



Iowa Department of Transportation

SPECIAL PROVISIONS FOR BRIDGE DECK DRAIN COLLECTION SYSTEM

Polk County
NHSX-U-1945(408)--8S-77

Effective Date
March 19, 2013

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

121006.01 GENERAL.

A. Description.

Furnish and install a fiberglass reinforced plastic (FRP) bridge deck drain collection system.

B. Submittals.

1. Manufacturer's specifications and/or catalog data listing for pipe, fittings and all other components of the system.
2. Manufacturer's instructions for installation for all pipe, fittings, and attachment hardware utilized.
3. Construction sequencing.
4. Catalog cuts, samples, manufacturer's data, and listing of applicable standards for special, unique or proposed substitute materials if requested by the Engineer.
5. Project Record Documents.
6. Upon request, the Contractor shall provide material certifications to the Engineer. No materials shall be incorporated into the work until approved by the Engineer for compliance to the specifications.

C. Delivery, Storage and Handling.

1. Store materials in a protected environment, on pallets or lagging. Keep exposed pipe ends of stocked pipe closed with rodent-proof end gates.

2. Pipe and fittings contaminated with mud and surface water shall be removed from the site and not used in construction unless thoroughly cleaned, inspected, and approved by the Engineer.
3. Handle materials to avoid damage. Replace damaged materials. Remove damaged materials from the site.

D. Conflicts.

1. Expose potential conflicts such as utility lines and drainage structures in advance of construction. Verify elevations and locations and verify clearance for proposed construction.
2. Notify the Engineer of conflicts discovered or changes needed to accommodate unknown conditions.

121006.02 MATERIALS.

A. Pipes and Fittings.

1. All fiberglass pipe, fittings, and expansion joints shall be handled and installed according to the guidelines and procedures recommended in the printed literature of the manufacturer. Pipe and fittings shall be from the same manufacturer.
2. Drainage pipes and related fittings shall be a reinforced thermosetting resin pipe system meeting the requirements of ASTM D 2996, BDP-12EA12122, with at least 30,000 psi short time rupture strength hoops tensile stress, and the accelerated UV weathering performance requirements of ASTM G154 (D4329-99).
3. All elbows shall be manufactured by using smooth radius steel molds. Elbow shall not be mitered. Filament wound pipe may be used for tees, laterals and crosses.
4. All fiberglass pipes and fittings shall be pigmented resin throughout the wall. Color to be standard concrete-gray or designated color. Paint, gel-coat or exterior coating will not be accepted.
5. A minimum liner of 40-mil resin-rich 1 1/2 ounce glass mat shall be standard for all elbows.
6. The minimum total wall thickness shall be no less than 0.125 inches.
7. Where specifically shown on the plans, cleanouts shall use a 45 degree reducing saddle bonded to the pipe. No other branch method, such as stab-in and overlay, shall be allowed. Cleanouts shall be capped utilizing a threaded PVC plug.

B. System Connections.

1. Connections to existing roadway drain scuppers shall not be rigid. The transition shall be made by means of a fiberglass collector assembly. Details of the connection assembly will be approved by the Engineer before beginning any work.
2. Pipe connections to the concrete storm sewer pipe will be watertight, and may consist of the installation of a connection fitting by either precast into the pipe section, or by drilling and mortaring the fitting in place.

C. Joints.

1. Adhesive bond joints are acceptable for all FRP to FRP joints. Straight runs may use a tee or a reducing saddle bonded to the pipe with a threaded PVC plug cap. Straight sockets shall be used for ease of installation with adhesive joint system. All adhesive joints shall be made in strict accordance with manufacturer's recommendations.
2. Adhesive for bond joint shall be a vinyl ester resin based product with silica filler, polyester pigment, and methyl ethyl ketone peroxide catalyst. The adhesive formulation shall be certified to be proven suitable for the intended application. The resin shall be certified to have no additives that leach out, catalysts that remain active, or other ingredients that could lead to deterioration.

D. Straps and Hangers.

1. Runs of pipe shall be supported at spacing not greater than those indicated by the pipe manufacturer. Supports that have point contact or narrow supporting areas shall not be allowed.
2. Standard sling, clamp, and clevis hangers for use with steel pipes shall be used. Supports shall have 120 degrees of contact with the pipe. If support would be less than 120 degrees of contact, a split fiberglass pipe protective sleeve shall be installed, bonded in place with adhesive. (Equal in length to the pipe diameter, i.e. 6 inch Dia. pipe, 6 inch long split sleeve).
3. Hanger's thickness shall be 3/16 inch. Strap width shall be as shown below:

Pipe Size	Minimum Strap Width
3"	1 1/4"
4"	1 1/4"
6"	1 1/2"
8"	1 1/2"
10"	1 1/2"
12"	2"
14"	2"
16"	2 1/2"

121006.03 CONSTRUCTION.

- A. The Engineer will approve the materials and construction methods of the proposed deck drain system prior to beginning any work on the installation of the drainage collection system.
- B. All runs of collection pipe shall be installed below the bottom flange of any adjacent bridge girder, and placed with a minimum of 2% grade.
- C. All mounting hardware will be affixed to the existing bridge by anchorage into the deck or pier concrete. No system attachment will be allowed to any structural steel component of the existing bridge, with the exception of the existing drain tube connections.

121006.04 METHOD OF MEASUREMENT.

Lump Sum.

121006.05 BASIS OF PAYMENT.

The cost of furnishing, fabricating, testing and installing of the bridge drainage system including pipes, fittings, cleanouts, connections to existing drains, connections to proposed storm sewer, and all mounting hardware necessary to install and place the system into service shall be included in the lump sum price bid for Bridge Deck Drain Collection System.