

Section 02515

HYDROSTATIC TESTING OF WATER LINES

PART 1 GENERAL

1.01 SUMMARY

This Section includes furnishing and performing of all operations in connection with field hydrostatic testing of newly installed water lines..

1.02 MEASUREMENT AND PAYMENT

A. Unit Prices

1. No separate measurement or payment will be made for hydrostatic testing of water lines under this Section. Include cost in unit price of water lines being tested.
2. Refer to Section 01270 – “Measurement and Payment” for unit price procedures.

B. Stipulated Price (Lump Sum). If Contract is Stipulated Price Contract, payment for Work in this Section is included in total Stipulated Price.

1.03 REFERENCES

This specification references the following publications in their current editions. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

- A. 30 TAC §290.44: Subchapter D: Rules and Regulations for Public Water Systems - Water Distribution [Texas Commission on Environmental Quality (TCEQ)]
- B. AWWA C655: Standard for Field Dechlorination

1.04 SUBMITTALS (NOT USED)

1.05 RELATED REQUIREMENTS

- A. Section 01270 – “Measurement and Payment”
- B. Section 01330 – “Submittal Procedures”
- C. Section 01454 - "Testing Laboratory Services"
- D. Section 01755 - “Water Line Start-Up”
- E. Section 02514 - “Disinfection of Water Lines”

F. Section 02516 - "Flushing of Water Lines"

G. Section 02990 - "Dechlorination Activities."

1.06 – 1.13 (NOT USED)

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

- A. Disinfect water lines prior to hydrostatic testing per requirements of Section 02514 – "Disinfection of Water Lines."
- B. After pipe has been laid and backfilled, except prior to replacement of pavement, newly installed pipe shall be subjected to hydrostatic testing described herein.
- C. Hydrostatically test newly installed water lines before connecting to distribution system.
- D. Water for testing shall be supplied by the Contractor.
- E. Water lines shall be tested between adjacent valves and/or plugs. Sections containing more than two valves or plugs will not be accepted except where valves are located on each branch of a TEE, test TEE with adjacent section of water line. Sequence testing to ensure every valve has been hydrostatically tested.
- F. Conduct hydrostatic tests in presence of the Project Manager and Engineer.

3.02 PREPARATION

- A. Fill each valved section of pipe slowly with water and apply specified test pressure, measured at point of highest elevation, by means of pump connected to pipe.
- B. Furnish, install, and operate pipe connections, pump, meter, and necessary apparatus, gauges and meters necessary for hydrostatic testing.
- C. Furnish necessary labor and assistance for conducting test..
- D. Allow water line to sit a minimum of 24 hours from time it is initially disinfected until testing begins, to allow pipe wall or lining material to absorb water. Periods of up to 7 days may be required for mortar lining to become saturated.
- E. Expelling air before test:

Before applying specified test pressure, expel air from pipe. To accomplish this, make taps in pipe, if necessary, at points of highest elevation. On completion of tests, taps are to be tightly plugged with brass fittings.

F. Test Pressure:

1. Any section being tested other than those stated below, apply pressure such that, at highest point in section, the minimum pressure is to be 150 pounds per square inch or pressure specified as shown on Plans.
2. Storm Sewer sections passing within 50' of the water well head are to be pressure tested such that, at the highest point in the section, the pressure is to be at 20 pounds per square inch.

G. Begin test by 9:00 a.m. unless otherwise approved by the Project Manager. When a large quantity of water is required to maintain pressure during the test, discontinue testing until cause of water loss is identified and corrected.

H. Duration of Pressure Test:

1. Exposed joints are to be tested for not less than 2 hours with no allowable leakage.
2. Covered joints to be tested for a minimum of 6 hours with no allowable leakage.
3. Durations may vary based on information shown on Plans or as called for by the Project Manager and Engineer.

I. Close valves to lines affected by hydrostatic test in adjacent metering stations during hydrostatic pressure test.

3.03 ALLOWABLE LEAKAGE FOR WATERLINES

A. Leakage Defined:

Leakage is quantity of water supplied into newly installed pipe, or any valved section thereto, necessary to maintain specified leakage test pressure after pipe has been filled with water and air expelled and the specified test pressure has been applied.

B. During hydrostatic tests, no leakage will be allowed for sections of water lines consisting of welded joints.

C. Permissible Leakage:

1. For water lines less than 24" in diameter:

Per 30 TAC §290.44, the hydrostatic leakage rate shall not exceed the amount allowed or recommended by formulas found in AWWA C600 and C605. Per

$$L = \frac{SD\sqrt{P}}{148,000}$$

AWWA, leakage is not to exceed that determined from the following formula:

Where L = Quantity of makeup water in gallons per hour

S = Length of the pipe section being tested, in feet; length being tested shall not exceed 3000 feet

D = Nominal diameter of pipe or valve, in inches

P = Average test pressure during the hydrostatic test, in pounds per square inch (psi - gage)

2. For water lines 24" or greater in diameter:

Maximum allowable leakage for water lines with rubber gasketed joints: 3.19 gallons per inch nominal diameter per mile of pipe per 24 hours while testing.

Length of pipe being tested shall not exceed 5000 feet.

- D. For meter run installation, when Work cannot be isolated and line fails pressure test, visual inspection of Work by the Project Manager and Engineer for leakage during the pressure test may be used to fulfill requirements of this section.

3.04 CORRECTION FOR FAILED TESTS

- A. At intervals during test, inspect route of pipe to disclose leakage greater than that specified.
- B. Repair joints showing visible leaks on surface regardless of total leakage shown on test. Check valves and fittings to ensure that no leakage occurs that could affect or invalidate test. Remove cracked or defective pipes, fittings, and valves discovered during pressure test and replace with new items.
- C. Contractor shall be required to disinfect failed water lines after repair and prior to retesting. Conduct and pay for subsequent disinfection operations in accordance with requirements of Section 02514 – "Disinfection of Water Lines."
- D. Repeat test until satisfactory results are obtained.

3.05 DECHLORINATION OF WATER

Dechlorination operations are to be carried out in accordance with requirements of Section 02990 – "Dechlorination Activities."

3.06 COMPLETION

Upon satisfactory completion of testing, remove risers remaining from disinfection and hydrostatic testing, and backfill excavation promptly.

END OF SECTION