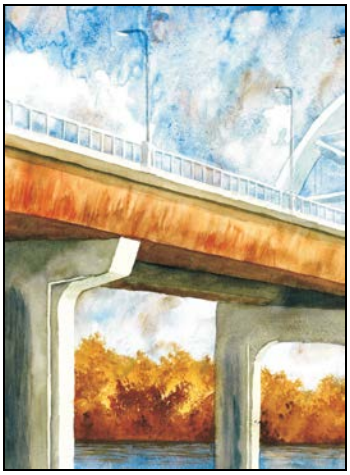
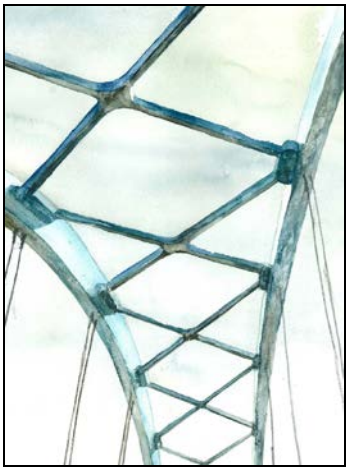
Division of Transportation
System Development
Bureau of Structures
PO Box 7916
Madison, WI 53707-7916



Bridge Manual



Standard Details

DATE: July 26, 2013
TO: Bridge Manual Users
FROM: DTSD – Bureau of Structures
SUBJECT: **July 2013 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 5:** Bid item numbers and bid item names have been updated to match current standard specification syntax.

- **Chapter 6:** Added a requirement for consultants to provide their controlling ratings analysis files as part of the final plan submittal requirements.

- **Chapter 6:** Added a requirement for preliminary plans to be assembled for all box culvert projects.

- **Chapter 7:** Updated section 7.1.4.4 regarding the use of Self Propelled Modular Transporters (SPMTs). A template SPV is available on the BOS webpage for use on WisDOT projects.

- **Chapter 12:** Added a new Figure to clarify the desired quantity computations for abutment backfill material when structural approach slab is utilized. Additionally, further clarification on what backfill material types shall be utilized with structural approach slabs was added.

- **Standard 12.10, 12.11 – Structural Approach Slab for Type A1 Abutments:** Updated structural approach slab standard details based on new information gathered and assembled. Specifically, reference to stainless steel SPV, new end of approach stationing and elevation requirements, and new “Designer Notes” were added to the standards.

- **<u>Standard 15.03 – Slope Paving Structures (Concrete Cast-in-Place):</u>** Added requirement for placement of wrapped pipe underdrain at 2 locations below the slope paving to help improve the performance of cast-in-place slope paving.

- **Chapter 19 Standards:** Removed the "Note" in the prestressed concrete girder standards allowing the use of ASTM A706 stirrups if the fabricator wants to build a welded bar cage.

- *<u>New</u>* **<u>Standard 29.03 – Floor Drain Type WF:</u>** Details for floor drain that may be used depending on the geometric configuration of wide-flange prestressed girders with respect to the gutter line and edge of deck. A standard specification bid item will be created for this type of floor drain with the next release of the WisDOT Standard Specs.

- **Chapter 30:** The entire bridge railing chapter was updated to provide new and clarified guidance on the use of bridge railings in Wisconsin. Of specific note, clarifications regarding the crash-worthiness of barrier types, specific use of concrete parapets vs. open railings, aesthetic guidelines, and rehabilitation considerations were added. This chapter will continue to expand and be refined in subsequent Bridge Manual updates.

- *<u>Relocated</u>* **<u>Standards 30.22 & 30.23 – Railing Tubular Type 'PF':</u>** Moved the Type PF railing standard details to the rehabilitation chapter based on current policy within Chapter 30 text.

- *<u>New</u>* **<u>Standard 30.34, 30.35, 30.36, 30.37 – Single Slope Parapet –SS with Structural Approach Slab:</u>** Details for use on projects utilizing single slope parapets and a structural approach slab. Corresponding insert sheets have been created and posted online.

- **Chapter 40:** Updated section 40.16 based on ongoing adhesive anchorage research and coordinated information with the updated version of the "Concrete Masonry Anchors, Type L" approved products list.

- *<u>New</u>* **<u>Standard 40.23 – Wing Strapping:</u>** Details to provide an alternative to wing replacement when wing tipping causes rehabilitation needs. A special provision has been created and posted online.

- *<u>Relocated</u>* **<u>Standards 40.24 & 40.25 – Railing Tubular Type 'PF':</u>** Moved the Type PF railing standard details to the rehabilitation chapter based on current policy within Chapter 30 text.

- **Insert Sheets:** Numerous 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.

- **Updated Special Provisions:**
    - Geosynthetic Reinforced Soil Abutment
    - High-Load Multi-Rotational Bridge Bearings
    - Painting Polysiloxane System
    - Parapet Concrete Type "TX"

- **New Special Provisions:**
  - Bar Steel Reinforcement HS Stainless Bridges
  - Drilled Shaft Foundation
  - Drilled Shaft Quality Management Program (QMP)
  - SPMT Bridge Construction
  - Wing Wall Strapping

Most other changes are fairly minor. Please use the example calculations 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 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 2013 Bridge Manual Text Update Summary

Chapter	Page Number(s)	Change
1	1	Removed out of date reference to inspection of fabricated steel for structures.
2	3	Added Bridge Rating Unit to Bureau of Structures Organizational Chart.
	3	Added new Structures Maintenance Section Chief to Organizational Chart.
	12	Added reference to updated name plate location.
3	--	No revisions.
4	3	Removed note referring to Interim Policy on Barriers.
	5	Removed note referring to ongoing research by BOS.
	8	Removed note referring to ongoing research by BOS.
5	5,6,7,8	Revised bid item numbers and bid item names.
6	1,2,3,4	Updated Table of Contents to coordinate with updated and inserted headings.
	8,9	Updated Structure Survey Report guidance.
	9	Removed note stating that preliminary plans are not required for box culverts.
	9	Added general guidance pertaining to preliminary plan layouts.
	11	Added guidance for reference line stationing on plans.
	12	Removed guidance for location of name plate.
	12	Added requirement to show railroad right-of-way on Plan.
	13	Added requirement to show railroad right-of-way on Elevation.
	15	Inserted guidance pertaining to Ultimate Stress and Ratings information to be included on final plans.
	17	Minor edit.
	26	Minor edit.
	33	Added guidance pertaining to the need to submit structure plans for maintenance painting projects.
	33,34	Added and revised guidance for locations of bench marks and name plates on structures.
	38	Added guidance stating that Abatement of Asbestos Containing Material bid item is to be included on the structure plans.
	39	Added guidance regarding Stainless Steel Reinforcement quantity computations.
	44	Updated reference to submittal (Bureau of Structures).

	45	Added reference to timeframe to be expected for preliminary plan reviews by BOS Consultant Review Unit.
	47	Added requirement for consultants to provide controlling ratings analysis files as a part of the final plan requirements.

7	5, 8, 11, 14, 26	Miscellaneous formatting revisions.
	15-26	Updated Self Propeled Modular Transporter section of Accelerated Bridge Construction chapter.

8	--	No revisions.

9	5	Added text to cover usage of Stainless Steel Reinforcement.
	6	Added reference to help define "top" bars.
	17, 18	Clarified definition of "top" bars for Table 9.9-1 and 9.9-2.

10	--	No revisions.

11	--	No revisions.

12	18-20	Updated abutment backfill material section to include information when structural approach slabs are utilized and inserted new Figure 12.6-2.

13	34-35, 37	Reinforced the need for designers to check crack control reinforcement per LRFD 5.7.3.4 for pier caps and pier columns.
	46	Revised "<" symbol to ">" to be accurate per calculation.
	48	Revised column width dimension on Figure 13.13-1 to match current minimum requirements per section 13.4.10.
	50	Updated incorrect Standard Specification section number.
13EX1	2	Updated version of AASHTO Spec. that example is current through (6th Edition - 2013 Interim).
	53	Highlighted that strain limits shown are based on f_y = 60 ksi and that limits are tabulated in LRFD [Table C5.7.2.1-1].
13EX2	2	Updated version of AASHTO Spec. that example is current through (6th Edition - 2013 Interim).
	17, 19, 22, 23	Updated multi-column pier cap design per new crack control guidance.
	17, 18, 19, 21, 23	Updated new stress limit for f_{ss} as $\leq$ 0.6 f_y per LRFD [5.7.3.4].

	29	Updated Figure E13-2.7-1 to reflect new bar cutoff location for bottom reinforcement.

14	23	Updated typo in Table 14.3-1.
	26	Updated reference to AASHTO LRFD Bridge Design Specifications.
14EX1	2	Updated version of AASHTO Spec. that example is current through (6th Edition - 2013 Interim).
	15, 16	Updated load inclination factor and added note stating that this factor is to be determined by the engineer.
	22, 25, 28	Highlighted that calculations are based on f_y = 60 ksi, equations in LRFD [5.5.4.2.1] and strain limits in LRFD [Table 5.7.2.1-1].
	29	Updated new stress limit for f_{ss} as $\leq$ 0.6 f_y per LRFD [5.7.3.4].
14EX4	2	Updated version of AASHTO Spec. that example is current through (6th Edition - 2013 Interim).
	26, 28, 30, 33	Highlighted that calculations are based on f_y = 60 ksi, equations in LRFD [5.5.4.2.1] and strain limits in LRFD [Table 5.7.2.1-1].
	34	Updated new stress limit for f_{ss} as $\leq$ 0.6 f_y per LRFD [5.7.3.4].

15	--	No revisions.

17	3	Updated text pertaining the the Manual for Bridge Evaluation.
	3	Inserted guidance pertaining to Ratings information to be included on final plans.
	49	Clarified guidance for use of hat bars when extensions of shear connectors do not meet minimum requirements.
	50	Updated new stress limit for f_{ss} as $\leq$ 0.6 f_y per LRFD [5.7.3.4].
	70	Clarified the non-use of additional reinforcement tables at overhangs when raised sidewalks are present.

18	11	Modified c/d_s equation to accomodate reinforcement of different yield strengths per AASHTO Specifications LRFD [5.7.2.1].
	16	Modified Fatigue Threshold equation to accomodate reinforcement of different yield strengths per AASHTO Specifications LRFD [5.5.3.2].
	23	Clarified description of SWL (Slab Width Loaded) used for Lane Load.
	26	Updated new stress limit for f_{ss} as $\leq$ 0.6 f_y per LRFD [5.7.3.4].
18EX1	3	Updated version of AASHTO Spec. that example is current through (6th Edition - 2013 Interim).

	14, 71	Referenced that c/d_s limit of 0.6 that is being used is based on reinforcement with a yield strength of 60 ksi.
	15, 20, 25, 30, 34, 39, 42	Referenced that Fatigue Threshold equation being used is based on a yield strength of 60 ksi.
	18, 22, 26, 36, 37, 41, 45	Updated new stress limit for f_{ss} as $\leq$ 0.6 f_y per LRFD [5.7.3.4].

19	31	Changed minimum size of WWF stirrup to D18.
19EX1	2	Updated version of AASHTO Spec. that example is current through (6th Edition - 2013 Interim).
19EX2	2	Updated version of AASHTO Spec. that example is current through (6th Edition - 2013 Interim).
	13-14	Added equation for c/d_s and checked for reinforcement yielding. Referenced that c/d_s limit of 0.6 that is being used is based on reinforcement with a yield strength of 60 ksi.
	15	Added equation for Fatigue Threshold as a function of yield strength.
	15, 16, 20	Referenced that Fatigue Threshold equation being used is based on a yield strength of 60 ksi.
	15, 19	Updated new stress limit for f_{ss} as $\leq$ 0.6 f_y per LRFD [5.7.3.4].
19EX3	2	Updated version of AASHTO Spec. that example is current through (6th Edition - 2013 Interim).

23	--	No revisions.

24	45	Separated out a WisDOT Policy Item regarding the use of shear studs on rehabilitation projects.

27	4, 5-11	Minor clarification to guidance on design process for elastomeric bearings.
27EX1	2	Updated version of AASHTO Spec. that example is current through (6th Edition - 2013 Interim).
	5	Clarified calculation of value of "n" used in equation.

28	5, 6	Updated text regarding the intended use of compression seals.

29	2	Updated text regarding preferred floor drain and downspout types and minimum downspout extensions based on addition of new Type "WF" floor drain to Standards.
	3	Minor text revision.
	6, 7	Moved table 29.2-3 to be fully located on one page.

30	All	Updated entire Chapter 30 text to provide further guidance, clarification, and supplemental information for use with the design and implementation of bridge railings.

32	--	No revisions.

36	4	Added reference to the Manual for Bridge Evaluation
	4	Referenced Table in Chapter 45 for location of live load factor to be used with the 190k Standard Permit vehicle
	12	Updated new stress limit for f_{ss} as $\leq$ 0.6 f_y per LRFD [5.7.3.4].
	17	Changed text and references to match new AASHTO Specifications
	18	Changed text and references to match new AASHTO Specifications
	19	Added references for clarity
	20	Removed "Wisc. Exception To AASHTO" because current Wisc. Method and new AASHTO Method for live load distribution are now the same
	20,21,22	Updated text and equations to follow AASHTO nomenclature and new Article numbers
	25	Added text to cover the range of fill heights to be used in design
	25	Modified dimension requirements to meet current usage
	35	Changed text and added reference to clarify selection of live load surcharge for wingwall design when wings are parallel to direction of traffic
	40,41	Added text to cover the height of the header and attachment of barriers to headers
36EX1	2	Updated version of AASHTO Spec. that example is current through (6th Edition - 2013 Interim).
	6	Referenced Section 36.1.3 of Bridge Manual for Wis-SPV requirements.
	7	Made AASHTO reference more specific to match new Article numbers.
	7	Removed "Exception To AASHTO" reference because Bridge Manual live load distribution now matches AASHTO Spec.
	8	Made AASHTO reference more specific to match new Article numbers.
	20	Referenced that c/d_s limit of 0.6 that is being used is based on reinforcement with a yield strength of 60 ksi per LRFD [5.7.2.1]
	22	Updated new stress limit for f_{ss} as $\leq$ 0.6 f_y per LRFD [5.7.3.4].

37	--	No revisions.

38	29	Added requirement to show railroad right-of-way on Plan.

39	--	No revisions.

40	6	Updated structure rehabilitation outcome requirement guidance.
	8	Formatting revision.
	11	Updated overlay text to coordinate with current guidance on railings & parapets.
	11	Removed Maintenance Note from 40.5.3 referring to the use of waterproofing membranes on asphaltic overlays.
	14	Added reference to BOS Ratings Unit for deck replacement guidance.
	14	Added additional reference to FDM SDD for temporary barrier design.
	14	Added guidance to deck overlays when continuity of structure is being changed.
	15	Removed contradictory bullet regarding haunch height from table generation criteria.
	17	Updated AASHTO LRFD 3.6.5 loading per Chapter 13.
	18	Updated AASHTO LRFD 3.6.5 loading per Chapter 13.
	20	Updated AASHTO LRFD 3.6.5 loading per Chapter 13.
	22	Updated note regarding protective surface treatment due to the fact that it is currently in the standard specifications.
	22	Added reference to updated requirement necessitating plans for all rehabilitation projects (including painting projects).
	29-43	Numerous updates to Concrete Masonry Anchors for Rehabilitation section of Chapter 40 text.

45	3	Updated text pertaining the the Manual for Bridge Evaluation.
	3	Inserted references to Allowable Stress Ratings (used for Timber structures only).
	4	Added note stating that ratings shall be completed for all projects that result in the change of loading of the structure.
	7	Updated text pertaining the the Manual for Bridge Evaluation.
	7	Added text pertaining to Allowable Stress Ratings.
	8	Updated text pertaining the the Manual for Bridge Evaluation.
	8	Added bullets point pertaining to ratings substructure elements.
	8	Clarified bullet point pertaining to the governing rating of structures in Wisconsin.
	9	Added bullet point to state that elastic gains are to be neglected in the ratings of prestressed girder bridges in Wisconsin.
	9	Updated equation reference, equation, and variable definitions to reflect current Manual for Bridge Evaluation text.
	12, 13	Updated live load factors based on Interim Updates to Manual for Bridge Evaluation.

	13	Updated Manual for Bridge Evaluation section reference.
	14	Updated incorrect Bridge Manual section reference.
	14	Updated equation reference to reflect current Manual for Bridge Evaluation text.
	15, 16	Updated Manual for Bridge Evaluation section references, equation, and variable definitions.
	17	Updated Figure 45.3-2 Title to include Allowable Stress Ratings (for timber structures only).
	18	Inserted ASR guidance for timber structures.
	20, 23, 26, 28, 29	Updated Manual for Bridge Evaluation section reference.
	31	Updated live load factors based on Interim Updates to Manual for Bridge Evaluation.
	32	Inserted ASR option into note 2 for the instructions for completing the Load Rating Summary form.
	32	Added guidance pertaining to the need for the Load Rating Summary Form to be signed and sealed based on project type.
	33	Inserted reference to Section 6.2.2.3.4 for ratings information to be included on final plans.
	34	Updated Rating Method portion of the Bridge Load Rating Summary form to include ASR for timber structures only.
	37	Updated references used in Chapter text.
45EX1	5	Referenced that c/d_s limit of 0.6 that is being used is based on reinforcement with a yield strength of 60 ksi
	10, 12	Changed live load factor for Wis-SPV vehicle from 1.5 to 1.2 to match current Manual for Bridge Evaluation specification
	11, 13	Changed rating factor (RF) and max. vehicle weight (MVW) based on new live load factor
	14	Changed Rating Summary table to reflect new max. vehicle weights
45EX2	23	Changed live load factor for Legal Loads and Specialized Hauling Vehicles to 1.45 to match current Manual for Bridge Evaluation specification
	24	Changed Max. Vehicle Weight summary table to reflect new live load factors
	25,26	Changed live load factor for Wis-SPV vehicle from 1.5 to 1.2 to match current Manual for Bridge Evaluation specification
	25, 26	Changed rating factor (RF) and max. vehicle weight (MVW) based on new live load factor
	27	Changed Rating Summary table to reflect new max. vehicle weights
45EX3	12	Changed live load factor for Wis-SPV vehicle from 1.5 to 1.2 to match current Manual for Bridge Evaluation specification
	12	Changed Max. Vehicle Weight summary table to reflect new live load factors
	13	Corrected live load factor for multi-lane distribution from 1.5 to 1.3 to match current Manual for Bridge Evaluation specification

	13	Changed rating factor (RF) and max. vehicle weight (MVW) due to corrected live load factor
45EX4	36, 37	Changed live load factor for Wis-SPV vehicle from 1.5 to 1.2 to match current Manual for Bridge Evaluation specification
	37, 38	Changed rating factor (RF) and max. vehicle weight (MVW) based on new live load factor
	40	Changed Rating Summary table to reflect new max. vehicle weights

July 2013 Standard Details Update Summary

Chapter 4

Std 4.01
- Clarified "Section Thru Formliner" to include formliner backing if used.

Chapter 7

Std 7.01
- Added a designer note stating that the minimum required tensile strength of the geosynthetic reinforcement shall be shown within the SPV.

Std 7.02
- Updated approach base aggregate note.
- Removed text below "Section Showing Prestressed Box".
- Added "Integrated Approach" to note in Section A-A.
- Added to geosynthetic reinforcement note stating that the spacing is to be designed.
- Added a designer note stating that the minimum required tensile strength of the geosynthetic reinforcement shall be shown within the SPV.
- Removed note pertaining to separate bid item for RSF.

Chapter 11

Std 11.01
- No revisions.

Chapter 12

Std 12.01
- Revised wing length dimension to include 10'-0" minimum requirement.

Std 12.02
- Revised wing length dimension to include 10'-0" minimum requirement.
- Clarified location of name plate.

Std 12.03
- No revisions.

Std 12.04
- Clarified location of name plate.

Std 12.05
- No revisions.

Std 12.06
- Clarified location of name plate.

Std 12.07
- Added note stating that rubberized membrane waterproofing is required when optional construction joint at wing is used.
- Clarified note regarding location of name plate.

Std 12.08
- Added note stating that rubberized membrane waterproofing is required when optional construction joint at wing is used.
- Clarified note regarding location of name plate.

Std 12.09
- No revisions.

Std 12.10
- Clarified note regarding location of name plate and bench mark when used in conjunction with Structural Approach Slab.
- Removed bar detail lengths for T501 and T803 due to the fact that the dimensions vary depending on skew angle.
- Relocated approach slab footing dimension to accurately reflect the 5'-0" dimension is taken normal to abutment (as shown in Standard 12.11).
- Relocated filler location between wing and abutment diaphragm at locations with wing walls.
- Added note pertaining to bid item for stainless steel bars in Designer Notes.
- Removed pipe underdrain due to it being ineffective in base aggregate dense.
- Added end of approach slab stationing and elevation requirements on plan.
- Clarified use of Allowable Bearing Pressure in Design Data.
- Added Designer Note to emphasize the need for coordination of surface drains, inlets, and/or flumes with the roadway design and SDD's.

Std 12.11
- Added note pertaining to bid item for stainless steel bars in Designer Notes.
- Removed pipe underdrain due to it being ineffective in base aggregate dense.
- Revised Designer Note pertaining to material to be placed beneath the structural approach slab and footing.
- Added Designer Notes to be consistent with Standard 12.10.
- Added Designer Note to emphasize the need for coordination of surface drains, inlets, and/or flumes with the roadway design and SDD's.

Chapter 13

Std 13.01
- No revisions.

Std 13.02
- Minor revision - text overlap on first note of Designer Notes.

Std 13.03
- Added guidance for size, spacing and location of additional longitudinal cap reinforcing when Cap Type Detail is used.

Std 13.04
- No revisions.

Std 13.05
- No revisions.

Std 13.06
- No revisions.

Std 13.07
- No revisions.

Std 13.10
- Updated masonry anchor notes to match current Chapter 40 policy.
- Revised footing reinforcement dimensioning note in "Plan" view.
- Removed vertical bars from "Plan" view for clarity.
- Relocated Section B-B section cuts in "Elevation" view.
- Relocated clear cover dimension in "Elevation" view for clarity.
- Revised vertical bar steel dimensioning in "Elevation" view.
- Removed horizontal bars from "Elevation" view for clarity.

Std 13.11
- Updated masonry anchor note to match current Chapter 40 policy.
- Revised "asphalt pavement" to "shoulder material" in Section A-A and Section B-B.

Chapter 14

Std 14.01
- No revisions.

Std 14.02
- Provided minimum wall panel embedment depth in Cast-In-Place Concrete Coping Detail.
- Added note to Concete Coping Detail pertaining to attachments.

Std 14.03
- No revisions.

Std 14.04
- Revised note in cross-section allowing the contractor an option to provide either MSE backfill or Size 2 Coarse Aggregate under the concrete slope paving.

Std 14.05
- No revisions.

Chapter 15

Std 15.01
- No revisions.

Std 15.02
- No revisions.

Std 15.03
- Added wrapped pipe underdrain at 2 locations below slope paving in Typical Section, Alt. Section, and Section at Sidewalk.

Chapter 17

Std 17.01
- Updated sidewalk cross-slope based on federal ADA requirement.
- Added Designer Note providing guidance for sidewalk design.

Std 17.02
- Added "Longitudinal Construction Joint Detail".

Chapter 18

Std 18.01
- Added rubberized membrane waterproofing to Longitudinal Section.

Std 18.02
- Added rubberized membrane waterproofing to Longitudinal Section.

Chapter 19

Std 19.01
- Made modifications to welded wire fabric stirrup detail.
- In "Notes" added note about approved concrete sealer.
- In "Notes" removed note allowing substitution of A706 stirrups if fabricator wanted to build a welded bar cage.
- In "Designer Notes" changed ϕ to Dia.
- In "Designer Notes" reworded 3rd paragraph.
- In "Side View of Girder" added spacing and total distance for stirrups.

Std 19.02
- No revisions.

Std 19.03
- Made modifications to welded wire fabric stirrup detail.
- In "Notes" added note about approved concrete sealer.
- In "Notes" removed note allowing substitution of A706 stirrups if fabricator wanted to build a welded bar cage.
- In "Designer Notes" changed ϕ to Dia.
- In "Designer Notes" reworded 3rd paragraph.
- In "Side View of Girder" added spacing and total distance for stirrups.

Std 19.04
- No revisions.

Std 19.11
- Made modifications to welded wire fabric stirrup detail.
- In "Notes" removed note allowing substitution of A706 stirrups if fabricator wanted to build a welded bar cage.
- In "Designer Notes" changed ϕ to Dia.
- In "Designer Notes" reworded 3rd paragraph.

Std 19.12
- Moved (2) strands toward C/L for 16 and 18 undraped strand pattern

Std 19.13
- Made modifications to welded wire fabric stirrup detail.
- In "Notes" removed note allowing substitution of A706 stirrups if fabricator wanted to build a welded bar cage.
- In "Designer Notes" changed ϕ to Dia.
- In "Designer Notes" reworded 3rd paragraph.

Std 19.14
- Moved (2) strands toward C/L for 16 and 18 undraped strand pattern

Std 19.15
- Made modifications to welded wire fabric stirrup detail.
- In "Notes" removed note allowing substitution of A706 stirrups if fabricator wanted to build a welded bar cage.
- In "Designer Notes" changed ϕ to Dia.
- In "Designer Notes" reworded 3rd paragraph.

Std 19.16
- Moved (2) strands toward C/L for 16 and 18 undraped strand pattern

Std 19.17
- Made modifications to welded wire fabric stirrup detail.
- In "Notes" removed note allowing substitution of A706 stirrups if fabricator wanted to build a welded bar cage.
- In "Notes" modified 1st paragraph to cover approved concrete sealer.
- In "Designer Notes" changed ϕ to Dia. and corrected misspelled word.
- In "Designer Notes" reworded 3rd paragraph.

Std 19.18
- Moved (2) strands toward C/L for 16 and 18 undraped strand pattern

Std 19.19
- Made modifications to welded wire fabric stirrup detail.
- In "Notes" removed note allowing substitution of A706 stirrups if fabricator wanted to build a welded bar cage.
- In "Designer Notes" changed f to Dia. and corrected misspelled word.
- In "Designer Notes" reworded 3rd paragraph.

Std 19.20
- Moved (2) strands toward C/L for 16 and 18 undraped strand pattern

Std 19.31
- No revisions.

Std 19.32
- No revisions.

Std 19.33
- No revisions.

Std 19.34
- Added note stating that rubberized membrane waterproofing is required when optional construction joint at abutment diaphragm is used.
- In "Notes" removed note allowing substitution of A706 stirrups if fabricator wanted to build a welded bar cage.
- In "Designer Notes" changed ϕ to Dia.

Std 19.35
- Added note stating that rubberized membrane waterproofing is required when optional construction joint at abutment diaphragm is used.
- In "Notes" removed note allowing substitution of A706 stirrups if fabricator wanted to build a welded bar cage.
- In "Designer Notes" changed ϕ to Dia.

Std 19.36 ■ No revisions.
Std 19.37 ■ No revisions.
Std 19.38 ■ No revisions.
Std 19.51 ■ No revisions.
Std 19.52 ■ No revisions.
Std 19.53 ■ No revisions.

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 ■ Updated paving notch note to current policy.
Std 27.06 ■ No revisions.
Std 27.07 ■ Added Designer Notes to clarify steel plate thickness requirement.
Std 27.08 ■ Added second anchor bolt to Expansion Bearing Assembly detail to accurately reflect layout of bolts per Masonry Plate "D" details.
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 ■ Revised length of galvanized plate in note "6" to coordinate with Std 28.01.
Std 28.08 ■ No revisions.

Chapter 29

Std 29.01
- Updated downspout extension note in Section A2.
- Updated downspout material note referencing the Standard Specifications.
- Revised "Slab" note to "Deck" in Section A1.
- Revised ϕ symbol note to "Dia." in multiple locations.
- Added Designer Notes referencing bid items to be used with floor drains.

Std 29.02
- Updated downspout extension note in Section A2.
- Updated downspout material note referencing the Standard Specifications.
- Revised "Slab" note to "Deck" in Section A1.
- Revised ϕ symbol note to "Dia." in multiple locations.
- Added Designer Notes referencing bid items to be used with floor drains.

NEW Std 29.03
- Floor Drain Type 'WF'
- This standard should be included in plans under bid item # 514.0450 - Floor Drain Type WF. Standard bid item was created 3/12/13.

Chapter 30

Std 30.01
- No revisions.

Std 30.02
- No revisions.

Std 30.04
- No revisions.

Std 30.05
- No revisions.

Std 30.07
- Clarified location of name plate.
- Added note regarding lap length of horizontal bars.

Std 30.10
- Clarified location of name plate and bench mark.
- Updated notes regarding parapet type shown in detail.
- Added guidance regarding potential use of adhesive anchors for interior barrier.
- Added adhesive anchor detail for use at interior barrier in conjunction with crashworthy exterior barrier.
- Added parapet footing width dimension to Section A-A and Section C-C.

Std 30.11
- Updated sidewalk cross-slope based on federal ADA requirement.
- Added Designer Note providing guidance for sidewalk design.
- Updated masonry anchor note to match current Chapter 40 policy.

Std 30.12
- Clarified location of name plate and revised location of bench mark.

Std 30.13
- Clarified location of name plate and revised location of bench mark.

Std 30.14
- Clarified anchor bolt embedment depth with relation to stand-alone pedestal height.
- Added guidance regarding minimum parapet height at roadway barrier.
- Added guidance regarding potential use of adhesive anchors for interior barrier.

Std 30.15
- Added note regarding connection of fabric to end posts to coordinate with Ornamental Protective Screening insert sheet.
- Updated masonry anchor note in "Anchorage Detail" to match current Chapter 40 policy.

Std 30.16
- No revisions.

Std 30.17
- Updated Designer Notes to be in compliance with current WisDOT railing policy.

Std 30.18
- Labeled as Structural Tubing for Legend items 5C, 8, 9B, 10B, and 11C.
- In "Railing Notes", clarified material type for each component.
- Enlarged size of fillet weld symbol.
- Updated masonry anchor note "3" to match current Chapter 40 policy.

Std 30.19
- Clarified location of name plate and revised location of bench mark.

Std 30.20
- Clarified location of name plate and revised location of bench mark.

	Std 30.21	■ Updated anchor bolt embedment depth for various SS parapets. ■ Updated Bill of Bars and Bar Detail dimensions for various SS parapets. ■ Revised location of conduit in "Outside Elevation of Parapet at Wingwall". ■ Adjusted 5' metallic conduit requirement at deck side of parapet and revised Notes and symbol descriptions accordingly.
	Std 30.22	■ Standard detail moved from railing chapter to rehabilitation chapter (guidance in Bridge Manual limits use to rehabs only after PS&E's after 2013).
	Std 30.23	■ Standard detail moved from railing chapter to rehabilitation chapter (guidance in Bridge Manual limits use to rehabs only after PS&E's after 2013).
	Std 30.24	■ No revisions.
	Std 30.25	■ No revisions.
	Std 30.30	■ Clarified location of name plate and bench mark.
	Std 30.31	■ Clarified location of name plate and bench mark.
	Std 30.32	■ Clarified location of name plate and bench mark.
	Std 30.33	■ Clarified location of name plate and bench mark.
NEW	Std 30.34	■ Single Slope Parapet 32SS with Structural Approach Slab.
NEW	Std 30.35	■ Single Slope Parapet 32SS with Structural Approach Slab.
NEW	Std 30.36	■ Single Slope Parapet 42SS with Structural Approach Slab.
NEW	Std 30.37	■ Single Slope Parapet 56SS with Structural Approach Slab.

Chapter 36

	Std 36.01	■ Added live load and rating information under "Design Data" ■ Earth load under "Design Data" now requires range of fill used for design to be entered ■ Referenced design fill height range next to symbol **
	Std 36.02	■ Removed duplicate note from "Notes" section that is also included in the "Designer Notes" section.
	Std 36.03	■ Removed smooth, round dowel bar requirement for connection of barrel wall to wing wall. ■ Changed number of bars in bottom slab header from 4 to 6 to match table on Standard ■ Reworded note above "Section Thru Box" to state that #4 bars at 1'-0" should be used in the transverse direction ■ Removed old guard rail post anchor details and referenced new crash tested details
	Std 36.04	■ No revisions.
	Std 36.05	■ No revisions.
	Std 36.06	■ No revisions.
	Std 36.07	■ 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	■ Modified Designer Note for coordination with Bridge Manual text.
	Std 37.02	■ No revisions.

Chapter 38

Std 38.01
- Added railroad right-of-way locations and corresponding note to Railroad Cross Sections.
- Revised Designer Notes relating to horizontal clearances and corresponding pier protection requirements.
- Added note pertaining to aesthetics application along railroad.

Chapter 39

Std 39.01 - No revisions.
Std 39.02 - No revisions.
Std 39.03 - No revisions.
Std 39.09 - No revisions.
Std 39.10 - No revisions.
Std 39.11 - No revisions.
Std 39.12 - No revisions.
Std 39.13 - No revisions.

Chapter 40

Std 40.01
- Revised the bid item reference under Ultimate Design Stresses within the Design Data.

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
- Added Designer Notes to "Expansion Bearing Replacement - Prestressed Girders Elastomeric Bearings" and "Expansion Bearing Replacement - Steel Girders Elastomeric Bearings" to clarify steel plate thickness requirement.

Std 40.09
- Minor text revisions.
- Removed dimension verification note per Bridge Manual policy item 6.3.2.1.2.
- Revised new pin size note.
- Revised pin material note and specification reference.

Std 40.10 - Minor typo revision.
Std 40.11 - No revisions.
Std 40.12 - No revisions.

Std 40.13
- Made modifications to welded wire fabric stirrup detail.
- In "Notes" added note about approved concrete sealer.
- In "Notes" removed note allowing substitution of A706 stirrups if fabricator wanted to build a welded bar cage.
- In "Notes" changed painted to coated.
- In "Notes" changed Type M to Type III.
- In "Notes" changed text for WWF alternate to match other Standards.
- In "Notes" added text "Prestressing strands shall be.." to match other Standards.
- In "Designer Notes" changed ϕ to Dia.
- In "Designer Notes" reworded 3rd paragraph.
- In "Designer Notes" corrected misspelled word.
- In "Designer Notes" added max. release strength and strand dia. to be used.
- In "Designer Notes" added reference to steel brgs. next to triangle symbol.
- Changed "General Notes" to "Notes".
- At "Side View of Girder", added "Elastomeric and Steel Brgs."next to triangle symbol.

	Std 40.14	■ No revisions.
	Std 40.15	■ Minor text edits and revisions. ■ Altered reference to 3/4" drip groove in Section B.
	Std 40.16	■ No revisions.
	Std 40.17	■ Made modifications to welded wire fabric stirrup detail. ■ In "Notes" added note about approved concrete sealer. ■ In "Notes" removed note allowing substitution of A706 stirrups if fabricator wanted to build a welded bar cage. ■ In "Notes" changed Type M to Type III. ■ In "Notes" changed text for WWF alternate to match other Standards. ■ In "Notes" added text "Prestressing strands shall be.." to match other Standards. ■ In "Notes" added text "Ends of strands shall be coated..." to match other Stds. ■ In "Designer Notes" changed ϕ to Dia. ■ In "Designer Notes" reworded 3rd paragraph. ■ In "Designer Notes" corrected misspelled word. ■ In "Designer Notes" added max. release strength and strand dia. to be used. ■ In "Designer Notes" added reference to steel brgs. next to triangle symbol. ■ Changed "General Notes" to "Notes". ■ At "Side View of Girder", added "Elastomeric and Steel Brgs."next to triangle symbol. ■ In "Detail A" changed lap to match Standards 40.17 and 40.19.
	Std 40.18	■ No revisions.
	Std 40.19	■ Made modifications to welded wire fabric stirrup detail. ■ In "Notes" added note about approved concrete sealer. ■ In "Notes" removed note allowing substitution of A706 stirrups if fabricator wanted to build a welded bar cage. ■ In "Notes" changed painted to coated. ■ In "Notes" changed Type M to Type III. ■ In "Notes" changed text for WWF alternate to match other Standards. ■ In "Notes" added text "Prestressing strands shall be.." to match other Standards. ■ In "Notes" removed last paragraph concerning falsework plan submittal. ■ In "Designer Notes" changed ϕ to Dia. ■ In "Designer Notes" reworded 5th paragraph. ■ In "Designer Notes" corrected misspelled word. ■ In "Designer Notes" added max. release strength and strand dia. to be used. ■ In "Designer Notes" added reference to steel brgs. next to triangle symbol. ■ Changed "General Notes" to "Notes". ■ At "Side View of Girder", added "Elastomeric and Steel Brgs."next to triangle symbol.
	Std 40.20	■ No revisions.
	Std 40.21	■ No revisions.
	Std 40.22	■ No revisions.
NEW	Std 40.23	■ Wing Strapping ■ This standard should be included in plans under bid item Strapping B-XX-XXX. Special Provision is located on the BOS website.
NEW	Std 40.24	■ Standard detail moved from railing chapter to rehabilitation chapter (guidance in Bridge Manual limits use to rehabs only after PS&E's after 2013). ■ Clarified location of name plate and added location of bench mark.
NEW	Std 40.25	■ Standard detail moved from railing chapter to rehabilitation chapter (guidance in Bridge Manual limits use to rehabs only after PS&E's after 2013).