

Controlling Design Criteria & Roadway Design Speed				
Controlling Design Criteria		Design Speed		Guidance
		≤ 45mph	≥ 50mph	
FHWA & MnDOT Designated	Design Speed	X	X	TM 22-07-TS-02
	Lane Width		X	FDG Chapter 4A Exhibit 4A-2 & PBPD Page 25-26
	Shoulder Width		X	FDG Chapter 4A
	Structural Capacity	X	X	LRFD Bridge Design Manual, Article 3.4 (Scroll to Page 3.4)
	Stopping Sight Distance		X	Tables 2-5.08A & B (Chapter 2, Page 37)
	Horizontal Curve Radius		X	FDG Chapter 5 Exhibit 5B- 4a
	Maximum Grade		X	RDM Table 3-4.02A (Chapter 3, Page 3-4(2))
	Cross Slope		X	FDG Chapter 4A
	Superelevation Rate		X	RDM Chapter 3-3
	Vertical Clearance		X	LRFD Bridge Design Manual, Table 2.1.3.1 (Page 11)
MnDOT Designated	Ramp Length (Acceleration and Deceleration)	X	X	RDM

Criteria	High Speed Only	Explanation
Design Speed		<p>Minimum design speed met based on the functional classification. This applies to mainline curves.</p> <p>For ramps, design exception only applies to the curves nearest to the mainline.</p>
Lane Width	✓	Minimum lane width provided based on functional classification and chosen design speed.
Shoulder Width	✓	<p>Minimum shoulder width provided based on functional classification and chosen design speed.</p> <p>If the reduction of left shoulder width is due to a bridge pier that is less than the intrusion of the sign bridge, a design exception is not required.</p>
Horizontal Curve Radius	✓	<p>Minimum horizontal curve radius achieved based on chosen design speed and max superelevation rate. This applies to mainline and ramp curves.</p> <p>For ramps, design exception only applies to the first curve, i.e., the curve nearest to the high-speed roadways.</p> <p>Design exception is not required for the final curve on a roadway before a T-intersection (stop condition).</p>
Superelevation Rate	✓	Was the correct superelevation rate chosen for each curve? Identify curves with insufficient superelevation.
Stopping Sight Distance	✓	<p>Provide horizontal and crest vertical stopping sight distance at every point along the roadway.</p> <p>For ramps/loops, the stopping sight distance need to meet the intended design speed of the curve along the entire length of the ramp.</p>
Maximum Grade	✓	Are all grades below the maximum grade?

Cross Slope	✓	Normal cross slope falls within the range:0.015-0.025.
Vertical Clearance*	✓	Minimum value achieved
Design Loading Structural Capacity*		Is structural capacity achieved? For preservation project where the bridges within the project limit is not being touched and minor work that do not add load to the bridge deck, a design exception is not required when its structural capacity rating is HS-20.
Ramp Pavement Width		For urban ramps and loops, determine the ramp pavement width based on the actual speed of the ramp or loop. This box is provided for organization; the actual design exception is Lane Width and Shoulder Width.
Ramp Acceleration Length [^]		Determine the required acceleration lane length using the actual design speed of the entrance curve. The entire length of the spiral can be included as part of the acceleration length. Use the below as part of design exception justifications: Tech Memo 19-01-TS-01 and NCHRP Report 730 state, reducing minimum acceleration lane length by 15% would not be expected to result in operational problems.
Ramp Deceleration Length [^]		Determine the required deceleration lane length using the actual design speed of the exiting curve. The entire length of the spiral can be included as part of the deceleration length.

*These are the only items that required State Bridge Engineer's approval.

[^] These are MnDOT designated design criteria, their justification can be written in paragraph format regardless of the classification of the highway.