WisDOT Bridge Manual

July 2024 Updates

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August 21st, 2024

Agenda

- Resources
- Updates (Chapter, Standard, and Inserts)
- Miscellaneous
- In The Works
- Questions and Feedback

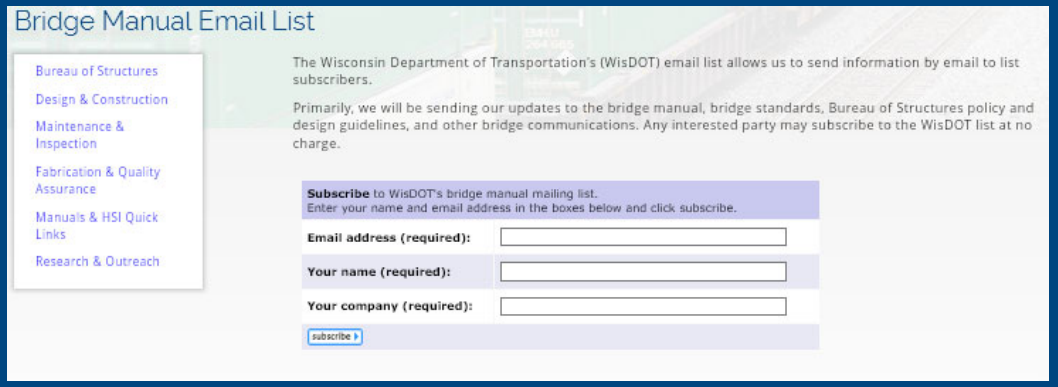
Housekeeping

- All participants are muted
- A handout of this webinar is posted on our website (See Update Archives)
- If you have a question, please use the chat feature to submit your question or raise your hand. Questions will be addressed at the end of the webinar.
- Follow-up questions, please send to James.luebke@dot.wi.gov

Resources

https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/strct/bm-mail-list.aspx

- Added to email distribution list:

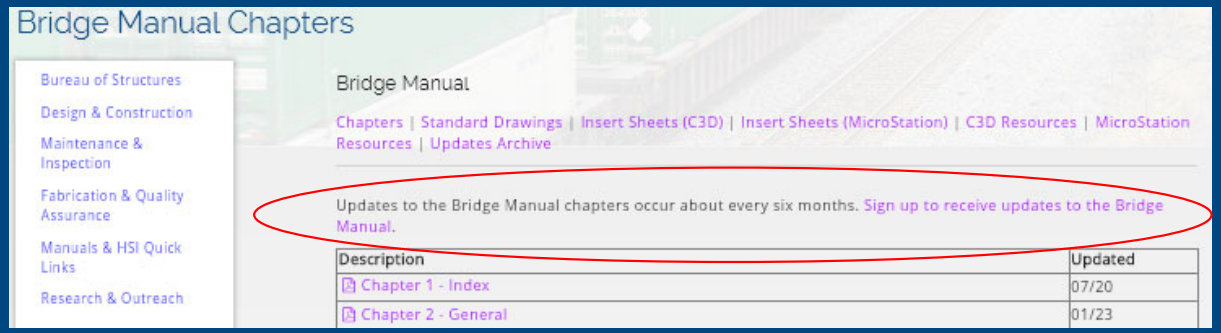


- Removed from email distribution list:
  - Send an email to James.Luebke@dot.wi.gov

Resources

https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/strct/bridge-manual.aspx

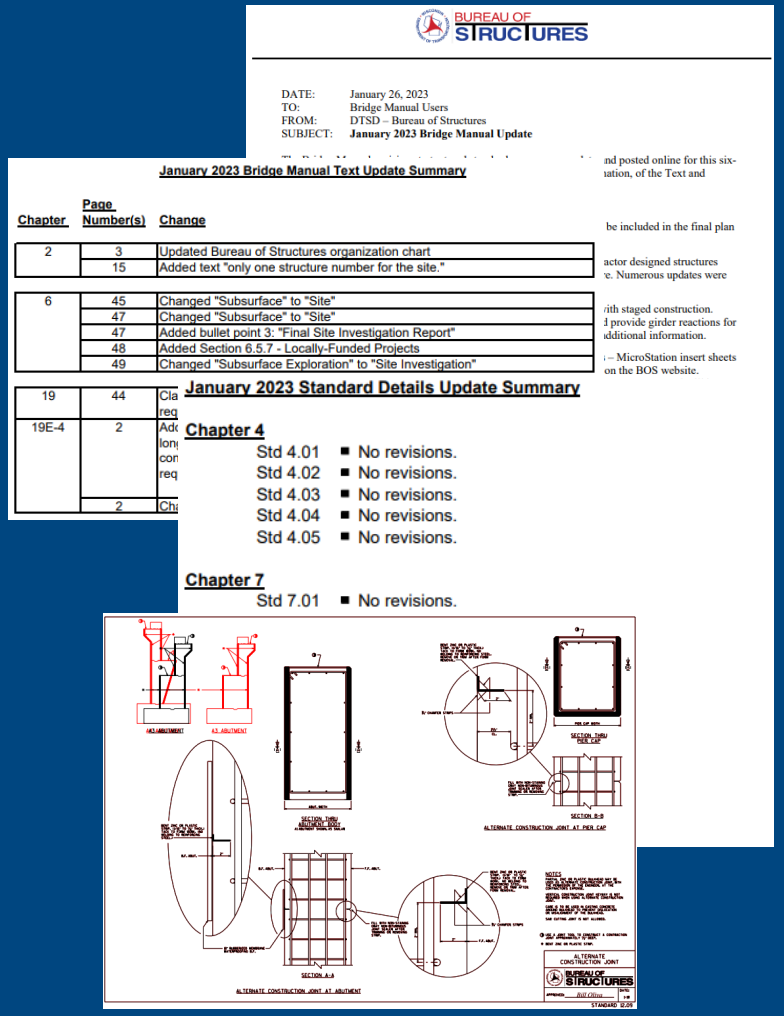
Or web search “WisDOT Bridge Manual”



Resources

- Update Archives
  - Update Memo
  - Bridge Manual Text Update Summary
  - Standard Details Update Summary
  - Standards Tracker *
  - Update Presentation Slides

* Used for 07/24 update



BUREAU OF STRUCTURES

DATE: January 26, 2023
TO: Bridge Manual Users
FROM: DTSD – Bureau of Structures
SUBJECT: **January 2023 Bridge Manual Update**

January 2023 Bridge Manual Text Update Summary

Chapter	Page Number(s)	Change
2	3	Updated Bureau of Structures organization chart
	15	Added text "only one structure number for the site."
6	45	Changed "Subsurface" to "Site"
	47	Changed "Subsurface" to "Site"
	47	Added bullet point 3: "Final Site Investigation Report"
	48	Added Section 6.5.7 - Locally-Funded Projects
	49	Changed "Subsurface Exploration" to "Site Investigation"
19	44	Cla req
19E-4	2	Ad lon con req
	2	Ch

January 2023 Standard Details Update Summary

Chapter 4

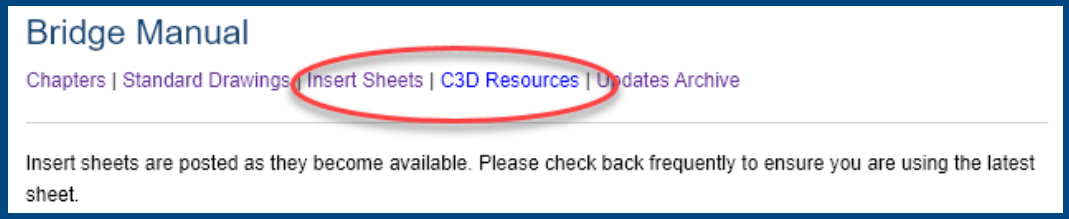
- Std 4.01 ■ No revisions.
- Std 4.02 ■ No revisions.
- Std 4.03 ■ No revisions.
- Std 4.04 ■ No revisions.
- Std 4.05 ■ No revisions.

Chapter 7

- Std 7.01 ■ No revisions.

Civil 3D Updates

- Insert Sheets
  - Removed archived MicroStation files



Chapter Update

- Chapter 4 – Changed CSS to CSD
  - Context (or Community) Sensitive Solutions (CSS)
  - Community Sensitive Design (CSD)
  - See FDM 11-3-1 for additional information (Updated 8/15/24)

- Chapter 5 - Added 2023 bridge cost data

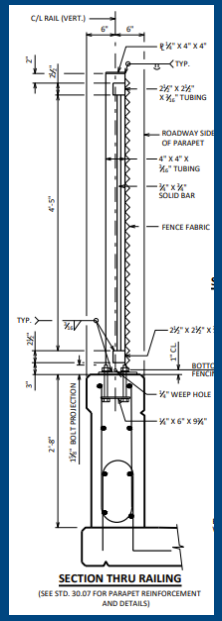
Chapter Update

- Chapter 30 – Protective Screening
  - Added guidance for protective screening height
    - 8-ft minimum above surface (preferred)
    - 6-ft minimum may be considered (with reduced level of protection)
  - Most snooper trucks: 10’-0” to 11’-0” vertical allowance
  - For highly vulnerable areas, consider 1” by 1” mesh
  - The designer should coordinate fence height, fence shape (vertical or bent), and mesh size with the Region and all other applicable agencies

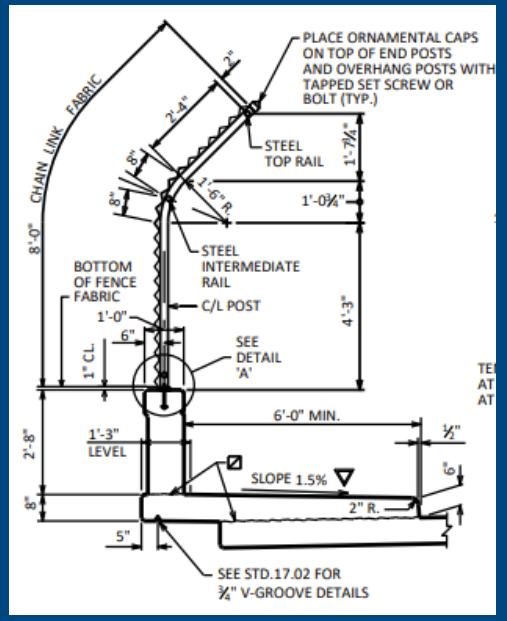
Chapter Update

- Chapter 30 – Protective Screening
  - Tubular Steel Railing Screening
  - Chain Link Fencing

Screening Type	Standard	Protection Height (ft)
Tubular Steel Railing Screening (Bent)	30.15	10'-1"
Tubular Steel Railing Screening (Straight)	30.15	7'-9"
Chain Link Fence (Straight 6-ft)	30.11	8'-9"
Chain Link Fence (Straight 8-ft)	30.11	10'-9"
Chain Link Fence (Bent 8-ft)	31.11	9'-8"
Chain Link Fence Side-Mounted (Straight 6-ft)	32.11	9'-6"



Std. 30.15



Std. 30.11

Chapter Update

- Chapter 36 – Box Culverts
  - CIP Concrete – Use epoxy coat bars in top slab when cover < 2ft
  - CIP Concrete – 6” minimum of backfill between T/Slab and B/Pavement
  - Precast Concrete - Defined standard designs per ASTM C1577:
    - 3-ft x 2-ft thru 12-ft x 12-ft (Span x Rise).
  - Precast Concrete – Not allowed when cover < 2ft while supporting traffic load*
  - Precast Concrete – Not allowed for pedestrian underpasses*

* Exceptions may be considered (no BM guidance)

Chapter Update

- Chapter 41 – Structures Asset Management
  - Defined the Structures Certification Tool (SCT)
  - Replaced "Regional" with "BOS inspection and maintenance“
  - Bridge or Structure Certification Document (BOSCD) is no longer under development
  - Rewrite of Section 41.4 - Structures Programming Process (Local System)

Chapter Update

- Chapter 42 – Bridge Preservation
  - Updated Condition Based Strategies
  - Updated Table 42.4-1 Objectives and Performance Measures
  - Updated Section 42.4.4 - Preservation Program Benefits
  - Updated Section 42.5.2 - Identification of Preservation Needs
  - Updated Table 42.7-1 NBI General Condition Ratings & Common Actions

Chapter Update

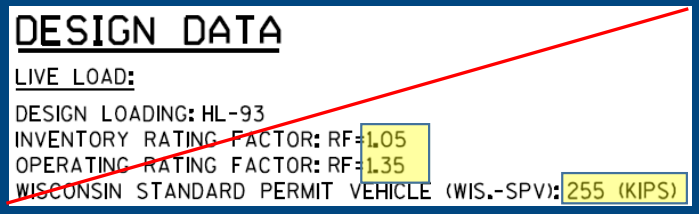
- Chapter 45 – Box Culvert Ratings
  - Updated non-bridge-length culvert (assigned a C-number) load ratings methods

For non-bridge-length culverts (assigned a C-number):

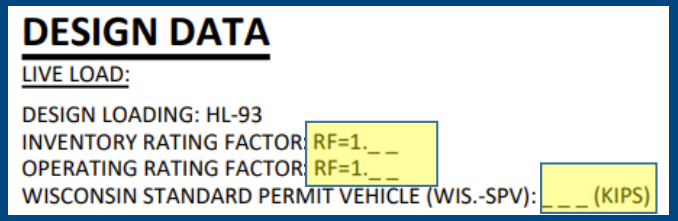
- New culverts shall be load rated the same as bridge-length culverts.
- For existing (in-service) culverts being rehabilitated, a load rating update is required only if a loading change would reduce the culvert's live load capacity below its original design load level. When load rating is not required, report ratings taken from HSI and the date. Contact the Bureau of Structures Rating Unit to discuss load rating existing (in-service) culverts prior to plan submittal.
- For culvert extensions, the new extended portion shall follow the above requirements for new culverts, and the existing portion shall follow the above requirements for rehabilitation of culverts. When different load rating methods are used for the new and existing portions of an extended culvert, provide ratings for both, as described in 6.2.2.3.4.
- For existing (in-service) culverts not being rehabilitated, a load rating update is not required. However, if deterioration or other significant changes warrant consideration of a load posting, contact the Bureau of Structures Rating Unit for evaluation requirements.

Standard Update

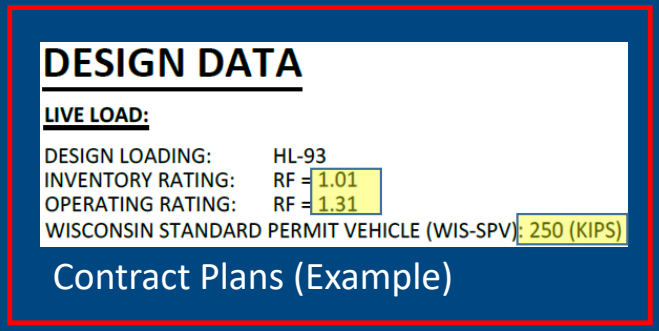
- Std. 36.01
  - Provide load ratings for new concrete box culverts



Std. 36.01 (07/23)



Std. 36.01 (01/24)



Contract Plans (Example)

DESIGNER NOTES

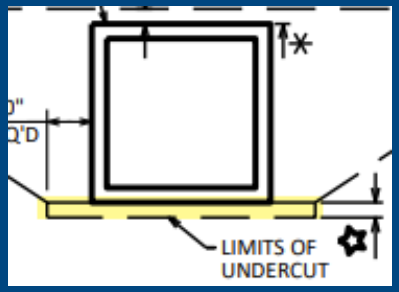
SEE CHAPTER 45 FOR LOAD RATING OF EXISTING CONCRETE BOX CULVERTS

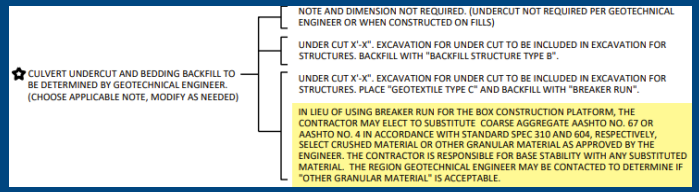
Standard Update

- Standards – Material Changes:
  - #1 Concrete Coarse Aggregate ➔ Coarse Agg. AASHTO No. 67
    - Gradations: 2025-Std Spec. 310-Open Graded
    - Usage: Box culvert base substitution/Modular Block Wall/Gravity Wall (Drainage Blanket)
  - #2 Concrete Coarse Aggregate ➔ Coarse Agg. AASHTO No. 4
    - Gradations: 2025-Std Spec. 604 – Slope Paving
    - Usage: Box culvert base substitution

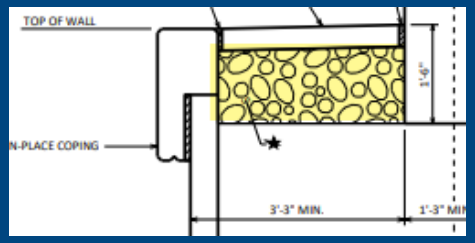
Standard Update

- Standards 9.02, 14.04, 14.11, 14.14, & 36.12

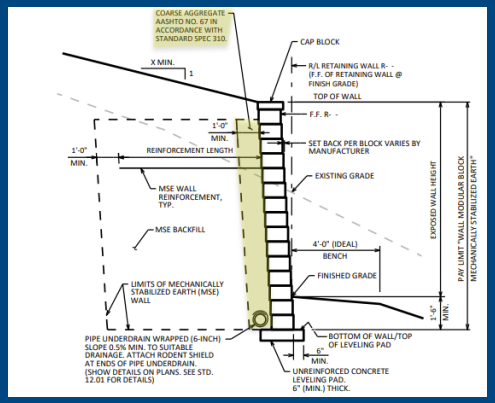




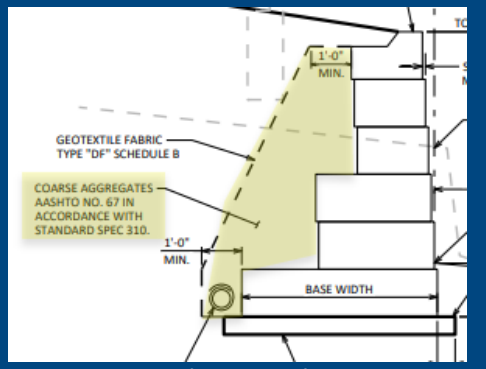
Std. 9.02 (No. 67, No. 4)



Std. 14.04 (No. 4)



Std. 14.11 (No. 67)

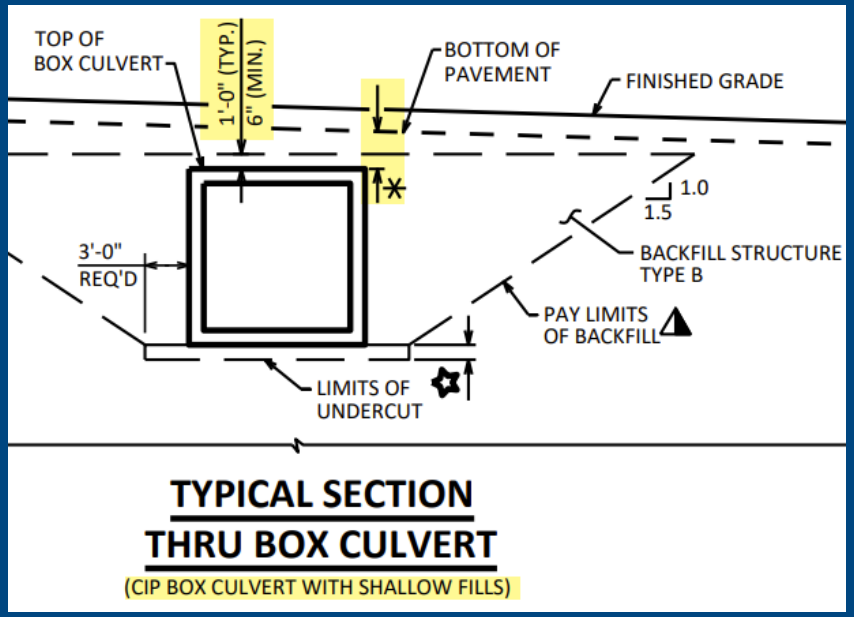


Std. 14.14 (No. 67)

Std. 36.12 – Precast Three-Sided Box Culvert Details (Minor)

Standard Update

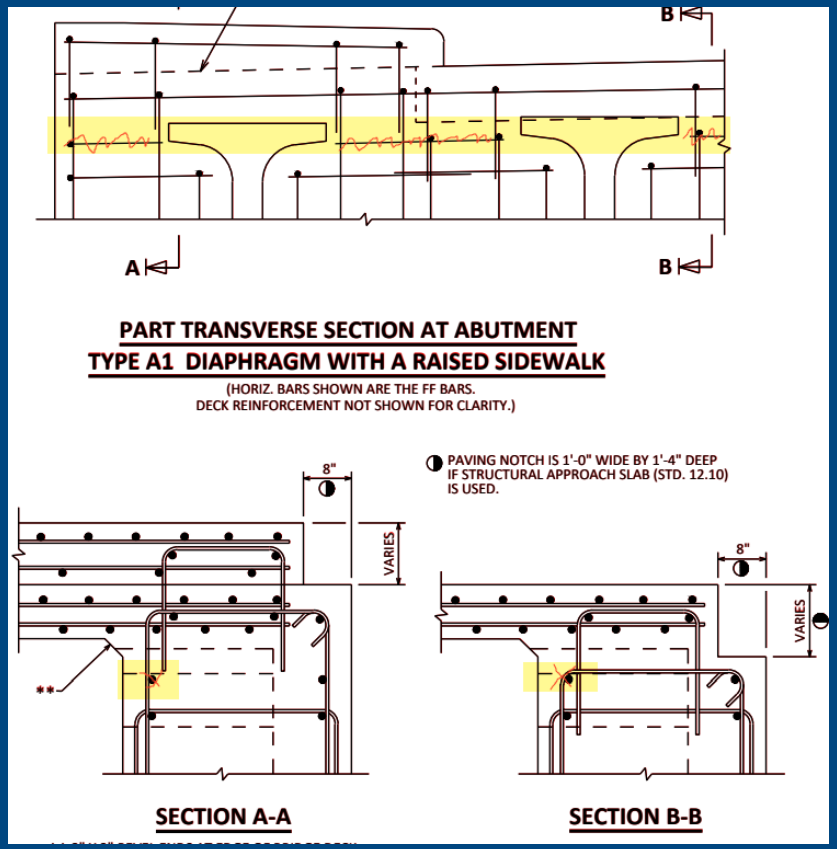
- Standard 9.02
  - Removed 1’-0” (Ideal) cover
  - Added 6” min. cover between T/box and B/Pavement (flexible or rigid)



* 6" MINIMUM OF "BACKFILL STRUCTURE TYPE B" REQUIRED BETWEEN BOTTOM OF ROADWAY SURFACE AND TOP OF CULVERT.

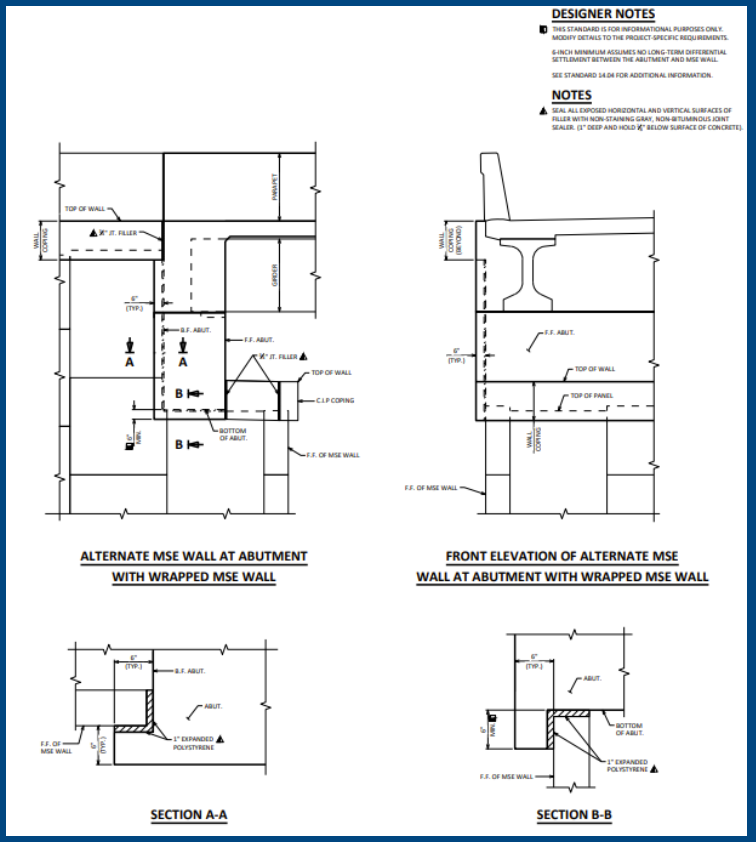
Standard Update

- Standard 17.01
  - Removed horizontal diaphragm bars to match Std. 19.34 and Std. 19.35 details



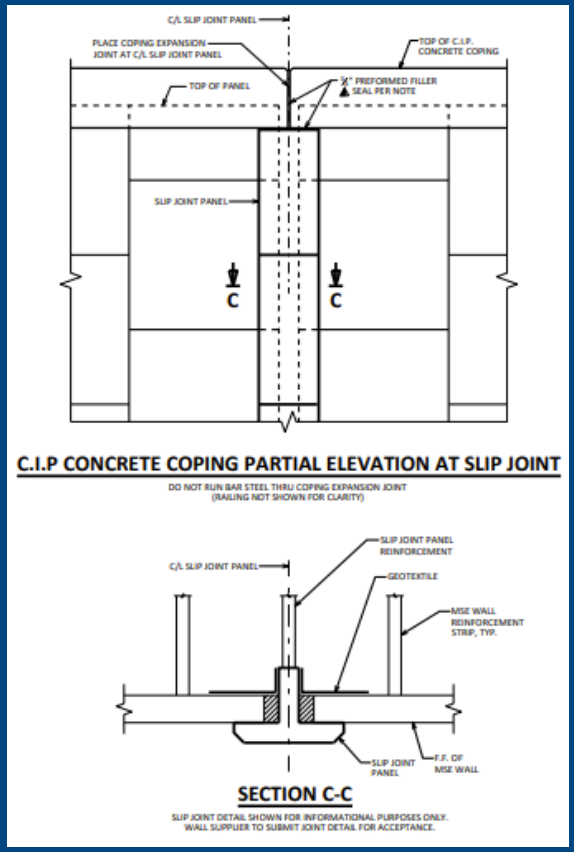
Standard Update

- Standard 14.06 (New)
  - MSE Wall at Abutment Details (wrapped)
  - General layout provided; final details still required.
  - MSE wall aligned with CL of abutment (not wrapped) is still preferred.



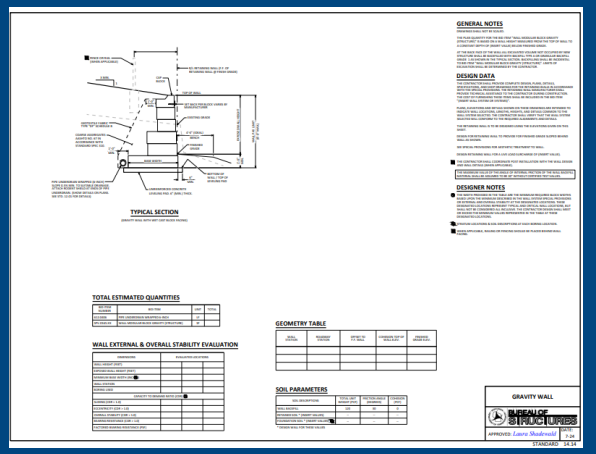
Standard Update

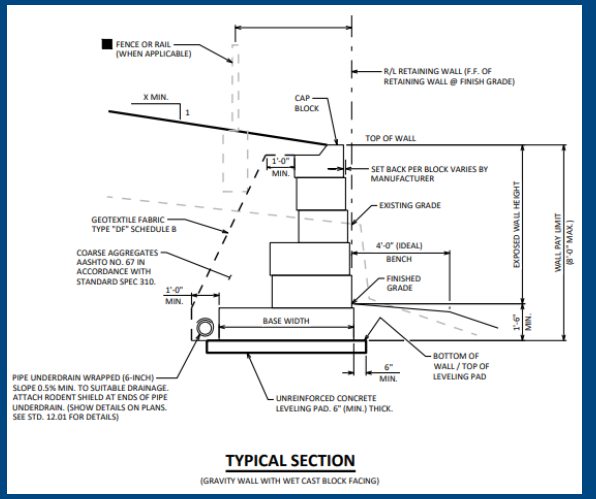
- Standard 14.06 (New)
  - MSE Wall Slip Joint
  - Details to ensure proper CIP concrete details
  - Provide slip joint locations on the plans
  - Do no run bar steel thru coping expansion joints



Standard Update

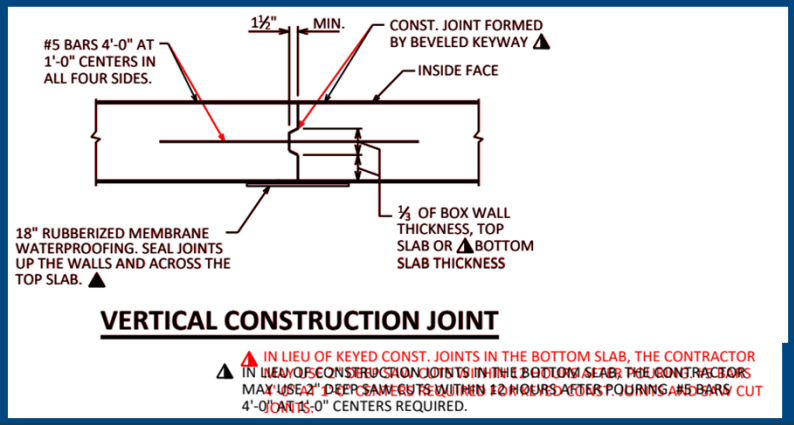
- Standard 14.14 (New)
  - Gravity Wall
  - Requires External and Overall Stability Evaluation (Minimum Base Width)





Standard Update

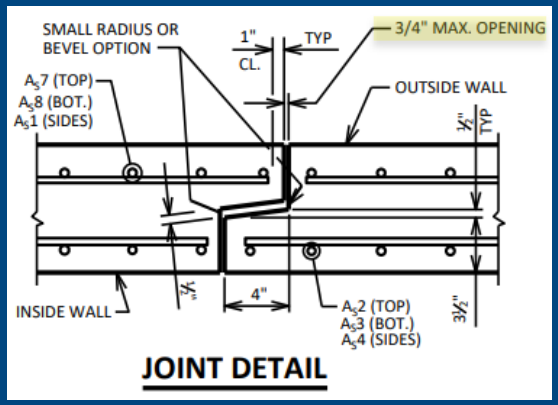
- Standard 36.03 – Box Culvert Details
  - Updated arrowhead locations
  - Updated note clarifying #5 bars required for keyed and saw cut joints in bottom slabs.



▲ IN LIEU OF KEYED CONST. JOINTS IN THE BOTTOM SLAB, THE CONTRACTOR MAY USE 2" DEEP SAW CUTS WITHIN 12 HOURS AFTER POURING. #5 BARS 4'-0" AT 1'-0" CENTERS REQUIRED FOR KEYED CONST. JOINTS AND SAW CUT JOINTS.

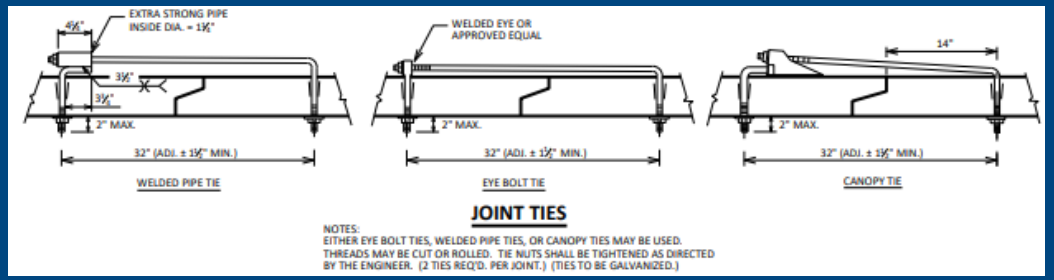
Standard Update

- Standard 36.05 – Box Culvert Details
  - Provided 3/4-inch maximum joint opening between box sections
  - Changed joint seal requirement from AASHTO M198 Type B on 3-sides to ASTM C990 on all 4-sides.
    - ASTM M198 (withdrawn)
    - Both ASTM's are similar (preformed butyl rubber)



Standard Update

- Standard 36.05 – Box Culvert Details
  - Added Designer Note regarding joint ties (only required between the last two-barrel sections for skewed culverts).
  - The designer shall determine if additional joint ties are warranted.
  - Provide plan note identifying required joint tie locations



Standard Update

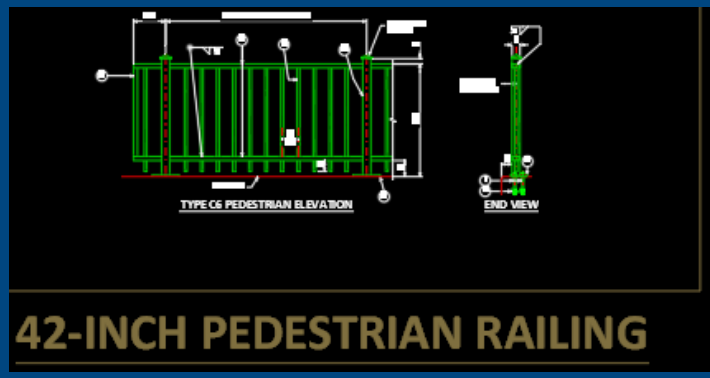
- Standard 40.04 – Strip Seals & Diaphragm Details for Overlays
  - Added bid item 517.0901.S - Preparation and Coating of Top Flanges (Structure) - to Total Estimated Quantities

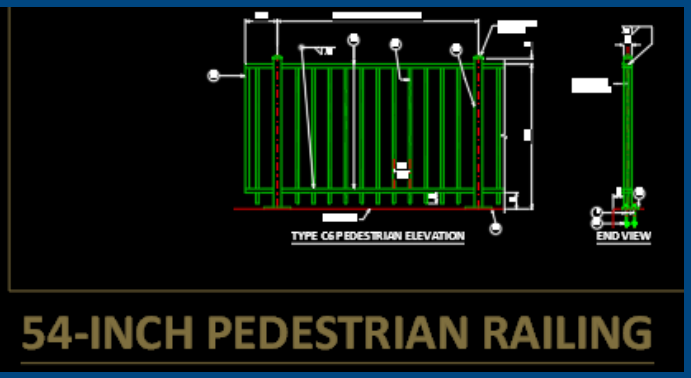
■	517.0901.S	PREPARATION AND COATING OF TOP FLANGES (STRUCTURE)

■ FOR STEEL GIRDERS, USE BID ITEM "PREPARATION AND COATING OF TOP FLANGES (STRUCTURE)" FOR JOINT REPAIRS OR DECK REPLACEMENTS.

Miscellaneous

- Added 42-inch and 54-inch Pedestrian Railings to Insert. See Combination Railing Types “C1-C6” (railcomb.dwg)





In The Works

- OSS Standard Design Drawings
  - Corrections to Foundation Estimated Quantities (Informational Only – Foundation Bid Item Unit “Each”)
- Update Precast Concrete Box Culvert and Wingwall STSPs
- Clarify approval of High Friction Surface Treatment (HFST) Polymer Overlay for structures.

Questions and Feedback

Contact:
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608-266-5098
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