Mainline Design Parameters – *SR99 NB Mainline: NB Line*

This checklist is to confirm interpretation of standards. Your project may require that additional/different/or fewer Design Elements be addressed.

Design Data	**Design Matrix 3, Line 7**			
Design Class	**Principal Arterial, Divided Mutlilane Highway, P-1** WSDOT Design Manual (DM) Fig. 440-6 (May 2008) Established by AWVSRP Corridor Analysis Addendum B (July 2006)			
Design Year	**2030** WSDOT DM Fig. 440-6 (May 2008) Note 2			
Design Speed (Posted Speed)	**South of the transition section: 55mph;** **North of the transition section: 50mph** Established by AWVSRP Corridor Analysis Addendum (November 2005)			
Number of Lanes	General Purpose: 3	HOV: 0	Auxiliary:0	
ADT	**Existing – 107,000** **Design Year – 115,000** "Transportation Discipline Report" (January 2008)			
Truck Percentage	**3%-5%** "Transportation Discipline Report" (January 2008)			

Design Element	**Reference**	**Design Standard**	**Existing/Proposed**	**Determination**
Access Control	WSDOT Design Manual (DM) Fig. 440-6 (May 2008) note 5			DNMG--deviation #3
Vertical Clearance (Bridges not a poart of the project)	WSDOT DM Section 1120.04(5b-1) (May 2007) over roadway; Fig. 1120-2 (May 2007) over railroad; Section 1020.06(3) (November 2006) over bikeways; Section 1025.05(2) (May 2006) over pedestrian path	**16.5 feet over roadway (17.5 feet for pedestrian bridges over roadways); 23.5 feet over railroad; 10 feet over bikeway; 7 feet of pedestrian path**	NB 141+93 to 196+02	MG
Bicycle/Pedestrian	WSDOT Figure 325-5 (January 2999) note 5	**10' width path**	WBPW 11+13.88 to 17+30.75 WBP 9+99.26 to 16+95	MG
Right of Way Width	N/A	**N/A**	None	N/A
Median				
Median Width	WSDOT DM Fig. 440-6 (May 2008) , Fig. 440-4 (May 2008)	**10 feet minimum when median barrier is present; 12 feet desireable**	Conc. Barrier/Conc. Barrier	MG
Median Width Transitions	N/A	**N/A**	None	N/A
Median Accident/Barrier Warrant	N/A	**N/A**	None	N/A
Median Width/Barrier Placement	N/A	**N/A**	None	N/A

Design Element	Reference	Design Standard	Existing/Proposed	Determination
Median Crossover Design	N/A	**N/A**	None	N/A
Roadway				
Lane Width	WSDOT Section 440.08 WSDOT DM Fig. 440-6 (May 2008)	**12 feet (may be reduced to 11 feet with justification) ;12 feet must be provided when truck DDHV is 200 or greater**	NB 141+93 to 196+02 (12')	MG
Turning Roadway Width	WSDOT DM Section 641.04(2)(4); Fig. 641-2(a)(b) (November 2006)	**Radius of Centerline of Traveled Way 1,000 – 2,999 feet; Design Traveled Way width 25 feet (2-lane)**	NB 150+43 to 157+72; Radius of 1,500 traveled way width of 37' (three lane)	MG
Lane Transition	WSDOT DM Section 620.07(1)	**Lane Addition: 1:4 – 1:15; Lane Reduction: Length= VT**	NB 150+88 to 150+43 (1:55)	MG
			NB 157+72 to 158+27 (1:55)	MG
Max. Superelevation	WSDOT DM Section 642.04; Fig. 642-4(c) (November 2007)	**6%**	NB 143+45 to 146+69 (2%)	MG
			NB 151+15 to 157+00 (6%)	Per 642.04; need justification to use 6% (see Fig. 642-4(c)). Justification provided by Cliff Mansfield in October, 2007. This justification statement is as follows:The highway is classified as Urban Managed Multilane Divided. That falls into the non-freeway category discussed in Design Manual Chapter 642, providing for the use of Figure 642-3b which uses the Max super 6% charts. For 55 MPH, an interpolated super elevation would be about 5.7%. Based on the potential transition to a surface option, use the flattest super elevation rate possible to minimize potential future modifications should the surface option be selected in the future, while still meeting the design criteria for the urban managed multilane - divided - highway.
			NB 161+65 to 165+18 (4%)	MG
			NB 177+63 to 186+15 (4%)	MG
Superelevation Transition/Runoff	WSDOT DM Fig. 642-6(a,b,c,d,e) (November 2007)	**Varies**	NB 141+93 to 143+45 (152')	MG
			NB 146+69 to 148+19 (150')	MG
			NB 149+56 to 151+15 (159')	MG
			NB 157+00 to 161+65 (465')	MG
			NB 165+18 to 167+43 (225')	MG
			NB 175+38 to 177+63 (225')	MG
			NB 186+15 to 186+90 (75')	MG
			NB 195+60 to 196+02 (42')	MG

Design Element	Reference	Design Standard	Existing/Proposed	Determination
Lane Cross Slope	WSDOT DM Section 640.04(1) (November 2006)	**2% standard; 1.5%-2.5% slopes acceptable with justification and a hydraulic analysis**	2%	MG
Shoulders				
Shoulder Width - Inside	WSDOT DM Fig. 440-6 (May 2008) Note 19	**4 feet**	NB 141+93 to 144+87; (1-4 feet)	DNMG: Deviation prepared - deviated to match existing conditions
			NB 144+87 to 185+80; (4 feet min.)	MG
			NB 185+80 to 196+02; (1-4 feet)	DNMG: Deviation prepared - deviated to match existing conditions
Shoulder Width - Outside	WSDOT DM Fig. 440-6 (May 2008) Note 17	**10 feet;** (When guardrail is installed along existing shoulders with a width greater than 4 feet, the shoulder width may be reduced by up to 4 inches)	NB 141+93 to 146+92; (6-10 feet)	DNMG: Deviation prepared - deviated to match existing conditions
			NB 146+92 to 176+00; (10 feet)	MG
			NB 181+50 to 182+47; (10 feet min.)	MG
			NB 181+92 to 196+02; (2-10 feet)	DNMG: Deviation prepared - deviated to match existing conditions
Shoulder Cross Slope	WSDOT DM Section 640.04(3) (November 2006)	**Varies 2-6%;** (Maximum difference between lane and shoulder is 8%)	NB 141+93 to 196+02; (2-6%) (Same as lane cross slope)	MG

Design Element	Reference	Design Standard	Existing/Proposed	Determination
Grade				
Maximum Grade	WSDOT DM Fig. 440-6 (May 2008) Note 30	**7% rolling (50mph design speed); 6% rolling (55mph design speed);** Grades 1% steeper may be used in urban design areas and mountainous terrain with critical right of way controls.	NB 141+93 to 196+02; (6% max)	MG
Minimum Grade	WSDOT DM Section 630.03 (4) (May 2004)	**Meet drainage requirements. Minimum ditch gradients of 0.30% on paved materials and 0.50% on earth**	NB 141+93 to 196+02; (0.3% minimum)	MG
Length of Grade	WSDOT DM Section 630.05 (5) (May 2004) Fig. 630-1 (May 2004)	**Varies by grade**	NB 141+93 to 196+02	MG
Horizontal Alignment				
Stopping Sight Distance	WSDOT DM Fig. 650-1,2,&7 (May 2008)	**Varies with Design Speed**	NP PI 145+07; (800', 495' required)	MG
			NB PI 154+15 - NB Sta 149+50 to 159+50; (443', 495' required)	**DNMG**: deviation prepared. Meets or exceeds 50mph criteria.
			NB PI 164+42; (493', 495' required)	MG
			NB PI 181+93; (498', 465' required)	MG
Horizontal Curve Radii	WSDOT DM Fig. 642-4(c) (November 2007)	**840' for 50mph; 1065' for 55mph; (For 6% superelevation rate)**	NB PI 145+07 (10000')	MG
			NB PI 154+15 (1500')	MG
			NB PI 163+42 (3062')	MG
			NB PI 181+93 (3100')	MG
Vertical Alignment				
Stopping Sight Distance	WSDOT DM Fig. 650-1,2,3,4,&5 (May 2008)	**Varies with Design Speed**	NB PVI 142+76 (495')	MG
			NB PVI 145+08 (495')	MG
			NB PVI 148+00 (495')	MG
			NB PVI 154+86 (495')	MG
			NB PVI 162+15 (495')	MG
			NB PVI 170+78 (542')	MG
			NB PVI 178+88 (542')	MG
			NB PVI 184+52 (425')	MG
			NB PVI 192+75 (425')	MG

Design Element	Reference	Design Standard	Existing/Proposed	Determination
Minimum Length of Vertical Curves	WSDOT DM Fig. 650-1,4,&5 (May 2008)	**Varies with Design Speed and Grade Change**	NB PVI 142+76; (166', 134' required)	MG
			NB PVI 145+08; (166', 147' required)	MG
			NB PVI 148+00; (166', 98' required)	MG
			NB PVI 154+86; (660', 640' required)	MG
			NB PVI 163+15; (780', 774' required)	MG
			NB PVI 170+78; (554', 552' required)	MG
			NB PVI 178+88; (720', 679' required)	MG
			NB PVI 184+52; (400', 510' required)	DNMG, lighting provided on Sag Curve
			NB PVI 192+75; (510', 502' required)	MG
Passing Sight Distance	WSDOT DM Fig. 650-14 (May 2008)	**1835' for 50mph; 1985' for 55mph**	None	N/A
Decision Sight Distance	WSDOT DM Fig. 650-10 (May 2008)	**Varies with Design Speed**	None	N/A
Roadside				
Fill/Ditch Slope	N/A	**N/A**	None	N/A
Ditch Depth	N/A	**N/A**	None	N/A
Back Slope & Cut Slope	N/A	**N/A**	None	N/A
Clear Zone	WSDOT DM Fig. 700.04 (1&2) (May 2006)	**Varies**	Barrier provided as needed	MG
Intersection Design	**N/A**	**N/A**	**None**	**N/A**