

## SECTION 02653

### SEWER PIPELINE TELEVISION INSPECTION

#### PART 1 GENERAL

##### 1.01 DESCRIPTION

- A. The work in this section includes, but is not limited to:
  - 1. The internal inspection of the sanitary sewers utilizing closed circuit cameras and associated equipment.
  - 2. The preparation of permanent records of televising activities.
  - 3. Cleaning the sewer reaches to permit visual inspection prior to televising.
- B. Related Work Specified Elsewhere
  - 1. Sewer Pipeline Testing - Section 02651

#### PART 2 PRODUCT

##### 2.01 CAMERA, MONITOR & MOBILE STUDIO

- A. Operation of the equipment shall be controlled from above ground with a skilled technician at the control panel in the television studio, controlling the movement of the television camera. The technician shall have the capability to adjust the brilliance of the built-in lighting system and be able to change the focus of the television camera by remote control.
- B. The color television camera used for the inspection and the back-up camera shall be one specifically designed and constructed for such inspection. Lighting for the camera shall be suitable to allow a clear picture for the entire periphery of the pipe. Picture quality shall be such as to produce a minimum of 600 lines of resolution, in 100% humidity conditions, from the television camera. Picture quality and definition shall be to the complete satisfaction of the Owner or Owner's representative and, if unsatisfactory, the equipment shall be removed and replaced with satisfactory equipment and the inspection shall be repeated.
- C. The view seen by the television camera shall be transmitted to color television monitor of not less than 9 inches. The television monitors shall be located inside a movable TV studio which shall be large enough to accommodate up to six people for the purpose of viewing a monitor while the inspection is in progress. The Owner or Owner's representative shall have access to view a television monitor at all times.
- D. The camera shall be capable of being moved through the sewer line in either direction at a uniform, slow rate by means of manual cable winches or motorized mechanical equipment of the indirect drive type.

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- E. A footage meter shall be provided such that the location of the camera and point of reference will be known at all times at ground level. The metering device shall be accurate to two-tenths (0.2) of a foot. A measuring target in front of the television camera shall be used as an exact measurement reference point and the meter shall be designed so that the distance recorder can be set at zero when the camera or packer is at the entrance of the pipe inside the manhole.
- F. The electricity for all TV inspection operations shall be furnished by and at the expense of the Contractor.
- G. All cables attached to the camera must be of sufficient length to ensure the televising of a given reach of sewer in one continuous operation.
- H. If in the opinion of the Owner or Owner's representative insufficient labor and/or equipment is available or if equipment supplied is not fully operation, there will be no payment until the situation is rectified.
- I. The equipment used to televise the sanitary sewers must be capable of extending a minimum of seven hundred (700) feet per set up.

#### 2.02 RECORDS

- A. Written records of all internal inspection operations shall be prepared by the Contractor. The records shall be in printed log form acceptable to the Owner or Owner's representative, indicating each section of sewer televised, Contractor's name, date, type and diameter of pipe, length of the sewer section and specific details as to service connection locations, broken pipe, the location of each infiltration point discovered and an estimate of the quantity of infiltration, and any other points of interest noted during the inspection. All locations shall be in relation to adjacent manholes and shall utilize the manhole designations shown on the sewer maps provided by the Owner. An acceptable copy of the written televising logs and the video tapes of the sewer reaches must be delivered to the Owner.
- B. Video and audio tape recording of the inspection shall be made at the direction of the Owner. The recording tape shall be VHS format and shall become the property of the Owner after completion of the sewer reach. The recording shall identify and describe the section of sewer line. Stationing shall be given by audio recording at intervals of no less than ten feet and shall be given at all points of interest such as infiltration sources and service connections. The video recording shall continuously indicate tape position and have a variable playback tape speed ranging from normal to one-third normal speed and shall have not less than 180 lines of resolution.

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#### PART 3 EXECUTION

##### 3.01 EQUIPMENT SET-UP

- A. After a sewer reach has been cleaned and tested, all necessary equipment shall be set-up in preparation for televising. Equipment set-up shall include necessary traffic control, positioning of winches, power cable and TV camera positioning in the manhole.
- B. All sanitary sewer mains (and laterals in certain instances) installed shall be cleaned at the expense of the contractor after completion of all construction and prior to televising.
  - 1. During the cleaning/flushing process, the outlet of the downstream manhole shall be plugged.
  - 2. A ¼" screen shall be installed at the invert of the downstream manhole to catch any stones and other miscellaneous debris that got into the main line during construction.
  - 3. The cleaning/flushing water shall NOT be sent down the sanitary sewer system. The cleaning/flushing water shall be pumped out of the downstream plugged manhole and disposed of in an appropriate and legal manner.

##### 3.02 TELEVISION ACTIVITIES

- A. The Contractor is requested to complete as many sewer reaches per equipment set-up as conditions permit.
- B. All new and repaired sanitary mains (and laterals when the Engineer requires) shall be televised and both a video copy and written report submitted to the Engineer for review and approval prior to the Engineer/Authority granting final approval.
- C. All televising activities shall be made in the presence of the Owner or Owner's representative.
- D. The camera shall be moved through the line at a uniform rate, not to exceed 1/2 foot per second by means of cables and winches positioned at each manhole. A suitable means of communication shall be established and maintained if remote controlled power winches are not used.
- E. The Contractor shall stop the camera at all leaks, cracks, laterals, separated joints and defects that might permit infiltration of groundwater into the sewer or where directed by the Owner or Owner's representative.
- F. If necessary, the camera shall be removed from the line and the lens cleaned. Picture quality and definition shall be to the complete satisfaction of the Owner or Owner's

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representative. Fogging conditions in the sewer atmosphere shall be eliminated by introducing forced fresh air into the sewer system or by other acceptable methods.

- G. The Contractor shall prepare the necessary written records and video tapes and manhole inspection forms at the time of televising. Copies of the written records and video tape shall be given to the Owner upon completion of a given reach of sewer.

\*\*\*END OF SECTION\*\*\*