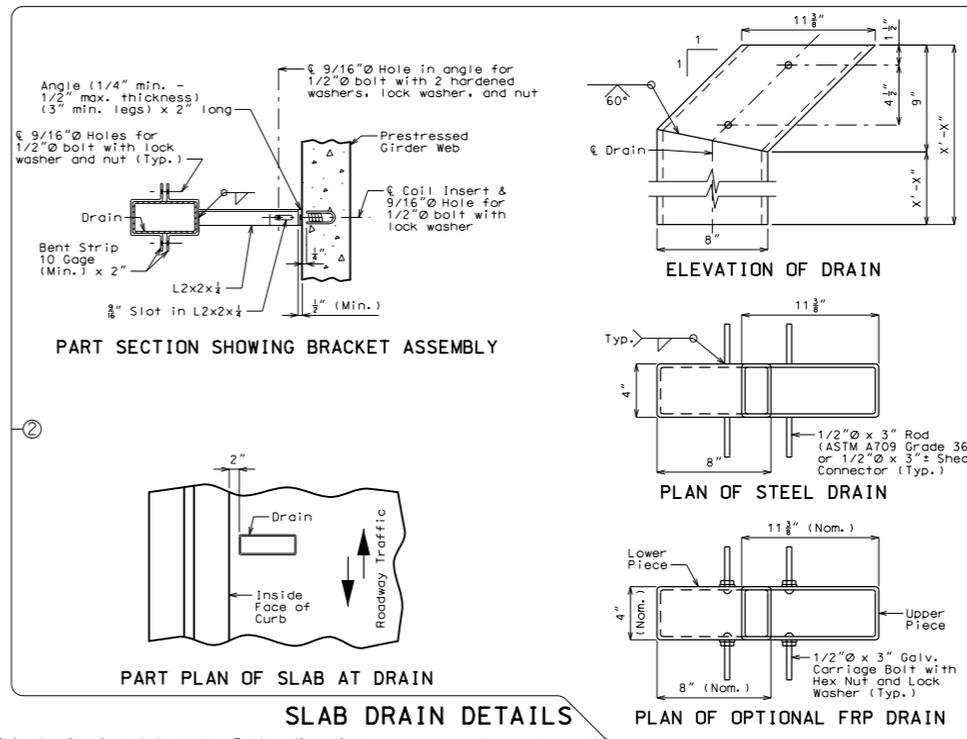
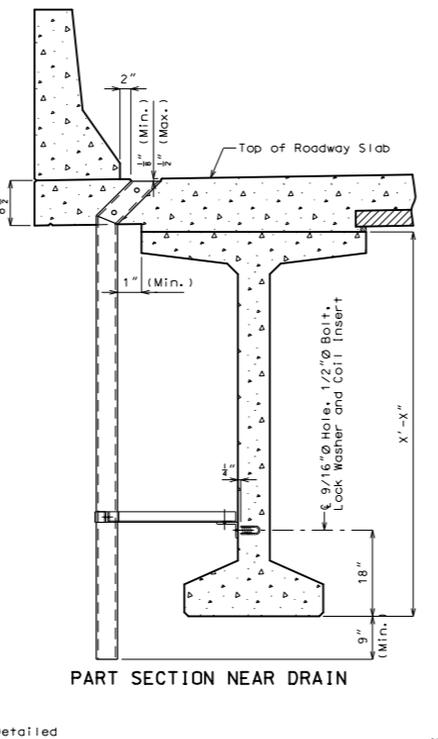
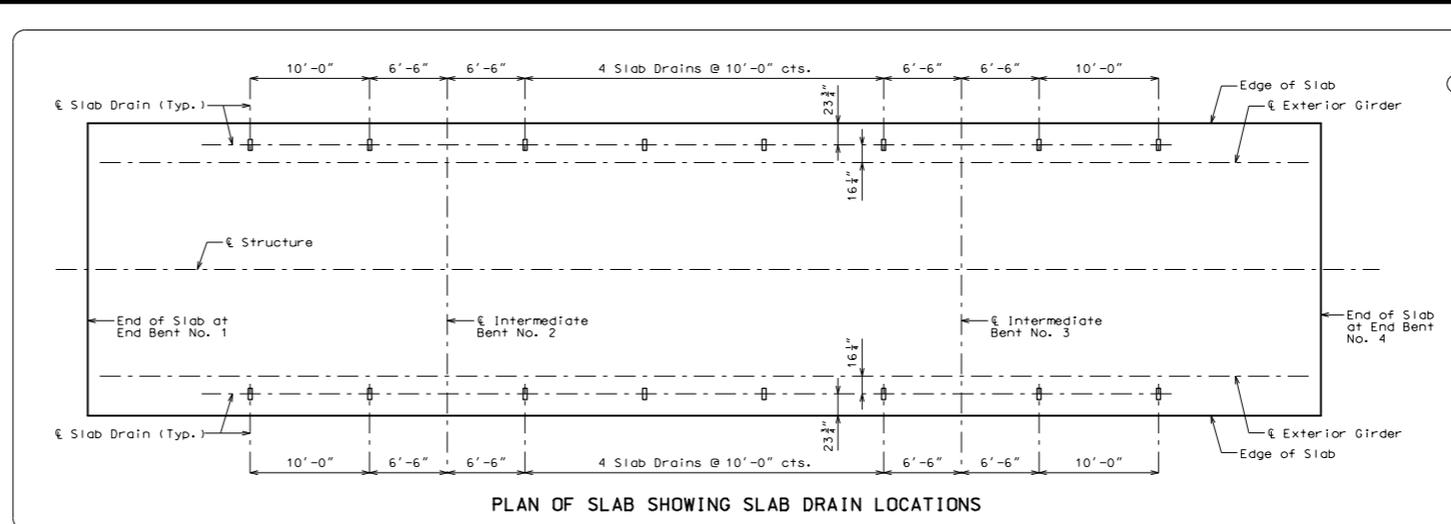
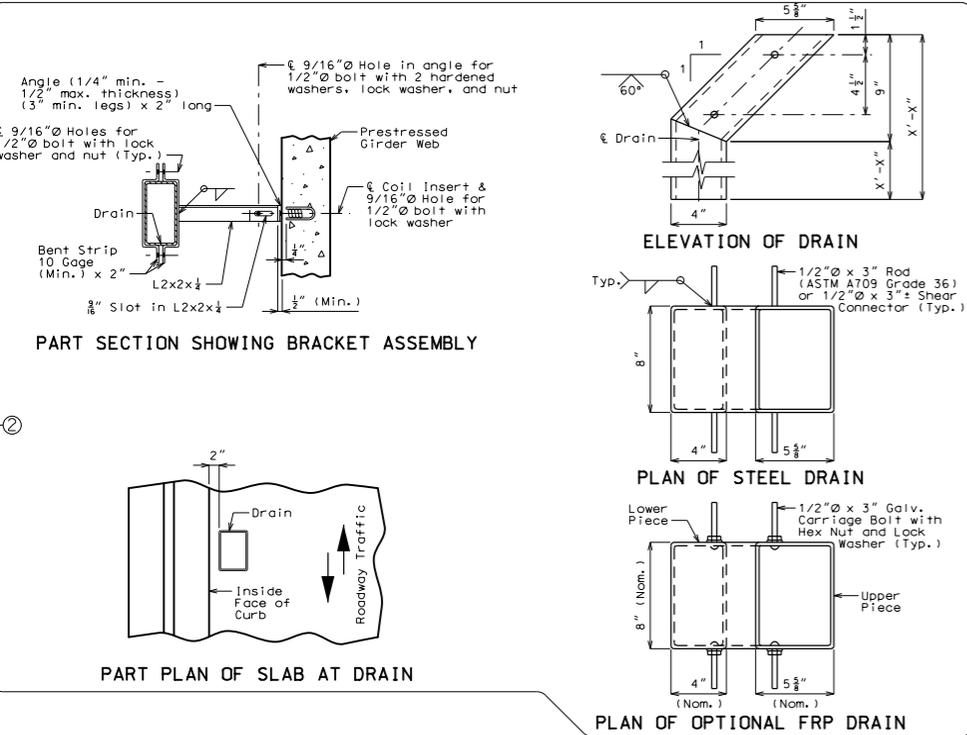


Standard Drawing Guidance (do not show on plans):

- 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 3'-6 3/8" or more. Use the below details for drains parallel to roadway requiring a cantilever 3'-0 5/8" or more.



**General Notes:**

Contractor shall have the option to construct either steel or FRP slab drains. All drains shall be of some type.

Slab drain bracket assembly shall be ASTM A709 Grade 36 steel.

Locate drains in slab by 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 insert required for the bracket assembly attachment shall be located on the prestressed girder 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 bolt required to attach the slab drain bracket assembly to the prestressed girder web shall be supplied by the prestressed girder 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 #26373). 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.

Both upper and lower drain pieces shall be rigidly connected to each other. Drain flow shall not be obstructed. Approval of the engineer is required.

No additional payment will be made for this substitution.

DATE PREPARED: 1/12/2016  
 ROUTE: MO  
 DISTRICT: BR  
 COUNTY: \*  
 JOB NO.: \*  
 CONTRACT ID.: \*  
 PROJECT NO.:  
 BRIDGE NO.: DRAIN05

DESCRIPTION: DRAIN05

DATE: 1/12/2016

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  
 1-888-LSK-MADOT 1-888-256-6236  
 100 WEST CAPITAL  
 JEFFERSON CITY, MO 64502

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