

## SECTION 816

### SEWER PIPE JOINT TESTING

#### **I. GENERAL**

##### **1.1 DESCRIPTION OF WORK**

The Work covered by this section consists of providing all labor, equipment, material and supplies and performing all operations required to air test the sewer pipe joints.

##### **1.2 SUBMITTALS**

Submittals shall be made by the Contractor in accordance with the procedures set forth in Section 105 - Control of Work, and as described below.

- A. The Contractor shall provide a minimum 48-hour advance written notice of proposed testing schedules and testing procedures for review and concurrence of the Owner.
- B. The Contractor shall submit records of all test results performed clearly identifying location, pipe characteristics, observations, procedures and results data.

#### **II EXECUTION**

##### **2.1 GENERAL**

- A. After the sewer line cleaning and television inspection operations are completed as specified the Contract shall proceed with joint testing on the designated lines.
- B. Sewer line joint testing is to identify sewer pipe joints that are defective and that can be successfully sealed by the internal pipe joints sealing process. Joint testing is also used to test the effectiveness of the seal. Testing of joints that are visibly leaking is not required and will not be paid for by the Owner. Testing on cracked broken pipe will not be required and will not be paid for by the Owner.
- C. All testing shall be performed in the presence of the Owner.
- D. Void pressure data shall be transmitted electrically from the void to the monitoring equipment. All test monitoring shall be aboveground and in a location to allow for simultaneous and continuous observation of the television monitor and test monitoring equipment by the Contractor.
- E. Sewer line joint testing shall be performed before and after the joint sealing operation by applying a positive air pressure to each sewer joint and monitoring the pressure in the void. The intent of joint testing is to identify defective joints prior to the joint sealing process and determine the effectiveness of the joint seal.

F. The joint testing equipment used shall consist of a television camera, joint testing device (such as a packer), and test monitoring equipment. The equipment shall be constructed in such a way as to provide means for introducing air, under pressure, into the VOID area created by the expanded ends of the joint-testing device and a means for continuously measuring the actual static pressure of the air within the VOID areas only.

## 2.2 CONTROL TEST

Prior to starting the pipe joint testing phase of the Work, a two-part control test shall be performed as follows:

- A. To ensure the accuracy, integrity, and performance capabilities of the testing equipment, a demonstration test will be performed aboveground in a test cylinder constructed in such a manner that a minimum of two known leak sizes can be simulated. This technique will establish the test equipment performance capability in relationship to the test criteria and ensure that there is no leakage of the test medium from the system or other equipment defects that could affect the joint testing results. If this test cannot be performed successfully, the Contractor shall be instructed to repair or otherwise modify his equipment and re-perform the test until the results are satisfactory to the Owner. This test may be required at any other time during the joint testing Work if the Owner suspects the testing equipment is not functioning properly.
- B. After entering each manhole section with the test equipment, but prior to the commencement of joint testing, the test equipment shall be positioned on a section of sound sewer pipe between pipe joints, and a test performed as specified. This procedure will demonstrate the reality of the test requirement, as no joint will test in excess of the pipe capability. Should it be found that the barrel of the sewer pipe will not meet the joint test requirements (void pressure cannot be held for 60 seconds), the requirements will be modified as necessary.

## 2.3 JOINT TESTING PROCEDURE

Each sewer line joint which is not visibly leaking shall be individually air tested at a test pressure equal to 0.5 psi per vertical foot of pipe depth (not exceeding a pressure of 10 psi, but no less than a pressure of 3 psi) and in accordance with the following procedure:

- A. The packer or testing device shall be positioned within the line in such a manner as to straddle joint to be tested.
- B. The packer or testing device and elements (sleeves) shall be expanded so as to isolate the joint from the remainder of the line and create a void area between the packer or testing device and the pipe joint. The ends of the testing device shall be expanded against the pipe with sufficient inflation pressure to contain the air within the void without leaking past the expanded ends.
- C. Air shall then be introduced into the void area until a pressure equal to or greater than the required test pressure is observed by the void pressure monitoring equipment. If the required test pressure cannot be developed (due to joint leakage), the joint will have failed the test. Sealing of the joint, if approved by the Owner, shall be performed in accordance with Section 817 - Chemical Grouting.

D. After the void pressure is observed to be equal to or greater than the required test pressure, the air flow shall be stopped. If the void pressure drops by more than 2 psi within 15 seconds (due to joint leakage), the joint will have failed the test. Sealing of the joint, if approved by the Owner, shall be performed in accordance with Section 817 - Chemical Grouting.

## 2.4 TEST RECORDS

- A. A sample filled out records form shall be submitted to the Owner for approval prior to initiation of Work.
- B. During the joint testing Work, complete records shall be kept which include:
  1. Identification of the manhole-to-manhole section tested;
  2. The test pressure used;
  3. Location (footage) of each joint tested; and
  4. A statement indicating the test results for each joint tested.

## III. MEASUREMENT FOR PAYMENT

- A. This item will be measured based on the number of joints tested.
- B. Joint testing will be paid on a per joint basis for the initial test. Any joint testing performed in association with verifying joint sealing shall be incidental to the joint sealing Work (Section 817 - Chemical Grouting).

End of Section