

NORTH MARIN WATER DISTRICT

STANDARD SPECIFICATIONS

SECTION 15044 HYDROSTATIC TESTING OF PRESSURE PIPELINES

PART 1 GENERAL

1.01 DESCRIPTION

This section describes the requirements and procedures for pressure and leakage testing of all pressure mains. The length and volume of pipe to be tested during any one test shall be determined by the Engineer. As a general rule, not more than one thousand (1,000) feet of pipe eight (8) inch and smaller may be included on one test.

1.02 RELATED WORK SPECIFIED ELSEWHERE

NMWD Standard Drawings
NMWD Standard Specifications 15000, 15041, 15056, 15057, 15061, and 15064

1.03 REQUIREMENTS PRIOR TO TESTING

- A. All piping, valves, fire hydrants, services, and related appurtenances shall be installed prior to testing.
- B. The pipe trench shall have trench zone backfill placed and compacted with a minimum of 20 (twenty) inches of material over the pipe.
- C. All concrete anchor blocks shall be allowed to cure a sufficient time to develop a minimum strength of 2,000 psi before testing.
- D. Pressure tests on exposed and aboveground piping shall be conducted only after the entire piping system has been installed and attached to pipe supports, hangers or anchors as shown on the Approved Plans.
- E. Steel pipelines shall not be tested before the mortar lining on all pipe lengths within the line have been in place for a minimum of fourteen (14) days. Cement-mortar lined pipe shall not be filled with water until a minimum of eight (8) hours has elapsed after the last joint has been mortared.

1.04 HYDROSTATIC TESTING AND DISINFECTION OF PIPELINES

Hydrostatic testing of pipelines shall be performed prior to disinfection operations in accordance with Section 15041. In the event repairs are necessary, as indicated by the hydrostatic test, the District may require additional disinfection in accordance with Section 15041.

1.05 CONNECTION TO EXISTING MAINS

Hydrostatic testing shall be performed prior to connections to existing mains. District authorization for connection to the existing system shall be given only on the basis of acceptable hydrostatic, disinfection and bacteriological test results. Connection to existing mains shall be performed in accordance with Section 15000.

PART 2 MATERIALS

2.01 WATER

- A. Potable water shall be used for hydrostatic testing of potable and recycled water mains.
- B. Unless noted on design drawings, potable water shall be supplied by the District for filling and testing pipelines. However, if the Contractor unnecessarily wastes water, it will be charged to him. Make-up water for testing shall also be potable water.
- C. Well water shall not be used for hydrostatic testing or any other purposes in new or existing pipelines.

2.02 CONNECTIONS

- A. Testing water shall be potable water supplied through a metered connection equipped with a backflow prevention device in accordance with Section 15112 at the point of connection to the potable water source used.
- B. The Contractor shall provide any temporary piping needed to deliver potable water to the piping that is to be tested. Temporary piping shall be in accordance with Section 15000.

PART 3 EXECUTION

3.01 GENERAL

- A. The Contractor shall provide the District with a minimum of 48 hours notice prior to the requested date and time for hydrostatic tests.
- B. The Contractor shall furnish all labor, materials, tools, and equipment for testing.
- C. Temporary blocking during the tests will be permitted only at temporary plugs, caps or where otherwise directed by the District.
- D. The test shall be conducted with valves in the open position. All valves shall be operated only by the District Engineer during testing.
- E. At the onset of testing, all valves, air vacuum assemblies, blowoffs, and services shall be monitored for possible leakage and repairs made, if necessary, before the test proceeds. The appurtenances shall be monitored through the duration of the testing.

- F. For pipe with porous lining, such as cement mortar, the pipe shall be filled with water and placed under a slight pressure for a minimum of forty-eight (48) hours prior to the actual hydrostatic test.

3.02 FIELD TEST PROCEDURE

- A. Before applying the specified test pressure, care shall be taken to release all air within the pipe and appurtenances to be tested. Air shall be released through services, fire hydrants, air release valves, or other approved locations.
- B. A twenty-four (24) hour hydrostatic pressure test shall be performed after the pipe and all appurtenances have been installed and after any trench backfill compaction with heavy-duty compaction equipment has been completed. The hydrostatic test pressure shall be at the class rating of the pipe at the lowest point in the section being tested, or as directed by the District Engineer, but average not less than 125% of the maximum working pressure.

The test pressure shall be applied and continuously maintained by pumping until stabilized. During the pumping phase of the test, the test pressure shall be maintained at not less than 95% of the specified test pressure at all times.

At the end of pumping, the pressure shall meet the requirements stated above. Pumping shall then be discontinued for twenty-four (24) hours and the drop in pressure shall be recorded. Pumping shall then be resumed to restore the initial test pressure, and the quantity of water pumped into the line shall be accurately measured. This measured quantity shall not exceed that specified in Standard Drawing 23.

If the leakage exceeds the allowable loss, the leak points shall be located and repaired as required by the Engineer. All defective pipe, fittings, valves and other appurtenances discovered shall be removed and replaced with sound material. The hydrostatic test shall be repeated until the leakage does not exceed the rate specified above. All visible leaks shall be similarly repaired. Disinfection shall be performed per Section 15041.

END OF SECTION