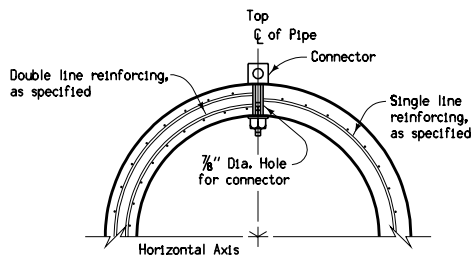
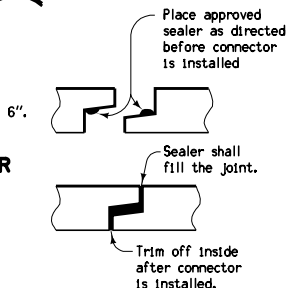


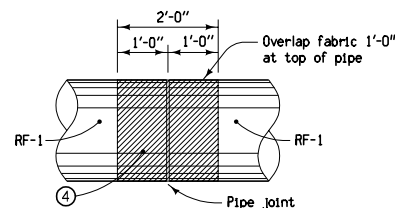
(CONCRETE PIPE TO CORRUGATED PIPE)  
**SECTION OF TYPICAL PIPE CONNECTOR**



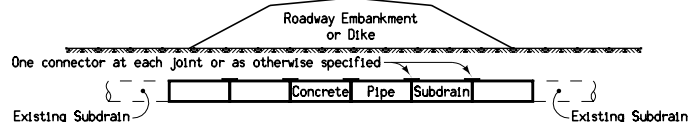
**TYPICAL SECTION  
TYPE 1 CONNECTION  
(Non-Sealed Joint)**



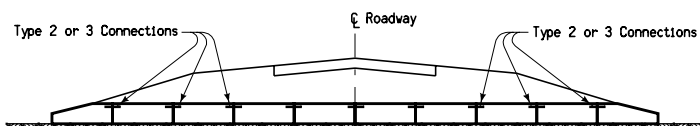
**DETAILS OF SEALED JOINT**  
(Type 2 Connection Only)



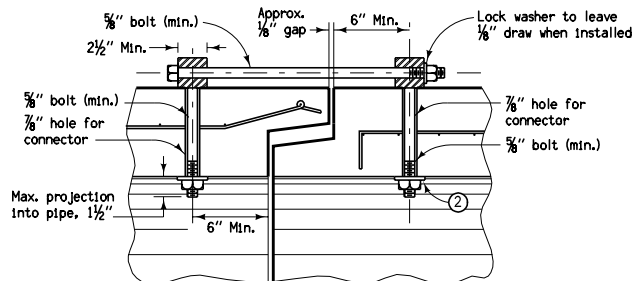
**PIPE JOINT WRAPPING**



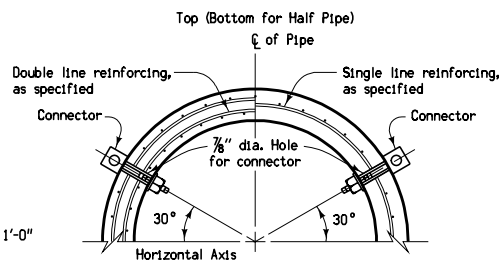
**TYPICAL INSTALLATION  
TYPE 1 CONNECTIONS**



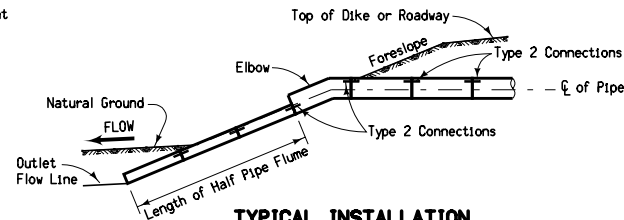
**TYPICAL INSTALLATION  
NEW CONSTRUCTION - TYPE 2 or 3 CONNECTIONS**



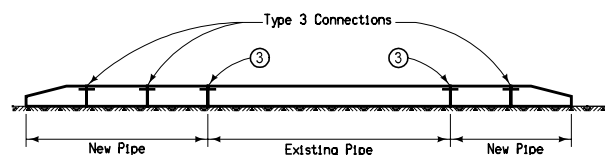
(CONCRETE PIPE TO CONCRETE PIPE)  
**SECTION OF TYPICAL PIPE CONNECTOR**



**TYPICAL SECTION  
TYPE 2 CONNECTION (Sealed Joint)  
TYPE 3 CONNECTION (Non-Sealed Joint)**



**TYPICAL INSTALLATION  
TYPE 2 CONNECTIONS**



**TYPICAL INSTALLATION  
PIPE EXTENSION - TYPE 3 CONNECTIONS**

Unless otherwise specified, Type 3 Connections shall be used on all culvert pipes.

All joints on concrete roadway pipe culverts shall be wrapped.

#### TYPE 1

One (1) connector at the top of the pipe section. May be used with pipe class 100D or greater.

#### TYPE 2


Two (2) connectors near the top of the pipe section. For details of reinforcement refer to RF-1 for the class of pipe required. The seal used shall meet the requirements of Article 4149.08 of the Standard Specifications. See Materials I.M. 491.09.

#### TYPE 3

Two (2) connectors near the top of the pipe section. For details of reinforcement, refer to RF-1 for the class of pipe required.

- ① If holes are field drilled, place a ribbon of butyl sealant around bolts before placing 3" x 3" x 1/4" plate on bolts through corrugated metal pipe and tightening nuts.
- ② 1 3/4" round x 9/64" thick washer or 3" x 3" x 1/4" square plate (shaped to pipe radius).
- ③ On culvert extensions, all new joints shall be connected including the joint between the old and new culvert pipe, except when collars are poured. Holes may need to be drilled into existing pipes.
- ④ Engineering fabric for embankment erosion control.

Tabulation:  
104-3

|  |                           |                     |  |
|--|---------------------------|---------------------|--|
|  Iowa Department<br>of Transportation | REVISION                  |                     |  |
|  | 11                        | 10-16-07            |  |
|  | <b>STANDARD ROAD PLAN</b> |                     |  |
|  | <b>RF-14</b>              |                     |  |
| REVISIONS: Added 'culvert' to the first general note.  |                           | <b>SHEET 1 of 1</b> |  |
| <div>Deanna Mayfield</div> <div>APPROVED BY DESIGN METHODS ENGINEER</div>  |                           |                     |  |
| <b>CONNECTED PIPE JOINTS</b>   |                           |                     |  |