METHODS OF SAMPLING AND TESTING
MT 420-04
PROCEDURE TO CHECK FOR LEAKS UNDER HYDROSTATIC PRESSURE

1 Scope

1.1 This procedure is used to determine the degree of water tightness for corrugated metal irrigation or siphon pipe and couplers. This test is customarily performed at the fabrication plant, but can also be performed in the field.

2 Apparatus and Equipment

2.1 Bulkheads shall consist of the following:

2.1.1 A two-foot section of corrugated steel pipe of the specific diameter to be tested. Pipe sections with helical corrugations shall be re-rolled at the outer ends to form at least two corrugations to fully accommodate band couplers.

2.1.2 Two squares pieces of 1/8 inch thick steel plate, with a dimension four inches greater than the diameter of the pipes to be tested.

2.1.3 Four lengths of 2 inch x 2 inch x ¼ inch steel angles to be used as braces with a length equal to the dimension of the plates.

2.1.4 One – 3 inch galvanized steel elbow.

2.1.5 One – 3 inch galvanized cap with a ¾ inch threaded hole at center.

2.1.6 One – ¾ inch, or longer, gate valve to accommodate a water hose.

2.1.7 Two full length section of culvert.

2.1.8 Three approved band couplers with appropriate gaskets.

2.1.9 2 inch x 4 inch wood bracing blocks 3 feet in length.

2.2 The bulkheads consist of two 2-foot sections of corrugated steel pipe, of the diameter of the pipe to be tested, to which a braced 1/8 inch square plate has been welded to one end. One bulkhead is fitted with a 3 inch galvanized elbow. The elbow is welded vertically to the top of the plate. The horizontal leg of the elbow must be located directly below the trough of the culvert corrugation to prevent air entrapment (See Figure 1).

2.3 A 3 inch removable, galvanized filler cap with ¾ inch dia. hole at center is to accommodate a standpipe for observing the static pressure head applied (see Figure 1 & Figure 2).

2.4 A ¾ inch dia. Gate valve is to accommodate the pressurized hose attached to the bottom of the steel back plate. This valve is to provide a constant head of water in the stand pipe during the tests and also to serve as a drain after testing is completed (see Figure 1).

2.5 The stand pipe shall consist of the following:

2.5.1 Four – 5 foot sections of ¾ inch galvanized pipe.

2.5.2 Three – ¾ inch galvanized tees.

2.5.3 Three – ¾ inch galvanized plugs.

2.5.4 One – 8 inch funnel.

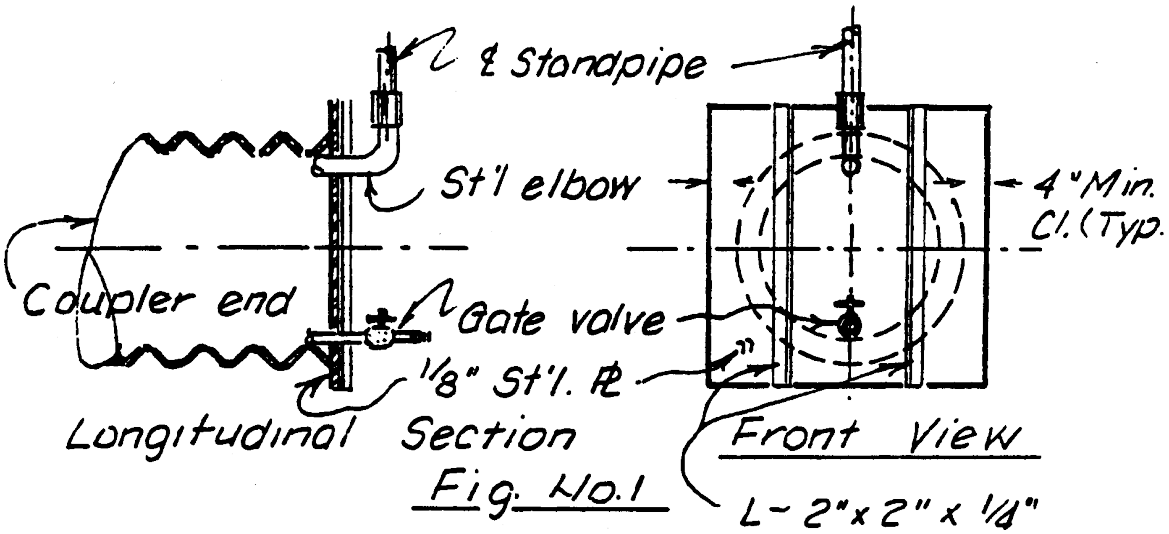
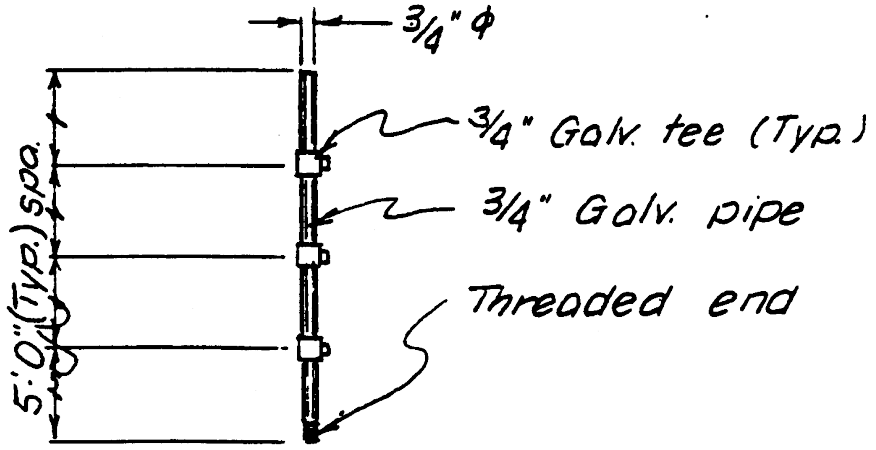


Fig. No.1



Standpipe Assembly
Fig. No.2

3 Procedure

3.1 After attaching the bulkheads to the culvert test sections, the sections are coupled together, braced at the center to prevent sagging, and are filled to capacity with water.

3.2 The 20 foot stand pipe (Figure 2) is assembled and attached to the 3 inch elbow filler cap.

3.3 Water is introduced into the stand pipe from the bottom by means of the gate valve.

3.4 With water flowing continuously out of the first or bottom tee, and after waiting for a period of five minutes, a close examination is made of the test section for evidence of leakage.

3.5 The tee is plugged and the process repeated at each five foot increment until water flows out of the top of the stand pipe, the maximum twenty foot head.

3.6 A slight indication of “sweating” or “seepage” at the test seams is permissible for irrigation pipe. Dripping or free flow of water is not acceptable. No sweating or other seepage for siphon pipe applications is permissible. If only the pipe seams are being tested but not the bands, some leakage at the bands may be allowed.

4 Frequency of Test

4.1 Each diameter of pipe at least once a year at the discretion of the inspector.

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