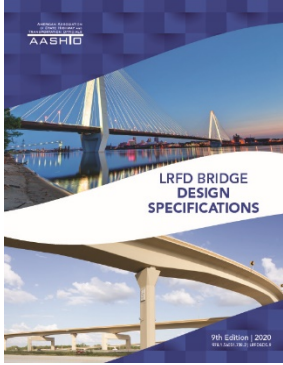


AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION

Summary of Key Revisions and Updates



The AASHTO *LRFD Bridge Design Specifications* are intended for use in the design, evaluation, and rehabilitation of bridges. The specifications employ the Load and Resistance Factor Design (LRFD) methodology, using factors developed from current statistical knowledge of loads and structural performance.

The new ninth edition includes revisions to almost all sections of the specifications. Following are the key revisions and updates made to the *LRFD Bridge Design Specifications*, 9th Edition, from the previous 2017 eighth edition:

Overall stability (slopes with or without foundations) has been moved from Service to the Strength Limit State in Sections 3, 10, 11, and several other sections:

- New guidance provided for application of loads to foundation elements resulting from soil slope instability
- Can now apply typical Strength Limit load factors for foundations and walls bearing on slopes

Extensive changes to Section 6, Steel Structures:

- New design specifications for noncomposite steel box-section members, which are often used as truss members, arch ribs and ties, rigid-frame members, columns, steel bent caps, edge girders, floor beams, and steel tower legs. The new provisions are the premier design resource for these members in the world.
- Updates to the simplified design provisions for bolted field splices, which include the LRFD-8 Errata issued in 2018.
- Improvements to the post-buckling flange-stress reduction factor, R_b , to account for the contribution of web longitudinal stiffeners to the overall flexural resistance of slender-web steel girders at the strength limit state.
- Updates to the shear lag reduction factor and to the specifications for determining the factored flexural resistance of tees and double angles to bring the design specifications into conformance with the latest AISC Specifications.
- New design provisions for the determination of the factored shear resistance of concrete filled steel tubes (CFSTs).
- Addition of a new fatigue classification for large inspection access manholes in the bottom flange of a steel tub girder, and hand holes placed throughout the length of built-up steel truss members to reduce dead load and aid with fabrication and inspection.
- Introduction of two new Guide Specifications related to redundancy in steel bridges: *Guide Specifications for Analysis and Identification of Fracture Critical Members and System Redundant Members* (GSFCM-1) and *Guide Specifications for Internal Redundancy of Built-Up Steel Members* (GSBSM-1), both published by AASHTO in late 2018.

Update to the various design tables for conformance with the National Design Specification Supplement, Design Values for Wood Construction 2018 version in Section 8, Wood Structures.

New information on settlement in Section 10, Foundations

- Updated methods for estimating settlement of foundations
- New, calibrated Service Limit State load factors for foundation settlement

New information on MSE walls and soil nails in Section 11, Abutments, Piers, and Walls

- Rewritten, updated, and more accurate methods for estimating MSE soil reinforcement loads and resistance, which is clearer and more complete
- More detailed specifications and commentary for evaluating compound stability of MSE walls
- Clearer guidance on determination of MSE wall facing/reinforcement connection design for modular block faced walls
- New, comprehensive articles for geotechnical and structural design of soil nail walls

New concrete pipe options in Section 12, Buried Structures and Tunnel Liners

Various changes throughout to make the AASHTO LRFD Bridge Design Specifications more internally consistent