

SECTION 02505**CLEANING AND TESTING OF MAIN****PART 1. GENERAL**

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all material, labor and equipment necessary to clean and test the force main and/or water main.
- B. Pipelines for Potable Water Mains shall be pressure tested at 150 psi for a minimum of two (2) hours in accordance with Health Department requirements.
- C. Pipelines for Sewage Force mains shall be pressure tested at 100 psi for a minimum of two (2) hours.
- D. The Contractor is advised that he is solely responsible for any damage caused to the main or it's lining by cleaning operations and he shall be required to repair or replace, as required by the Department, any damaged pipe or lining.
- E. Potable water mains shall be disinfected and approved for use by the Health Department prior to placing the main in operation.

1.02 SUBMITTALS

- A. Prior to cleaning operations, submit in writing to the Engineer, the make, model and characteristics of the pig to be used in cleaning operations.
- B. If the pig has not been previously approved for this use by the Department, the submittal shall be a formal shop drawing submittal for approval and accompanied by a letter signed by a responsible officer of the manufacturing firm specifically stating that the submitted item will not damage the lining or pipe and that it is suitable for cleaning pipe of the diameter and lining type utilized in the project.
- C. Single submittals may be made to qualify different types of pigs for different linings or sizes of pipe but only one manufacturer's products shall be included in a particular submittal.

1.03 QUALITY ASSURANCE

- A. Testing shall be in accordance with ANSI/AWWA Standard C-600, latest edition.
- B. Cleaning and testing shall be performed in strict accordance with these specifications.

- C. The Contractor is cautioned that Miami Dade County or other governing body having jurisdiction over the work location may have regulatory rules and ordinances prohibiting or limiting the discharge of water from any excavation into sanitary and storm sewer systems, or to canals and drainage ditches. The Contractor shall comply with all regulations of all governing agencies.

PART 2. PRODUCTS

2.01 MATERIALS

- A. Pig for cleaning lines: Bare Swab No. 5B; density, 1 lb./ft.³; Knapp Polly Pig, Inc., 1209 Hardy Street, Houston, Texas 77020, 1-800-231-7205, or approved equal.

PART 3. EXECUTION

3.01 CLEANING

- A. As soon as the installation of each run of force main and/or water main is completed, and prior to installation of valves on the main in positions which would interfere with the cleaning operation, the line shall be cleaned by use of a pig with characteristics as specified above. The pig shall be driven through the line by water pressure and no cables, push rods or other mechanisms that might damage the pipe or lining shall be utilized in this operation.
- B. Thorough pigging will be required and operations shall be sufficient to remove all deleterious materials left in the pipe by construction and shall meet the Engineer's approval. If required by the Department, pigging operations shall be scheduled to allow observation by the Department and no extra compensation will be allowed for such scheduling.
- C. The Contractor shall furnish and install all piping necessary to carry out pigging operations, dispose of water and debris from the operation, and shall exercise care to prevent any damage to the surrounding area and adjoining or adjacent properties. The Contractor shall furnish either a new or in new condition pig for cleaning operations and the Department reserves the right to reject the pig and require provision by the Contractor of a new replacement at no additional cost to the Department.
- D. The Contractor is required to install nightcaps, plugs or other devices acceptable to the Engineer at the open ends of the pipe installation at the end the work day. This requirement shall apply to installations both above and below the water table.

3.02 TESTING

- A. The test pressure for potable water mains shall be 150 psi. The test pressure for sewage force mains shall be 100 psi.

- B. After the main has been cleaned to the satisfaction of the Engineer, any valves which could not be placed prior to pigging operations shall be installed using care to prevent entrance of deleterious materials into the cleaned main or valve body. Thereafter the main shall be tested between line valves unless otherwise specified or permitted by the Engineer. Corporation stops shall be installed prior to testing and shall be included in the test with no leak permitted.
- C. All fire hydrants, corporation stops, air release valves, flushing valves, and meter valves in the section being tested shall be opened and left open until water comes out of them, in order to remove as much air as possible from the line.
- D. The Contractor shall furnish and install all necessary pumps, piping and fittings, including the corporation stop, to connect the section under test to the source of water. The test pump shall be a centrifugal or gear pump producing a steady pressure free of pulsation. Water from a fire hydrant shall be measured with a floating meter.
- E. The Contractor shall furnish and install all necessary pumps, piping and fittings, including the corporation stops, to connect the section under test to the source of water. The test pump shall be a centrifugal or gear pump producing a steady pressure free of pulsation. The test pressure shall be maintained throughout the duration of the test. Unless otherwise permitted by the Engineer, no static testing will be allowed.
- F. All corporation stops in the section being tested shall be opened and left open until water comes out of them, in order that as much air as possible may be removed from the line. Water shall be pumped into the line through the meter up to the required pressure, and pumping shall be continued to maintain that pressure for a period of 2 hours, or such longer period as the Inspector requires to inspect the line for leaks. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain the specified leakage test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.
- G. Since the allowable leakage is defined in gallons per hour, testing shall be conducted in, at a minimum, two independent 1 hour test periods.
- H. The maximum allowable leakage for ductile iron mains shall be determined by the following formula from the ANSI/AWWA Standard C600 "Installation of Ductile-Iron Water Mains and Their Appurtenances", latest edition:

$$L = \frac{SD \text{ times the square root of } P}{148,000}$$

1. Where: L is the allowable leakage in gallons per hour;
S is the length of pipeline tested in feet; D is the nominal diameter of the pipe in inches; and P is the average test pressure during the leakage test, in pounds per square inch gage.

- I. No pipe installation will be accepted if the leakage is greater than that determined by the above requirements.
- J. The Contractor shall locate and repair all leaks until the leakage is reduced to the limits specified. The Contractor may use the leak detector belonging to the Department but shall reimburse the Department for the actual cost of the operation of the instrument by Department personnel. Any observed leaks or any obviously defective joints or pipes shall be repaired or replaced as directed by the Engineer, even though the total leakage is below that specified above.
- K. The tests and repairs shall be continued or repeated until the Engineer is assured that the leakage from the section of line under test is less than the amount specified.

END OF SECTION