

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 Multilane Highway, P-1 WSDOT Design Manual (DM) Fig. 440-6 (May 2008)			
Design Year	2030 WSDOT DM Fig. 440-6 (May 2008) Note 2			
Design Speed (Posted Speed)	50mph/50mph Established by AWVSRP Corridor Analysis (2009)			
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	Full	M1 Managed Access/M1 Managed Access	DNMG--deviation #3
Vertical Clearance (Bridges not a part 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 117+64	MG
Bicycle/Pedestrian	N/A	N/A	N/A	N/A
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 desirable	10 ft with 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
Median Crossover Design	N/A	N/A	None	N/A

Design Element	Reference	Design Standard	Existing/Proposed	Determination
Roadway				
Lane Width	WSDOT Section 440.08 WSDOT DM Fig. 440-6 (May 2008)	12 feet	NB 141+93 to 177+64 (12')	MG
Turning Roadway Width	WSDOT DM Section 641.04(2); 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; 1:25 for lane width change is sufficient	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(b); Fig. 642-4(c) (November 2007)	6%	NB 143+45 to 146+69 (2%)	MG
			NB 151+15 to 157+00 (6%)	DNMG - Deviation #4 provided for use of 6% max chart (Fig 642-4c). The design classification was changed after 90% from UMA-1 to P1 which only allows for use of the 8% max charts.
			NB 161+65 to 165+18 (4%)	DNMG
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
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	10 ft	NB 141+93 to 144+87; (1-4 feet)	DNMG: Deviation prepared - deviated to match existing conditions
			NB 144+87 to 177+64; (4 feet min.)	DNMG: Deviation Prepared
Shoulder Width - Outside	WSDOT DM Fig. 440-6 (May 2008) Note 17	10 feet	NB 141+93 to 146+92; (6-10 feet)	DNMG: Deviation prepared - deviated to match existing conditions
			NB 146+92 to 177+64; (10 feet)	MG

Design Element	Reference	Design Standard	Existing/Proposed	Determination
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

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Grade				
Maximum Grade	WSDOT DM Fig. 440-6 (May 2008) Note 30	6% level (50mph design speed); 5% level (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) (0% to match existing)	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
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+00 (495')	MG
			NB PVI 148+00 (495')	MG
			NB PVI 154+86 (495')	MG
			NB PVI 162+91 (495')	MG
			NB PVI 170+50 (542')	MG

Design Element	Reference	Design Standard	Existing/Proposed	Determination
Minimum Length of Vertical Curves	WSDOT DM Section 630.03 (4) (May 2004); WSDOT DM 630.03(2) for sag curve requirements when mitigation for stopping sight distance is made.	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
Passing Sight Distance	WSDOT DM Fig. 650-14 (May 2006)	1835' for 50mph; 1985' for 55mph	None	N/A
Decision Sight Distance	WSDOT DM Fig. 650-10 (May 2006)	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