SECTION 15044

hydrostatic testING and flushing of presSURE pipelineS

# GENERAL

## DESCRIPTION

### This section describes the requirements and procedures for pressure and leakage testing, and flushing, of all ductile iron (DI) and polyvinyl chloride (PVC) pressure mains.

### It shall be the CONTRACTOR’S sole responsibility to plan their construction activities to allow and facilitate testing and flushing of all sections of pipelines. It shall be the CONTRACTOR’S sole responsibility to obtain any and all permits required to carry out the work specified herein.

## RELATED WORK SPECIFIED ELSEWHERE

### Section 13000 – Shop Drawings and Submittals

### Section 15000 – General Piping Systems and Appurtenances

### EVMWD New Water Main Chlorination and Bacteriological Testing Protocol Document

## SUBMITTALS

### Submit shop drawings in accordance with Specification SECTION 01300.

### Submit plan testing pressure pipeline. Plan should indicate source of water to fill pipeline, locations of air release valves and blow-offs, equipment and materials required to deliver the potable water to the testing area, temporary thrust block locations and proposed point of discharge of the test water.

### Submit request for potable water source from the DISTRICT five (5) business days in advance of testing date.

## REQUIREMENTS PRIOR TO TESTING

### All piping, valves, fire hydrants, services, and related appurtenances shall be installed prior to testing.

### The pipe trench shall have trench zone backfill placed and compacted with a minimum of 3.0 feet of material over the pipe.

### All concrete anchor blocks shall be allowed to cure until a minimum strength of 2,500 psi is achieved before testing.

### 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.

## CONCURRENT HYDROSTATIC TESTING AND DISINFECTION OF PIPELINES

### Hydrostatic testing of pipelines shall be performed prior to or concurrently with the disinfection operations. In the event repairs are necessary, as indicated by the hydrostatic test, the DISTRICT may require additional disinfection testing. Any costs associated with additional disinfection testing after said repairs shall be borne by the Contractor at no additional cost to the DISTRICT.

## 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 - General Piping Systems and Appurtenances.

# MATERIALS

## WATER

### Potable water shall be used for hydrostatic testing of potable and recycled water mains when such testing is performed separately from disinfection operations.

### Potable water shall be supplied by a DISTRICT-approved source. Make-up water for testing shall also be potable water.

### A chlorinated water solution, in accordance with EVMWD’s New Water Main Chlorination and Bacteriological Testing Protocol Document, shall be used to charge the line and for make-up water when hydrostatic testing and disinfection operations are combined.

## CONNECTIONS

### Testing water shall be supplied through a metered connection equipped with a backflow prevention device at the point of connection to the potable water source used.

### The Contractor shall provide any temporary piping needed to deliver potable water to the piping that is to be tested.

# EXECUTION

## general

### The Contractor shall provide the DISTRICT with a minimum of five working days notice prior to the requested date and time for hydrostatic tests.

### The Contractor shall furnish all labor, materials, tools, and equipment for testing, unless otherwise directed by the DISTRICT.

### Temporary blocking during the tests will be permitted only at temporary plugs, caps or where otherwise directed by the DISTRICT.

### All valves and appurtenances shall be operated during the test period. The test shall be conducted with valves in the open position.

### 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.

### 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 two working days prior to the actual hydrostatic test.

## FIELD TEST PROCEDURE

### 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.

### A four (4) 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 200psi.

### The test pressure shall be applied and maintained for a period of four (4) hours. During the pumping phase of the test, the test pressure shall be maintained at +/-5psi of the specified test pressure at all times.

### If the leakage exceeds the allowable loss, the leak points shall be located and repaired as required by the DISTRICT. All defective pipe, fittings, valves and other appurtenances discovered shall be removed and replaced with sound material. Additional disinfection shall be performed as necessary per EVMWD’s New Water Main Chlorination and Bacteriological Testing Protocol Document. The hydrostatic test shall be repeated until the leakage does not exceed the rate specified above. All visible leaks shall be similarly repaired.

## FLUSHING

### After completion of construction, all potable water and recycled water pipelines shall be flushed with potable water in accordance with the New Water Main Chlorination and Bacteriological Testing Protocol. The CONTRACTOR shall provide a sufficient number of suitable outlets at the end(s) of the line(s) being flushed in addition to those required by the approved plans to permit the main to be flushed with water at a velocity of at least 2.5-feet per second over its entire length. The outlets provided shall meet the requirements for fittings as specified for the type of main constructed. The velocity through outlets and fittings shall not exceed 16 fps during the flushing operation. Drainage facilities shall be constructed such that the water lines cannot be contaminated through the flushing outlet.

### The CONTRACTOR shall be solely responsible for the methods for discharge of the water, including all associated costs and permits. All flushing water shall be metered and protected in accordance with the New Water Main Chlorination and Bacteriological Testing Protocol. All flushing water will be legally disposed of in accordance with the requirements of the State Water Resources Control Board (SWRCB) National Pollutant Discharge Elimination System (NPDES) Permit, the Governing City, and this standard specification

## sewer forcemains

### All of the requirements as stated above shall be adhered to for testing of sewer forcemains except for flushing and bacteriological testing.

END OF SECTION