Oregon
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FILE CODE:

April 22, 2009

To: Users of Oregon DOT Bridge Design and Drafting Manual

Subject: New changes and additions to the ODOT Bridge Design and Drafting Manual

The ODOT Bridge Design and Drafting Manual (BDDM), 2004 has been updated with several changes and additions. The revised Manual is being released in web-based Acrobat files, which can be access at the following web site:

http://www.oregon.gov/ODOT/HWY/BRIDGE/standards_manuals.shtml#Bridge_Design_Drafting_Manual

The Manual and changes can be viewed from the site, or downloaded and printed. The update consists of 54 areas covering changes listed in the attachment. Some of the changes include installation of bridge ID Paddles, ODOT Accelerated Bridge Construction (ABC) Guidelines, and the preparation of Bridge Operations and Maintenance Manuals for some bridges. We also included the use of the AASHTO 2009 LRFD interim design specifications, even though that update will not be published until July 2009. As soon as it is published, it should be used for all new designs that begin after the publication date.

The BDDM changes apply to new design projects as of the effective date of April 21, 2009. New projects for ODOT designed projects are those that do not have an approved DAP by the effective date. New projects for outsourced projects are those that do not have an executed work order contract for PE. However, existing projects may make use of new changes, if agreed to by the CPM or Project Team Leader.

For your information, the ODOT Seismic Data sheet and the ODOT Design Response Spectrum Microsoft ACCESS Program for calculating the 550-year and 1000-year spectra was added to the ODOT FTP site. The ODOT electronic file for shop drawing review is also on the FTP site.

We are very interested in comments and suggestions on these proposals from those who use the manual. Please provide comments and questions about the changes to Kevin Davidson at (503) 986-3342, Kevin.F.Davidson@odot.state.or.us or Bruce Johnson at (503) 986-3344.

B Johnson

Bruce V. Johnson
State Bridge Engineer

Attachment: BDDM Update Summary April 2009

BVJ/mvs

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April 2009 Update
ODOT Bridge Design & Drafting Manual

Update Summary

NOTE: Yellow highlighted changes were added after the change list was sent out for review and therefore, have not had public review prior to adoption. These changes were felt to be minor in nature and non-controversial. If there are comments or questions about the non-reviewed changes, please contact Kevin Davidson or Bruce Johnson.

Section 1 – Design and Detailing Practices

1.1.1 Standard Specifications and Standard Drawing Manuals – Use 2009 Interim Revisions, when available

1.1.1.1 Purpose of the Bridge Design and Drafting Manual – add discussion on design deviations, innovation.

1.1.1.3 Bridge Security Design Considerations – expanded security risk decision criteria, misc. revisions.

1.1.2.3 Structure Layout: Spans and Proportions
(3) Girder Spacing – revise criteria.

1.1.2.4 Structure Type – Add deeper girder sections, revise span lengths

1.1.2.9 Other Things To Keep In Mind:

(5) Bridge R/W Considerations – Consider room for future inspection, maintenance, detours, work bridges, etc.
(7) Use of Salvage Materials – existing calculations may be scanned and electronically transmitted.
(9) Bridge ID Paddles – New section
(10) Accelerated Bridge Construction – New section

1.1.2.12 Complex Details: Provide maintenance/service manuals

1.1.3.4 Hydraulics – New section, reference to ODOT Hydraulics Manual Chapter 4, items to show on Plan and Elevation (scour elevation etc.)

1.1.7.1 Dead Loads –
(4) Wearing Surface: revised present & future allowance

1.1.8.4 End Bents – change reference to ODOT Geotechnical Design Manual, Chapter 15

1.1.9.5 Column Design, General – Remove restriction on tied columns

1.1.10.1 Design Philosophy – use of the AASHTO Guide Specifications for LRFD Seismic Bridge Design, and exceptions.

1.1.10.2-1 General Considerations, Seismic Retrofit – add discussion for Site Factor / Site Class

1.1.10.3-1 General Considerations – ODOT has adopted the AASHTO Guide Specifications for LRFD Seismic Bridge Design

1.1.12.1 Concrete General – Change 3600 to 3300, add higher strengths.

1.1.12.4 Curing Concrete – New section

1.1.12.5 Permanent Strengthening of Reinforced Concrete Bridges – New section, includes flexure, shear and epoxy injection.

1.1.13.1 Reinforcement, General:
(3), (6) thru (10) – Revise shrinkage & temperature reinforcement, minimum bar spacing, development lengths for LRFD.
(11) Welded Splices and Mechanical Connections – revised.
(12) Lap Splices, Grade 60 – revised for LRFD compliance
(16) Headed Reinforcement – new section

1.1.14.1 Design of Precast Prestressed Elements – revisions: slab & box (skew limits, stage construction, transverse connections), surface finish, deck interface shear.

1.1.14.2 Design and Detailing of Prestressed Girders,
(11) Girder Spacing – revise criteria.

1.1.14.3 Stage Construction for Side-By-Side Precast Prestressed Elements – new section

1.1.19.1 Elastomeric Bearing Pads – restrict use of cotton duck pads, clarify equation load factors

1.1.19.2 Proprietary Pot, Disc, Slide, Radial or Spherical Bearings – clarify equation load factors

1.1.19.5 Elastomeric Bearing Pads – restrict use of cotton duck pads

1.1.20.1 Decks, Design and Detailing – add explanation on control of cracking, and discussion on Inlaid Durable Striping

1.1.20.2 Deck Expansion Joint Seals – misc. revisions

1.1.20.5 Deck Overlays – General update and revisions

1.1.21.1 Rail Selection –
(1) Rail Selection, General– revised, use AASHTO LRFD Section 13
Rail selection decision criteria
(1) Note A – Approval Criteria for nonstandard rails
(2) Vehicular Railing:
General– Consider maintenance and inspection needs when selecting rail height: add subsection
Aesthetic rails designed by another agency: add application procedure subsection

1.1.21.3 Joints in Bridge Rail – add guidance on joint spacing

1.1.23.3 (Drilled Concrete Anchors) Plan Details, Construction – correct reference: 1.1.22, not 1.2.20

1.1.25.4 Waterproofing Membranes – general updates and added guidance

1.2 Steel Structure Design and Detailing – misc. cleanup, and revised sections as listed here:

1.2.1 Steel Girders, Design – Add design instruction for girder splice. Add deflection, rotation and loading considerations for skewed and curved girder structures during deck placement. Add coating requirements for girder ends cast in concrete.

1.2.1.7 Composite Action and Flange Shear Connectors – add criteria for length of shear connectors

1.2.1.10 End Bents Detailing – add discussion on painting ends of girders

1.2.3 Traffic Structures Mounted on Bridges – Height of structure mounted signs

1.2.4.4 Painting or coating of new or existing metal – new section

1.2.4.5 Process for recoating of an existing metal structure – new section

1.4.1.1 Retaining Structures, General – change reference to ODOT Geotechnical Design Manual, Chapter 15.

1.4.4.2 Inspection and Maintenance Accessibility – cross reference to 1.1.21.1 (2) for rail height

1.4.4.5 Protective Screening – Figures 1.4.4.5B & C: for post sizes, ref. BR240

1.4.8.1 Roadway Clearances:
(3) Vertical Clearance – revised, add High Route discussion
(5) Clearances During Construction – revised discussion

1.4.9.2 Temporary Detour Bridges – clarification of hydraulic design requirements for temporary highway bridges

Section 2 – Drafting Practices

2.1.8 Scales – add scale warning

2.2.5 Structural Steel – Revise Fig. 2.2.5C splice details

2.3 Drawing Borders – Revised Fig. 2.3A Bridge Drawing Titleblock

2.4.2 Title Block – add reference note for "Accompanied By" drawings, revise Fig. 2.4.2B

2.7.2 Final Plans, General – add Girder Schedule to Sheet Order

A2.1.3 CAD Files – Replacement Bridges:
General Drawings – All Bridges: Add bullet items for TSL Plan & Elevation, TSL Staging & Typical Section

A2.1.3.1 Contract Plans Sheet Development Guide – Revise Contract Plans Sheet Development Matrix

A2.1.4 Cell Library – Revise cells:
B_Titleblock_Bridge
D_Pile_Closedsplice and D_Plug
G_BT_48 thru G_IBDT_IntegralBulbT
G_SLB_12 thru G_Type2
T_Paylimits thru T_Wingwall

A2.2.2 Linework and Levels – Revise levels chart (Existing, Superstructure, Substructure)

A2.7.3 Plan and Elevation, General Notes – revise Splice Length table for LRFD, revise concrete strengths