

DATE PREPARED	1/12/2016
ROUTE	MO
DISTRICT	SHEET NO. *
BR	
COUNTY	*
JOB NO.	*
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	DRAIN12
DESCRIPTION	
DATE	
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION	
MDOT	
105 WEST CAPITOL JEFFERSON CITY, MO 65102	
1-888-ASK-ROADOT (1-888-875-6361)	

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

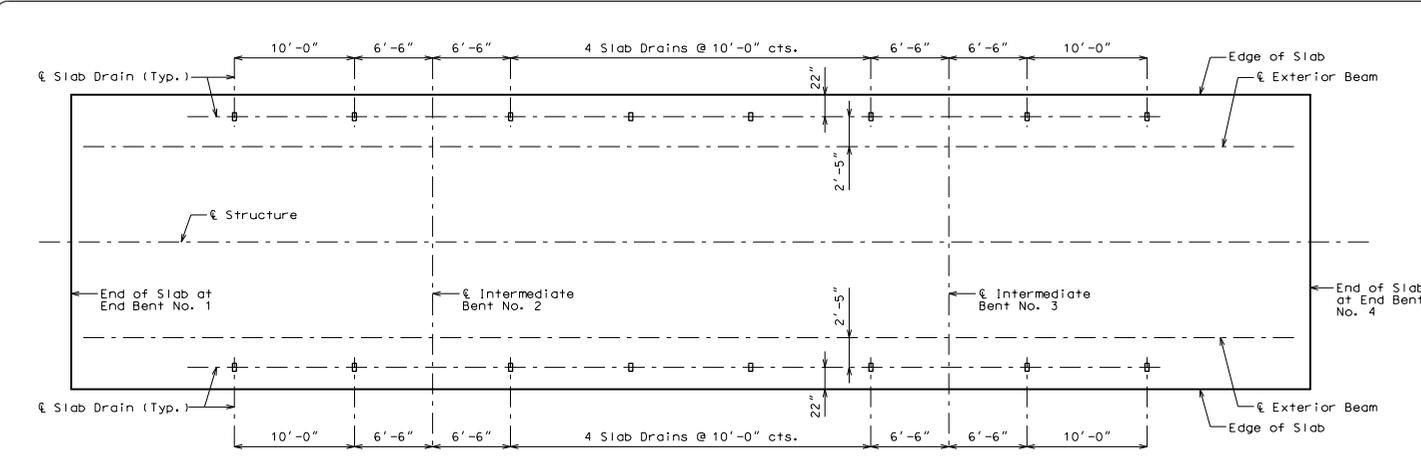
**General Notes:**  
 Contractor shall have the option to construct either steel or FRP slab drains. All drains shall be of same type.  
 Slab drain bracket assembly shall be ASTM A709 Grade 36 steel.  
 Locate drains in slab in dimensions shown in Part Section Near Drain.  
 Reinforcing steel shall be shifted to clear drains.  
 The coil inserts and bracket assembly shall be galvanized in accordance with ASTM A123.  
 All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with ASTM A153.  
 Shop drawings will not be required for the slab drains and the bracket assembly.  
 The coil inserts required for the bracket assembly attachment shall be located on the prestressed beam shop drawings.  
 Coil inserts shall have a concrete pull-out strength (ultimate load) of at least 2,500 pounds in 5,000 psi concrete.  
 The bolts required to attach the slab drain bracket assembly to the prestressed beam shall be supplied by the prestressed beam fabricator.

**Notes for Steel Drain:**  
 Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709 Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.  
 Outside dimensions of drains are 8" x 4".  
 The drains shall be galvanized in accordance with ASTM A123.

**Notes for FRP Drain:**  
 Drains shall be machine filament-wound thermosetting resin tubing meeting the requirements of ASTM D2996 with the following exceptions:  
 Shape of drains shall be rectangular with outside nominal dimensions of 8" x 4".  
 Minimum reinforced wall thickness shall be 1/4 inch.  
 The resin used shall be ultraviolet (UV) resistant and/or have UV inhibitors mixed throughout. Drains may have an exterior coating for additional UV resistance.

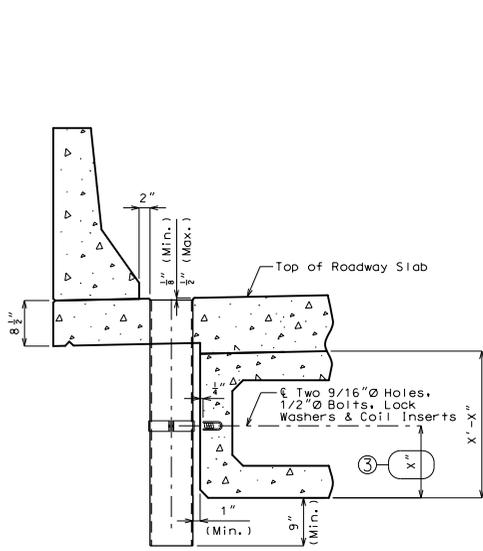
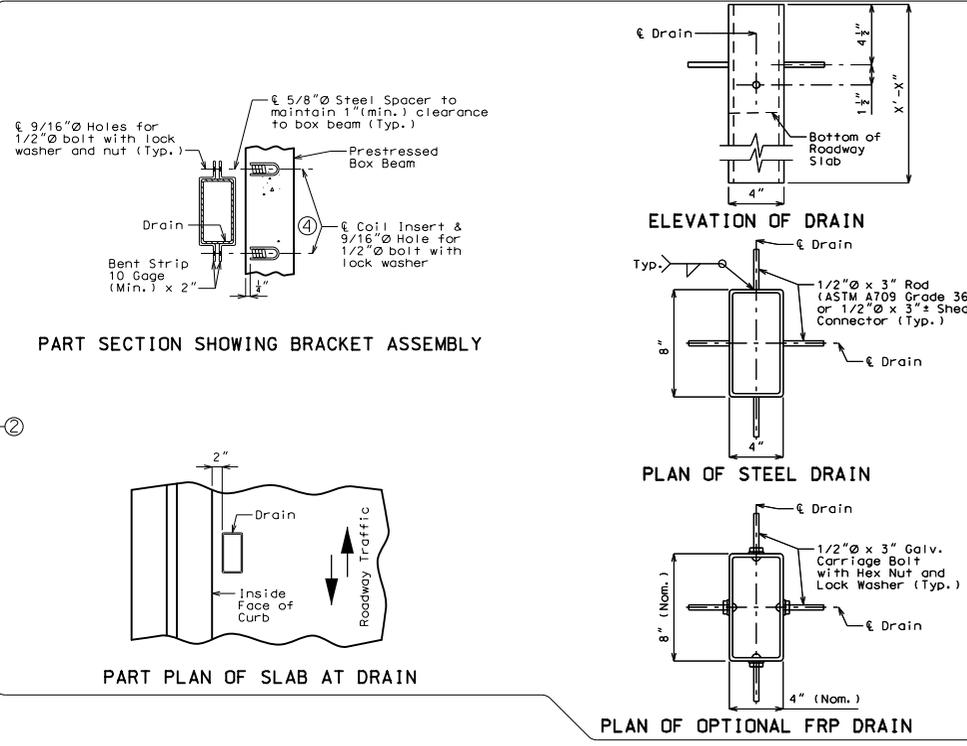
The color of the slab drain shall be Gray (Federal Standard #2373). The color shall be uniform throughout the resin and any coating used.  
 The combination of materials used in the manufacture of the drains shall be tested for UV resistance in accordance with ASTM D4329 Cycle A. The representative material shall withstand at least 500 hours of testing with only minor discoloration and without any physical deterioration. The contractor shall furnish the results of the required ultraviolet testing prior to acceptance of the slab drains.

At the contractor's option, drains may be field cut. The method of cutting FRP slab drain shall be as recommended by the manufacturer to ensure a smooth, chip free cut.  
 No additional payment will be made for this substitution.

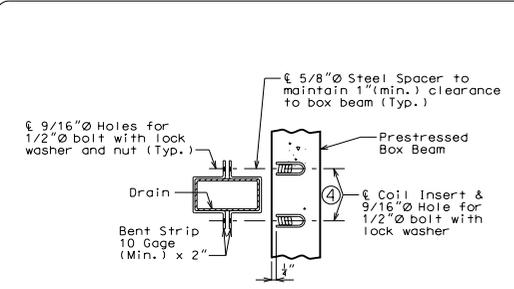


PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

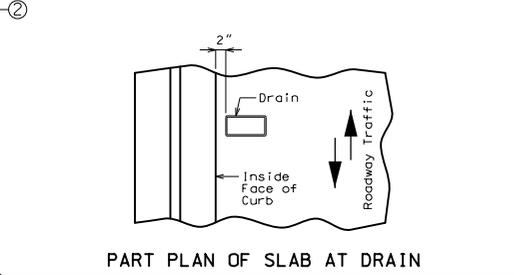
Standard Drawing Guidance (do not show on plans):  
 1 Replace example Plan of Slab Showing Slab Drain Locations with actual plan.  
 2 Details shown inside the sheet border are for drains transverse to roadway requiring a cantilever 4'-3" or more. Use the below details for drains parallel to roadway requiring a cantilever 3'-11" or more.  
 3 Use half of the beam depth.  
 4 Beam manufacturer determines required distance between inserts with coordination between contractor and drain supplier.



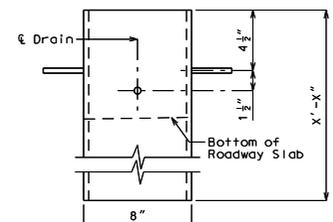
PART SECTION NEAR DRAIN



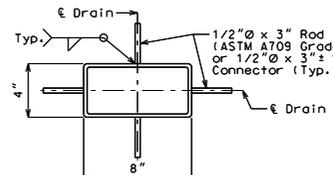
PART SECTION SHOWING BRACKET ASSEMBLY



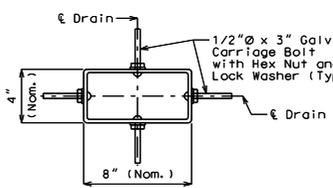
PART PLAN OF SLAB AT DRAIN



ELEVATION OF DRAIN



PLAN OF STEEL DRAIN



PLAN OF OPTIONAL FRP DRAIN

SLAB DRAIN DETAILS

Detailed Checked

Note: This drawing is not to scale. Follow dimensions.

Sheet No. of