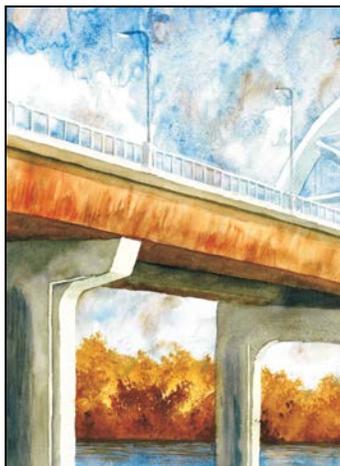
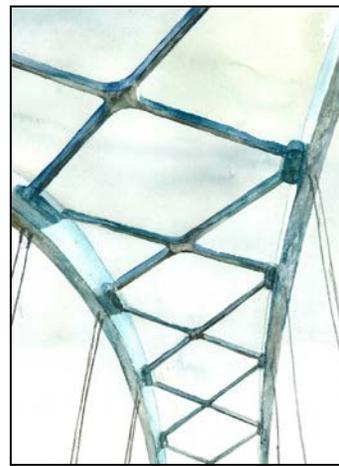




Division of Transportation
System Development
Bureau of Structures
PO Box 7916
Madison, WI 53707-7916



Bridge Manual



Standard Details

DATE: February 11, 2016
TO: Bridge Manual Users
FROM: DTSD – Bureau of Structures
SUBJECT: **January 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:

- **Throughout:** Hyperlinks updated to function with new website
- **Chapter 4:** Aesthetic policy sunset period of August 15, 2016. Revisions with regards to CSS funding, etc. **PLEASE READ SECTION 4.5**
- **Chapter 6:** 6.2.2.3.2 Elevation view should be shown for new decks and other rehabs as defined in this section.
- **Chapter 6:** 6.4.12 Calculations given for determining various railing lengths, which have been LF since the implementation of the 2016 Standard Spec. Note: 6.4.19 All expansion devices are going from LS to LF with the 2017 Standard Spec, (Aug., 2016 PS&E).
- **Chapter 6:** 6.6 Structures Data Management and Resources section is new, with information extracted and modified from elsewhere in the chapter. New email of DOTDLTSDSTRUCTURESRECORDS@DOT.WI.GOV to be used for sending in many different types of shop drawings (not to supersede other processes in place for specific projects).
- **Chapter 8:** Separate design criteria is required for temporary construction causeways than is required for temporary structures.
- **Chapter 13:** 13.11.5 Updated cofferdam information with special attention to pile encased piers.

- **New Standard 7.07 – Cast-in-Place Bearing Block Details:** Details for use on projects utilizing precast pier caps. Option to use precast blocks is also available.
- **New Standards 19.50-19.56:** New prestressed box girder shapes and details. Chapter 19 text revisions to account for changes, too.
- Below Standard 30.17, pictures have been added for Combination Railings, Type C1-C6.
- **Relocated Standard 40.26 – Tubular Steel Railing Type ‘F’:** This is Standard 30.01 moved to the Rehabilitation chapter as Type ‘F’ rails are no longer allowed. This standard is for informational purposes only (e.g. damage repair).
- **New Chapter 39 Insert Sheets:** Nine new insert sheets for sign structures
- **Other insert sheets:** Other insert sheets have been updated and/or created for this 6-month cycle. 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 black 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.



Division of Transportation
System Development
Bureau of Structures
PO Box 7916

DATE: February 26, 2016
TO: Bridge Manual Users
FROM: DTSD – Bureau of Structures
SUBJECT: **February 2016 Bridge Manual Revisions**

Chapters 4 and 5 have been revised/updated. These revisions/updates supersede the information provided with the release on February 11th.

- **Chapter 4:** Clarification on the aesthetics policy, with more information given with regard to the sunset date of August 15, 2016. Also includes clarification regarding aesthetic railings and parapets. **PLEASE READ SECTION 4.5**
- **Chapter 5:** This chapter was not updated for the February 11th release. Cost information is now updated. Individual bid item costs are now only given for items not found in Estimator or Bid Express.

January 2016 Bridge Manual Text Update Summary

Chapter	Page Number(s)	Change
2	7	Updated link to "Public Communication Record" form
	12	Clarified what is and is not a culvert (was 25, now 20 SF). Retitled section "Structure Numbers"
	17	Updated link to "Special Provisions" for structures
	28	Removed "Strutted Arch Span" from description of B-32-202
4	13	Updated link to "Bridge Aesthetic Sourcebook" document
	9,10	CSS funding policy in effect until August 15, 2016. Also added Type H rail as a non-CSS pedestrian rail for on top of a parapet.
5	All	Cost info updated. Only bid items not found on Estimator are shown.
6	13	Elevation view required for new bridge decks and other rehabs as listed
	20	Updated link to "Standard Insert Sheets"
	32	Discusses plan prep for multiple sign structures on a project. Also describes what SSR information is needed for painting projects.
	33	Removed reference to Type "F" railing because it is no longer used.
	38	Railing bid items is now LF (began Aug. 2015 PS&E)
	39	Changing Expansion Device bid items to LF (beginning Aug. 2016 PS&E)
	48	Updated link to "FDM, CMM and Standard Specifications"
	Various	Various updates with regards to hydraulics information, Coast Guard and RR requirements. Number of updates regarding information flow and records keeping. Of particular interest is the information in new Section 6.6 (some information moved from 6.3)
8	5	Separate hydraulic design criteria is required for temporary construction causeways
	8	Updated link to "DNR Floodplain Analysis Interactive Map"
	51	Updated link to "Flood-Frequency Characteristics of Wisc. Streams"
9	2	Updated link to "Approved Products List"
	3	Updated structure type to "prestressed box girders"
	9	Removed reference to Type "F" railing because it is no longer used.
11	24	Updated WisDOT Policy Item: For steel H-piles, 50 ksi shall be used for pile design.
	41-42	Updated Table 11.3-5 to include PDA/CAPWAP values
	47,49-50	Updated PDA testing requirements per LRFD [Table 10.5.5.2.3-1] and PDA Example
	55	Updated micropile design guidance
13	7,48	Removed Appendix A - Pile Encased Pier Configuration
	7, 45-47	Updated cofferdam guidance
	49	Design Examples Re-numbered
14	74	Clarified minimum wall radii for MSE retaining walls with precast concrete panels and modular block facings.
	74-75	Added dry cast and wet cast modular block information
17	44	Clarified prestressed girder fabrication locations
	45	Updated superstructure type to "prestressed box girders"
	72	Clarified longitudinal joint location
19	3	Added Chapter 19 disclaimer
	7,10-15, 17,19-20, 26,30, 33-35,37,40,41, 44-51	Clarified prestressed I-girder and prestressed box girder guidance
	10	Updated time-dependent losses for prestressed box girders
	11	Updated WisDOT Policy for prestressed box girder usage
	13,19,49-51	Updated prestressed box girder design guidance
	14	Updated WisDOT policy for prestressed box girder live load distribution

	15	Corrected WisDOT policy item reference to LRFD[5.4.2.4]
	50-51	Updated Prestressed Box Girder Section Properties and Maximum Span Length Table
19E - 3	2	Added disclaimer "Example has not been updated to current Bridge Manual guidance and should be used for informational purposes only"

24E - 1	All	Example respaced girders to 10'-0" to reduce overhang. Updated to current AASHTO.
24E - 2	All	Splice example updated to match updated girder design. Updated to current AASHTO.

30	2	Added notice to announce that at date shown, bridge railings and transitions that are part of the contract will have to meet the 2016 Edition of MASH criteria
	3	Removed reference to Type "F" railing because it is no longer used.
	7	Referenced where Type "PF" railing details are to be found.
	9,22	Referenced where Type "F" railing details are to be found, and that they are for "Informational Purposes Only".
	11	Added text to address pedestrian loads to be used on stairway railings
	19,20	Added notes to Table 30.8-1 to announce that at date shown, the compliance document will be the 2016 Edition of MASH
	22	Referenced where Type "PF" and "B" railing details are to be found.
	23	Corrected numbering scheme in Section 30.9

37	4	Added text to address pedestrian loads to be used on stairway railings
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39	3,4,9,10,11,12,13	Changed text from "upright(s)" to "tower(s)" or "column(s)" to match terminology in Standards
	2	Removed WisDOT policy item, because AASHTO references are in Section 39.2 and 39.4.2
	3	Clarified adhesive anchorage usage
	5	Updated references to Specifications
	6	Updated materials references for chords and columns and added WisDOT policy item on flat washer usage restriction
	7	Added WisDOT policy item concerning Type I break-away sign supports; Added information on DMS roadside sign supports; Removed design data table because it is contained in references in new WisDOT policy item
	8	Modified and repositioned tables in Section 39.4.2; Clarified WisDOT policy item for fatigue loading
	9	Changed text from "anchor bolts" to "anchor rods" to match terminology in Standards
	10	Clarified hand hole requirements
	12	Defined butterfly type sign bridge and its limitations; Clarified when standard details can be used vs. designing the sign structure; Updated considerations and recommendations for sign bridges carrying dynamic message signs (DMS)
	13	Clarified when Standard Detail Drawings (SDD) become part of the contract plans
	14	Moved WisDOT policy item and clarified limitations for shaft length of the foundation; Clarified types of signs associated with the standard foundation; Spelled out foundation types possible for butterfly and full span sign bridges
	15	Clarified which Standard Detail Drawings (SDD) are associated with Overhead Sign Supports, and when they can be used; Referenced Section 39.5 for guidance when non-standard foundations must be used

40	5	Table 40.3-1 removed. Reference to FDM 11-40-1, 1.5 is given.
	14	Clarified intermediate diaphragm guidance for prestressed girder deck replacements.
	38	Corrected Secc C-C to be 1.5 Ca1 (was 1.0 Ca1)

45	23	Axle spacing for PUP Unit was corrected to 15'-9"
	26	Table reference number changed to 45.5-1 (was incorrect at 45.3-1)
	32	Updated link to "Load Rating Summary Form"
45E - 4	2	Added disclaimer "Note: Example has not been updated for example E24-1 January 2016 updates"

- Std 15.01 ■ No revisions.
- Std 15.02 ■ No revisions.
- Std 15.03 ■ No revisions.

Chapter 17

- Std 17.01 ■ No revisions.
- Std 17.02 ■ No revisions.

Chapter 18

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

Chapter 19

- Std 19.01 ■ Modified "Notes" to state that epoxy at girder ends is not to be applied to concrete surfaces that will have stain applied.
 - Added to "Designer Notes", a reminder to provide stirrup spacing that is symmetrical about the C/L of girder.
 - Added to "Notes", a reference to the Standard Specifications for lifting device guidance.
- Std 19.02 ■ Added "Designer Notes" as a reminder to highlight strand patterns that apply to designed structure
- Std 19.03 ■ Modified "Notes" to state that epoxy at girder ends is not to be applied to concrete surfaces that will have stain applied.
 - Added to "Designer Notes", a reminder to provide stirrup spacing that is symmetrical about the C/L of girder.
 - Added to "Notes", a reference to the Standard Specifications for lifting device guidance.
- Std 19.04 ■ Added "Designer Notes" as a reminder to highlight strand patterns that apply to designed structure
- Std 19.11 ■ Modified "Notes" to state that epoxy at girder ends is not to be applied to concrete surfaces that will have stain applied.
 - Added to "Designer Notes", a reminder to provide stirrup spacing that is symmetrical about the C/L of girder.
 - Added to "Notes", a reference to the Standard Specifications for lifting device guidance.
- Std 19.12 ■ Added "Designer Notes" as a reminder to highlight strand patterns that apply to designed structure
- Std 19.13 ■ Modified "Notes" to state that epoxy at girder ends is not to be applied to concrete surfaces that will have stain applied.
 - Added to "Designer Notes", a reminder to provide stirrup spacing that is symmetrical about the C/L of girder.
 - Added to "Notes", a reference to the Standard Specifications for lifting device guidance.
- Std 19.14 ■ Added "Designer Notes" as a reminder to highlight strand patterns that apply to designed structure
- Std 19.15 ■ Modified "Notes" to state that epoxy at girder ends is not to be applied to concrete surfaces that will have stain applied.
 - Added to "Designer Notes", a reminder to provide stirrup spacing that is symmetrical about the C/L of girder.
 - Added to "Notes", a reference to the Standard Specifications for lifting device guidance.
- Std 19.16 ■ Added "Designer Notes" as a reminder to highlight strand patterns

January 2016 Standard Details Update Summary

Chapter 4

- Std 4.01 ■ No revisions.

Chapter 7

- Std 7.01 ■ Added 6'-6" min. working width requirement
- Std 7.02 ■ Added minimum clear space requirement
- Std 7.03 ■ No revisions.
- Std 7.04 ■ No revisions.
- Std 7.05 ■ Added Contractor Note: the contractor may use precast segments at their discretion and allowance for cast-in-place bearing blocks.
- Std 7.06 ■ Added Contractor Note: Allowance for cast-in-place bearing blocks
- NEW** Std 7.07 ■ Cast-In-Place Bearing Block Details

Chapter 11

- Std 11.01 ■ No revisions.

Chapter 12

- Std 12.01 ■ No revisions.
- Std 12.02 ■ No revisions.
- Std 12.03 ■ No revisions.
- Std 12.04 ■ No revisions.
- Std 12.05 ■ No revisions.
- Std 12.06 ■ No revisions.
- Std 12.07 ■ No revisions.
- Std 12.08 ■ No revisions.
- Std 12.09 ■ No revisions.
- Std 12.10 ■ Modified tranverse spacing (T507,T508,& T510)
- Std 12.11 ■ No revisions.
- Std 12.12 ■ No revisions.
- Std 12.13 ■ Corrected approach slab limits and several other details.

Chapter 13

- Std 13.01 ■ No revisions.
- Std 13.02 ■ No revisions.
- Std 13.03 ■ Updated cofferdam note
- Std 13.04 ■ No revisions.
- Std 13.05 ■ No revisions.
- Std 13.06 ■ No revisions.
- Std 13.07 ■ No revisions.
- Std 13.10 ■ No revisions.
- Std 13.11 ■ No revisions.

Chapter 14

- Std 14.01 ■ No revisions.
- Std 14.02 ■ No revisions.
- Std 14.03 ■ No revisions.
- Std 14.04 ■ No revisions.
- Std 14.05 ■ No revisions.

Chapter 15

- that apply to designed structure
- Std 19.17 ■ Modified "Notes" to state that epoxy at girder ends is not to be applied to concrete surfaces that will have stain applied.
- Added to "Designer Notes", a reminder to provide stirrup spacing that is symmetrical about the C/L of girder.
 - Added to "Notes", a reference to the Standard Specifications for lifting device guidance.
- Std 19.18 ■ Added "Designer Notes" as a reminder to highlight strand patterns that apply to designed structure
- Std 19.19 ■ Modified "Notes" to state that epoxy at girder ends is not to be applied to concrete surfaces that will have stain applied.
- Added to "Designer Notes", a reminder to provide stirrup spacing that is symmetrical about the C/L of girder.
 - Added to "Notes", a reference to the Standard Specifications for lifting device guidance.
- Std 19.20 ■ Added "Designer Notes" as a reminder to highlight strand patterns that apply to designed structure
- Std 19.31 ■ No revisions.
- Std 19.32 ■ No revisions.
- Std 19.33 ■ No revisions.
- Std 19.34 ■ No revisions.
- Std 19.35 ■ No revisions.
- Std 19.36 ■ Added "Designer Notes" requiring inserts/holes for diaphragm to web connection to also have locations shown from the ends of each girder
- Std 19.37 ■ Added "Designer Notes" requiring inserts/holes for diaphragm to web connection to also have locations shown from the ends of each girder
- Std 19.38 ■ Added "Designer Notes" requiring inserts/holes for diaphragm to web connection to also have locations shown from the ends of each girder
- NEW** Std 19.50 ■ 3'-0" Prestressed Box Girder Sections
- NEW** Std 19.51 ■ 4'-0" Prestressed Box Girder Sections
- NEW** Std 19.52 ■ Prestressed Box Girder Details 1
- NEW** Std 19.53 ■ Prestressed Box Girder Details 2
- NEW** Std 19.54 ■ Prestressed Box Girder Details 3
- NEW** Std 19.55 ■ Prestressed Box Girder Details 4
- NEW** Std 19.56 ■ Prestressed Box Girder Details 5

Chapter 23

- Std 23.01 ■ No revisions.
- Std 23.02 ■ No revisions.
- Std 23.03 ■ No revisions.

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 ■ No revisions.
- Std 24.09 ■ No revisions.
- Std 24.10 ■ No revisions.
- Std 24.11 ■ No revisions.
- Std 24.12 ■ No revisions.

Chapter 27

- Std 27.02 ■ No revisions.
- Std 27.05 ■ Removed prestressed box girder details. See Standard 19.55.
- Std 27.06 ■ No revisions.
- Std 27.07 ■ No revisions.
- Std 27.08 ■ No revisions.
- Std 27.09 ■ No revisions.

Chapter 28

- Std 28.01 ■ No revisions.
- Std 28.02 ■ No revisions.
- Std 28.03 ■ No revisions.
- 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 ■ Added note that downspout extension is not to be used over railroads, and that Railroads and Harbors Section should be contacted for guidance
- Std 29.02 ■ Added note that downspout extension is not to be used over railroads, and that Railroads and Harbors Section should be contacted for guidance
- Std 29.03 ■ Added note that downspout extension is not to be used over railroads, and that Railroads and Harbors Section should be contacted for guidance

Chapter 30

- Std 30.01 ■ Removed this Standard from Chapter 30 and placed in Chapter 40 as Standard 40.26. It can no longer be used and is shown for informational purposes only.
- Std 30.02 ■ Changed "General Notes" to "Notes"
- Std 30.04 ■ Changed "General Notes" to "Notes"
- Std 30.05 ■ Changed "General Notes" to "Notes"
- Std 30.07 ■ Deleted arrow from detail "At Sidewalk or Deck Section C"
 - Type H is allowed for pedestrian/bicycle use by FHWA exception (rail spacing slightly exceeds 6")
- Std 30.08 ■ No revisions.
- Std 30.09 ■ Added note to place paint Color Name on plans along with the Federal Color Number.
- Std 30.10 ■ Enhanced detail for 'Adhesive Anchor Connection'
- Std 30.11 ■ No revisions.
- Std 30.12 ■ No revisions.
- Std 30.13 ■ No revisions.
- Std 30.14 ■ No revisions.
- Std 30.15 ■ Added note to place paint Color Name on plans along with the Federal Color Number.
- Std 30.16 ■ Removed note concerning bar adjacent to drip groove.
 - Added note to place paint Color Name on plans along with the Federal Color Number.
- Std 30.17 ■ No revisions.
- Std 30.18 ■ Added note to place paint Color Name on plans along with the Federal Color Number.

- Std 30.19 ■ No revisions.
- Std 30.20 ■ No revisions.
- Std 30.21 ■ No revisions.
- Std 30.24 ■ No revisions.
- Std 30.25 ■ Changed "General Notes" to "Notes"
- Std 30.26 ■ Removed note concerning bar adjacent to drip groove.
 - Added note to place paint Color Name on plans along with the Federal Color Number.
- Std 30.27 ■ Removed note concerning bar adjacent to drip groove.
 - Added note to place paint Color Name on plans along with the Federal Color Number.
- Std 30.28 ■ No revisions.
- Std 30.29 ■ No revisions.
- 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 ■ No revisions.
- Std 36.02 ■ Added note to require epoxy coated bar steel in culvert wingwalls and wingwall dowels.
- Std 36.03 ■ No revisions.
- Std 36.04 ■ No revisions.
- Std 36.05 ■ No revisions.
- Std 36.06 ■ No revisions.
- Std 36.07 ■ No revisions.
- Std 36.08 ■ No revisions.
- Std 36.10 ■ No revisions.
- 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 39.01 ■ **Removed 1/15**
- Std 39.02 ■ Added/modified text for clarity and to match new Insert Sheets.
 - Removed tables and placed on new Insert Sheets.
- Std 39.03 ■ Added/modified text for clarity and to match new Insert Sheets.

- Std 39.09 ■ Removed tables and placed on new Insert Sheets.
- Std 39.10 ■ Added/modified text for clarity and to match new Insert Sheets.
- Std 39.11 ■ Added/modified text for clarity and to match new Insert Sheets.
- Std 39.12 ■ Added/modified text for clarity and to match new Insert Sheets.
- Std 39.13 ■ Added/modified text for clarity and to match new Insert Sheets.

Chapter 40

- Std 40.01 ■ No revisions.
- Std 40.02 ■ No revisions.
- Std 40.03 ■ No revisions.
- Std 40.04 ■ No revisions.
- Std 40.05 ■ No revisions.
- Std 40.06 ■ No revisions.
- Std 40.07 ■ No revisions.
- Std 40.08 ■ No revisions.
- Std 40.09 ■ No revisions.
- Std 40.10 ■ No revisions.
- Std 40.11 ■ No revisions.
- Std 40.12 ■ No revisions.
- Std 40.13 ■ Modified "Notes" to state that epoxy at girder ends is not to be applied to concrete surfaces that will have stain applied.
- Std 40.14 ■ No revisions.
- Std 40.15 ■ No revisions.
- Std 40.16 ■ No revisions.
- Std 40.17 ■ Modified "Notes" to state that epoxy at girder ends is not to be applied to concrete surfaces that will have stain applied.
- Std 40.18 ■ No revisions.
- Std 40.19 ■ Modified "Notes" to state that epoxy at girder ends is not to be applied to concrete surfaces that will have stain applied.
- Std 40.20 ■ No revisions.
- Std 40.21 ■ No revisions.
- Std 40.22 ■ No revisions.
- Std 40.23 ■ No revisions.
- Std 40.24 ■ Corrected Standard referenced under "Designer Notes"
- Std 40.25 ■ No revisions.
- Std 40.26 ■ Moved Standard 30.01 to Chapter 40. Standard kept for "Informational Purposes Only"
- Std 40.31 ■ No revisions.
- Std 40.33 ■ No revisions.
- Std 40.33 ■ No revisions.