

# SR-35 Columbia River Crossing Study



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Date: 9-17-10

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Subject: Design Criteria for the Bridge TSL Study

The SR-35 Columbia River Crossing Study is unique in that the project spans two states and several local jurisdictions. The intent of this document is to define applicable project design criteria based on not only published engineering design standards from both the Oregon and Washington DOTs for the crossing structure but also the context of the end user.

At the start of the investigation of design criteria, it became apparent that many of the design criteria are based on a small group of fundamental or foundational criteria. These foundational criteria were discussed at a Project Management Team (PMT) meeting held on 7/13/10 and are noted with footnote #2. The PMT provided direction on these criteria which enabled the remainder of the design criteria to be established.

## PROJECT DESIGN CRITERIA

DESIGN ELEMENT	WSDOT (2010)	ODOT (2008)	2003 DEIS	PMT RECOMMENDATION
Units of Measure	English	English	English	English
Functional Class	Minor Arterial <sup>1</sup>	Urban Principal Arterial –State Highway		Principal Arterial <sup>2</sup>
Design Speed (mph)	40-60(or 5 over posted)	40 (5 over posted)	50	40 <sup>2</sup>
Shoulder Widths (ft)				
<i>Left</i>	NA	NA	NA	NA
<i>Right</i>	8	8	8	8 min <sup>2</sup>

<sup>1</sup> <http://www.wsdot.wa.gov/mapsdata/tdo/FunctionalClassMaps/PDF/bingen.pdf>

<sup>2</sup> This design element is considered a foundational design element and was discussed at the 7/13/10 PMT meeting.

# S R - 3 5 C o l u m b i a R i v e r C r o s s i n g S t u d y



DESIGN ELEMENT	WSDOT (2010)	ODOT (2008)	2003 DEIS	PMT RECOMMENDATION
Nav. Clearance (ft): Horizontal Vertical	Permit with Coast Guard.	Permit with Coast Guard.	450 80	450 H <sup>2</sup> 80 V <sup>2</sup>
Ability to Widen Bridge or restripe for 3 <sup>rd</sup> lane			yes	Not required <sup>2</sup>
Pedestrian /Bike lane width (ft)	12 min. (Clear width)	14 <sup>3</sup> (incl. 2' shy dist. to rail)	16 (Clear width)	12 foot plus two viewing areas <sup>2</sup>
Bridge width (out to out)			59'-8" <sup>4</sup>	56'-4" <sup>5</sup>
Storm water collection	In shoulders	In shoulders or pipe		In shoulders <sup>2</sup>
Horizontal Clearance	AASHTO Roadside Design Guide	AASHTO Roadside Design Guide		AASHTO Roadside Design Guide
Pedestrian /Bike lane location			West side of bridge only	West side of bridge only <sup>2</sup>
Lane Widths (ft)	12	12		12
Roadway Cross Slope	2%	2%		2% - Crown
Maximum Superelevation	10%	4%		4%
Maximum Tangent Grades	5% <sup>6</sup>	5%	4.5%	5%
Stopping Sight Distance (ft)	305-570	305		305
Minimum CL Radius (ft)	540 <sup>7</sup>	575		575
Specific Structural Design Criteria	WSDOT Bridge Design Manual	ODOT Bridge Design and Drafting Manual		Project Specific
General Bridge Design Criteria	AASHTO LRFD	AASHTO LRFD		AASHTO LRFD
RR Hor. Clearance (ft)	14 (BNSF)	14 (BNSF)		14 (BNSF)
Vertical Clearance	16' - 6"	17' - 0"		17' - 0"
RR Vertical Clearance	23' - 6"	23' - 0"		23' - 6"
Bridge Railing Height	Br railing-Test level 4 Ped railing- 42"	Br railing-Test level 4 Bike railing- 44"		Br Rail-42" Type S/W Rail-44" Metal
Seismic Design Criteria	1000 yr No Collapse	500 yr Serviceability 1000 yr No Collapse		500 yr Serviceability 1000 yr No Collapse

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It is anticipated that additional design criterion may need to be added to this list as the Bridge TSL Study progresses. As those situations arise, decisions on the additional design criterion will be made by the PMT.

<sup>3</sup> Refer to the Oregon Bicycle and Pedestrian Plan for additional combined standards. Shared pedestrian and bicycle paths are not encouraged.

<sup>4</sup> Includes 40' roadway, 16' ped/bike path and allowance for bridge railing and ped railing.

<sup>5</sup> 56'-4" width provides for ped rail, 12' bike, br rail, 8' shldr, 12' lane, 12' lane, 8' shldr, br rail

<sup>6</sup> 7% is allowable, (WSDOT Exhibit 1140-7 urban 40mph), but 5% max for ADA.

<sup>7</sup> Based on WSDOT exhibit 1250-5

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Rev #	Revision Date	Revision	Initiator
1	11/30/2010	Changed bridge rail width from 1'-4" to 1'-8"	MEH
2	12/14/2010	Added Seismic Design Criteria	MEH