

2019 May Update
ODOT Bridge Design Manual & Bridge CAD Manual

Update Summary

The following revisions are in reference to current BDM section numbers:

Section 1 – Design and Detailing Practices

- 1.3.7 Wind Load – Figure 1.15.1 Design wind velocity map is outdated, obtain updated 3-second gust wind speed map to use with 8th Edition AASHTO LRFD. Figure 3.8.1.1.2-1 is not detail enough for Oregon use.
- 1.5.5.1.18 GFRP – add design guidance regarding GFRP bar reinforcement.
- 1.5.6.1 Design of Precast Prestressed Elements – Revise language to allow side-by-side deck Bulb-T girders with UHPC to be used without RC deck for NHS routes.
- 1.6.1.12 Bearings – Failure of bearing anchor rod if not design/detail properly. Provide guidance on design/detail.
- 1.9.4.4 Field Investigation – Suggest adding method of repairing core locations. Clarification for length for compressive strength test and number of cores needed for bridge larger than 120,000 sf. Add guidance for coring girders, columns, bent caps for strength test.

Relocate compressive strength testing to 1.30.1, since it belongs with strengthening rather than deck overlays.
- 1.9.4.1 & .7 Design and Construction Considerations – Add guidance on use of dowel bars for thick structural overlay.
- 1.11.2.4 General Procedures and Typical Values – Add guidance for backfill, of abutments, retaining walls and end panels. Add detail using appropriate lateral earth pressure coefficient.
- 1.11.3.5 Column Design, General – Clarify design requirement.
- 1.11.3.9 Add “Type 2” Mechanical Couplers for use in columns. Revise Figure 1.11.3.9A. Also revise General Notes and 1.5.5.1.17.
- 1.11.3.11 Footing Reinforcing – Update Figure 1.11.3.11A to show seismic detailing, add note to see guide spec. for SDC C and D.

- 1.13.1 & 2 Bridge Rail Replacement & Retrofit Guidelines – Define TL level required for rail retrofit for interstate & NHS routes and non-interstate and non-NHS routes.
- 1.13.1.4 Loads – Provide design guidance to design deck overhang to a more realistic demand.
- 1.14.2.1(1) Remove the 1st bullet in “Asphaltic Plug joints do not perform well under...”. “Hot Poured Joint Filler” changed to “Hot Applied Joint Sealant”. Clarify terms.
- 1.15 Delete outdated information in this section; refer to GDM Chapter 16 for design. Revise section for soundwall on Bridge.
- 1.16 Work Activity Triggers – Update section per comments from the accessibility consultant.
- 1.17.2.1 Applications of AASHTO Guide Specs for LRFD Seismic Bridge Design – Add guidance for concrete strain limits for unconfined columns for retrofit of existing bridges. Includes guidelines for seismic retrofit.

Clarify design requirement for temporary detour bridges.
- Fig1.17.2-1A Applications of AASHTO LRFD Bridge Design Specifications – Modification of Figure 1.17.2-1A to clarify the need of Design Exemption from FHWA
- 1.17.3.2 Specification Interpretations and Modifications – Add clarification on the reinforcement requirements and detailing of T and Knee joints of integral bent caps

Specification Interpretations and Modifications – Expand the 8th bullet to reflect the circumstances when Nonlinear Time History analysis should be considered for seismic design.
- 1.20.2.2 Design – Add guidance for anchor design according to ACI 318 Ch17 with a recommended characteristic bond stress based on the manufacturer-provided information for the epoxy resin products on the QPL.
- 1.20.2.4 Plan Details – Revise information in Table 1.20.2.4 to be consistent with SP00535.

- 1.20.2.5 Testing Requirements – Revise guidance to be consistent with SP00535.
- 1.23.1 Bridge End Panels and Supports - For bridge with large skew and movement, designer need to modify the ledge detail to account for the movement and prevent concrete spall at the face of the ledge.
- 1.26.3 Deck and End Panel Reinforcement Protection – Add GFRP bars to the list of options.
- 1.26.4 Waterproof Membranes – Allow use of rolled membrane and polymer membrane for certain structure types. Related sections are 1.5.6.1, 1.5.6.2.11 (1), 1.8.2, 1.9.1, 1.9.4, 1.9.4.6, 1.9.4.10, 1.26.3 and 1.26.5
- 1.30 Strengthening of Bridges – ODOT have employed a number of new bridge strengthening methods on bridge projects. This article needs to be updated to include new information.

Section 2 –

- 2.2.9 Precast Connections Seismic Regions Swap – swap Figures 2.2.9A and 2.2.9B. (No revision form.)
- 2.5.2 Spans and Proportions (1) Column Locations – Provide commentary to barrier protection for structures. Update/move part of Figure 3.14.4.2C to this section. Work with HDM 4.6.3 Figure 4-9 to provide consistent information.
- 2.6.2 Inspection and Maintenance Accessibility – Update clearance needed below bridge at abutment. Edit BDM Figure 1.14.1.3A.

Section 3 – Procedures and Layout

- 3.10.7 Calculation & Calculation Books – Prefer electronic calculation book.
- 3.12.5.1 As-Constructed Drawings – See BCM Section 7.11.1

Bridge CAD Manual

- 6 Clarified TS&L CAD files are to be used for subsequent milestones.
- 6.1 Clarified bent numbering for project plans.
- 6.2 Updated location map description to include that map must be legible and monochrome. Changed Figure 6.2A to monochrome.