

**DIVISION IV**  
**GRAVITY SEWERS, FORCE MAINS, AND PUMP STATIONS**

**SECTION 44**

**TESTING AND INSPECTION**

**44.1 GENERAL**

Gravity sewer systems shall be tested for alignment, deflection, and integrity prior to acceptance by the CITY. All testing, procedures, and video inspections shall be performed by the CONTRACTOR in the present of CITY inspection personnel and certified by the DEVELOPER'S ENGINEER. The CONTRACTOR shall be responsible for furnishing all necessary labor and equipment for all such testing and inspections.

**44.2 TESTING**

**44.2.1 TYPE OF TEST**

Gravity sewer systems shall be required to pass one of the following leakage tests and a lamping procedure before acceptance by the CITY.

- a) Low-Pressure Air Leakage Test: Testing shall be conducted in accordance with the procedure for "Recommended Practice for Low Pressure Air Testing of Installed Sewer Pipe" as established by the Uni-Bell PVC Pipe Association. Passing this test shall be presumed to establish leakage test limits of 50 gallons per day per inch of diameter per mile of sewer.
- b) Infiltration and Ex-filtration Leakage Test: Flows shall not exceed 150 gallons per day per inch of nominal pipe diameter per mile as measured between adjacent manholes over a two (2) hour testing period.

When the lamping procedure is performed, each test section of pipe with a full circle showing shall be considered to be acceptable to the CITY.

**44.2.2 SELECTION OF TEST SECTIONS**

Each test section shall not exceed 400 feet in length and be conducted between adjacent manholes.

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#### **44. 2. 3            PREPARATION AND COORDINATION FOR TESTING**

The CONTRACTOR shall flush all sewers with water sufficient in volume to obtain free flow through each line. Flushing water and debris shall not enter any pump station wet well. Water will be pumped from the sewer system during flushing to an acceptable discharge location. A visual inspection shall be made and all obstructions removed.

The CONTRACTOR shall notify the DIRECTOR forty eight (48) hours prior to performing any leakage testing.

The results of all leakage tests shall be neat, legible, and certified by the DEVELOPER'S ENGINEER when presented to the CITY. The results shall be formatted and adequately labeled so that they are easily understandable.

#### **44. 3    VIDEO INSPECTION**

An internal video inspection for all gravity sewers may be performed by the CONTRACTOR to check for alignment and deflection as a substitution for the above leakage testing and lamping procedures stated in Section 44.2. Video inspection shall be used to check for cracked, broken, or otherwise defective pipe and when the system fails the above leakage testing and lamping procedures. The CONTRACTOR shall provide the CITY with a copy of the video inspection for staff review in a format acceptable to the CITY. The CITY shall respond back to the CONTRACTOR within five (5) working days after the receipt of acceptable tapes.

Prior to video inspection, the CONTRACTOR shall flush all sewers with water sufficient in volume to obtain free flow through each line. Flushing water and debris shall not enter any pump station wet well. Water will be pumped from the sewer system during flushing to an acceptable discharge location. A visual inspection shall be made and all obstructions removed.

If elected by the CONTRACTOR or when required by the CITY, the video inspection shall be conducted within 30 days after substantial completion of the gravity sewer system, provided the road base is in place and the manhole rings and covers are to grade. The requirement of the road base being in place shall be waived if the top of the sewer is 12 feet below the finished grade. In such cases, the video inspection shall be performed once the trench has been compacted up to the road base.

A final inspection of the gravity sewer system shall be conducted by the CITY prior to the end of the two (2) year warranty period.

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If any inspection reveals cracked, broken, defective, or misaligned pipe resulting in vertical sags in excess of 1-1/2 inches and in the case of PVC pipe a ring deflection in excess of 5 percent, the CONTRACTOR shall be required to repair or replace the

pipeline. The CITY reserves the right to pass a mandrel through the PVC pipe to confirm ring deflection.

Successful passage of the lamping procedure and leakage tests, or the video inspection if used as a substitute, is required before the system can be accepted by the CITY.

Prior to repair or replacement of any failed sewer pipe, the method of repair or replacement shall be submitted to the CITY for approval. Pressure grouting of pipe or manholes shall not be considered as an acceptable method of repair.