sub>LW</sub>	0.0	mph	f <sub>LC</sub>	0.0	mph	TRD Adjustment	5.0	mph	FFS	70.4	mph
f <sub>LW</sub>	0.0	mph															
f <sub>LC</sub>	0.0	mph															
TRD Adjustment	5.0	mph															
FFS	70.4	mph															
Rt-Side Lat. Clearance	6.0	ft															
Number of Lanes, N	4																
Total Ramp Density, TRD	1.67	ramps/mi															
FFS (measured)		mph															
Base free-flow Speed, BFFS	75.4	mph															
<b>LOS and Performance Measures</b>			<b>Design (N)</b>														
<u>Operational (LOS)</u>			<u>Design (N)</u>														
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	1561	pc/h/ln	Design LOS														
S	68.5	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )														
D = v <sub>p</sub> / S	22.8	pc/mi/ln	S														
LOS	C		D = v <sub>p</sub> / S														
			Required Number of Lanes, N														
<b>Glossary</b>			<b>Factor Location</b>														
N - Number of lanes	S - Speed		E <sub>R</sub> - Exhibits 11-10, 11-12		f <sub>LW</sub> - Exhibit 11-8												
V - Hourly volume	D - Density		E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13		f <sub>LC</sub> - Exhibit 11-9												
v <sub>p</sub> - Flow rate	FFS - Free-flow speed		f <sub>p</sub> - Page 11-18		TRD - Page 11-11												
LOS - Level of service	BFFS - Base free-flow speed		LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3														
DDHV - Directional design hour volume																	

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>																	
<b>General Information</b>			<b>Site Information</b>														
Analyst	JRE		Highway/Direction of Travel <i>I-80 Westbound</i>														
Agency or Company	AECOM		From/To <i>Between Ints. 302 and 303</i>														
Date Performed	9/11/2014		Jurisdiction														
Analysis Time Period	A.M. Peak Hour		Analysis Year <i>Alt B1 Ph II 2045</i>														
Project Description <i>Interstate 80 Reconstruction</i>																	
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data													
<b>Flow Inputs</b>																	
Volume, V	2309	veh/h	Peak-Hour Factor, PHF	0.97													
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>	12													
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>	1													
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>														
DDHV = AADT x K x D		veh/h	Grade %	Length	mi												
			Up/Down %														
<b>Calculate Flow Adjustments</b>																	
f <sub>p</sub>	0.95		E <sub>R</sub>	2.0													
E <sub>T</sub>	2.5		f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <b>0.840</b>														
<b>Speed Inputs</b>			<b>Calc Speed Adj and FFS</b>														
Lane Width	12.0	ft	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">f<sub>LW</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">f<sub>LC</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">TRD Adjustment</td> <td style="padding: 5px;">5.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">FFS</td> <td style="padding: 5px;">70.4</td> <td style="padding: 5px;">mph</td> </tr> </table>			f <sub>LW</sub>	0.0	mph	f <sub>LC</sub>	0.0	mph	TRD Adjustment	5.0	mph	FFS	70.4	mph
f <sub>LW</sub>	0.0	mph															
f <sub>LC</sub>	0.0	mph															
TRD Adjustment	5.0	mph															
FFS	70.4	mph															
Rt-Side Lat. Clearance	6.0	ft															
Number of Lanes, N	2																
Total Ramp Density, TRD	1.67	ramps/mi															
FFS (measured)		mph															
Base free-flow Speed, BFFS	75.4	mph															
<b>LOS and Performance Measures</b>			<b>Design (N)</b>														
<u>Operational (LOS)</u>			<u>Design (N)</u>														
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	1491	pc/h/ln	Design LOS														
S	69.0	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )														
D = v <sub>p</sub> / S	21.6	pc/mi/ln	S														
LOS	C		D = v <sub>p</sub> / S														
			Required Number of Lanes, N														
<b>Glossary</b>			<b>Factor Location</b>														
N - Number of lanes	S - Speed		E <sub>R</sub> - Exhibits 11-10, 11-12		f <sub>LW</sub> - Exhibit 11-8												
V - Hourly volume	D - Density		E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13		f <sub>LC</sub> - Exhibit 11-9												
v <sub>p</sub> - Flow rate	FFS - Free-flow speed		f <sub>p</sub> - Page 11-18		TRD - Page 11-11												
LOS - Level of service	BFFS - Base free-flow speed		LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3														
DDHV - Directional design hour volume																	

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>																	
<b>General Information</b>			<b>Site Information</b>														
Analyst	JRE		Highway/Direction of Travel <i>I-80 Westbound</i>														
Agency or Company	AECOM		From/To <i>Between Ints. 302 and 303</i>														
Date Performed	9/11/2014		Jurisdiction														
Analysis Time Period	P.M. Peak Hour		Analysis Year <i>Alt B1 Ph II 2045</i>														
Project Description <i>Interstate 80 Reconstruction</i>																	
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data													
<b>Flow Inputs</b>																	
Volume, V	4736	veh/h	Peak-Hour Factor, PHF	0.97													
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>	13													
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>	1													
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>														
DDHV = AADT x K x D		veh/h	Grade %	Length	mi												
			Up/Down %														
<b>Calculate Flow Adjustments</b>																	
f <sub>p</sub>	0.95		E <sub>R</sub>	2.0													
E <sub>T</sub>	2.5		f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <b>0.830</b>														
<b>Speed Inputs</b>			<b>Calc Speed Adj and FFS</b>														
Lane Width	12.0	ft	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">f<sub>LW</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">f<sub>LC</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">TRD Adjustment</td> <td style="padding: 5px;">5.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">FFS</td> <td style="padding: 5px;">70.4</td> <td style="padding: 5px;">mph</td> </tr> </table>			f <sub>LW</sub>	0.0	mph	f <sub>LC</sub>	0.0	mph	TRD Adjustment	5.0	mph	FFS	70.4	mph
f <sub>LW</sub>	0.0	mph															
f <sub>LC</sub>	0.0	mph															
TRD Adjustment	5.0	mph															
FFS	70.4	mph															
Rt-Side Lat. Clearance	6.0	ft															
Number of Lanes, N	2																
Total Ramp Density, TRD	1.67	ramps/mi															
FFS (measured)		mph															
Base free-flow Speed, BFFS	75.4	mph															
<b>LOS and Performance Measures</b>			<b>Design (N)</b>														
<u>Operational (LOS)</u>			<u>Design (N)</u>														
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	3097	pc/h/ln	Design LOS														
S	28.3	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )														
D = v <sub>p</sub> / S	109.6	pc/mi/ln	S														
LOS	F		D = v <sub>p</sub> / S														
			Required Number of Lanes, N														
<b>Glossary</b>			<b>Factor Location</b>														
N - Number of lanes	S - Speed		E <sub>R</sub> - Exhibits 11-10, 11-12		f <sub>LW</sub> - Exhibit 11-8												
V - Hourly volume	D - Density		E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13		f <sub>LC</sub> - Exhibit 11-9												
v <sub>p</sub> - Flow rate	FFS - Free-flow speed		f <sub>p</sub> - Page 11-18		TRD - Page 11-11												
LOS - Level of service speed	BFFS - Base free-flow speed		LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3														
DDHV - Directional design hour volume																	

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>																	
<b>General Information</b>			<b>Site Information</b>														
Analyst	JRE		Highway/Direction of Travel <i>I-80 Westbound</i>														
Agency or Company	AECOM		From/To <i>Between Ints. 303 and 304</i>														
Date Performed	9/11/2014		Jurisdiction														
Analysis Time Period	A.M. Peak Hour		Analysis Year <i>Alt B1 Ph II 2045</i>														
Project Description <i>Interstate 80 Reconstruction</i>																	
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data													
<b>Flow Inputs</b>																	
Volume, V	1994	veh/h	Peak-Hour Factor, PHF	0.97													
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>	12													
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>	1													
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>														
DDHV = AADT x K x D		veh/h	Grade %	Length	mi												
			Up/Down %														
<b>Calculate Flow Adjustments</b>																	
f <sub>p</sub>	0.95		E <sub>R</sub>	2.0													
E <sub>T</sub>	2.5		f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <b>0.840</b>														
<b>Speed Inputs</b>			<b>Calc Speed Adj and FFS</b>														
Lane Width	12.0	ft	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">f<sub>LW</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">f<sub>LC</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">TRD Adjustment</td> <td style="padding: 5px;">5.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">FFS</td> <td style="padding: 5px;">70.4</td> <td style="padding: 5px;">mph</td> </tr> </table>			f <sub>LW</sub>	0.0	mph	f <sub>LC</sub>	0.0	mph	TRD Adjustment	5.0	mph	FFS	70.4	mph
f <sub>LW</sub>	0.0	mph															
f <sub>LC</sub>	0.0	mph															
TRD Adjustment	5.0	mph															
FFS	70.4	mph															
Rt-Side Lat. Clearance	6.0	ft															
Number of Lanes, N	3																
Total Ramp Density, TRD	1.67	ramps/mi															
FFS (measured)		mph															
Base free-flow Speed, BFFS	75.4	mph															
<b>LOS and Performance Measures</b>			<b>Design (N)</b>														
<u>Operational (LOS)</u>			<u>Design (N)</u>														
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	858	pc/h/ln	Design LOS														
S	70.0	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )														
D = v <sub>p</sub> / S	12.3	pc/mi/ln	S														
LOS	B		D = v <sub>p</sub> / S														
			Required Number of Lanes, N														
<b>Glossary</b>			<b>Factor Location</b>														
N - Number of lanes	S - Speed		E <sub>R</sub> - Exhibits 11-10, 11-12		f <sub>LW</sub> - Exhibit 11-8												
V - Hourly volume	D - Density		E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13		f <sub>LC</sub> - Exhibit 11-9												
v <sub>p</sub> - Flow rate	FFS - Free-flow speed		f <sub>p</sub> - Page 11-18		TRD - Page 11-11												
LOS - Level of service	BFFS - Base free-flow speed		LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3														
DDHV - Directional design hour volume																	

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>																	
<b>General Information</b>			<b>Site Information</b>														
Analyst	JRE		Highway/Direction of Travel <i>I-80 Westbound</i>														
Agency or Company	AECOM		From/To <i>Between Ints. 303 and 304</i>														
Date Performed	9/11/2014		Jurisdiction														
Analysis Time Period	P.M. Peak Hour		Analysis Year <i>Alt B1 Ph II 2045</i>														
Project Description <i>Interstate 80 Reconstruction</i>																	
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data													
<b>Flow Inputs</b>																	
Volume, V	4225	veh/h	Peak-Hour Factor, PHF	0.97													
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>	13													
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>	1													
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>														
DDHV = AADT x K x D		veh/h	Grade %	Length	mi												
			Up/Down %														
<b>Calculate Flow Adjustments</b>																	
f <sub>p</sub>	0.95		E <sub>R</sub>	2.0													
E <sub>T</sub>	2.5		f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <b>0.830</b>														
<b>Speed Inputs</b>			<b>Calc Speed Adj and FFS</b>														
Lane Width	12.0	ft	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">f<sub>LW</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">f<sub>LC</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">TRD Adjustment</td> <td style="padding: 5px;">5.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">FFS</td> <td style="padding: 5px;">70.4</td> <td style="padding: 5px;">mph</td> </tr> </table>			f <sub>LW</sub>	0.0	mph	f <sub>LC</sub>	0.0	mph	TRD Adjustment	5.0	mph	FFS	70.4	mph
f <sub>LW</sub>	0.0	mph															
f <sub>LC</sub>	0.0	mph															
TRD Adjustment	5.0	mph															
FFS	70.4	mph															
Rt-Side Lat. Clearance	6.0	ft															
Number of Lanes, N	3																
Total Ramp Density, TRD	1.67	ramps/mi															
FFS (measured)		mph															
Base free-flow Speed, BFFS	75.4	mph															
<b>LOS and Performance Measures</b>			<b>Design (N)</b>														
<u>Operational (LOS)</u>			<u>Design (N)</u>														
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	1842	pc/h/ln	Design LOS														
S	65.2	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )														
D = v <sub>p</sub> / S	28.2	pc/mi/ln	S														
LOS	D		D = v <sub>p</sub> / S														
			Required Number of Lanes, N														
<b>Glossary</b>			<b>Factor Location</b>														
N - Number of lanes	S - Speed		E <sub>R</sub> - Exhibits 11-10, 11-12		f <sub>LW</sub> - Exhibit 11-8												
V - Hourly volume	D - Density		E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13		f <sub>LC</sub> - Exhibit 11-9												
v <sub>p</sub> - Flow rate	FFS - Free-flow speed		f <sub>p</sub> - Page 11-18		TRD - Page 11-11												
LOS - Level of service speed	BFFS - Base free-flow speed		LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3														
DDHV - Directional design hour volume																	

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	JRE	Highway/Direction of Travel <i>I-80 Westbound</i>	
Agency or Company	AECOM	From/To <i>Between Ints. 304 and 305</i>	
Date Performed	9/11/2014	Jurisdiction	
Analysis Time Period	A.M. Peak Hour	Analysis Year <i>Alt B1 Ph II 2045</i>	
Project Description <i>Interstate 80 Reconstruction</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	1798	veh/h	Peak-Hour Factor, PHF <i>0.95</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>12</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>1</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	0.95	E <sub>R</sub>	2.0
E <sub>T</sub>	2.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.840</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	12.0	ft	
Rt-Side Lat. Clearance	6.0	ft	f <sub>LW</sub> <i>0.0</i> mph
Number of Lanes, N	3		f <sub>LC</sub> <i>0.0</i> mph
Total Ramp Density, TRD	1.67	ramps/mi	TRD Adjustment <i>5.0</i> mph
FFS (measured)		mph	FFS <i>70.4</i> mph
Base free-flow Speed, BFFS	75.4	mph	
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	790	pc/h/ln	Design LOS
S	70.0	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	11.3	pc/mi/ln	S
LOS	B		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	JRE	Highway/Direction of Travel <i>I-80 Westbound</i>	
Agency or Company	AECOM	From/To <i>Between Ints. 304 and 305</i>	
Date Performed	9/11/2014	Jurisdiction	
Analysis Time Period	P.M. Peak Hour	Analysis Year <i>Alt B1 Ph II 2045</i>	
Project Description <i>Interstate 80 Reconstruction</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	3865	veh/h	Peak-Hour Factor, PHF <i>0.97</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>13</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>1</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i>
			Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	0.95	E <sub>R</sub>	2.0
E <sub>T</sub>	2.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.830</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	12.0	ft	
Rt-Side Lat. Clearance	6.0	ft	f <sub>LW</sub> <i>0.0</i> mph
Number of Lanes, N	3		f <sub>LC</sub> <i>0.0</i> mph
Total Ramp Density, TRD	1.67	ramps/mi	TRD Adjustment <i>5.0</i> mph
FFS (measured)		mph	FFS <i>70.4</i> mph
Base free-flow Speed, BFFS	75.4	mph	
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	1685	pc/h/ln	Design LOS
S	67.3	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	25.0	pc/mi/ln	S
LOS	C		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>					
<b>General Information</b>			<b>Site Information</b>		
Analyst	JRE		Highway/Direction of Travel <i>I-80 Westbound</i>		
Agency or Company	AECOM		From/To <i>Between 304 and 305 Merges</i>		
Date Performed	9/11/2014		Jurisdiction		
Analysis Time Period	A.M. Peak Hour		Analysis Year <i>Alt B1 Ph II 2045</i>		
Project Description <i>Interstate 80 Reconstruction</i>					
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data	
<b>Flow Inputs</b>					
Volume, V	1994		veh/h	Peak-Hour Factor, PHF	0.95
AADT			veh/day	%Trucks and Buses, P <sub>T</sub>	12
Peak-Hr Prop. of AADT, K				%RVs, P <sub>R</sub>	1
Peak-Hr Direction Prop, D				General Terrain:	<i>Rolling</i>
DDHV = AADT x K x D			veh/h	Grade % Length	<i>mi</i>
				Up/Down %	
<b>Calculate Flow Adjustments</b>					
f <sub>p</sub>	0.95		E <sub>R</sub>	2.0	
E <sub>T</sub>	2.5		f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.840</i>		
<b>Speed Inputs</b>			<b>Calc Speed Adj and FFS</b>		
Lane Width	12.0		ft		
Rt-Side Lat. Clearance	6.0		ft		
Number of Lanes, N	3		f <sub>LW</sub> 0.0 mph		
Total Ramp Density, TRD	1.67		ramps/mi		
FFS (measured)			f <sub>LC</sub> 0.0 mph		
Base free-flow Speed, BFFS	75.4		TRD Adjustment 5.0 mph		
			FFS 70.4 mph		
<b>LOS and Performance Measures</b>			<b>Design (N)</b>		
Operational (LOS)			Design (N)		
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )			Design LOS		
x f <sub>p</sub> )		876		v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )	
S		70.0		x f <sub>p</sub> )	
D = v <sub>p</sub> / S		12.5		S	
LOS		B		D = v <sub>p</sub> / S	
			Required Number of Lanes, N		
<b>Glossary</b>			<b>Factor Location</b>		
N - Number of lanes		S - Speed		E <sub>R</sub> - Exhibits 11-10, 11-12	
V - Hourly volume		D - Density		f <sub>LW</sub> - Exhibit 11-8	
v <sub>p</sub> - Flow rate		FFS - Free-flow speed		E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	
LOS - Level of service		BFFS - Base free-flow speed		f <sub>LC</sub> - Exhibit 11-9	
DDHV - Directional design hour volume				f <sub>p</sub> - Page 11-18	
				TRD - Page 11-11	
				LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>																	
<b>General Information</b>			<b>Site Information</b>														
Analyst	JRE		Highway/Direction of Travel <i>I-80 Westbound</i>														
Agency or Company	AECOM		From/To <i>Between 304 and 305 Merges</i>														
Date Performed	9/11/2014		Jurisdiction														
Analysis Time Period	P.M. Peak Hour		Analysis Year <i>Alt B1 Ph II 2045</i>														
Project Description <i>Interstate 80 Reconstruction</i>																	
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data													
<b>Flow Inputs</b>																	
Volume, V	4225	veh/h	Peak-Hour Factor, PHF	0.97													
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>	13													
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>	1													
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>														
DDHV = AADT x K x D		veh/h	Grade %	Length	mi												
			Up/Down %														
<b>Calculate Flow Adjustments</b>																	
f <sub>p</sub>	0.95		E <sub>R</sub>	2.0													
E <sub>T</sub>	2.5		f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] 0.830														
<b>Speed Inputs</b>			<b>Calc Speed Adj and FFS</b>														
Lane Width	12.0	ft	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">f<sub>LW</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">f<sub>LC</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">TRD Adjustment</td> <td style="padding: 5px;">5.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">FFS</td> <td style="padding: 5px;">70.4</td> <td style="padding: 5px;">mph</td> </tr> </table>			f <sub>LW</sub>	0.0	mph	f <sub>LC</sub>	0.0	mph	TRD Adjustment	5.0	mph	FFS	70.4	mph
f <sub>LW</sub>	0.0	mph															
f <sub>LC</sub>	0.0	mph															
TRD Adjustment	5.0	mph															
FFS	70.4	mph															
Rt-Side Lat. Clearance	6.0	ft															
Number of Lanes, N	3																
Total Ramp Density, TRD	1.67	ramps/mi															
FFS (measured)		mph															
Base free-flow Speed, BFFS	75.4	mph															
<b>LOS and Performance Measures</b>			<b>Design (N)</b>														
<u>Operational (LOS)</u>			<u>Design (N)</u>														
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	1842	pc/h/ln	Design LOS														
S	65.2	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )														
D = v <sub>p</sub> / S	28.2	pc/mi/ln	S														
LOS	D		D = v <sub>p</sub> / S														
			Required Number of Lanes, N														
<b>Glossary</b>			<b>Factor Location</b>														
N - Number of lanes	S - Speed		E <sub>R</sub> - Exhibits 11-10, 11-12		f <sub>LW</sub> - Exhibit 11-8												
V - Hourly volume	D - Density		E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13		f <sub>LC</sub> - Exhibit 11-9												
v <sub>p</sub> - Flow rate	FFS - Free-flow speed		f <sub>p</sub> - Page 11-18		TRD - Page 11-11												
LOS - Level of service	BFFS - Base free-flow speed		LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3														
DDHV - Directional design hour volume																	

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>			
<b>General Information</b>		<b>Site Information</b>	
Analyst	JRE	Highway/Direction of Travel <i>I-80 Westbound</i>	
Agency or Company	AECOM	From/To <i>Between Ints. 307 and 305</i>	
Date Performed	9/11/2014	Jurisdiction	
Analysis Time Period	A.M. Peak Hour	Analysis Year <i>Alt B1 Ph II 2045</i>	
Project Description <i>Interstate 80 Reconstruction</i>			
<input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data			
<b>Flow Inputs</b>			
Volume, V	3206	veh/h	Peak-Hour Factor, PHF <i>0.91</i>
AADT		veh/day	%Trucks and Buses, P <sub>T</sub> <i>12</i>
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub> <i>1</i>
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>
DDHV = AADT x K x D		veh/h	Grade % Length <i>mi</i> Up/Down %
<b>Calculate Flow Adjustments</b>			
f <sub>p</sub>	0.95	E <sub>R</sub>	2.0
E <sub>T</sub>	2.5	f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.840</i>	
<b>Speed Inputs</b>		<b>Calc Speed Adj and FFS</b>	
Lane Width	12.0	ft	
Rt-Side Lat. Clearance	6.0	ft	f <sub>LW</sub> <i>0.0</i> mph
Number of Lanes, N	4		f <sub>LC</sub> <i>0.0</i> mph
Total Ramp Density, TRD	1.83	ramps/mi	TRD Adjustment <i>5.3</i> mph
FFS (measured)		mph	FFS <i>70.1</i> mph
Base free-flow Speed, BFFS	75.4	mph	
<b>LOS and Performance Measures</b>		<b>Design (N)</b>	
<u>Operational (LOS)</u>		<u>Design (N)</u>	
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )	<i>1103</i>	pc/h/ln	Design LOS
S	<i>70.0</i>	mph	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )
D = v <sub>p</sub> / S	<i>15.8</i>	pc/mi/ln	S
LOS	<i>B</i>		D = v <sub>p</sub> / S
			Required Number of Lanes, N
<b>Glossary</b>		<b>Factor Location</b>	
N - Number of lanes	S - Speed	E <sub>R</sub> - Exhibits 11-10, 11-12	f <sub>LW</sub> - Exhibit 11-8
V - Hourly volume	D - Density	E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13	f <sub>LC</sub> - Exhibit 11-9
v <sub>p</sub> - Flow rate	FFS - Free-flow speed	f <sub>p</sub> - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

<b>BASIC FREEWAY SEGMENTS WORKSHEET</b>																	
<b>General Information</b>			<b>Site Information</b>														
Analyst	JRE		Highway/Direction of Travel <i>I-80 Westbound</i>														
Agency or Company	AECOM		From/To <i>Between Ints. 307 and 305</i>														
Date Performed	9/11/2014		Jurisdiction														
Analysis Time Period	P.M. Peak Hour		Analysis Year <i>Alt B1 Ph II 2045</i>														
Project Description <i>Interstate 80 Reconstruction</i>																	
<input checked="" type="checkbox"/> Oper.(LOS)		<input type="checkbox"/> Des.(N)		<input type="checkbox"/> Planning Data													
<b>Flow Inputs</b>																	
Volume, V	6672	veh/h	Peak-Hour Factor, PHF	0.96													
AADT		veh/day	%Trucks and Buses, P <sub>T</sub>	12													
Peak-Hr Prop. of AADT, K			%RVs, P <sub>R</sub>	1													
Peak-Hr Direction Prop, D			General Terrain: <i>Rolling</i>														
DDHV = AADT x K x D		veh/h	Grade %	Length	mi												
			Up/Down %														
<b>Calculate Flow Adjustments</b>																	
f <sub>p</sub>	0.95		E <sub>R</sub>	2.0													
E <sub>T</sub>	2.5		f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <b>0.840</b>														
<b>Speed Inputs</b>			<b>Calc Speed Adj and FFS</b>														
Lane Width	12.0	ft	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">f<sub>LW</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">f<sub>LC</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">TRD Adjustment</td> <td style="padding: 5px;">5.3</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">FFS</td> <td style="padding: 5px;">70.1</td> <td style="padding: 5px;">mph</td> </tr> </table>			f <sub>LW</sub>	0.0	mph	f <sub>LC</sub>	0.0	mph	TRD Adjustment	5.3	mph	FFS	70.1	mph
f <sub>LW</sub>	0.0	mph															
f <sub>LC</sub>	0.0	mph															
TRD Adjustment	5.3	mph															
FFS	70.1	mph															
Rt-Side Lat. Clearance	6.0	ft															
Number of Lanes, N	4																
Total Ramp Density, TRD	1.83	ramps/mi															
FFS (measured)		mph															
Base free-flow Speed, BFFS	75.4	mph															
<b>LOS and Performance Measures</b>			<b>Design (N)</b>														
<u>Operational (LOS)</u>			<u>Design (N)</u>														
v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )			Design LOS														
x f <sub>p</sub> )	2176	pc/h/ln	v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> )														
S	59.0	mph	x f <sub>p</sub> )														
D = v <sub>p</sub> / S	36.9	pc/mi/ln	S														
LOS	E		D = v <sub>p</sub> / S														
			Required Number of Lanes, N														
<b>Glossary</b>			<b>Factor Location</b>														
N - Number of lanes	S - Speed		E <sub>R</sub> - Exhibits 11-10, 11-12		f <sub>LW</sub> - Exhibit 11-8												
V - Hourly volume	D - Density		E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13		f <sub>LC</sub> - Exhibit 11-9												
v <sub>p</sub> - Flow rate	FFS - Free-flow speed		f <sub>p</sub> - Page 11-18		TRD - Page 11-11												
LOS - Level of service speed	BFFS - Base free-flow speed		LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3														
DDHV - Directional design hour volume																	