SECTION 02450
HYDROSTATIC TESTING OF WATERLINES

PART I: GENERAL

1.1 GENERAL REQUIREMENTS
- A. Field hydrostatic testing of newly installed water waterlines.

1.2 MEASUREMENT AND PAYMENT
- A. Unit Prices:
  1. No separate payment shall be made for hydrostatic testing of waterlines under this Section. Include cost in the unit price of waterlines being tested.
  2. Refer to Section 01270 – Measurement and Payment for unit price procedures.
- B. Stipulated Price (Lump Sum):
  1. If Contract is Stipulated Price Contract, payment for work in this Section is included in Total Stipulated Price.

1.3 REFERENCES
- A. CFTS – City of Friendswood Technical Specifications.

PART II: PRODUCTS – NOT USED

PART III: EXECUTION

3.1 PROCEDURE
- A. All potable water provided for test shall be through a City provided construction meter and shall be at the cost of the contractor. Backflow assembly shall be provided and installed by the Contractor. Coordinate with City of Friendswood Project Manager prior to installing construction meter and backflow assembly on hydrant.
- B. Once approved by Project Manager, Load the waterlines.
- C. Hydrostatically Test waterlines.
- D. Once hydrostatic pressure test has passed, proceed with disinfection and bacteriological testing per Technical Specifications 02455 – Disinfection of Waterlines and 02465 – Procedures for Bacteriological Testing respectively.

3.2 PREPARATION
- A. To obtain the water, the Contractor must obtain a transient meter from the City for use at a nearby fire hydrant. A deposit is required for a transient meter.
- B. Pressure gauge shall be calibrated within past twelve months (12 Mos);

zero pounds per square inch (0 psi) to five hundred pounds per square inch (500 psi) range in increments of five pounds per square inch (5 psi), present calibration certificates prior to hydrostatic testing.

C. Plan waterline tests in lengths between valves or plugs, of not more than fourth thousand feet (4000 Ft).

D. Hydrostatic tests must be scheduled at least twenty-four (24) hours in advance for the Project Manager to witness.

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

1. At no time shall a hydrostatic test start after 1:00 P.M.
2. At no time shall a hydrostatic test be scheduled for Friday.

3.3 TEST PROCEDURES

A. Furnish, install, and operate connections, pump, meter, and gages necessary for hydrostatic testing.

B. Expel air from all waterlines and apply a minimum test pressure of one hundred fifty pounds per square inch (150 psi) for a minimum of four hours (4 Hrs).

1. Fire line Testing is required to be two hundred pounds per square inch (200 psi) for a minimum of two hours (2 Hrs).

C. Keep valves inside pressure reducing stations closed during hydrostatic pressure test.

3.4 ALLOWABLE LEAKAGE FOR WATERLINES

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

B. Maximum allowable leakage for water lines with rubber gasketed joints: Three and nineteen-hundredths gallons (3.19 Gal) per inch nominal diameter per mile of pipe per twenty-four hours (24 Hrs) while testing.

1. The following formula shall be used, either manually or electronically, for the amount of leakage:

$$L = \frac{NDP^2}{7400}$$

where: L = Allowable leakage, gallons per hour (Gal/Hr)
N = Number of joints in the length of the pipe
D = Nominal diameter of the pipe, in inches (In)
P = Average test pressure during the leakage test, pounds per square inch (psi)

C. For meter run installation, when work cannot be isolated and line fails pressure test, visual inspection of work by the Project Manager for leakage during pressure test may be used to fulfill requirements of this Section.

3.5 CORRECTION FOR FAILED TESTS

A. 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.

B. The Project Manager shall require failed lines to be disinfected after repair and prior to retesting. Conduct and pay for subsequent disinfection operations in accordance with requirements of Section 02455 – Disinfection of Waterlines. Pay for water required for additional disinfection and retesting.

C. After the second (2nd) failed test;

1. For City Projects, the Project Manager shall deduct the amounts of money from the Contract as stated in Section 01140 – Work Restrictions for each additional test taken.
2. For Private Development, the Contractor shall pay the City the amount stated in Section 01140 – Work Restrictions for each additional test, before the test is taken.

C. Repeat test until satisfactory results are obtained.

3.6 COMPLETION

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

END OF SECTION