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 ¾” 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.
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page Number(s)</th>
<th>Change</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>2,3</td>
<td>Updated org charts</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>Updated Economic Span Length table</td>
</tr>
<tr>
<td>6</td>
<td>26</td>
<td>Added that bridge widenings and damaged girders should use the sheet border for new bridges</td>
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<td></td>
<td>40</td>
<td>Show unit concrete quantities to the nearest cubic yard</td>
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<tr>
<td>13</td>
<td>3</td>
<td>Same design criteria for construction staging as for final configuration</td>
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<tr>
<td></td>
<td>15</td>
<td>Explicitly state that &quot;I&quot; is the gross moment of inertia</td>
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<tr>
<td></td>
<td>20,21</td>
<td>REVISED policy items related to vehicle collision (400 kip) with piers and when it needs to be applied.</td>
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<tr>
<td></td>
<td>35</td>
<td>Use gross moment of inertia and appropriate load factors related to it</td>
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<tr>
<td>14</td>
<td>7</td>
<td>Updated Proprietary Wall development process</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Removed the word &quot;Some&quot;</td>
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<tr>
<td></td>
<td>12</td>
<td>Added commonly used concrete panel sizes</td>
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<tr>
<td></td>
<td>14</td>
<td>Definition of post and panel walls revised. Typo of &quot;devise&quot; changed to &quot;device&quot;</td>
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<tr>
<td></td>
<td>18</td>
<td>Updated Table 14.2-1 including Construction Concept to distinguish between top down/bottom up cantilever walls</td>
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<tr>
<td></td>
<td>21</td>
<td>Wall cost - expanded explanation</td>
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<tr>
<td></td>
<td>24</td>
<td>Updated Table 14.3-2: ROW for post and panel</td>
</tr>
<tr>
<td></td>
<td>69</td>
<td>Defined &quot;designer&quot; and added final external stability requirement</td>
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<tr>
<td></td>
<td>70</td>
<td>Updated usage restriction criteria - deleted items 6-9 for block wall restrictions.</td>
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<tr>
<td>17</td>
<td>3</td>
<td>Same design criteria for construction staging as for final configuration</td>
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<tr>
<td></td>
<td>9</td>
<td>Typo (changed &quot;form&quot; to &quot;from&quot;)</td>
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<tr>
<td></td>
<td>37</td>
<td>Reminder for correct LL application - reaction vs shears</td>
</tr>
<tr>
<td></td>
<td>61</td>
<td>Two typos</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>Added that reflective cracks can appear parallel to deck panels</td>
</tr>
<tr>
<td>19</td>
<td>27</td>
<td>New Policy Item stating to use the simplified procedure for shear, although it is also stated more implicitly on the following page.</td>
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<tr>
<td></td>
<td>30</td>
<td>Addition to Policy Item to give guidance on shear analysis vs. actual stirrup layout.</td>
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<tr>
<td>Chapter</td>
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<tr>
<td>24</td>
<td>19</td>
<td>Modified recommended haunch weight calculation. Reference section for DL deflections.</td>
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<tr>
<td></td>
<td>31</td>
<td>Providing better guidance regarding DL deflections. Camber, if needed, is also to be on girders used in widenings.</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>Noting the plans should show top of steel elevations.</td>
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<tr>
<td></td>
<td>89</td>
<td><strong>NEW</strong> Policy Item to <strong>not</strong> allow rigorous analysis of one and two box, box girder bridges to eliminate in-depth inspections</td>
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<tr>
<td>30</td>
<td>3</td>
<td>Removed reference to ADT (see FDM for information)</td>
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<td></td>
<td>4</td>
<td>Removed reference to ADT and added note to see FDM</td>
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<tr>
<td></td>
<td>5</td>
<td>Changed sidewalk height info to match new Standard 17.01</td>
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<td></td>
<td>8</td>
<td>Removed detail for median and reference new Standard 17.01</td>
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<tr>
<td>40</td>
<td>3</td>
<td>Same design criteria for construction staging as for final configuration</td>
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<tr>
<td></td>
<td>6</td>
<td><strong>Revised</strong> Policy Item to clarify LRFR vs LFR for rehabilitations</td>
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<td></td>
<td>9</td>
<td>Clarified required inventory rating <em>after</em> overlay must be HS10</td>
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<tr>
<td></td>
<td>11</td>
<td>Additional advice for railings/parapets on overlay projects</td>
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<tr>
<td></td>
<td>14</td>
<td>Typo in 54” girder table</td>
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<tr>
<td></td>
<td>15</td>
<td>Additional advice for railings/parapets on non-widened side</td>
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<tr>
<td></td>
<td>16</td>
<td>More lenient on using existing multi-columned piers on superstructure replacements</td>
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<tr>
<td></td>
<td>27-29</td>
<td>Overhaul of masonry anchor section</td>
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<tr>
<td>45</td>
<td>3</td>
<td>Same design criteria for construction staging as for final configuration</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td><strong>NEW</strong> Policy Item for LRFR and LFR use</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Reference Policy Item on page 6</td>
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</tbody>
</table>
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, AI 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