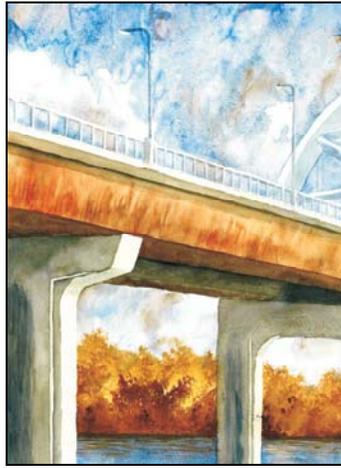




Division of Transportation
System Development
Bureau of Structures
PO Box 7916
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Bridge Manual



Standard Details

DATE: July 29, 2016
TO: Bridge Manual Users
FROM: DTSD – Bureau of Structures
SUBJECT: **July 2016 Bridge Manual Update**

The Bridge Manual revisions to text and standards are now complete and posted online for this six month cycle. Please see the attached sheets for a list, with brief explanation, of the Text and Standards that were revised. Corresponding plan insert sheets have also been updated and posted online.

Of particular interest in this edition:

- **Chapter 4:** Once again, revisions with regards to CSS funding, etc. **PLEASE READ SECTION 4.5.** Standard 4.01 has a warning that the formliners shown are all non-participating (CSS) items.
- **Chapter 6:** Numerous enhancements outlining consultant/BOS processes, etc. Clarified several bid items regarding measurement.
 - **Note:** “FDM 3-20-30 Structure Design” has been removed (or will be soon). This FDM section is attached at the end of Chapter 6. The January, 2017 edition of the Bridge Manual will incorporate this information into the Bridge Manual text.
- **Chapter 9:** Noting possible implementation of the new bar tables is on hold.
- **Chapter 9:** Added 9.10 to address changes to granular materials
- **Chapter 13:** 13.11.5 Updated cofferdam seal example.
- **Chapter 5 & 18:** Added note and a new “WisDOT policy item” added stating that slab bridges should not be used on the Interstate. This was in response to slabs having an initial period of time before the creep camber has dissipated where the bridge does not ride particularly well.

- **Chapter 24:** New statement requiring full-depth, solid diaphragms for steel box girders. Box girders require prior BOS approval.
- **Chapter 40 and other locations, including standards:** No longer Type ‘S’ and Type ‘L’ adhesive anchors. Now just adhesive anchors. (Insert sheet changes have not yet been made).
- **New Standard 9.01 – Structure Backfill Limits and Notes:** Standard to better illustrate backfill for abutments, retaining walls and box culverts.
- **New Standards 13.08 - Pier Cap Reinforcement Detailing:** Standard to provide guidance for design engineers in how to lay out pier cap steel (abutments, too) to avoid anchor bolt conflicts.
- **New Standard 14.11 – MSE Wall – Panel and Block Facing:** Standard to better illustrate these types of retaining walls.
- **New Chapter 14.12 – MSE Wall – Wire Faced 1:** Details for wire-faced MSE walls utilizing tip-up precast concrete, full-height panels.
- **New Chapter 14.13 – MSE Wall – Wire Faced 2:** Details for wire-faced MSE walls utilizing tip-up precast concrete, full-height panels.
- **Numerous Standards:** For consistency:
 - Showing mostly NOTES and DESIGNER NOTES on standards. GENERAL NOTES was misleading, as general notes are for the general plan sheets at the beginning of a plan set.
 - “DIA.” replaces the diameter symbol (ϕ).
 - **Note:** Insert sheet changes for the above have not yet been made.
- **Insert sheets:** Insert sheets have been updated for this 6-month cycle, unless noted otherwise. Please make sure that the current insert sheets are being utilized for structures projects.

There is a department wide effort to reduce the number of SPV’s and convert, where possible, to Standard Spec or STSP.

Most other changes are relatively minor. If anything in a given chapter was edited, the date for the entire chapter was updated. A vertical black bar in the left margin notes all changes. Previous bars were not removed from chapters which were not edited in this update.

The user’s feedback regarding the Bridge Manual is important to us as that is where we get many ideas for corrections, clarification and new ideas for enhancement.

July 2016 Bridge Manual Text Update Summary

<u>Chapter</u>	<u>Page Number(s)</u>	<u>Change</u>
4	2,7,11	References to 4.5 for current aesthetic policy
	5	Added a max. number of corners a pier should have
	9	Added note warning of high future maintenance costs associated with staining and painting
	9,10	Revised aesthetics policy language
5	4	Note that slab bridges should not be used on the Interstate
6	6	Corrected FEM to FDM
	7	Removed additional requirements for Federal aid primary and Interstate
	14	Added note for rating of bridge widenings
	15	Updated Hydraulic Data requirements
	18	Consolidated several sections under "Other Agencies"
	24	Added professional seal guidance
	33	Clarified name plate location
	36-37	Updated plan preparations for granular materials
	39	Proper bid items for Preparation Decks Type 1 & 2 in description
	41	Updated concrete adhesive anchors
	41	Clarified payment items for Piling Steel Sheet Temporary and Temporary Shoring
	41	Sawing pavement is for Preparation Decks Type I, only
	43	Removed 'expected service loads' and replaced with 'expected loads'
	43-45	Updated workflow chart to reflect current process
	45	Updated preliminary plan requirements to reflect current process
	46	Updated final plan requirements to reflect current process
46	Included on-time improvement form information	
46-47	Added info on addenda, post-let revisions and local lets	
9	15, 16	Updated Federal Standard No. from 595B to 595C
	15	Updated link to Federal Color chart
	24	Added Section 9.10 for granular materials
	26	Moved implementation of Draft Bar Tables into following year
11	25-26	Corrected heading for pipe piles
12	18 (19 & 20 removed)	Removed Figures 12.6-1 and 12.6.2 for calculating structure backfill. See Standard Detail 9.01 for typical pay limits and plan notes.
13	47	Updated cofferdam seal example
	48	Changed "granular" to "structure" backfill

14	8	Updated link to Section 14.11
	20	Updated link to Section 14.11
	24	Added maximum MSE wall heights
	62	Changed "pervious" to "permeable" and "granular" to "structure" backfill
18	3	New "WisDOT policy item" stating slab bridges should not be used on the Interstate
24	89	Full-depth, solid diaphragms to be used for box girders. Box girders require prior BOS approval.
30	8	Clarification on Type W rail usage
36	39	Removed Figure 36.9-1 for calculating structure excavation and backfill. See Standard Detail 9.01 for typical pay limits and plan notes.
39	3, 10	Added minimum vertical clearance value for the Oversize/Overweight (OSOW) High Clearance Route system
	6	Clarified alternate materials that are allowed and the requirements that accompany their use
	6	Clarified that direct tension indicating (DTI) washers apply to field bolted connections
	8, 9	Clarified the application of fatigue group loads
	12, 13	Added new subsection headers in "Section 39.5 Structure Selection Guidelines" to improve the format
	15	Added reference to new subsection 39.5.2
40	14	Clarified existing diaphragms
	29-44	Updated adhesive anchors based on 2017 specificaiton changes
	50-56	Add Fiber Reinforced Polymer Section
45E -1	6	Corrected moment capacity reference LRFD [5.7.3.3.1]
	6-7	Minor formatting

July 2016 Standard Details Update Summary

Chapter 4

- Std 4.01 ■ Warning that any formliner is a non-participating (CSS) item
- Std 4.02 ■ No revisions.
- Std 4.03 ■ No revisions.
- Std 4.04 ■ No revisions.
- Std 4.05 ■ No revisions.

Chapter 7

- Std 7.01 ■ Updated "General Notes" to "Notes"
- Std 7.02 ■ No revisions.
- Std 7.03 ■ No revisions.
- Std 7.04 ■ No revisions.
- Std 7.05 ■ Spelling error corrected
- Std 7.06 ■ No revisions.
- Std 7.07 ■ No revisions.

Chapter 9

- NEW** Std 9.01 ■ Structure Backfill Limits and Notes

Chapter 11

- Std 11.01 ■ Updated Diameter symbol to "DIA."

Chapter 12

- Std 12.01 ■ Removed rodent screen detail. Now on new standard 9.01
- Std 12.02 ■ Removed obsolete references to Type 'F' railing & added NY 3&4 sw notch
- Std 12.03 ■ Rodent screen reference now 9.01 instead of 12.01
- Std 12.04 ■ No revisions.
- Std 12.05 ■ Corrected broken line in Front Elevation view
 - Rodent screen reference now 9.01 instead of 12.01
- Std 12.06 ■ Removed obsolete references to Type 'F' railing and added NY 3&4
- Std 12.07 ■ Removed obsolete references to Type 'F' railing and added NY 3&4
 - Revised "L" shaped bar location in Wing Elevation & Section B-B
 - Rodent screen reference now 9.01 instead of 12.01
- Std 12.08 ■ Rodent screen reference now 9.01 instead of 12.01
- Std 12.09 ■ No revisions.
- Std 12.10 ■ Updated Bar Steel Reinforcement bid item
- Std 12.11 ■ No revisions.
- Std 12.12 ■ No revisions.
- Std 12.13 ■ No revisions.

Chapter 13

- Std 13.01 ■ Updated "Section P2" note to reference steel bearings
- Std 13.02 ■ No revisions.
- Std 13.03 ■ No revisions.
- Std 13.04 ■ No revisions.
- Std 13.05 ■ Removed vertical rib rustication based on aesthetics policy
- Std 13.06 ■ Removed vertical rib rustication based on aesthetics policy
- Std 13.07 ■ No revisions.
- NEW** Std 13.08 ■ Pier Cap Reinforcement Detailing
- Std 13.10 ■ Updated adhesive anchor notes

- Std 13.11 ■ Updated adhesive anchor notes

Chapter 14

- Std 14.02 ■ Updated Diameter symbol to "DIA."
- Std 14.03 ■ Rodent screen reference now 9.01 instead of 12.01
- Std 14.04 ■ No revisions.
- Std 14.05 ■ No revisions.
- NEW** Std 14.11 ■ MSE Wall - Panel and Block Facing
- NEW** Std 14.12 ■ MSE Wall - Wire Faced 1
- NEW** Std 14.13 ■ MSE Wall - Wire Faced 2

Chapter 15

- Std 15.01 ■ No revisions.
- Std 15.02 ■ Updated "General Notes" to "Notes"
- Std 15.03 ■ Updated "General Notes" to "Notes"
 - Rodent screen reference now 9.01 instead of 12.01

Chapter 17

- Std 17.01 ■ Updated adhesive anchor notes
- Std 17.02 ■ Updated v-groove notes

Chapter 18

- Std 18.01 ■ No revisions.
- Std 18.02 ■ No revisions.

Chapter 19

- Std 19.01 ■ No revisions.
- Std 19.02 ■ Updated Diameter symbol to "DIA."
- Std 19.03 ■ No revisions.
- Std 19.04 ■ Updated Diameter symbol to "DIA."
- Std 19.11 ■ No revisions.
- Std 19.12 ■ Relocated (2) strands 2" laterally outwards for non-draped patterns.
 - Updated Diameter symbol to "DIA."
- Std 19.13 ■ No revisions.
- Std 19.14 ■ Relocated (2) strands 2" laterally outwards for non-draped patterns.
 - Updated Diameter symbol to "DIA."
- Std 19.15 ■ No revisions.
- Std 19.16 ■ Relocated (2) strands 2" laterally outwards for non-draped patterns.
 - Updated Diameter symbol to "DIA."
- Std 19.17 ■ No revisions.
- Std 19.18 ■ Relocated (2) strands 2" laterally outwards for non-draped patterns.
 - Updated Diameter symbol to "DIA."
- Std 19.19 ■ No revisions.
- Std 19.20 ■ Relocated (2) strands 2" laterally outwards for non-draped patterns.
 - Updated Diameter symbol to "DIA."
- Std 19.31 ■ No revisions.
- Std 19.32 ■ No revisions.
- Std 19.33 ■ No revisions.
- Std 19.34 ■ Updated diaphragm connection Notes and Designer Notes
 - Updated Diameter symbol to "DIA."
- Std 19.35 ■ Updated diaphragm connection Notes and Designer Notes
 - Updated Diameter symbol to "DIA."

- Std 19.36 ■ Updated diaphragm connection Notes and Designer Notes
- Updated Diameter symbol to "DIA."
- Std 19.37 ■ Updated diaphragm connection Notes and Designer Notes
- Updated Diameter symbol to "DIA."
- Std 19.38 ■ Updated diaphragm connection Notes and Designer Notes
- Std 19.50 ■ Updated Diameter symbol to "DIA."
- Std 19.51 ■ Updated Diameter symbol to "DIA."
- Std 19.52 ■ Updated Diameter symbol to "DIA."
- Std 19.53 ■ Updated Diameter symbol to "DIA."
- Std 19.54 ■ Updated Diameter symbol to "DIA."
- Std 19.55 ■ No revisions.
- Std 19.56 ■ Corrected Section C-C. Longitudinal bars are shown.

Chapter 23

- Std 23.01 ■ Updated Diameter symbol to "DIA."
- Std 23.02 ■ Updated Diameter symbol to "DIA."
- Std 23.03 ■ Updated Diameter symbol to "DIA."

Chapter 24

- Std 24.02 ■ No revisions.
- Std 24.03 ■ No revisions.
- Std 24.04 ■ No revisions.
- Std 24.06 ■ No revisions.
- Std 24.08 ■ Updated Diameter symbol to "DIA."
- Std 24.09 ■ No revisions.
- Std 24.10 ■ No revisions.
- Std 24.11 ■ Updated Designer Notes and Notes for added clarity
- Std 24.12 ■ No revisions.

Chapter 27

- Std 27.02 ■ Updated Diameter symbol to "DIA."
- Std 27.05 ■ Updated Diameter symbol to "DIA."
- Std 27.06 ■ Updated adhesive anchor notes
- Std 27.07 ■ No revisions.
- Std 27.08 ■ Updated Diameter symbol to "DIA."
- Std 27.09 ■ Updated Diameter symbol to "DIA."

Chapter 28

- Std 28.01 ■ No revisions.
- Std 28.02 ■ No revisions.
- Std 28.03 ■ Updated adhesive anchor notes
- Std 28.04 ■ No revisions.
- Std 28.05 ■ No revisions.
- Std 28.06 ■ No revisions.
- Std 28.07 ■ No revisions.
- Std 28.08 ■ No revisions.

Chapter 29

- Std 29.01 ■ Updated "General Notes" to "Notes"
- Std 29.02 ■ Updated "General Notes" to "Notes"
- Std 29.03 ■ Updated "General Notes" to "Notes"

Chapter 30

- Std 30.02 ■ No revisions.
- Std 30.04 ■ Updated Diameter symbol to "DIA."
- Std 30.05 ■ Updated Diameter symbol to "DIA."
- Std 30.07 ■ Updated Diameter symbol to "DIA."
- Std 30.08 ■ No revisions.
- Std 30.09 ■ Updated adhesive anchor notes
 - Updated Diameter symbol to "DIA."
 - Changed "Bridge Special Provisions" to Contract Documents in Notes
- Std 30.10 ■ Updated adhesive anchor notes
- Std 30.11 ■ Updated adhesive anchor notes
- Std 30.12 ■ No revisions.
- Std 30.13 ■ No revisions.
- Std 30.14 ■ Updated Diameter symbol to "DIA."
- Std 30.15 ■ Updated adhesive anchor notes
 - Changed "Bridge Special Provisions" to Contract Documents in Notes
- Std 30.16 ■ Updated Diameter symbol to "DIA."
 - Added reference to Contract Documents in Notes
- Std 30.17 ■ No revisions.
- Std 30.18 ■ Updated adhesive anchor notes
 - Changed "Bridge Special Provisions" to Contract Documents in Notes
- Std 30.19 ■ Updated Diameter symbol to "DIA."
- Std 30.20 ■ No revisions.
- Std 30.21 ■ No revisions.
- Std 30.24 ■ No revisions.
- Std 30.25 ■ Updated Diameter symbol to "DIA."
- Std 30.26 ■ Changed "Bridge Special Provisions" to Contract Documents in Notes
- Std 30.27 ■ Changed "Bridge Special Provisions" to Contract Documents in Notes
- Std 30.28 ■ No revisions.
- Std 30.29 ■ Changed cross-slopes to % from '/'
- Std 30.30 ■ No revisions.
- Std 30.31 ■ No revisions.
- Std 30.32 ■ No revisions.
- Std 30.33 ■ No revisions.
- Std 30.34 ■ No revisions.
- Std 30.35 ■ No revisions.
- Std 30.36 ■ No revisions.
- Std 30.37 ■ No revisions.

Chapter 36

- Std 36.01 ■ Updated construction joints and undercut note
- Std 36.02 ■ Revised notes (see Standard 9.01) and revised dowel bar in wings
- Std 36.03 ■ Added alternative construction joint and revised bottom slab dowel bar
- Std 36.04 ■ Updated "General Notes" to "Notes"
- Std 36.05 ■ Updated Diameter symbol to "DIA."
- Std 36.06 ■ Updated Diameter symbol to "DIA."
- Std 36.07 ■ No revisions.
- Std 36.08 ■ Updated adhesive anchor notes
- Std 36.10 ■ Updated beam guard reference to S.D.D. 14B43-3
- Std 36.11 ■ No revisions.
- Std 36.12 ■ No revisions.
- Std 36.13 ■ No revisions.

- Std 36.14 ■ No revisions.
- Std 36.15 ■ No revisions.
- Std 36.16 ■ No revisions.

Chapter 37

- Std 37.01 ■ No revisions.
- Std 37.02 ■ No revisions.

Chapter 38

- Std 38.01 ■ No revisions.

Chapter 39

- Std 39.02 ■ Updated "General Notes" to "Notes"
- Updated Diameter symbol to "DIA."
- Clarified in Notes the usage of 3/4" dia. high strength bolts
- Referenced the Bridge Manual for use of alternate materials in members
- Updated clearance requirement for the Oversize/Overweight (OSOW) High Clearance Route system
- Std 39.03 ■ Updated Diameter symbol to "DIA."
- Changed shape of footing in Section A-A to match Standard 39.02
- Std 39.09 ■ Updated Diameter symbol to "DIA."
- Std 39.10 ■ Updated "General Notes" to "Notes"
- Updated Diameter symbol to "DIA."
- Removed note stating that welded connections can be used in lieu of bolted connections. Added text to Plan View stating where only bolted connections can be used, and where welded connections are optional.
- Clarified in Notes the usage of 3/4" dia. high strength bolts
- Referenced the Bridge Manual for use of alternate materials in members and the requirements for a complete analysis of the structure
- Updated clearance requirement for the Oversize/Overweight (OSOW) High Clearance Route system
- Std 39.11 ■ Updated Diameter symbol to "DIA."
- Placed weld lengths for angles in a table
- Added text to Plan View stating where only bolted connections can be used, and where welded connections are optional
- Std 39.12 ■ Updated Diameter symbol to "DIA."
- Std 39.13 ■ Updated Diameter symbol to "DIA."

Chapter 40

- Std 40.01 ■ Updated Bar Steel Reinforcement bid item
- Updated adhesive anchor notes
- Std 40.02 ■ No revisions.
- Std 40.03 ■ No revisions.
- Std 40.04 ■ Updated Bar Steel Reinforcement bid item
- Updated adhesive anchor notes
- Std 40.05 ■ Updated Bar Steel Reinforcement bid item
- Std 40.06 ■ Updated bubble note numbers
- Updated adhesive anchor notes
- Std 40.07 ■ Updated Diameter symbol to "DIA."
- Std 40.08 ■ Updated Diameter symbol to "DIA."
- Std 40.09 ■ No revisions.
- Std 40.10 ■ Updated adhesive anchor notes

- Std 40.11 ■ No revisions.
- Std 40.12 ■ Updated Diameter symbol to "DIA."
- Std 40.13 ■ No revisions.
- Std 40.14 ■ Updated Diameter symbol to "DIA."
- Std 40.15 ■ No revisions.
- Std 40.16 ■ Updated Diameter symbol to "DIA."
- Std 40.17 ■ No revisions.
- Std 40.18 ■ Updated Diameter symbol to "DIA."
- Std 40.19 ■ No revisions.
- Std 40.20 ■ Updated Diameter symbol to "DIA."
- Std 40.21 ■ Updated Diameter symbol to "DIA."
- Std 40.22 ■ Updated Diameter symbol to "DIA."
- Std 40.23 ■ Updated adhesive anchor notes
 - Updated "General Notes" to "Notes"
- Std 40.24 ■ Updated Diameter symbol to "DIA."
- Std 40.25 ■ Updated "General Notes" to "Notes"
- Std 40.26 ■ Updated "General Notes" to "Notes"
- Std 40.31 ■ Added "do not include bid item "Sawing pavement deck preparation areas" for deck preparation."
 - Added possible bid item 502.3210 - Pigmented Surface Sealer
- Std 40.32 ■ Spelling correction, minor text alignment adjustments
- Std 40.33 ■ Revised tack coat application to 0.05 to 0.07 gallons/SY