

SECTION 33 05 05.31
HYDROSTATIC TESTING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Hydrostatic testing of pressure piping.
- B. Related Requirements:
 - 1. Section 33 31 23 - Sanitary Sewer Force Mains, Valves and Appurtenances: Pipe materials and accessories normally encountered with municipal sanitary sewage force mains.
 - 2. Section 33 14 13 - Water Distribution Piping: Pipe materials and accessories normally encountered with pressurized water distribution systems.

1.2 REFERENCE STANDARDS

- A. American Water Works Association:
 - 1. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
 - 2. AWWA C605 - Underground Installation of PVC

1.3 ADMINISTRATIVE REQUIREMENTS

- A. The foreman of the contracting crew must speak fluent English.
- B. Any event requiring a CFPUA representative to be present will require a minimum of two (2) business day notice to schedule the event.
- C. No valves are to be operated unless a CFPUA representative is present. Any valves operated without a CFPUA representative present, or a directive may be subject to penalties in accordance with CFPUA's Ordinance.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittals.
- B. Submit following items prior to start of testing upon request:
 - 1. Testing procedures.
 - 2. List of test equipment.
 - 3. Testing sequence schedule.
 - 4. Provisions for disposal of flushing and test water.
 - 5. Certification of test gage calibration.
- C. Test and Evaluation Reports: Indicate results of piping tests.
- D. Qualifications Statement:
 - 1. Submit qualifications for applicator upon request.

PART 2 PRODUCTS

2.1 HYDROSTATIC TESTING

- A. Equipment:
 - 1. Pressure pump.
 - 2. Pressure hose.
 - 3. Water meter.
 - 4. Test connections.
 - 5. Pressure relief valve.
 - 6. Pressure Gage: Calibrated to 0.1 psi.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that piping and appurtenances are installed and ready for testing.
- C. Verify that trenches are backfilled.
- D. Verify that pressure piping thrust restraints have been installed. Where any section of piping is provided with concrete thrust blocking, the hydrostatic test shall not be made until at least 5 days after installation of the concrete thrust blocking unless otherwise approved.

3.2 FIELD QUALITY CONTROL

- A. Section 01 70 00 - Execution and Closeout Requirements.
- B. Testing of Pressure Piping to be performed according to AWWA C600 (DIP), AWWA C605 (PVC) and the following as applicable:
 - 1. Hydrostatic testing procedure:
 - a. Testing shall be performed in the presence of the CFPUA representative. Testing shall be scheduled with CFPUA a minimum of two business days in advance and shall not proceed until granted approval by CFPUA. The contractor will pre-test the lines prior to the CFPUA representative arrival. The contractor is to cancel the test if the lines will not pass the required test, correct all visible leakage, and locate and repair leakage in lines which exceeds the specified amounts. When completed, the contractor will re-schedule the test.
 - b. Slowly fill with clean potable water portion of piping to be tested, expelling air from piping. Fill and test mains and services.
 - c. Close air vents after air is expelled.

- d. Raise pressure to specified test pressure. For purposes of testing, working pressure shall be 100 psi and test pressure shall be 150 psi. The pressure gauge must be liquid filled with 2 psi increments maximum. The gauge must be a minimum of three feet above grade. No more than 3 psi can be lost during the two-hour test. The gauge must return to 0 psi when the test is completed. There will be no allowable leakage. Air testing will not be accepted on mains and services, but will be accepted for tapping sleeves, 40 psi for 15 minutes or hydrostatic testing @150 psi for 15 min with zero pressure loss for both.
- e. Observe joints, fittings, and valves undergoing testing.
- 2. Hydrostatic Testing Requirements for Pipe Burst Installations
 - a. Subject pipe burst installations to a pressure test before connecting to direct bury mains. Testing shall be performed in the presence of the CFPUA representative. Testing shall be scheduled with CFPUA a minimum of two business days in advance and shall not proceed until granted approval by CFPUA.
 - b. The pipe shall be filled with clean potable water and pressurized to 1.5 times the working pressure at the point of testing with a minimum of 150 psi, for a period of no less than 24 hours and then subjected to the specified test pressure.
 - c. Pretest pipe burst installations for a period of 2 hours before notifying CFPUA that the main is ready for a final pressure test. No final pressure test shall begin after 2:00 pm.
 - d. Perform testing as follows:
 - 1) Test pressure shall be at least 1.5 times the working pressure at the point of testing with a minimum of 150 psi. Test pressure shall not be less than 1.25 times the working pressure at the highest point along the test section. Test pressure shall not exceed the pipe or thrust restraint design pressure. Test pressure shall not vary by more than +/- 5 psi for the duration of the test.
 - 2) The pressure test duration shall be 2 hours.
 - 3) Ensure that the pipe is full of water and that the air has been removed before testing.
 - e. Pressure testing is the responsibility of the Contractor, who shall provide materials, labor, and equipment.
- 3. If testing of piping and appurtenances indicates leakage greater than that allowed, locate source of leakage, make corrections, and retest until leakage is within acceptable limits.
- 4. Correct visible leaks regardless of quantity of leakage.

END OF SECTION