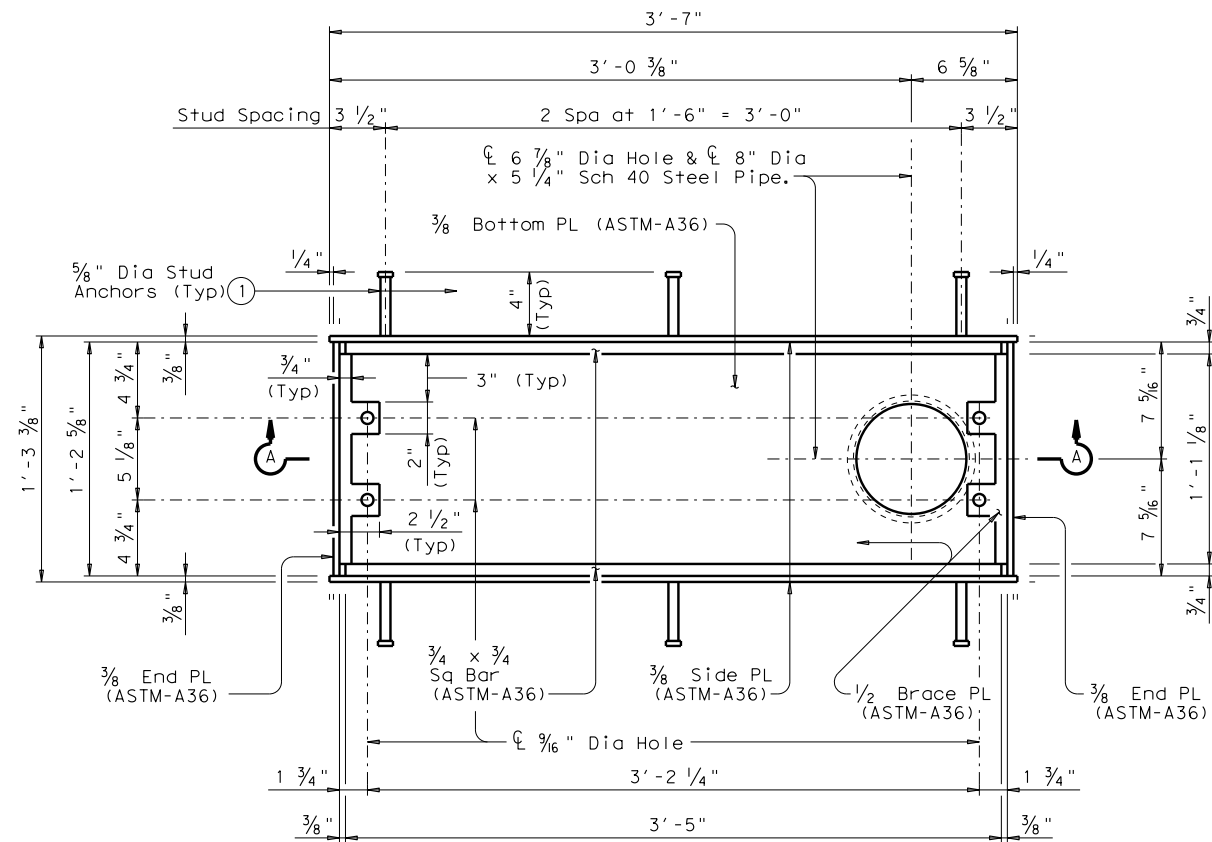


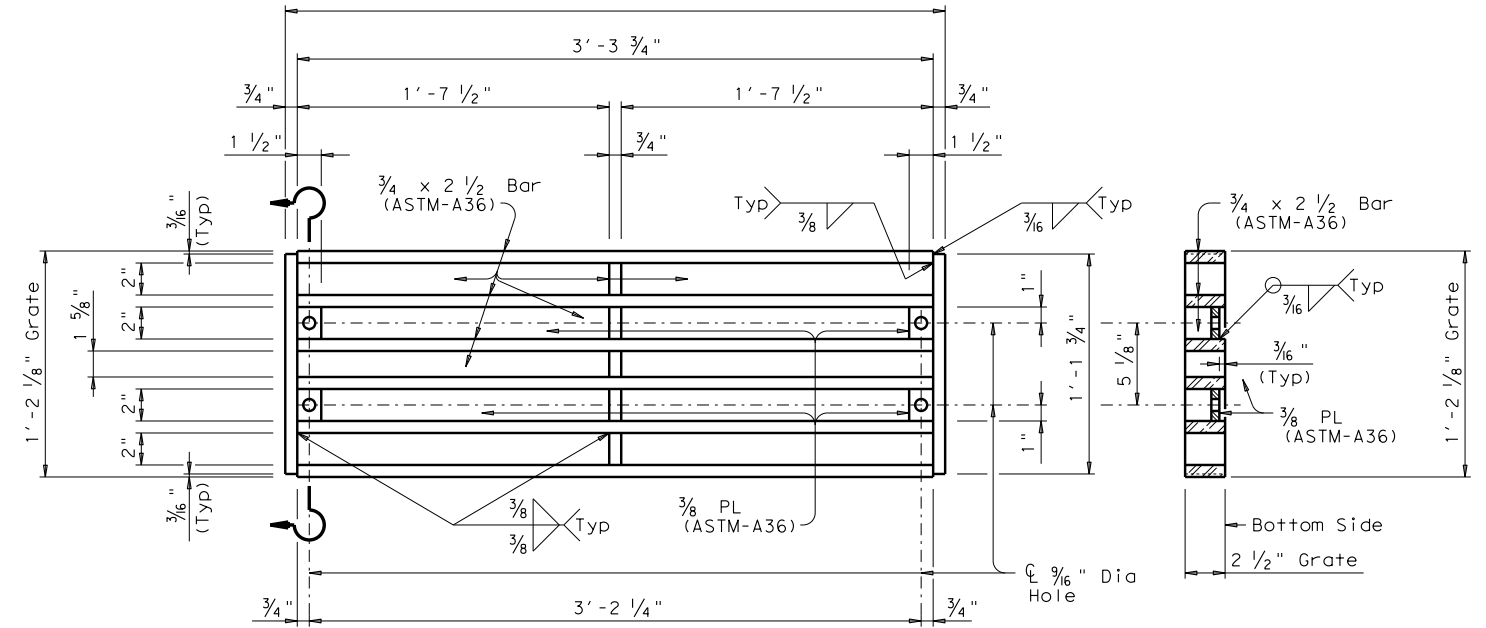
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:



PLAN

(Grate not shown for clarity)

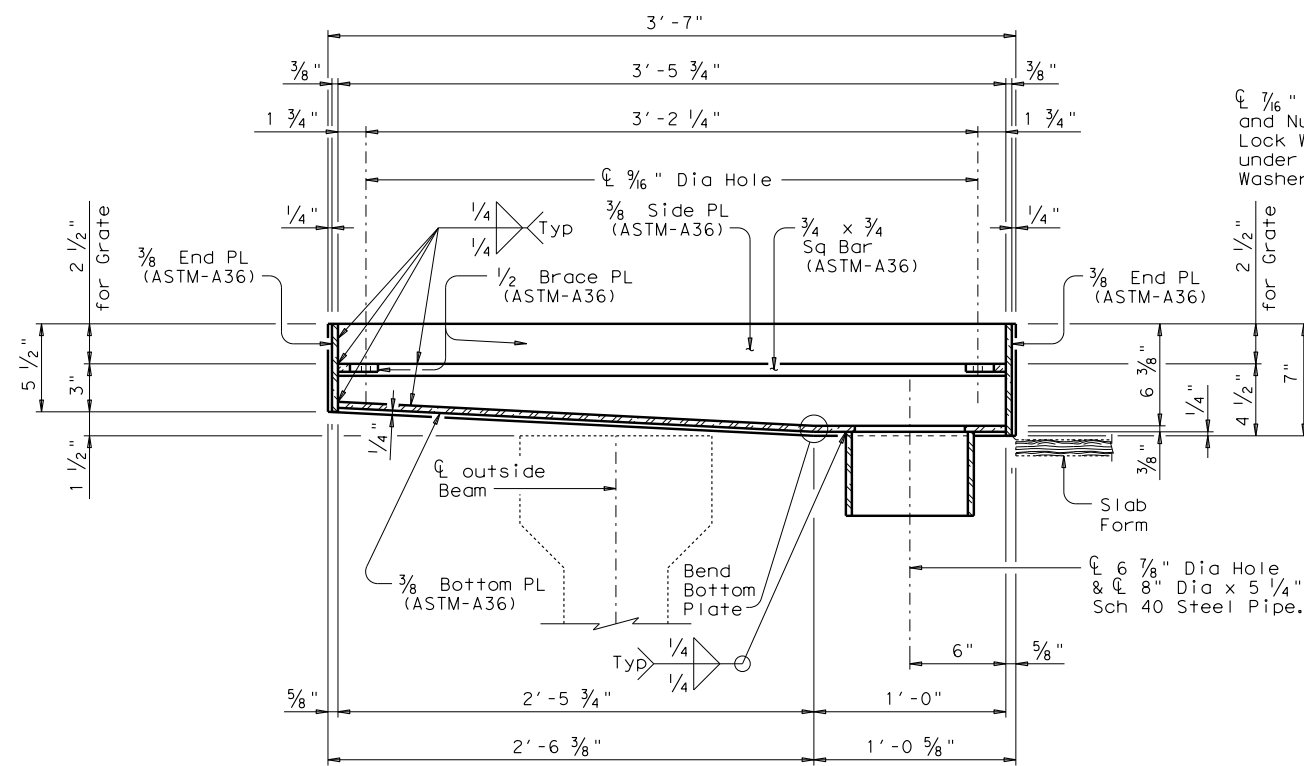


PLAN

SECTION

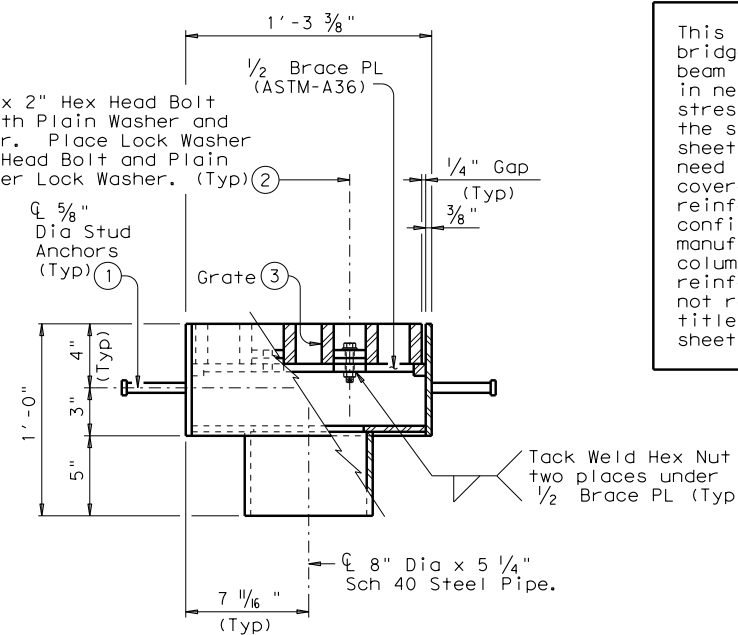
GRATE DETAILS

- ① Electric arc end-weld stud anchors to plates with complete fusion.
- ② After Nuts have been tack welded to the frame, the assembly must be tested for fit of frame and grate with Hex Bolt assembly.
- ③ Grate must be test fitted at the fabricator to ensure grate can be rotated in either direction of 180° to accommodate assembly in the field.



SECTION A-A

(Grate not shown for clarity)



ASSEMBLED END VIEW OF FRAME AND GRATE

This sheet is intended for use as a guide for fabricating and installing bridge deck drains in prestressed concrete beam and simply supported steel beam bridge decks. The size of this drain makes it undesirable for use in negative moment regions of continuous steel units where slab tensile stresses are high. Appropriate details and notes should be prepared for the specific application based on the information presented herein. This sheet may not be used without modification. The details shown here may need to be amended and/or expanded if the exact conditions are not covered. Special consideration should be given to beam, slab and slab reinforcing configuration with respect to the deck drain. Pipe configuration and support details must be done in accordance with manufacturers recommendations, and drain outfall at the base of the column accomplished in such a manner as to disrupt the cap and column reinforcing steel as little as possible. In all cases, details and notes not required must be crossed out or eliminated, "(MOD)" added to the title block, the phrase "(Not to be used as a standard)" removed, and the sheet sealed and signed by a licensed professional engineer.

HL93 LOADING

SHEET 1 OF 2



BRIDGE DRAIN DETAILS (WELDED)

(NOT TO BE USED AS A STANDARD)

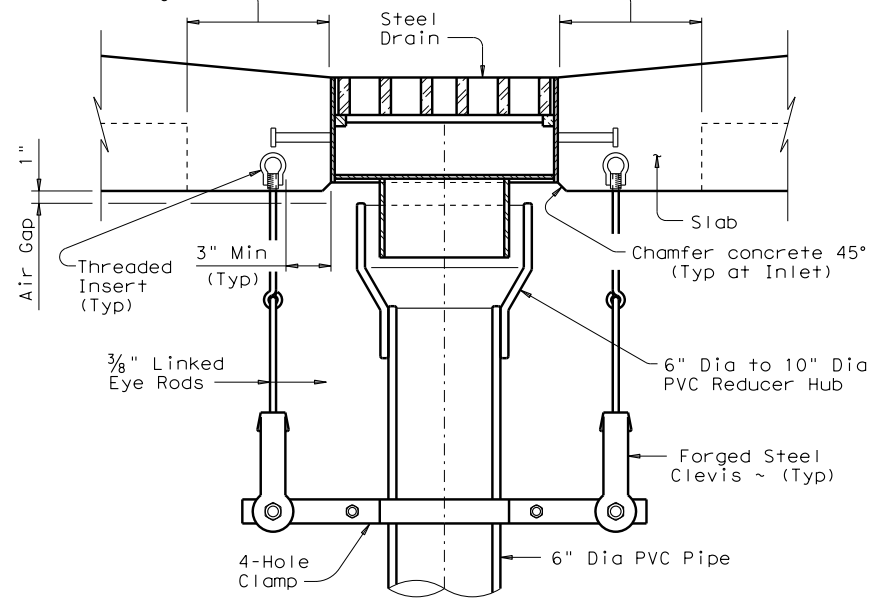
BD-2

FILE: bdstde02.dgn	DN: MAS	CK: TxDOT	DW: JTR	CK: TxDOT
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
DIST	COUNTY			SHEET NO.

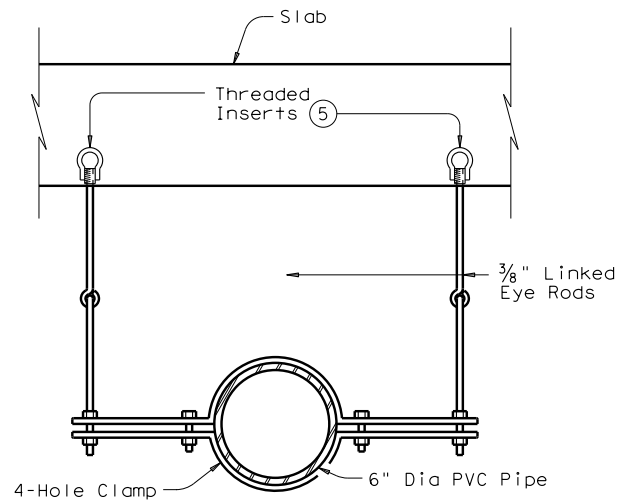
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:

If prestressed concrete panels are permitted, they shall be placed 3' Min from edges of drain. This portion of cast-in-place slab shall be conventionally reinforced as detailed on the Span or Unit sheets and as directed by the Engineer.

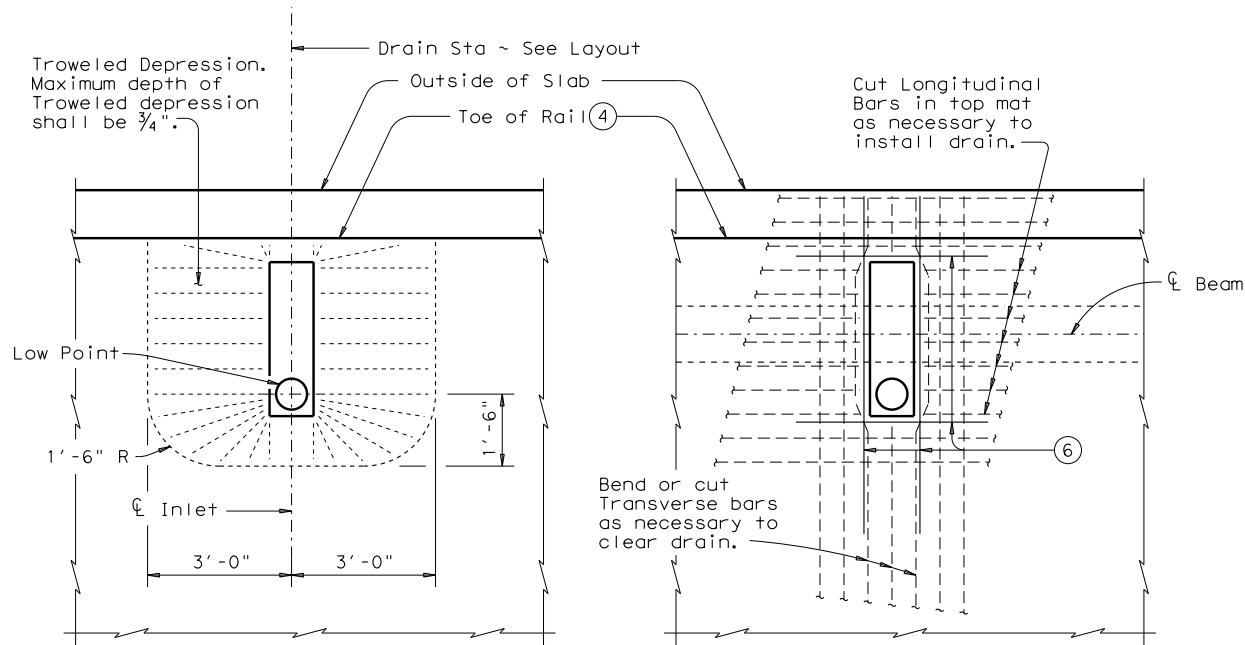


HOOK-UP TO INLET WITH VERTICAL PIPE SUPPORT ④



HORIZONTAL PIPE SUPPORT ④

(Spaced 1'-0" from ϕ Drain then 4'-0" Max spacing for PVC pipe)



TROWELED DEPRESSION

SHOWING TYPICAL SLAB REINFORCING

- ④ Edge of Bridge Drain will be placed close to the toe of rail and all plumbing will be placed behind outside beam and inside Interior Bents and Abutments as practicable to hide from view.
- ⑤ If Prestressed Concrete Panels are permitted, a $\frac{7}{16}$ " hole will be cored drilled (percussion drilling not permitted) thru the panels, the $\frac{3}{8}$ " Linked Eye Rods inserted through the panels and the threaded insert placed in the cast-in-place portion of the bridge slab above the panels.
- ⑥ Provide 4 additional #5 bars around perimeter in top mat of reinforcing and 4 additional #5 bars around perimeter in bottom mat of reinforcing. Extend bars 1'-6" from edges of drain.

GENERAL NOTES:

Grate must be test fitted at the fabricator to ensure grate can be rotated in either direction of 180° to accommodate assembly in the field.
 Galvanize all steel components in accordance with Item 445 "Galvanizing" unless noted otherwise.
 Hex Bolts will be $\frac{7}{16}$ " Dia ASTM A307 Grade A with one Hex Nut, one Plain Washer and one Lock Washer.
 Alternate bridge drains may be substituted for the bridge drain shown on this sheet provided they are approved by the Engineer prior to fabrication and installation. Alternate drains must have an approximately equal grate opening area (350 sq in) and an 8" diameter outfall. The grate should be of a similar configuration.
 Slab reinforcing bars shall be bent to clear casting by 1". When bending is not possible reinforcing bars may be stopped or cut to clear drain as shown. Additional slab reinforcing will be subsidiary to "Reinforced Concrete Slab". When placing concrete, care shall be taken to prevent honeycombing or air pockets around or beneath the drain.
 All PVC pipe shall be Schedule 40 DWV conforming to ASTM D 2665. Minimum wall thickness: 0.280" ~ 6" Dia, 0.322" ~ 8" Dia. Fittings to be used as directed by the Engineer. All pipe will be securely supported by the superstructure. Pipe and supports will accommodate anticipated longitudinal movements of pipe and bridge slab. For long pipe runs, pipe grade shall match roadway grade. All metallic pipe support hardware and fasteners will be galvanized in accordance with Item 445 "Galvanizing". All attachment devices will be considered subsidiary to the bid item "Grate and Frame".
 Exposed edges of Grate and Frame will be rounded or chamfered to approximately $\frac{1}{16}$ " by grinding, unless otherwise noted.
 Payment will be by each Grate and Frame (Bridge Drain). See Bridge Layout for location of drains. Deviations from Bridge Drain Details contained herein will not be permitted without prior approval from the Engineer.
 Average weight of Grate and Frame:

321 Lb total
 148 Lb (Grate)
 173 Lb (Frame)



BRIDGE DRAIN DETAILS (WELDED)
(NOT TO BE USED AS A STANDARD)

BD-2

FILE: bdstd02.dgn	DN: MAS	CK: TxDOT	DW: JTR	CK: TxDOT
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.