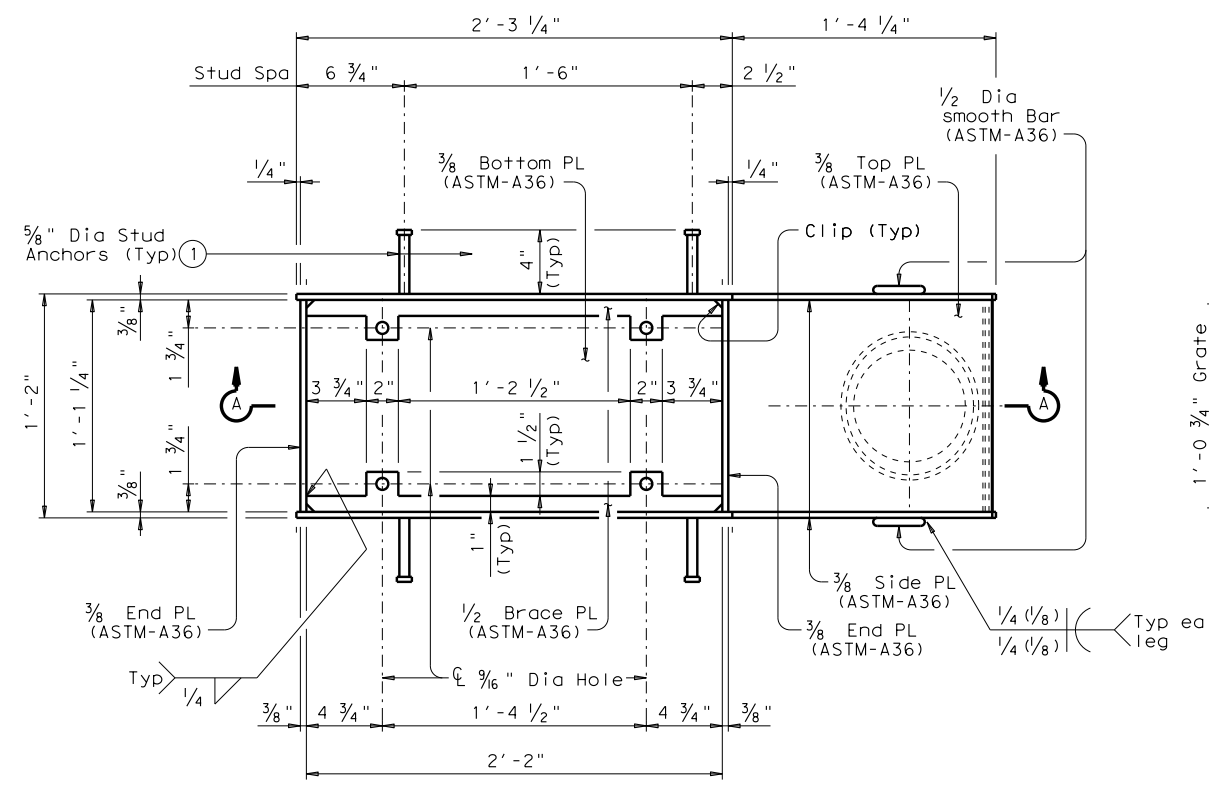


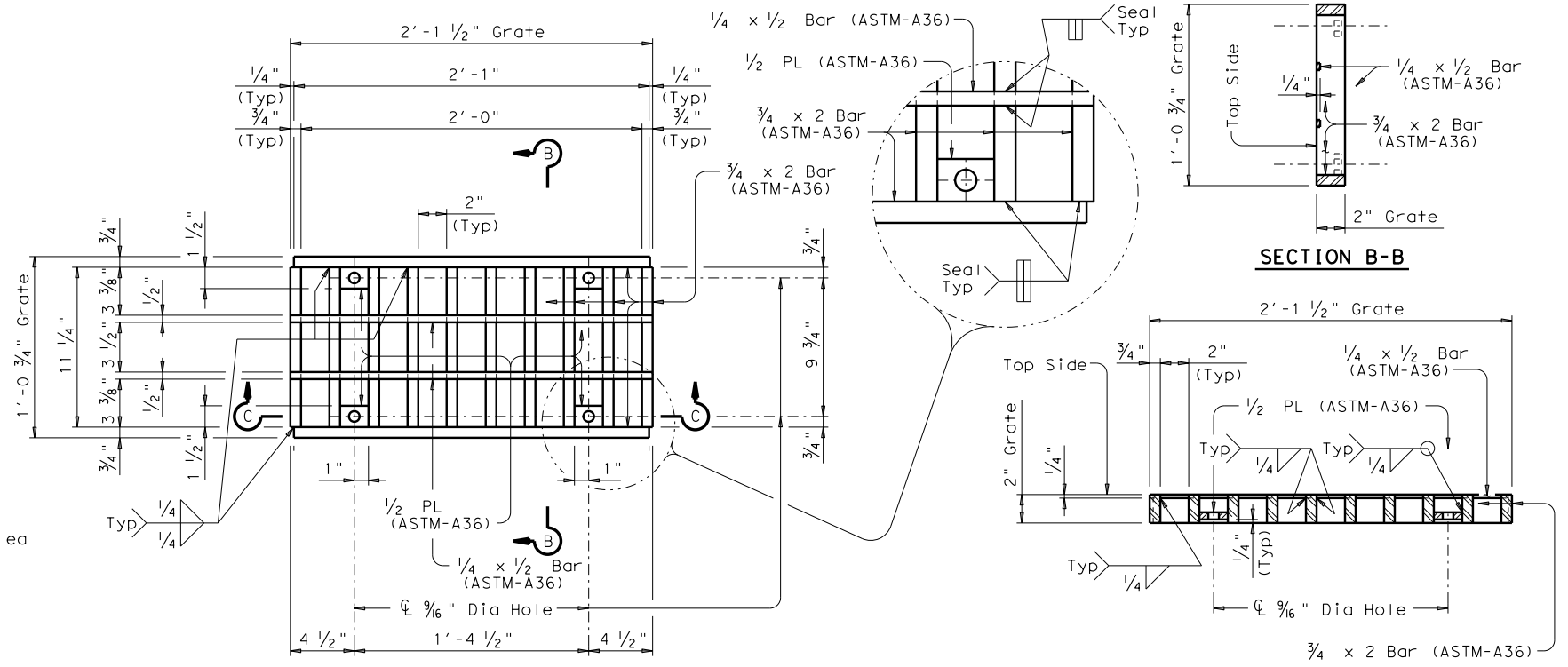
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**PLAN**

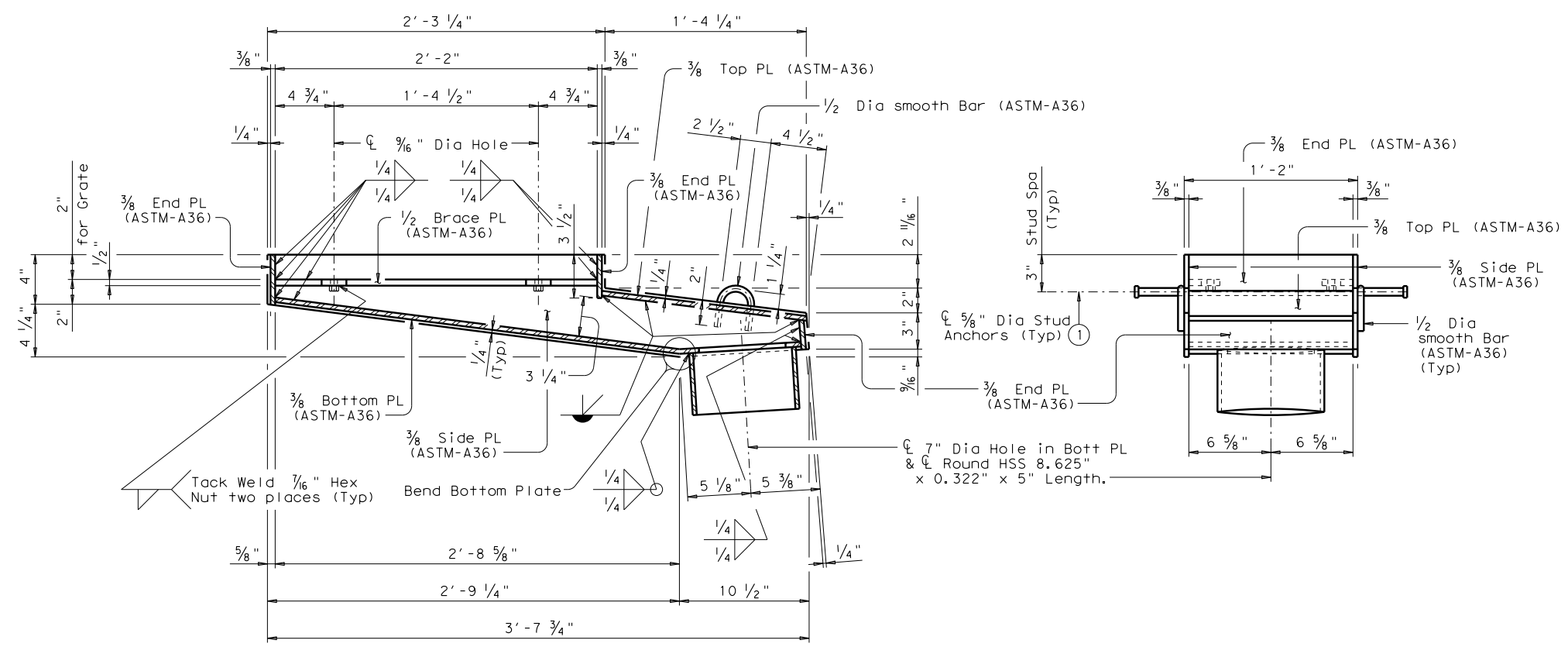
(Grate not shown for clarity)



**GRATE DETAILS**

(Grate open area = 178 sq in)

① Electric arc end-weld stud anchors to plates with complete fusion.



**SECTION A-A**

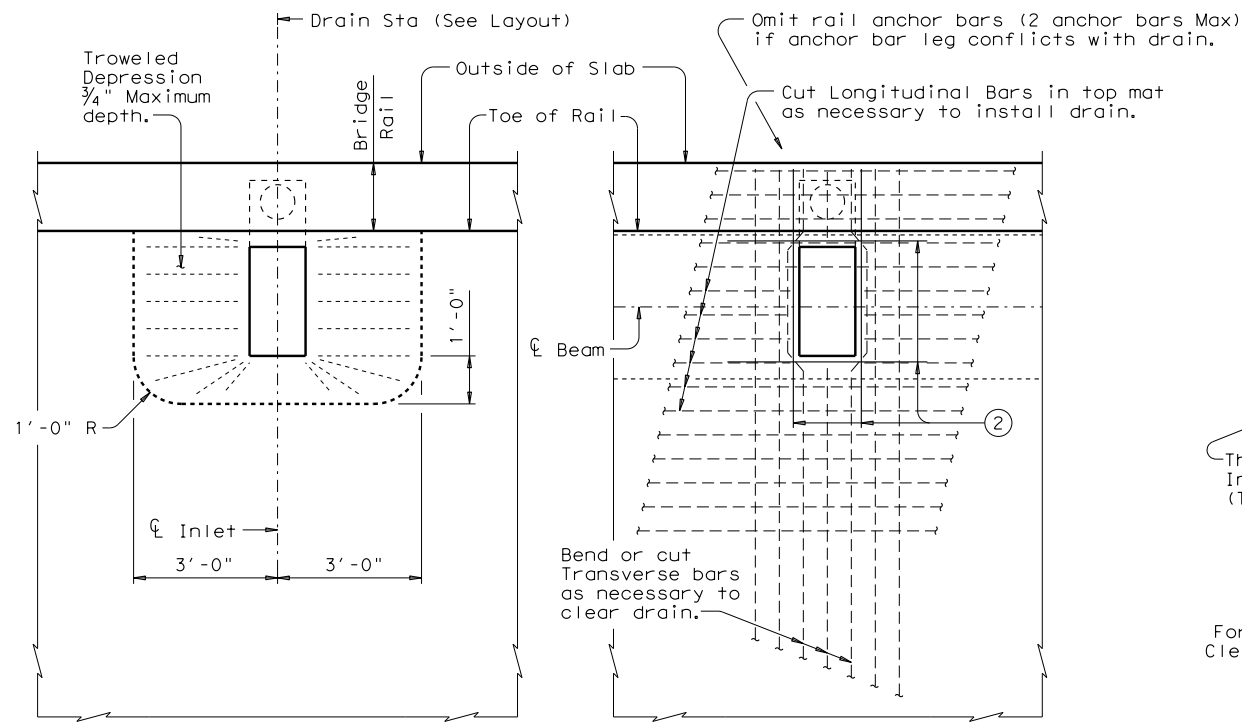
(Grate and Studs not shown for clarity)

**END VIEW OF DRAIN**

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 Division Standard			
<b>BRIDGE DRAIN DETAILS (WELDED)</b> (NOT TO BE USED AS A STANDARD)					
<b>BD-3</b>					
FILE: bdstde03.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: TAR	
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REVISIONS					
	DIST	COUNTY		SHEET NO.	

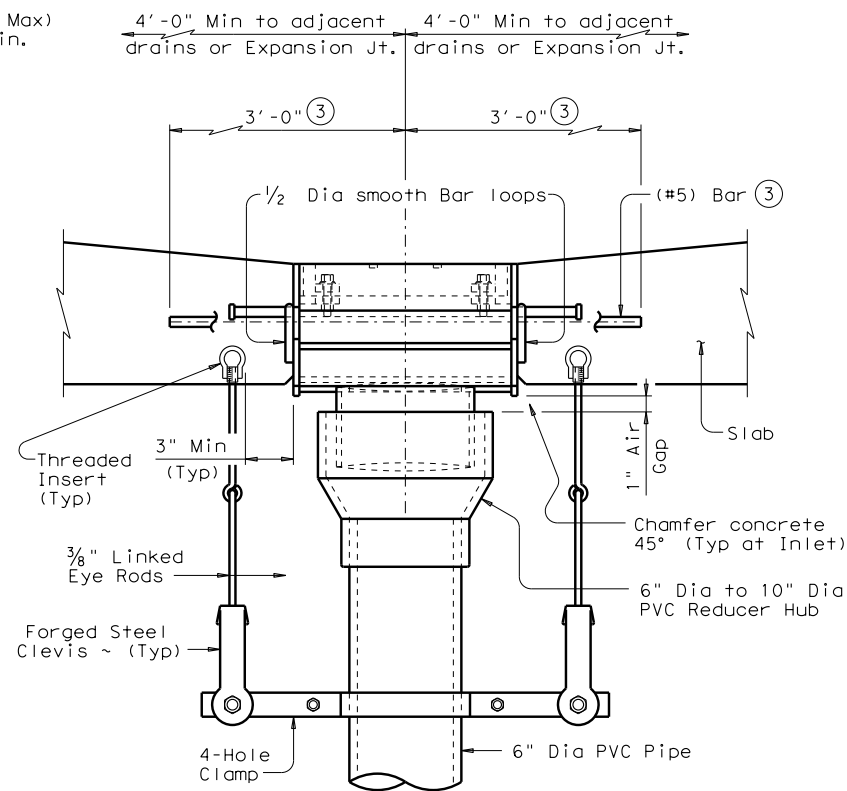
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**TROWELED DEPRESSION**

**SHOWING TYPICAL SLAB REINFORCING**

Showing top reinforcing only, bottom reinforcing not shown for clarity.

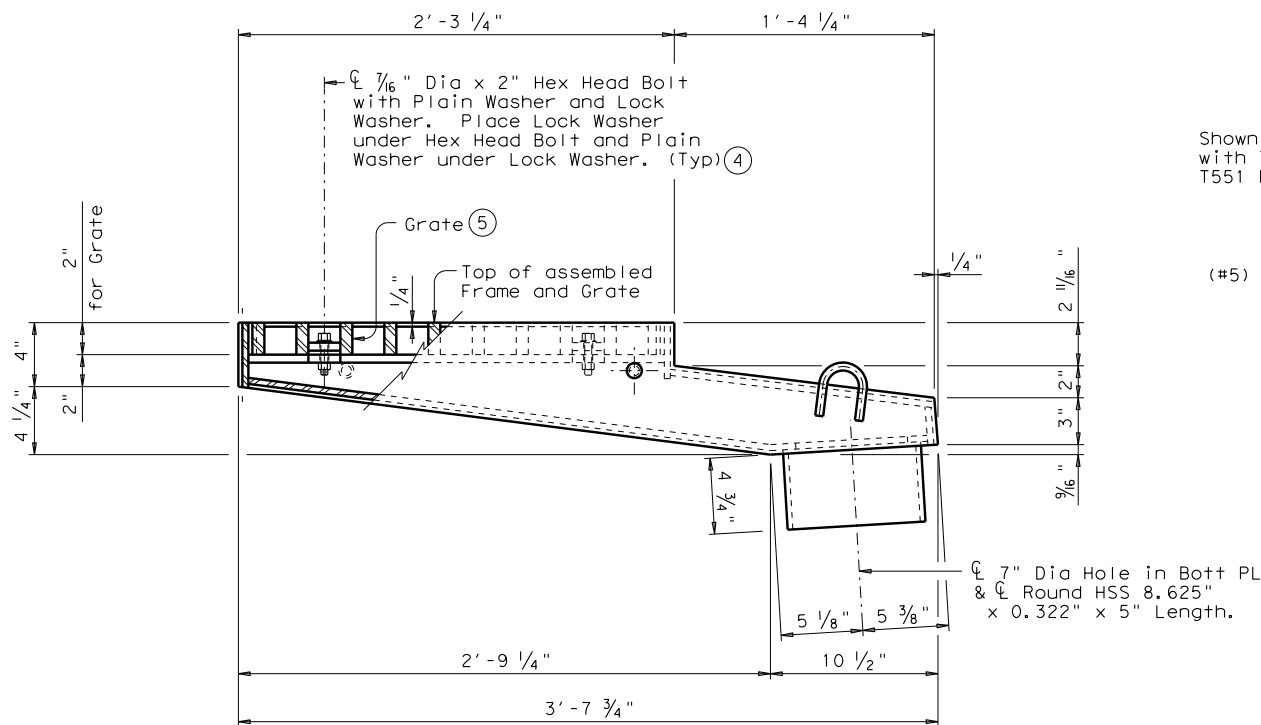


**HOOK-UP TO INLET WITH VERTICAL PIPE SUPPORT**

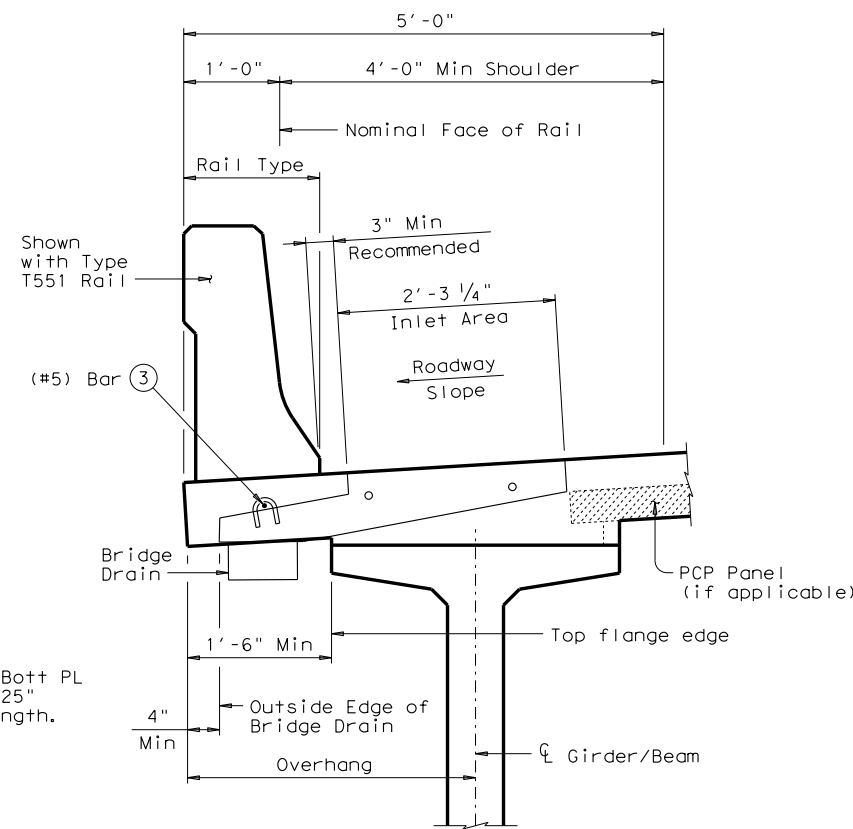
- ① Electric arc end-weld stud anchors to plates with complete fusion.
- ② Provide 4 additional (#5) bars around perimeter in top mat of reinforcing and 4 additional (#5) bars around perimeter in bottom mat of reinforcing. Extend bars 1'-6" from edges of drain.
- ③ Place one 6'-0" long (#5) Bar threaded thru 1/2 Dia smooth Bar loops, centered with drain. Contractor must provide 6'-0" long (#5) bar for each drain.
- ④ After nuts have been tack welded to the frame, test assemble frame and grate with hex bolts.
- ⑤ Grate must be test fitted by the fabricator to ensure grate can be rotated in either direction of 180° to accommodate assembly in the field.

**GENERAL NOTES:**

These drain details are intended for I-Girders and U-Beams with drain outfall on bridge exterior.  
 Galvanize all steel components in accordance with Item 445 "Galvanizing" unless noted otherwise.  
 Slab reinforcing bars must be bent to clear drain by 1". When bending is not possible reinforcing bars may be stopped or cut to clear drain as shown. Additional slab reinforcing is considered subsidiary to "Reinforced Concrete Slab". When placing concrete, care must be taken to prevent honeycombing or air pockets around and beneath the drain.  
 All PVC pipe must 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 must be securely supported by the superstructure. Pipe and supports must accommodate anticipated longitudinal movements of pipe and bridge slab. For long pipe runs, pipe grade must match roadway grade. All metallic pipe support hardware and fasteners must be galvanized in accordance with Item 445 "Galvanizing". All attachment devices are considered subsidiary to the bid item "Grate and Frame".  
 Round or chamfer exposed edges of Grate and Frame to approximately 1/16" by grinding, unless otherwise noted.  
 Payment will be by each Grate and Frame (Bridge Drain).  
 See Bridge Layout for location of drains.  
 Deviation from these details is not permitted without prior approval from the Engineer.  
 Average weight of Grate and Frame:  
 240 Lb total  
 73 Lb (Grate)  
 167 Lb (Frame).



**SIDE VIEW OF ASSEMBLED FRAME AND GRATE**



**EXAMPLE OF INLET ON BRIDGE DECK**

Shown without troweled depression. With troweled depression similar.



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

BD-3

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