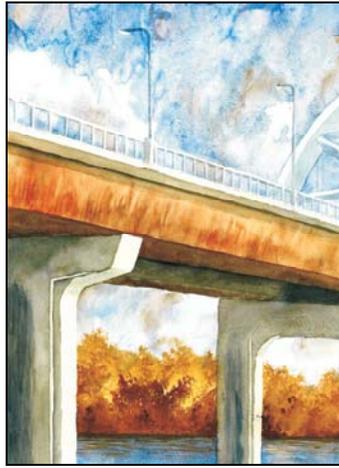




Division of Transportation  
System Development  
Bureau of Structures  
PO Box 7916  
Madison, WI 53707-7916



**Bridge Manual**



**Standard Details**

DATE: July 28, 2011  
TO: Bridge Manual Users  
FROM: DTSD – Bureau of Structures  
SUBJECT: **July, 2011 Bridge Manual Update**

The Bridge Manual revisions to text and standards are now complete 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 13 – LRFD 3.6.5, which pertains to vehicular collision (400 kip), was changed to allow the owner discretion in its application. **Section 13.4.10 states WisDOT’s policy regarding the application of the collision load based on design speed.**
- Chapter 24 – New Policy Item to not allow rigorous analysis of one and two box, box girder bridges to eliminate in-depth inspections.
- Chapters 40 & 45 – Clarification regarding LFR vs. LRFR for rating rehabilitated bridges.
- Chapter 40 – Overhaul of masonry anchor section.
- **NEW** Standard 17.01 – provide additional details for deck, raised sidewalk, and median reinforcing (medians at least a certain width no longer required to be anchored to the deck).
- **NEW** Standard 17.02 - Change from 3” to 5” for the dimension to the  $\frac{3}{4}$ ” v-groove. This is noted on this standard and a number of other standards now reference Standard 17.02 for v-groove and edge-of-deck coating for open railings. Also details for deep overhangs and preferred continuity steel layout.
- **NEW** Standard 24.12 – Diaphragms for expansion ends on steel girders. Previously, the only “details” were in the Bridge Rehabilitation chapter and referenced the Prestressed Concrete chapter.
- Standards 19.34 & 19.35 are revised to allow an optional construction joint in the concrete diaphragm (with a restriction on stds. 19.33, 19.34, & 19.35 for the time from first pour to second pour).

- Combination Railing Standards 30.17 & 30.18 are revised to show galvanized railing with a two-coat paint system.
- Various Chapter 30 standards – changed the location for attachment to the Midwest Guardrail System.

Most other changes are fairly minor. Please use the example calculations provided with care (follow along in AASHTO). A couple of mistakes have been pointed out. Unfortunately, due to time/resource issues, the corrections were not made at this time

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 edition.

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 2011 Bridge Manual Text Update Summary

<u>Chapter</u>	<u>Page Number(s)</u>	<u>Change</u>
2	2,3	Updated org charts
5	4	Updated Economic Span Length table
6	26	Added that bridge widenings and damaged girders should use the sheet border for new bridges
	40	Show unit concrete quantities to the nearest cubic yard
13	3	Same design criteria for construction staging as for final configuration
	15	Explicitly state that "I" is the <u>gross</u> moment of inertia
	20,21	<b>REVISED</b> policy items related to vehicle collision (400 kip) with piers and <i>when</i> it needs to be applied.
	35	Use gross moment of inertia and appropriate load factors related to it
14	7	Updated Proprietary Wall development process
	10	Removed the word "Some"
	12	Added commonly used concrete panel sizes
	14	Definition of post and panel walls revised. Typo of "devise" changed to "device"
	18	Updated Table 14.2-1 including Construction Concept to distinguish between top down/bottom up cantilever walls
	21	Wall cost - expanded explanation
	24	Updated Table 14.3-2: ROW for post and panel
	69	Defined "designer" and added final external stability requirement
	70	Updated usage restriction criteria - deleted items 6-9 for block wall restrictions.
17	3	Same design criteria for construction staging as for final configuration
	9	Typo (changed "form" to "from")
	37	Reminder for correct LL application - reaction vs shears
	61	Two typos
	75	Added that reflective cracks can appear parallel to deck panels
19	27	New Policy Item stating to use the simplified procedure for shear, although it is also stated more implicitly on the following page.
	30	Addition to Policy Item to give guidance on shear analysis vs. actual stirrup layout.

<u>Chapter</u>	<u>Page Number(s)</u>	<u>Change</u>
24	19	Modified recommended haunch weight calculation. Reference section for DL deflections.
	31	Providing better guidance regarding DL deflections. Camber, if needed, is also to be on girders used in widenings.
	32	Noting the plans should show top of steel elevations.
	89	<b>NEW</b> Policy Item to <b>not</b> allow rigorous analysis of one and two box, box girder bridges to eliminate in-depth inspections
30	3	Removed reference to ADT (see FDM for information)
	4	Removed reference to ADT and added note to see FDM
	5	Changed sidewalk height info to match new Standard 17.01
	8	Removed detail for median and reference new Standard 17.01
40	3	Same design criteria for construction staging as for final configuration
	6	<b>Revised</b> Policy Item to clarify LRFR vs LFR for rehabilitations
	9	Clarified required inventory rating <i>after</i> overlay must be HS10
	11	Additional advice for railings/parapets on overlay projects
	14	Typo in 54" girder table
	15	Additional advice for railings/parapets on non-widened side
	16	More lenient on using existing multi-columned piers on superstructure replacements
	27-29	Overhaul of masonry anchor section
45	3	Same design criteria for construction staging as for final configuration
	6	<b>NEW</b> Policy Item for LRFR and LFR use
	13	Reference Policy Item on page 6

## July 2011 Standard Details Update Summary

### Chapter 4

- Std 4.01 ■ Added note for wrapping formliner around corners.

### Chapter 12

- Std 12.02 ■ "Top of Wing Details" for sidewalk now shows u-bar below construction joint, as it is in other views.
  - Added note in "Wing with Pile Elevation" for pouring lower pour full length for wings <=12' long with piles.
  - Hu >= 4'-0"+/- for limits on wing pile requirements. (" +/- " added)
- Std 12.07 ■ Made "Plan for Type A1 Abutment" details more clear

### Chapter 13

- Std 13.02 ■ Minor. Removed note in End View for filler being for slab spans, only.

### Chapter 17

- NEW** Std 17.01 ■ Median, A1 abutment diaph. with sidewalk, & sidewalk details (sidewalk details removed from Std. 30.07)
- NEW** Std 17.02 ■ Deck and slab details including continuity steel, drip groove & protective coating, and reinf. for unusually deep overhangs.

### Chapter 18

- Std 18.01 ■ Reference to new Std 17.02 for 3/4" v-groove information
- Std 18.02 ■ Reference to new Std 17.02 for 3/4" v-groove information

### Chapter 19

- Std 19.01 ■ Revised General Notes to match order shown on insert sheets
  - Clarified note associated with stirrup projection
  - Clarified view "Support View with 1/2" Elastomeric Brg. Pad"
- Std 19.03 ■ Revised General Notes to match order shown on insert sheets
  - Clarified note associated with stirrup projection
  - Clarified view "Support View with 1/2" Elastomeric Brg. Pad"
- Std 19.11 ■ Revised General Notes to match order shown on insert sheets
  - Clarified note associated with stirrup projection
- Std 19.13 ■ Revised General Notes to match order shown on insert sheets
  - Clarified note associated with stirrup projection
- Std 19.15 ■ Revised General Notes to match order shown on insert sheets
  - Clarified note associated with stirrup projection
- Std 19.16 ■ On 42 strand pattern, changed "4 spa.." to "3 spa..." (only a typo, no change to strand pattern)
- Std 19.17 ■ Revised General Notes to match order shown on insert sheets
  - Clarified note associated with stirrup projection
- Std 19.19 ■ Revised General Notes to match order shown on insert sheets
  - Clarified note associated with stirrup projection

- Std 19.32 ■ Modified format of note beneath "Slab Haunch Detail".  
(content is the same)
  - Removed ghost line in circled "... Exterior Girder Detail" view.
  - Reference to new Std 17.02 for 3/4" v-groove information
- Std 19.33 ■ Changed note for continuity bars - references Bridge Manual
  - Clarified bevel dimensions at base of concrete diaphragms
  - Added 2 week time restriction if optional diaph. const. jt. is used
- Std 19.34 ■ Changed note for continuity bars - references Bridge Manual
  - Added notes to clarify view "Part Transverse Section at Diaphragm Semi Expansion End"
  - **Optional diaphragm construction joint is now allowed with a 2 week time restriction**
- Std 19.35 ■ Changed note for continuity bars - references Bridge Manual
  - Added notes to clarify view "Part Transverse Section at Diaphragm Semi Expansion End"
  - **Optional diaphragm construction joint is now allowed with a 2 week time restriction**
- Std 19.53 ■ Added a note indicating Type M railings are not allowed for prestressed box girder bridges

#### Chapter 24

- Std 24.09 ■ Cleaned up some items. No major content change.
  - Reference to new Std 17.02 for 3/4" v-groove information
- Std 24.11 ■ Minor. Renamed "Section P" to a more general name.
- NEW** Std 24.12 ■ New standard for steel girder slab and superstructure details  
(note: std 24.12 had been eliminated in July, '09. This new standard is completely different)

#### Chapter 27

- Std 27.07 ■ Clarified stainless width of stainless steel plate embedded in girder

#### Chapter 28

- Std 28.04 ■ Updated sidewalk height at curb
- Std 28.06 ■ Updated sidewalk height at curb

#### Chapter 30

- Std 30.07 ■ Changed location of anchor assembly for Midwest Guardrail System
  - Reference to new Std 17.02 for 3/4" v-groove information
- Std 30.10 ■ Changed location of anchor assembly for Midwest Guardrail System
  - Reference to new Std 17.02 for 3/4" v-groove information
- Std 30.11 ■ Reference to new Std 17.02 for 3/4" v-groove information
  - Updated sidewalk height at curb

- Std 30.12 ■ Changed location of anchor assembly for Midwest Guardrail System  
■ Reference to new Std 17.02 for 3/4" v-groove information
- Std 30.13 ■ Changed location of anchor assembly for Midwest Guardrail System  
■ Reference to new Std 17.02 for 3/4" v-groove information
- Std 30.17 ■ Changes made to use Two-Coat paint system over galvanizing  
■ Changed location of anchor assembly for Midwest Guardrail System
- Std 30.18 ■ Changed note #3 pullout from 15 kips to 13 kips  
■ Changes made to use Two-Coat paint system over galvanizing  
■ Changed location of anchor assembly for Midwest Guardrail System  
■ Reference to new Std 17.02 for 3/4" v-groove information
- Std 30.19 ■ Changed location of anchor assembly for Midwest Guardrail System
- Std 30.20 ■ Reference to new Std 17.02 for 3/4" v-groove information
- Std 30.21 ■ Reference to new Std 17.02 for 3/4" v-groove information
- Std 30.22 ■ Changed location of anchor assembly for Midwest Guardrail System  
■ Reference to new Std 17.02 for 3/4" v-groove information
- Std 30.24 ■ Changed location of anchor assembly for Midwest Guardrail System  
■ Reference to new Std 17.02 for 3/4" v-groove information

### **Chapter 36**

- Std 36.12 ■ Very minor revision. Line style changed to CL in Details A & B.

### **Chapter 37**

- Std 37.01 ■ Reference to new Std 17.02 for 3/4" v-groove information

### **Chapter 40**

- Std 40.01 ■ Note added for guidance regarding railing/parapet improvements, etc.
- Std 40.02 ■ Note added for guidance regarding railing/parapet improvements, etc.
- Std 40.04 ■ Save & incorp. some trans. deck bars on skews > 20 degrees
- Std 40.13 ■ Clarified note associated with stirrup projection
- Std 40.17 ■ Clarified note associated with stirrup projection
- Std 40.19 ■ Clarified note associated with stirrup projection