

SECTION 02735 - TELEVISION INSPECTION OF SEWERS

City of San Diego, CWP Guidelines

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NTS: This Section specifies inspection to detect sewer problems needing repair, inspection to document the results of rehabilitation, and inspection to document the condition of a newly constructed sewer. The three purposes are expressed in separate square brackets. Edit the entire Section as appropriate for the project.

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PART 1 -- GENERAL

1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes pre-cleaning, when necessary, and performing a closed circuit television (CCTV) inspection of the indicated reaches of sewers. The minimum diameter of sewer for television inspection shall be 4 inches.
- B. [The purpose of inspection is to detect and locate defects and document the current condition of the sewer, leading to evaluation and selection of repair methodology by the OWNER.][The purpose of inspection is to inspect and document the physical condition of the sewer after rehabilitation.] [The purpose of inspection is to document the condition of the new sewer.]
- C. The CONTRACTOR is cautioned that sewage will continue to flow to the sewers and that the WORK must be performed under permit required for confined space entry conditions.

1.2 SHOP DRAWINGS AND STANDARDS

- A. The following shall be submitted in compliance with Section 01300.
 - 1. CCTV equipment operational manual.
 - 2. Location where debris from cleaning sewers will be disposed.
 - 3. Schedule for cleaning and inspecting each sewer reach.

PART 2 -- PRODUCTS (Not Used)

PART 3 -- EXECUTION

3.1 DIVERSION PUMPING

- A. The CONTRACTOR shall install and operate sewage diversion pumping equipment to maintain sewage flows without backup, overflow or spill.

3.2 CLEANING

- A. The CONTRACTOR shall select the cleaning equipment and method for cleaning based on the age, the material, and the probable condition of the sewer. More than one type of equipment or

attachments may be required on a single reach or at a single location. The CONTRACTOR shall not damage the sewer or any manhole during cleaning.

- B. When requested by the CONSTRUCTION MANAGER, the CONTRACTOR shall demonstrate the performance capabilities of the cleaning equipment and method proposed for use. If results obtained by the demonstration are not satisfactory, the CONTRACTOR shall select other methods or equipment that will clean the sewer line, and shall perform another demonstration.
- C. For water pressure cleaning equipment, the CONTRACTOR shall install a gauge to monitor working pressure on the discharge of high-pressure water pumps.
- D. The CONTRACTOR shall remove dirt, debris, and grease from the entire circumference of the sewer between manholes.
- E. Acceptance of sewer cleaning work is contingent upon the successful completion of the television inspection. If television inspection shows debris, solids, sand, grease, or grit remaining in the line, the cleaning will be considered unsatisfactory, and the CONTRACTOR shall repeat cleaning and televising of the sewer line at no increased cost to the OWNER until cleaning is acceptable to the CONSTRUCTION MANAGER.
- F. The CONTRACTOR shall remove sludge, dirt, sand, rocks, grease, roots, and other solid or semi-solid material resulting from the cleaning operation at the downstream manhole of the section being cleaned. A suitable sand trap, weir, dam, or suction in the next downstream manhole shall be installed so that solids and debris are trapped for removal. Passing debris from one sewer section to any other sewer section shall not be allowed. Debris from the manholes shall be loaded into a leak-proof, enclosed container that is permitted by applicable regulations for liquid waste hauling. All solids or semi-solid wastes shall be removed from the Site at the end of each work day. Debris, liquid waste, or sludge shall not accumulate at the Site.
- G. The CONTRACTOR shall dispose of waste using a licensed waste transporter to a location licensed for the type of waste involved.

3.3 TELEVISION

A. CCTV Equipment

- 1. The camera system shall include a pan-and-tilt, radial viewing, pipe inspection camera that pans plus or minus 275 degrees and rotates 360 degrees with zooming capability. The CONTRACTOR shall use a camera with an accurate footage counter which displays, on the operator's monitor and the videotape, the distance of the camera from the centerline of the starting manhole. The CONTRACTOR shall use a camera with height adjustment so that the camera lens is always centered at one-half the inside diameter, or higher, in the pipe being televised. The CONTRACTOR shall provide a lighting system that allows the features and condition of the pipe to be clearly seen. A reflector in front of the camera may be required to enhance lighting in large diameter pipe. The camera system shall be controlled from the operator's truck.
- 2. Recording shall be on a 4-head VHS format VCR recorded at standard play mode in color.
- 3. Videotape
 - a. Video cassette capacity shall be adequate to record inspection of at least one complete pipe segment between manholes, but no more than 5 segments shall be recorded on a

single cassette. Recording of a single segment shall not extend to more than one video cassette. The CONTRACTOR shall not leave gaps in the recording of a segment between manholes.

- b. Only segments between manholes on the same sewer reach shall be included on one videotape.
- c. Two permanent labels are required. One label shall be placed on the spine and the other on the face of the videotape.
- d. Cassette spine information
 - (1) CONTRACTOR NAME
 - (2) Project Name
 - (3) Tape Number
 - (4) Date Televised
 - (5) Date Submitted
- e. Cassette face information
 - (1) Name of street
 - (2) From Manhole Number and VCR counter number
 - (3) To Manhole Number and VCR counter number
 - (4) Pipe Length and Size
 - (5) Project Name
 - (6) Tape Number
- f. For each cassette the CONTRACTOR shall prepare a TV Inspection Report which shall be a complete written log of pipe conditions [and connections], indexed to the footage counter.

B. Inspection

- 1. The CONTRACTOR shall televise the sewer immediately after cleaning. It shall notify the CONSTRUCTION MANAGER 24 hours in advance of TV inspection so that the CONSTRUCTION MANAGER may observe inspection operations.
- 2. In addition, the CONTRACTOR shall clean all associated sewer manholes, and shall pan the camera to document the conditions of manholes. Camera operator shall slowly inspect each connection and sewer transitions from one pipe material to another.
- [3. Sewage flow during television inspection shall not be deeper than:

<u>Nominal Diameter</u> <u>Inches</u>	<u>Depth as Percent of</u> <u>Inside Diameter</u>
6 - 10	10
12 - 24	15
Greater than 24	20

If the flow exceeds the depth limit, the CONTRACTOR shall either perform the inspection during minimum flow times, pump or otherwise divert some flow, or use a camera with provisions for high velocity jet flushing.]

4. The CONTRACTOR shall move the camera downstream at a uniform rate not greater than 30 feet per minute. The CONTRACTOR shall stop and thoroughly inspect each of the following:
 - [a. Collapsed pipe, obstructions
 - b. Structural cracking, with and without deflection
 - c. Missing portion of wall
 - d. Sag, excessively deflected joint
 - e. Cracked and open joints
 - f. Root intrusion
 - g. Protruding joint sealing material
 - h. Corrosion conditions, including exposed aggregate, exposed reinforcement, and disintegrated wall which exposes the soil surrounding the pipe.
 - i. Missing, damaged, bulging PVC sheet liner.
 - j. Protruding lateral joint
 - k. Inflow point]
5. The camera operator shall log on a suitable form his/her observations in the inspection of the above items.
6. If the camera is unable to pass an obstruction even though flow is unobstructed, the CONTRACTOR shall also approach the obstruction from the other direction in order to obtain complete video on both sides of the obstruction. The CONTRACTOR shall notify the CONSTRUCTION MANAGER whenever such an obstruction is encountered. The CONSTRUCTION MANAGER will determine if the obstruction must be removed.

** END OF SECTION **