WisDOT Bridge Manual

July 2025 Updates

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Policy and Standards Engineer
August 20th, 2025

Agenda

- Resources
- Updates (Chapters, Standards, Inserts, and Blocks)
- Other Updates
- In The Works
- Questions and Feedback

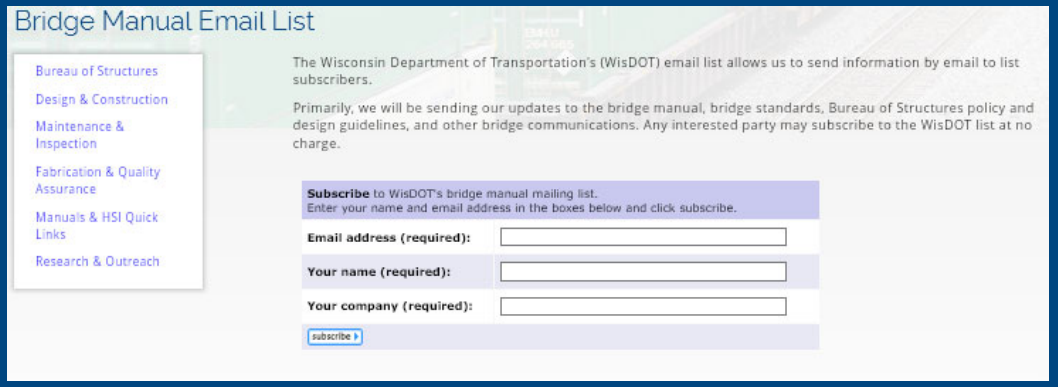
Housekeeping

- 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.
- 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

- To be added to the email distribution list:

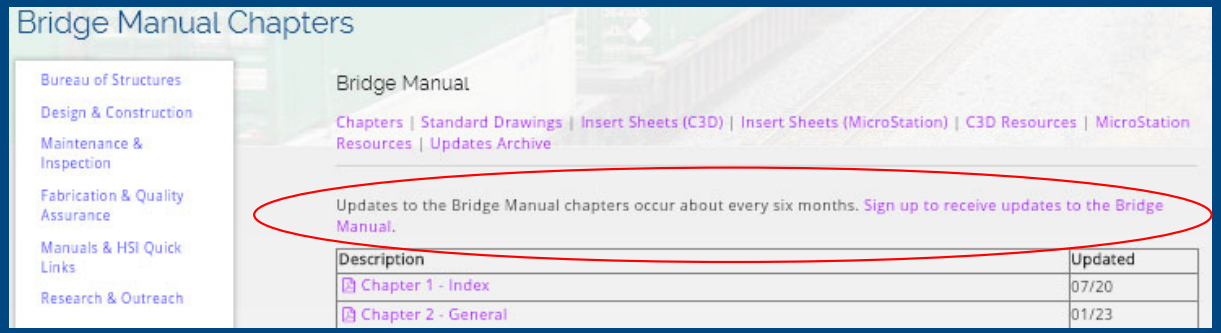


- To be removed from the email distribution list:
  - Send an email to James.Luebke@dot.wi.gov

Resources

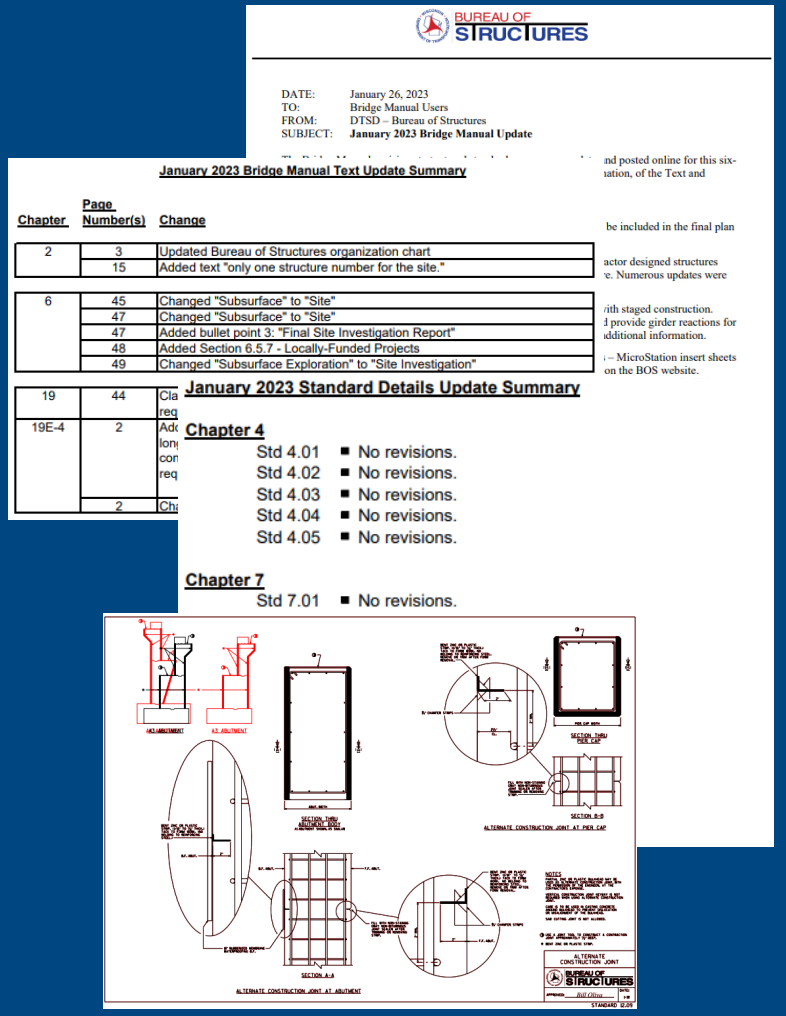
https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/strct/bridge-manual.aspx

Or web search “WisDOT Bridge Manual”



Resources

- Update Archives
  - Update Memo
  - Text Update Summary
  - Standard Details Update Summary
  - Insert Sheet Update Summary
    Standards Tracker
  - Update Presentation Slides
  - *Block Update Summary NEW*



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.

Chapter Update

- Chapter 5 – Added 2024 Bridge Cost Data

5.4.5 2024 Year End Structure Costs

Structure Type	No. of Bridges	Total Area (Sq. Ft.)	Total Costs	Super. Only Cost Per Square Foot	Cost per Square Foot
Prestressed Concrete Girders	12	43,125	7,753,194	84.68	179.78
Reinf. Conc. Slabs (Flat)	73	116,017	24,143,428	86.69	227.97
Reinf. Conc. Slabs (Haunched)	5	39,031	5,700,285	81.54	146.05
Prestressed Box Girder	1	1,401	526,521	118.21	375.82
Buried Slabs	1	2,897	743,006	105.07	256.47
Steel Plate Girders	0	--	--	--	--

Table 5.4-10
Stream Crossing Structures

Structure Type	No. of Bridges	Total Area (Sq. Ft.)	Total Costs	Super. Only Cost Per Square Foot	Cost per Square Foot
Prestressed Concrete Girders	15	174,056	13,572,036	77.98	178.23
Reinf. Conc. Slabs (Flat)	0	--	--	--	--
Reinf. Conc. Slabs (Haunched)	0	--	--	--	--

Table 5.4-11
Grade Separation Structures

Chapter Update

- Chapter 6 – False Decking
  - Rigid containment system
  - Protect against falling construction debris (nails, tools, etc.)

STSP language is to be included (note that these criteria are minimum application locations and that Regions may determine other suitable locations for project-specific reasons):

- All bridges over interstate highways with live traffic below.
- All bridges over roadways with a minimum ADT of 10,000 with live traffic below.
- All bridges over pedestrian facilities that will remain open during construction.

Chapter Update

- Chapter 6 – False Decking
  - STSP (available in the next ASP-6):

502-015 DELETE ALL DESIGNER NOTES FROM YOUR SPECIAL PROVISIONS

Use this STSP where work operations between the exterior girders of a bridge are anticipated to be performed over live traffic lanes and pedestrian facilities, and the operations have a risk of falling construction debris (i.e., nails, construction tools, various wood products, concrete/deck repair debris, fresh concrete, etc.) onto the facilities below. This article is not needed if the contract requires all bridge construction to be performed when the facilities under the bridge are fully closed. Include in contracts with the following conditions:

- ***All bridges over interstate highways with live traffic below.***
- ***All bridges over roadways with a minimum ADT of 10,000 with live traffic below.***
- ***All bridges over pedestrian facilities that will remain open during construction.***

Note that these criteria are the minimum application locations. Regions may determine other suitable locations where Containment System language will be included in the contractor for project-specific reasons.

Note that for work and removals over railroads requiring protection below, standard spec bid item "203.0330 Debris Containment (structure)" shall be used.

Notice to Contractor, Containment System.

Provide a rigid containment system throughout bridge construction over live traffic lanes and pedestrian facilities capable of protecting underlying facilities and vehicles from falling construction debris. Design, detail, install, and maintain the containment system to catch construction debris between exterior girders without extending below the bottom of the girders at the containment system's maximum deflection. The containment system is not intended to be a secondary falsework/formwork system. Put the containment system in place before beginning construction operations that may generate debris over live traffic or active pedestrian facilities. Operations may include, but are not limited to: full or partial deck removals, falsework installation, deck repairs, and deck pours. This containment system is not required if construction operations are performed when the facilities below are under full closure. This containment system does not replace any requirements under standard spec 203. Include details of the proposed containment system in the falsework submittal per standard spec 502.3.2. The containment system is incidental to the bridge construction items.

stp-502-015 (2025XXXX)

Chapter Update

- Chapter 6 – Total Estimated Quantities Table
  - Provide "structural approach slab" as a separate column

UNIT	SUPER.	W. STRUCT. APP.	WEST ABUT.	EAST ABUT.	E. STRUCT. APP.	TOTALS
EACH	———	———	———	———	———	1
EACH	———	———	———	———	———	1
TON	———	———	169	169	———	338
TON	———	145	———	———	145	290
TON	106	———	———	———	———	106

Chapter Update

- Chapter 9 – Permanent Pavement Markings
  - Grooved (0.09 to 0.175 inches deep) acceptable for concrete decks, concrete overlays, and PPC overlays but prohibited on thin polymer overlays (TPO and HFST TPO bid items).
  - Refer to ~~Section 646 Std. Spec.~~ Traffic Engineering, Operations and Safety Manual (TEOpS) and Section 650 CMM.

Chapter Update

- Chapter 14 – Minimum Wall Radii for walls*
  - Small Blocks (dry cast): 8 feet
  - Large Blocks (wet cast): 15 feet
  - Concrete Panels (5-ft wide w/ std. joint) 50 feet
  - Concrete Panels (10-ft wide w/ std. joint) 100 feet
  - Bin walls** 800 feet

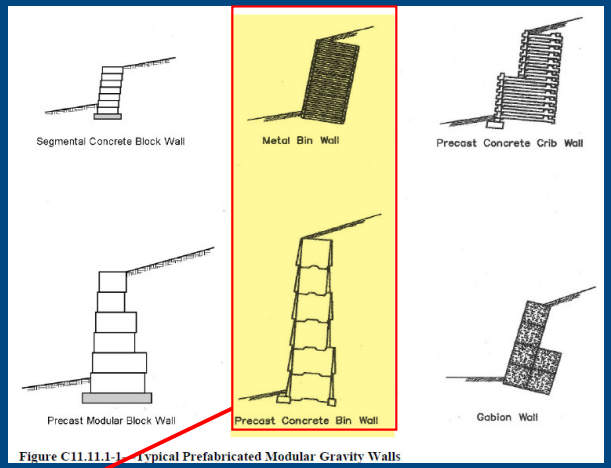


Figure C11.11.1-1—Typical Prefabricated Modular Gravity Walls

*Use of the minimum wall radius limits should be avoided and may require additional investigation. Wall radius limits based on curve type, batter, height, block joint, etc..

**LRFD 11.11.1-Prefabricated Modular Walls

Chapter Update

- Chapter 14 – Minimum Wall Radii for walls*

90-deg corner (LET Plans)

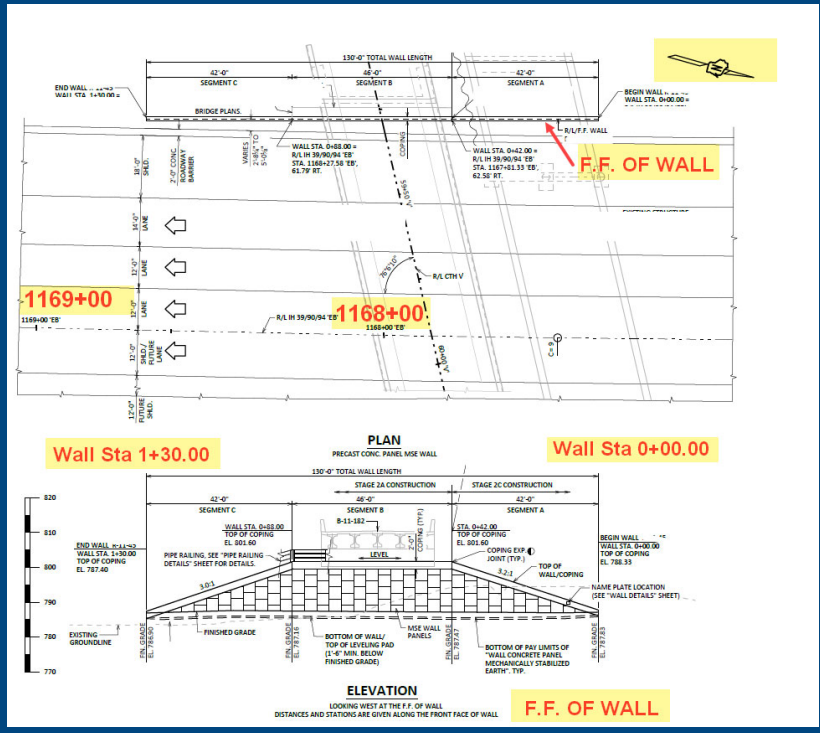
90-deg corner (LET Plans)
Curved corner – (WisDOT accepted shop drawings)

Convex Wall ➔ Minimum Curve at Top of wall

Concave Wall ➔ Minimum Curve at Bottom of wall

Chapter Update

- Chapter 14
  - Show Front Face of walls in Elevation View. Do not show B.F. of Wall (rotate plan view)

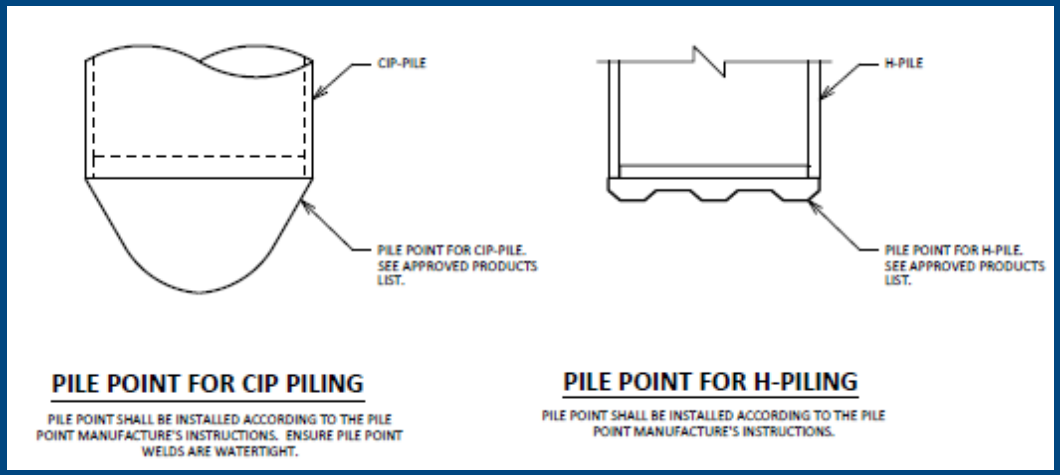


Chapter Update

- Chapter 24 – Redundancy in Floor Systems
  - Updated Terms
    - ~~Fracture critical member (FCM)~~
    - Load path redundant members (LPRMs), system redundant members (SRMs), and non-redundant steel tension members (NSTMs).
  - New Section 24.14.1 Redundancy in Floor Systems
  - New Section 24.14.2 Simplified System Redundancy Analysis

Standard Update

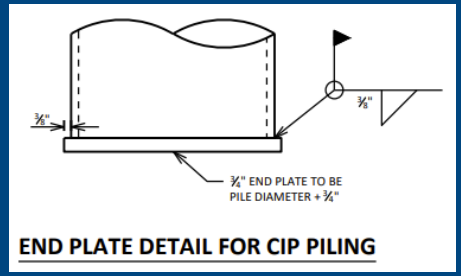
- Std. 11.01 – Pile Details



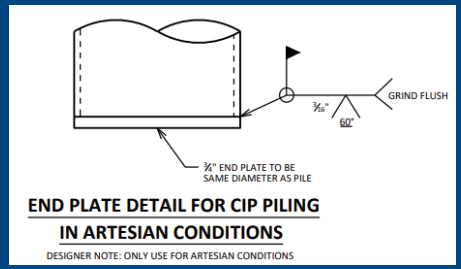
Pile Point Detail (See "Pile Points" APL)

DESIGNER NOTES

WHEN RECOMMENDED IN THE SOILS REPORT, USE BID ITEM "PILE POINTS" AND PROVIDE THE APPROPRIATE PILE POINT DETAIL.



Standard Detail



Artesian Condition Detail

Standard Update

- Std. 27.08 – Expansion Bearings

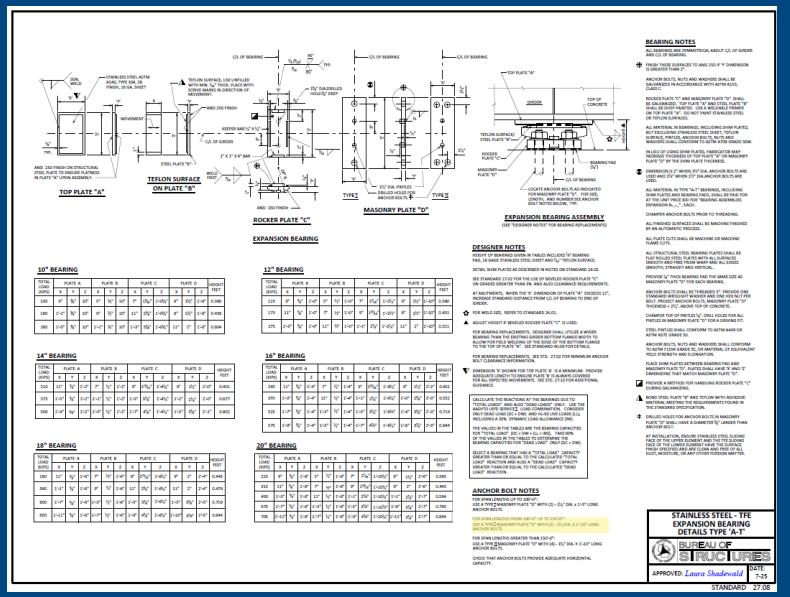
ANCHOR BOLT NOTES

FOR SPAN LENGTHS UP TO 100'-0":
USE A TYPE I MASONRY PLATE "D" WITH (2) - 1¼" DIA. x 1'-5" LONG ANCHOR BOLTS.

~~1'-0" LONG~~

FOR SPAN LENGTHS FROM 100'-0" UP TO 150'-0":
USE A TYPE I MASONRY PLATE "D" WITH (2) - 1½ DIA. X 1'-10" LONG ANCHOR BOLTS.

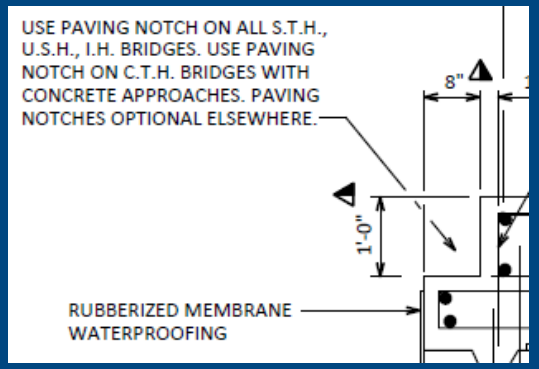
FOR SPAN LENGTHS GREATER THAN 150'-0":
USE A TYPE II MASONRY PLATE "D" WITH (4) - 1½" DIA. X 1'-10" LONG ANCHOR BOLTS.



Standard Update

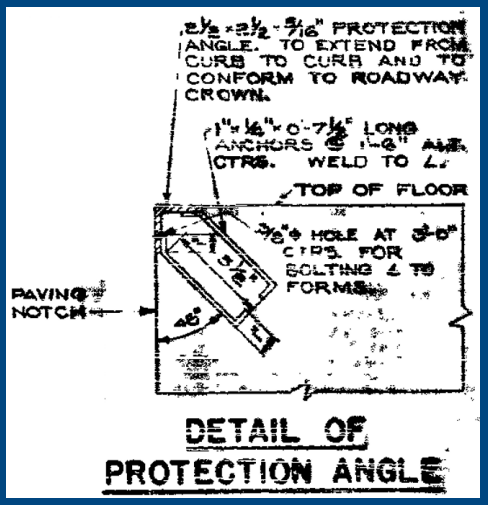
- Paving Notch Details
  - Standards 18.01,18.02, 19.33, 19.34, 19.35, 27.05
  - Chapter 6:

    Paving notches required on all:
    - S.T.H., U.S.H., and I.H. bridges.
    - C.T.H. with bridges with concrete approaches.
    - Optional elsewhere

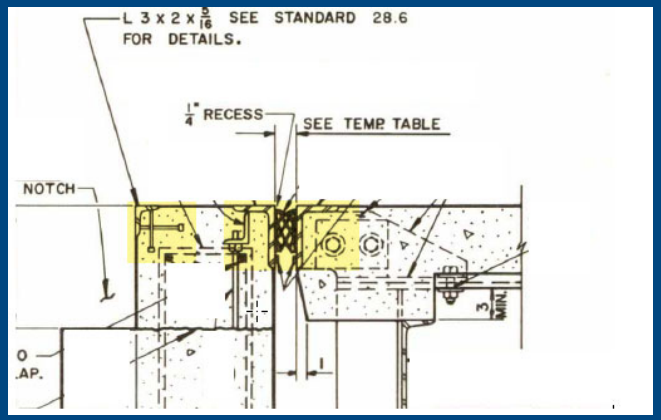


Standard Update

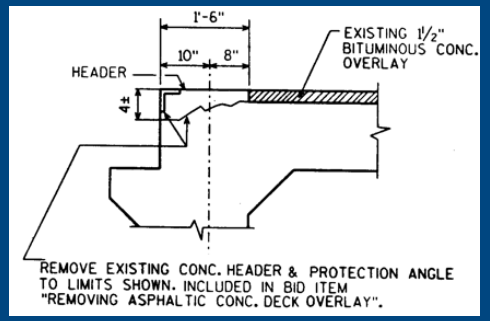
- Protection Angle Armor (History)

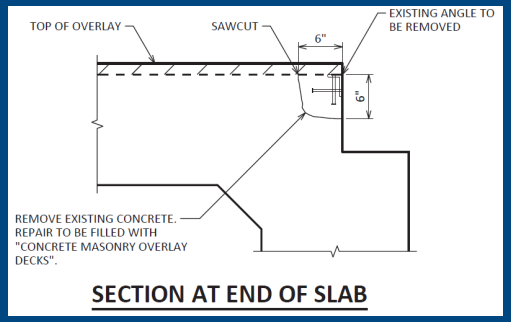


1937 – New Bridge

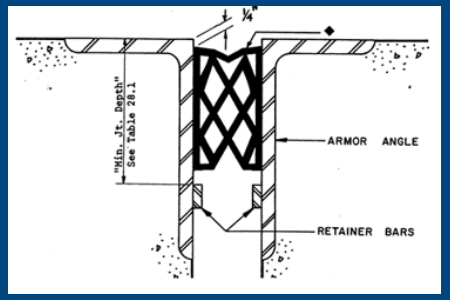


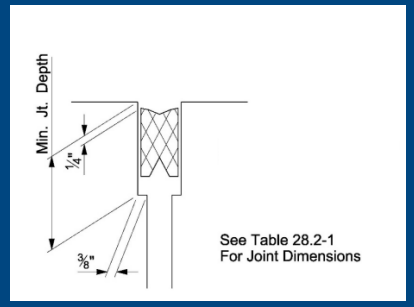
1979 – Standard 28.1





1997/2025 - Removal of Existing Protection Angles



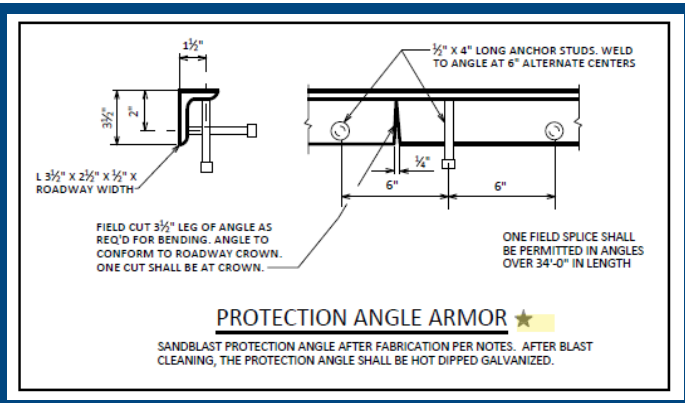


2006 – Removed armor angles from compression seals (Fixed joints with little or no movement of the joint)

2013 - Compression seals shall no longer be used

Standard Update

- Protection Angle Armor
  - In general, DOTs have discontinued armoring approach edges. Difficult to justify the cost/benefit
  - Std. 28.01 - Updated
  - Ch. 28 - Updated
    - May be considered on unpaved (gravel) approach roadways on a project-by-project basis. Not recommended otherwise.
    - Issues due to snowplow damage, leakage, and corrosion.

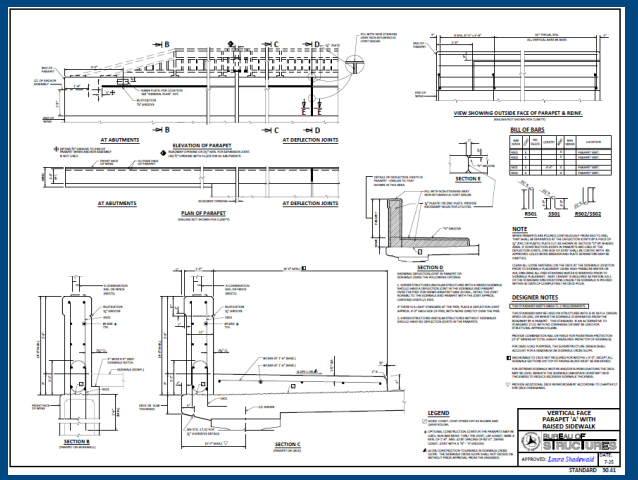


DESIGNER NOTES

★ PROTECTION ANGLE ARMOR MAY BE USED ON UNPAVED (GRAVEL) APPROACH ROADWAYS. PROTECTION ANGLE ARMOR SHOULD NOT BE USED ON PAVED (CONCRETE OR ASPHALT) APPROACH ROADWAYS WITH OR WITHOUT PAVING NOTCHES. EXTEND PROTECTION ANGLE FULL WIDTH OF ROADWAY (GUTTER LINE TO GUTTER LINE). PROVIDE PAY LIMITS ON THE PLANS. BID AS "STRUCTURAL STEEL CARBON". SEE BRIDGE MANUAL SECTION 28.7 FOR ADDITIONAL INFORMATION.

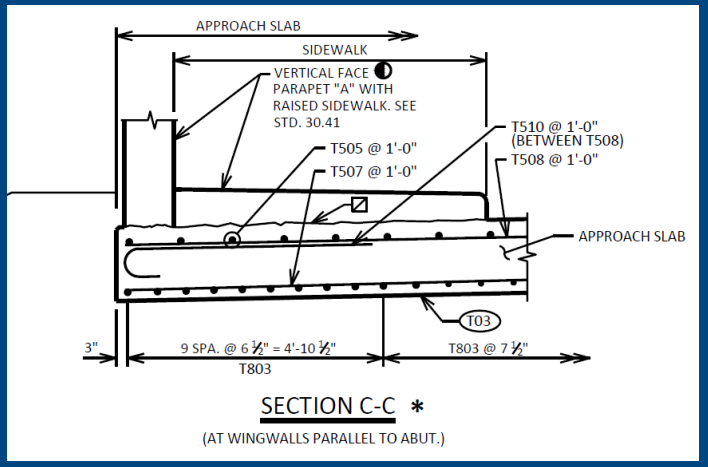
Standard Update

- Std. 30.41 – Vertical Face Parapet ‘A’ with Raised Sidewalk *NEW*
  - TL-2 (RDS ≤ 45 mph)
  - Raised Sidewalk Applications:
    - Structural Approaches (Std. 12.11)
    - Decks with no sidewalk overhang (Std. 17.01)
      - Requires additional deck rein. per Ch 17
      - 3’-7” max. deck overhang

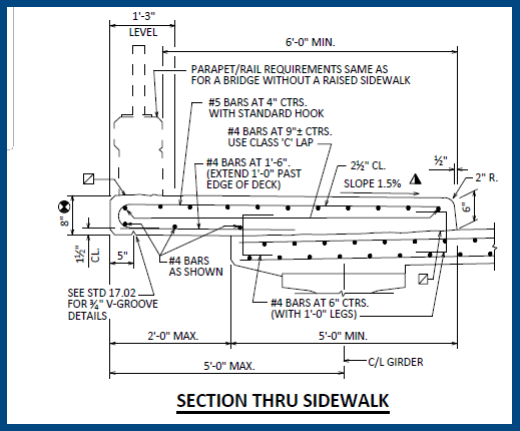


Standard Update

- Std. 30.41 – Vertical Face Parapet ‘A’ with Raised Sidewalk *NEW*
  - Structural approaches
  - Decks with no overhangs
    - Provide deck reinforcement per Ch 17



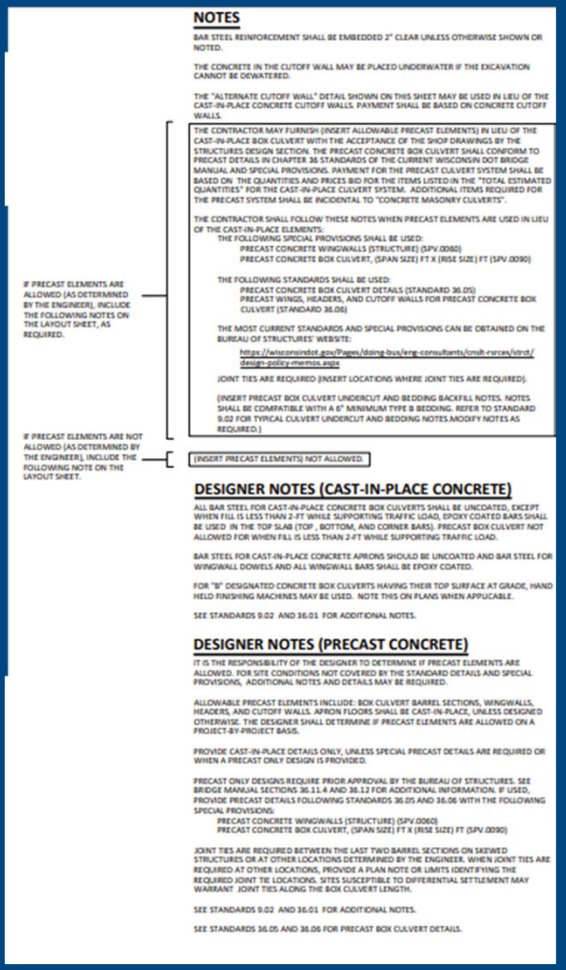
Std. 12.11



Std. 17.01

Standard Update

- Precast Box Culverts (Stds. 36.02, 36.05 & 36.06)
  - Reiterated: Designer to determine precast usage allowances and suppling required details.
  - Consolidated Notes on Std. 36.02:
    - Precast element allowed or not allowed
    - Special Provisions
    - Bedding requirements
    - Joint tie locations



NOTES

BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

THE CONCRETE IN THE CUTOFF WALL MAY BE PLACED UNDERWATER IF THE EXCAVATION CANNOT BE DEWATERED.

THE "ALTERNATE CUTOFF WALL" DETAIL SHOWN ON THIS SHEET MAY BE USED IN LIEU OF THE CAST-IN-PLACE CONCRETE CUTOFF WALLS. PAYMENT SHALL BE BASED ON CONCRETE CUTOFF WALLS.

IF PRECAST ELEMENTS ARE ALLOWED (AS DETERMINED BY THE ENGINEER), INCLUDE THE FOLLOWING NOTES ON THE LAYOUT SHEET, AS REQUIRED.

THE CONTRACTOR MAY FURNISH (INSERT ALLOWABLE PRECAST ELEMENTS) IN LIEU OF THE CAST-IN-PLACE BOX CULVERT WITH THE ACCEPTANCE OF THE SHOP DRAWINGS BY THE STRUCTURES DESIGN SECTION. THE PRECAST CONCRETE BOX CULVERT SHALL CONFORM TO PRECAST DETAILS IN CHAPTER 36 STANDARDS OF THE CURRENT WISCONSIN DOT BRIDGE MANUAL AND SPECIAL PROVISIONS. PAYMENT FOR THE PRECAST CULVERT SYSTEM SHALL BE BASED ON THE QUANTITIES AND PRICES BID FOR THE ITEMS LISTED IN THE "TOTAL ESTIMATED QUANTITIES" FOR THE CAST-IN-PLACE CULVERT SYSTEM. ADDITIONAL ITEMS REQUIRED FOR THE PRECAST SYSTEM SHALL BE INCIDENTAL TO "CONCRETE MASONRY CULVERTS".

THE CONTRACTOR SHALL FOLLOW THESE NOTES WHEN PRECAST ELEMENTS ARE USED IN LIEU OF THE CAST-IN-PLACE ELEMENTS:

THE FOLLOWING SPECIAL PROVISIONS SHALL BE USED:
PRECAST CONCRETE WINGWALLS (STRUCTURE) (SPV.0060)
PRECAST CONCRETE BOX CULVERT, (SPAN SIZE) FT X (RISE SIZE) FT (SPV.0090)

THE FOLLOWING STANDARDS SHALL BE USED:
PRECAST CONCRETE BOX CULVERT DETAILS (STANDARD 36.05)
PRECAST WINGS, HEADERS, AND CUTOFF WALLS FOR PRECAST CONCRETE BOX CULVERT (STANDARD 36.06)

THE MOST CURRENT STANDARDS AND SPECIAL PROVISIONS CAN BE OBTAINED ON THE BUREAU OF STRUCTURES' WEBSITE:
https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rscrces/strct/design-policy-memos.aspx

JOINT TIES ARE REQUIRED (INSERT LOCATIONS WHERE JOINT TIES ARE REQUIRED).

(INSERT PRECAST BOX CULVERT UNDERCUT AND BEDDING BACKFILL NOTES. NOTES SHALL BE COMPATIBLE WITH A 6" MINIMUM TYPE B BEDDING. REFER TO STANDARD 9.02 FOR TYPICAL CULVERT UNDERCUT AND BEDDING NOTES.MODIFY NOTES AS REQUIRED.)

IF PRECAST ELEMENTS ARE NOT ALLOWED (AS DETERMINED BY THE ENGINEER), INCLUDE THE FOLLOWING NOTE ON THE LAYOUT SHEET.

(INSERT PRECAST ELEMENTS) NOT ALLOWED.

DESIGNER NOTES (CAST-IN-PLACE CONCRETE)

ALL BAR STEEL FOR CAST-IN-PLACE CONCRETE BOX CULVERTS SHALL BE UNCOATED, EXCEPT WHEN FILL IS LESS THAN 2-FT WHILE SUPPORTING TRAFFIC LOAD, EPOXY COATED BARS SHALL BE USED IN THE TOP SLAB (TOP , BOTTOM, AND CORNER BARS). PRECAST BOX CULVERT NOT ALLOWED FOR WHEN FILL IS LESS THAN 2-FT WHILE SUPPORTING TRAFFIC LOAD.

BAR STEEL FOR CAST-IN-PLACE CONCRETE APRONS SHOULD BE UNCOATED AND BAR STEEL FOR WINGWALL DOWELS AND ALL WINGWALL BARS SHALL BE EPOXY COATED.

FOR "B" DESIGNATED CONCRETE BOX CULVERTS HAVING THEIR TOP SURFACE AT GRADE, HAND HELD FINISHING MACHINES MAY BE USED. NOTE THIS ON PLANS WHEN APPLICABLE.

SEE STANDARDS 9.02 AND 36.01 FOR ADDITIONAL NOTES.

DESIGNER NOTES (PRECAST CONCRETE)

IT IS THE RESPONSIBILITY OF THE DESIGNER TO DETERMINE IF PRECAST ELEMENTS ARE ALLOWED. FOR SITE CONDITIONS NOT COVERED BY THE STANDARD DETAILS AND SPECIAL PROVISIONS, ADDITIONAL NOTES AND DETAILS MAY BE REQUIRED.

ALLOWABLE PRECAST ELEMENTS INCLUDE: BOX CULVERT BARREL SECTIONS, WINGWALLS, HEADERS, AND CUTOFF WALLS. APRON FLOORS SHALL BE CAST-IN-PLACE, UNLESS DESIGNED OTHERWISE. THE DESIGNER SHALL DETERMINE IF PRECAST ELEMENTS ARE ALLOWED ON A PROJECT-BY-PROJECT BASIS.

PROVIDE CAST-IN-PLACE DETAILS ONLY, UNLESS SPECIAL PRECAST DETAILS ARE REQUIRED OR WHEN A PRECAST ONLY DESIGN IS PROVIDED.

PRECAST ONLY DESIGNS REQUIRE PRIOR APPROVAL BY THE BUREAU OF STRUCTURES. SEE BRIDGE MANUAL SECTIONS 36.11.4 AND 36.12 FOR ADDITIONAL INFORMATION. IF USED, PROVIDE PRECAST DETAILS FOLLOWING STANDARDS 36.05 AND 36.06 WITH THE FOLLOWING SPECIAL PROVISIONS:
PRECAST CONCRETE WINGWALLS (STRUCTURE) (SPV.0060)
PRECAST CONCRETE BOX CULVERT, (SPAN SIZE) FT X (RISE SIZE) FT (SPV.0090)

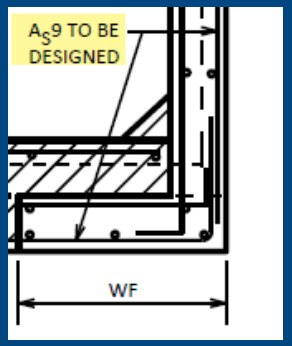
JOINT TIES ARE REQUIRED BETWEEN THE LAST TWO BARREL SECTIONS ON SKEWED STRUCTURES OR AT OTHER LOCATIONS DETERMINED BY THE ENGINEER. WHEN JOINT TIES ARE REQUIRED AT OTHER LOCATIONS, PROVIDE A PLAN NOTE OR LIMITS IDENTIFYING THE REQUIRED JOINT TIE LOCATIONS. SITES SUSCEPTIBLE TO DIFFERENTIAL SETTLEMENT MAY WARRANT JOINT TIES ALONG THE BOX CULVERT LENGTH.

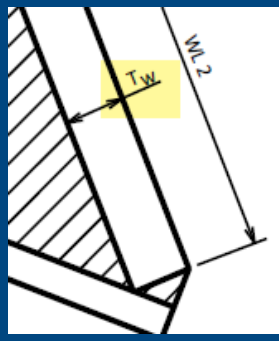
SEE STANDARDS 9.02 AND 36.01 FOR ADDITIONAL NOTES.

SEE STANDARDS 36.05 AND 36.06 FOR PRECAST BOX CULVERT DETAILS.

Standard Update

- Stds. 36.02, 36.05 & 36.06 (Precast Boxes)
  - New SPV's for boxes and wingwalls (current STSP's to be phased out)
  - Additional guidance for constructing precast box culverts:
    - Joint Tie Locations
    - Precast box bedding notes
    - As9 Steel (BF vertical bars) to be designed by contractor. Standard provides Tw (minimum wing thickness)

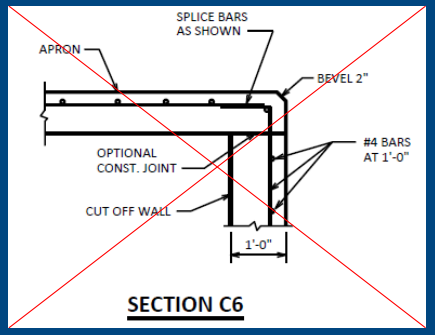




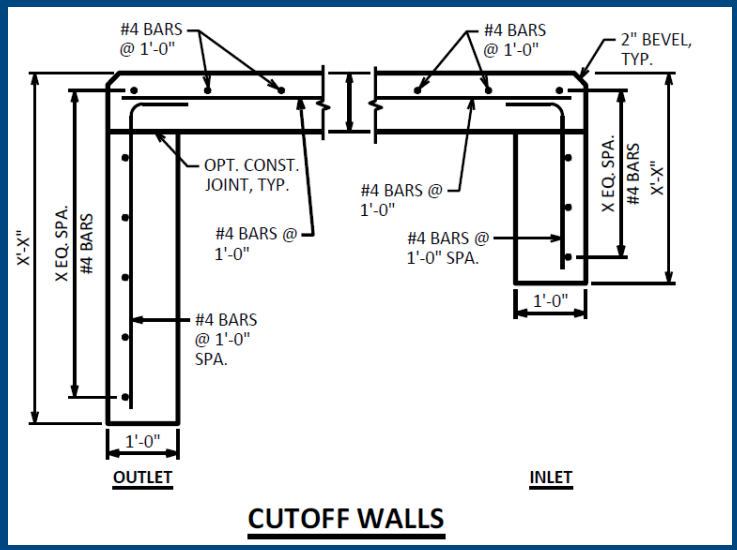
RISE(R)	T_W (MIN.)	WF (MIN.)
4'-0"	8"	2'-6"
6'-0"	8"	3'-6"
8'-0"	8"	4'-0"
10'-0"	10"	4'-9"

Standard Update

- Std. 36.02
  - New Cutoff Wall Details



January 2025



July 2025 (block: CULV_CUTOFF)

Standard Update

- Std. 39.21 - 4-Chord Truss Cantilever Details
  - Added substituted member

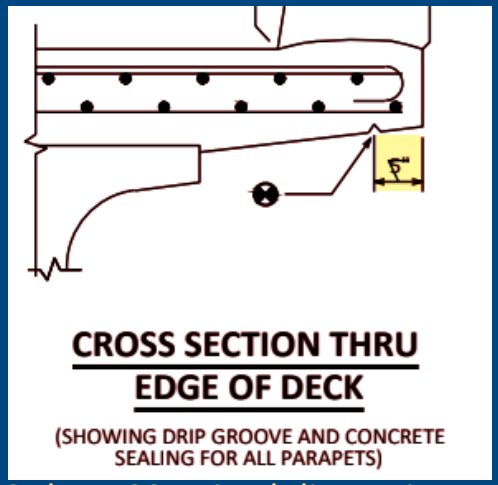
CANTILEVER 4-CHORD TRUSS MEMBER TABLE

STANDARD DESIGN TYPE	TYPE I SIGN AREA (SQ. FT)	DMS AREA (SQ. FT.)	MAXIMUM SPAN "L"	MAXIMUM COLUMN HEIGHT "H"	DIM. "A"	COLUMN "OD" X THK.	CHORD "OD" X THK	WEB W X D X THK	BOXED END W X D X THK	TRANSVERSE DIAGONAL W X D X THK
I	264	114	30'-0"	30'-0"	1'-3"	20.00" X 0.500"	5.000" X 0.375" ▽	L3 X 3 X ¼	L3 X 3 X ¼	L3 X 3 X ¼
II	240	114	38'-0"	30'-0"	1'-4½"	24.00" X 0.500"	5.563" X 0.375"	L3 X 3 X 5/16	L3 X 3 X ¼	L3 X 3 X ¼

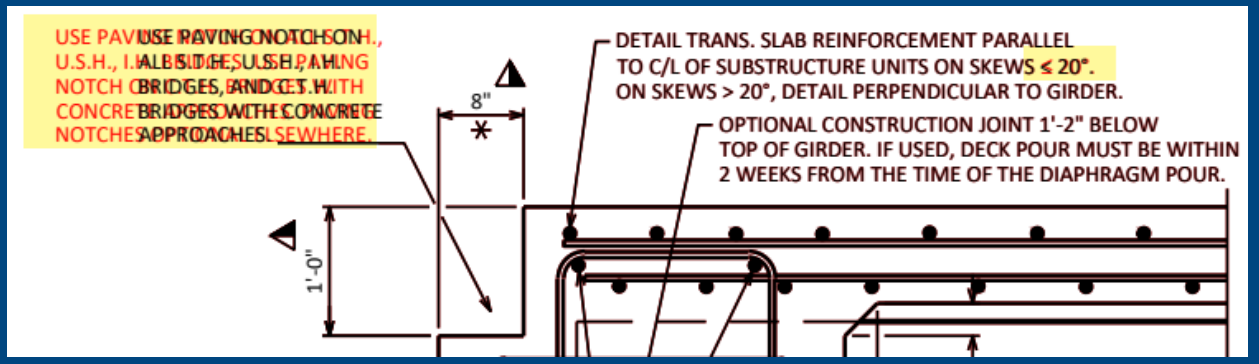
▽ 5.563" X 0.375" MAY BE SUBSTITUTED FOR 5.000" X 0.375"

Standard Update

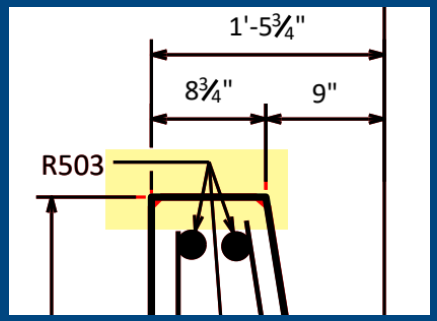
- Misc. Standards



Std. 17.02 - Fixed dimension label for 5" V-groove



Std. 19.34 - Clarified paving notch usage. Changed note from "less than" to "less than or equal to" 20 degrees.



Std. 30.37 -Added 3/4" Bevels at top of ppt

Insert Update

July 2025 Insert Sheet Update Summary

Chapter 19 - Prestressed Concrete

g36W.dwg	Corrected where stirrup dimension snapped. Added "=" to girder radius callouts.
g45W.dwg	Corrected where stirrup dimension snapped. Added "=" to girder radius callouts.
g54W.dwg	Added "=" to girder radius callouts.
g72W.dwg	Added "=" to girder radius callouts.
gstdia36W.dwg	Changed "TWO 3 1/2" SQUARE… WASHERS" to "A 3 1/2"… WASHER ON SLOTTED SIDE" within "DETAIL B"

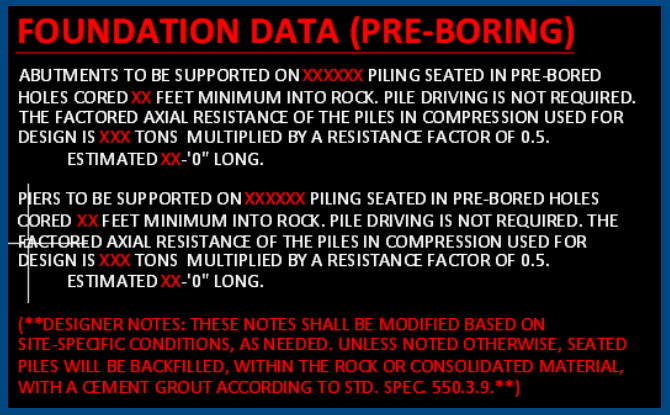
Archived

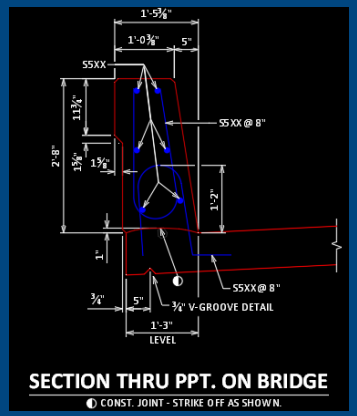
pptb.dwg	Changed R403 bar length to 4'-7". Changed R403 stickout to 1'-1 3/4". These insert sheet changes agree with Standard 40.15 (Archived).

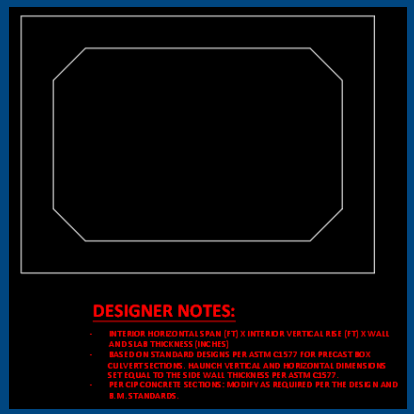
Block Details Update *NEW*

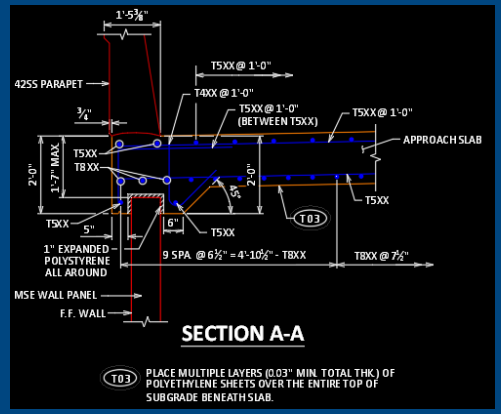
July 2025 Block Details Update Summary
Updated: 2025-05-14
https://c3dkb.dot.wi.gov/

- Design Data *Added "Pre-Boring" Notes*
- Section Thru Parapet on Superstructure *NEW*
- Precast Box Culvert *NEW*
- Misc. - Section Thru Corner *NEW*





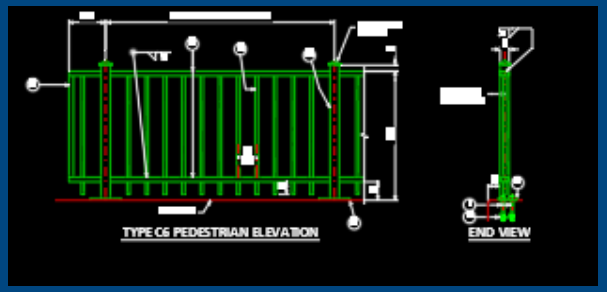




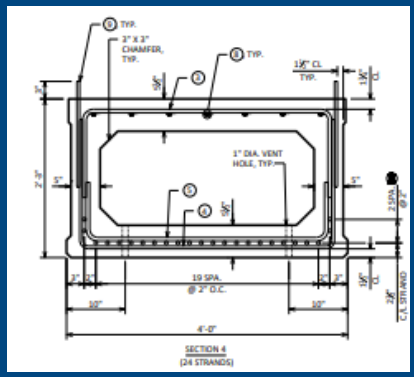
Other Updates

Reminder that WisDOT will not produce a complete update for 2026 to the Standard Specifications. We will continue to use the 2025 Standard Specifications and update information via additional special provision 6 (ASP-6, under “Proposal inserts” on the HCCI contracting information page). WisDOT is working to reorganize and update the specifications with pilot projects starting in 2026.

In The Works



- Pedestrian Railing – Insert Sheets *NEW*
- PS Box Girder – Insert Sheets *NEW*
- Profile Grade Line – Blocks (Improvements)



Questions and Feedback

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