I N T E R O F F I C E M E M O

TECHNICAL SERVICES
Bridge Engineering Section
Office Phone: (503) 986-4200
Fax Number: (503) 986-3407

DATE: August 9, 2016

TO: Alex Lim
Bridge Design Standards Engineer

FROM: Alex Lim
Bridge Design Standards Engineer
ODOT
Phone: 503-986-3402

SUBJECT: Proposed Revision to Bridge Design & Drafting Manual

RE: BDDM Section 1.2 – Bridge Design, General

Problem Statement:

Update reference manuals, add additional reference manuals. Update titles, name and email.

Proposal:

Modify Sections 1.2.1 and 1.2.2 as follows:

1.2 BRIDGE DESIGN, GENERAL

1.2.1 Bridge Design Standards

1.2.2 Bridge Design Deviations

1.2.3 Bridge Design Deliverables

1.2.4 Bridge Design Procedures

1.2.1 Bridge Design Standards

1.2.1.1 Standard Specifications and Standard Drawing Manuals

- *LRFD Bridge Design Specifications* (7th Edition, 2014 with 2015 and 2016 interims) published by the American Association of State Highway and Transportation Officials (AASHTO).
- *AASHTO Guide Specifications for LRFD Seismic Bridge Design* (2nd Edition, 2011 with 2012, ~~and~~ 2014 and 2015 interims).
- *LRFD Guide Specifications for the Design of Pedestrian Bridges* (2nd Edition, December 2009 with 2015 interims) published by ~~the American Association of State Highway and Transportation Officials (~~AASHTO~~)~~.
- *Manual for Railway Engineering* of the American Railway Engineering and Maintenance-of-Way Association (AREMA) ~~(formerly AREA)~~ as modified by the individual requirements of each railroad company.
- *Oregon Standard Specifications for Construction*, published by ODOT and pertinent special provisions (for all construction except bridges carrying railways).
- *Oregon Standard Drawings,* published by Oregon Department of Transportation, Standards Engineer.

The International Building Code (IBC) as adopted by Oregon does not apply to structures within a public right of way, such as bridges, culverts, retaining walls, traffic structures, signals, sound walls, or railings. Ref: Oregon Structural Specialty Code, Section 101.2.1 General.

1.2.1.2 Use of Oregon Standard Drawing and Standard Details

The Standard Drawings and Standard Details prepared by ODOT have been developed through a long history of collaboration with Oregon contractors and fabricators. Consider impacts to both when making modifications.

Oregon Standard Drawings are to be used without significant change, as determined by the drawing Engineer of Record. Where a significant change to a standard drawing is needed, submit a design deviation request to the State Bridge Engineer. Where an equivalent ODOT Standard Drawing or accompanying design detail exists, do not use Standard Drawings or design details from another state or agency without approval of a design deviation from the State Bridge Engineer.

The Standard Details does not include the seal of the Technical Owner, the Designer or the Engineer of

Record (EOR) is responsible for sealing the contract plans with the Standard Details, and the design calculation which is specific to the project where the Standard Details are used.

1.2.2 Bridge Design Deviations

Since the bridge design field is an art that is constantly changing, it is understood that designers will occasionally want to use innovative details or methods that may differ substantially from those contained in this manual and on the standard drawings. Designers having experience in other states may also want to introduce details and methods which have worked well in those states.

Submit a request for a design deviation to the State Bridge Engineer before replacing an established drawing or method from this manual. This may include design methods and/or details established in other states, design methods and/or details presented in research reports, or innovative design methods and/or details developed by designers. This requirement is not intended to inhibit innovation or the ability of the designer to exercise good engineering judgment. On the contrary, it is intended to allow good innovative ideas to be used and to potentially become part of this manual.

In cases where a Standard Drawing or BDDM design requirement is not applicable to the project circumstances and must be modified, a design deviation is necessary. This commonly occurs to meet a project goal, incorporate new technology or to meet a technical requirement e.g. significant modification to accommodate project geometry; ADA requirements; any modified attachments; existing elements; Local Agency standards; aesthetics. Modifications made in these instances cannot be based on preference or economy. They must be justified by structure geometry, configuration, constructability, and intended purpose. In other words, use a Standard Drawing if it satisfies the need. Ensure changes made to Standard Drawings comply with LRFD and BDDM design requirements.

Modifications to Standard Drawings on repair and rehabilitation projects do not require design deviations, except on bridge rail drawings or when new design techniques or materials are used. This is due to the often unique needs of project specific circumstances on rehab and repair projects. These projects must still comply with LRFD and BDDM design requirements or a design deviation is necessary. The Bridge Reviewer should devote extra attention to modified drawings and raise concerns to the Standard Drawing owner when appropriate. Because of federal crash test requirements all projects with modifications to bridge rail require a design exception~~.~~ (refer to ODOT Highway Design Manual Chapter 14 for design exception process). Design deviation is not needed when a Design Exception is submitted for the project, however, provide the supplement information required for a design deviation with the Design Exception submittal. Design deviations submitted on projects using new materials and techniques help document their use and incorporate innovative methods into standard practice.

(1) Design Deviation – Prior to submitting a design deviation request, it is prudent to contact the BDDM technical specialist for guidance. They can discern when a design deviation is necessary; an e-mail inquiry about the proposed modification suffices for confirmation on whether a formal design deviation is necessary or not.

A design deviation form is available on the ODOT Bridge Engineering web~~-~~site. In the request include a brief description of the project, an explanation of the issues, what is being proposed, ~~a~~ justification for the proposed deviation, and any supporting documents. The request may be submitted by e-mail. Send deviation requests to:

Bruce Johnson, State Bridge Engineer
~~bruce.v.johnson@odot.state.or.us~~Bruce.V.JOHNSON@odot.state.or.us, and
~~Emily Maurer~~Alex Lim, Bridge Standards and Practices Engineer, Alex.K.LIM@odot.state.or.us
~~Emily.Maurer@odot.state.or.us~~

The request will be distributed to and evaluated by the BDDM technical specialists. The State Bridge Engineer makes the final decision to accept or reject a request for design deviation. A response to each

request will be returned by e-mail within 10 business days.

(2) Technical Bulletins – From time to time, technical issues arise between scheduled BDDM updates which require urgent distribution of guidance to the design community. These are handled by Technical Bulletins. Check the ODOT Bridge Engineering web page for status of Technical Bulletins.

Analysis / Research / Other Supporting Data:

☒ None
☐ Attached:

Bridge Engineering Section Response:

☐ Accepted for consideration as submitted ☐ Accepted for consideration as noted ☐ Proposal tabled, see Remarks ☐ Proposal not accepted, see Remarks		
Remarks:		
Craig Shike Bridge Design Standards Reviewer		Date
Alex Lim Digitally signed by Alex Lim DN: cn=Alex Lim, o=ODOT, ou=BDDM Standards Engineer, email=Alex.K.LIM@odot.state.or.us, c=US Date: 2016.09.29 08:11:43 -07'00'		
Alex Lim Bridge Design Standards Engineer		Date 9/29/2016

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