

IV-01.01 Guidelines

This chapter contains NDDOT Bridge Division policies and procedures for the design, evaluation, and rehabilitation of structures on the North Dakota State Highway System. Use of this chapter does not relieve the design engineer of responsibility for the design of a bridge or structural component. Although Bridge Division policy is presented here for numerous situations, content of the chapter is not intended to be exhaustive. Therefore, use of this chapter must be tempered with sound engineering judgment. The basis for these guidelines is found in the current editions of the following reference publications:

1. AASHTO LRFD Bridge Design Specifications
2. Standard Specifications for Highway Bridges (AASHTO)
3. Standard Specifications for Road and Bridge Construction (NDDOT)

Those policies unique to the Standard Specifications for Highway Bridges are located in Section 3 and those policies unique to the LRFD Bridge Design Specifications are located in Section 4. Guidelines in Section 2 pertain to both specifications.

Prior to the beginning of a design, all applicable files in filenet and the plans of the existing structure shall be researched. The Environmental Impact Statement (EIS), the Environmental Assessment (EA), or the Project Concept Report (PCR) must also be reviewed. Other items that shall be considered are the need for agreements or permits. Once all of these have been studied, a Preliminary Engineering meeting shall be scheduled with the Bridge Engineer. Persons in attendance shall include the Bridge Engineer, Assistant Bridge Engineer, section leader, designer of the project, and others as appropriate. See Appendix IV-06 D for Preliminary Engineering meeting discussion items. Bridge information determined from the Preliminary Engineering meeting shall be shared with the Design Division so that right of way limits can be established.

The primary design method for structures shall be Load & Resistance Factor Design (LRFD). Details on the LRFD design method can be found in reference publication 1 above. An HL-93 loading shall be used for the live load. In rehabilitating existing structures, the design method shall be Load Factor Design (LFD) with Working Stress Design (WSD) being used for designing piling. An HS 25 loading shall be used for the live load when practical in rehabilitating structures; otherwise an HS 20 loading shall be used.

The National Bridge Inspection Program requires that every bridge in the state be rated for Inventory and Operating loadings. The ratings shall be according to the AASHTO "Manual for Maintenance Inspection of Bridges" using an HS truck and WSD method except for NHS routes, new structures, and rehabilitated bridges, which shall be rated with the LRFR or LFD method. The Structural Management Section (Bridge) will rate the bridges.