

SANITARY SEWER FORCE MAIN TESTING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pressure Test

1.2 RELATED SECTIONS

- A. Section 02733 – Sanitary Sewer Force Mains
- B. Section 02676 – New Construction Water Usage

1.3 REGULATORY REQUIREMENTS

- A. Conform to SCDHEC Standards for Wastewater Facility Construction: R.61-67.

PART 2 EXECUTION

2.1 GENERAL

- A. Schedule inspections with BCWS at least 72 hours in advance.
- B. Compaction testing will be performed in accordance with ASTM D1557.

2.2 PRESSURE TEST

- A. Pressure test all sections of the force main in accordance with AWWA C600 (DIP) or AWWA C-605 (PVC).
- B. Provide temporary blocking, bulkheads, flanges and plugs as necessary to assure all new pipes, valves and appurtenances will be pressure tested.
- C. Before applying test pressure, completely expel air from the force mains and all appurtenances. Utilize air release valves, as shown on the Drawings, to expel air as line is filled with water.
- D. Notify the BCWS in accordance with paragraph 2.2 of BCWS Standards 02670 Water Main Testing. Fill pipeline slowly with water from the BCWS system. Utilize an accurate water meter and pump arrangement to pump the line to the specified test pressure.

- E. Measure test pressure at the lowest point in the test segment. Maintain test pressure for a minimum of two hours. Provide a test pressure of 150 psi or 1.5 times the working pressure in the finished force main, whichever is greater.
- F. Do not allow a variance in the test pressure of more than 5 psi for the test duration. If the pressure drops more than 5 psi at any time during the test period, restore the pressure to the specified test pressure. Provide an accurate pressure gauge, four inches in diameter, with a range of pressure large enough to allow the specific test pressure to fall in the middle of the range (i.e. for 150 psi test pressure need 300 psi range on gage). Face gradations shall be at 20 psi intervals with tick marks every one psi, or equal approved by BCWS.
- G. Definition of Leakage: The quantity of water that is pumped and metered into the test section to maintain test pressure within 5 psi of the specified test pressure for the test duration, plus the quantity of water required to return line to test pressure at the end of the test.
- H. Test Results: Reject test section if the leakage exceeds the limits determined by the AWWA allowable leakage rate as stated in Section C605 and C600 as follows:

Ductile Iron

$$L = \frac{SD(P)^{0.5}}{148,000}$$

PVC

$$L = \frac{ND(P)^{0.5}}{8,223}$$

For the ductile iron pipe equation, “L” is the allowable leakage in gallons per hour, “S” is the length of water main tested in feet, “D” is the nominal diameter of the water main in inches, and “P” is the test pressure in pounds per square inch (psi).

For the PVC pipe equation, “L” is the allowable leakage in gallons per hour, “N” is the number of joints in the length of water main tested, “D” is the nominal diameter of the water main in inches, and “P” is the test pressure in pounds per square inch (psi).

- I. If tests indicate work does not meet specified requirements, remove work, replace and retest at no cost to the Owner.
- J. Locate and repair defective joints and/or pipes, and retest until the allowable test rates are within specified allowances.

END OF SECTION