

SECTION 25

CLOSED CIRCUIT TELEVISION INSPECTION OF SEWER LINES

25.1 GENERAL

This section of the specifications shall form a part of the contract documents and should be read in conjunction with them.

The work shall include television inspection of sewer mains between manholes including a digital or audio commentary on location and distance encoding, written report and still photographs of problem areas.

The equipment, materials and methods used must produce suitable video records and logs for the identification and categorization of deficiencies, as well as the determination of the location, extent and seriousness of each deficiency.

All sewer lines shall be flushed and cleaned prior to video inspection. Lines, including stubs must be inspected with either actual flow or simulated flow produced by adding water at an upstream manhole or riser pipe. The simulated flow must produce a visible, laminar flowing stream in the line for the full length of the line being inspected. Inspections will be rejected where the simulated flow exceeds one-third the diameter of the pipe.

25.2 MATERIALS

25.2.1 VIDEO RECORDS AND INDEX PLAN

Video records are to be supplied by the Contractor and shall be in DVD format and in colour. The contractor shall set up the DVD's on a format where each section of pipe or services have a separate chapter number. All video inspections are to be done in colour and with sufficient lighting to result in clear high quality picture. The Contractor must also provide an 11" x 17" plan with an Index of video runs to pipe element or manhole numbers. Manhole numbers shall be as prescribed by Aquatera and/or the Municipal Engineer and, in the absence of such, the manhole numbers on the Detailed Engineering Drawings shall be used. The manhole numbers from the Detailed Engineering Drawings shall be on a plan showing the location and the number of the manholes, and is to be bound in with the video and index sheet. There shall be separate video DVD's for sanitary mains and services. Separate logs shall be provided for each DVD.

25.3 INSTALLATION

25.3.1 GENERAL OPERATIONS

The entire length of each sewer, shall be video inspected **from the centre of manholes to the centre of manholes and/or end of video inspection riser**. In new developments, terminating video's at the connection point to an existing stub will not be permitted. The camera unit shall, at no time, travel at a rate of speed

greater than 6 m per minute. If for any reason, the video camera unit will not pass from one manhole to another then a reverse run shall be done at no extra cost. The video inspection shall take place during low flow conditions. At no time during video inspection shall the depth of flow exceed 1/3 of the pipe diameter. Camera travel shall be in the same direction as the flow, at all times, unless impractical or when a reverse run is necessary. Newly constructed pipes are to be video inspected with simulated flow by running water into an upstream manhole or clean-out.

The camera shall be positioned centrally in the pipe with a tolerance of +/- 10%. If conditions within the pipe do not allow for this configuration, a greater tolerance may be allowed upon approval by Aquatera and/or the Municipal Engineer. Chainages for the video inspection shall begin at the inside face of the starting manhole wall and terminate at the inside face of the end manhole wall.

25.3.2 VIDEO TAPING

The video inspection of each section of sewer line shall begin with a digital or audio commentary describing the following:

- Time and date
- Weather
- Development Description and/or Phase
- Location description in an on-from-to format as described on the list of lines to be inspected
- Manhole numbers as provided by the Developer or Aquatera
- Size and use of sewer including pipe material
- Direction of flow
- Inspection Technician
- DVD identification number

This information shall also be written on the video report sheet.

25.3.3 WORK REPORT

A television work report, in log form, shall be completed during the inspection.

- a) This log shall show the exact measured location of faults including, but not limited to:

- Open joints
- Broken, cracked, collapsed or ovaled pipe
- Accumulation of debris or obstructions

- Root penetration and root rating (1 to 9 root rating system)
- Infiltration and mineral deposits
- Water depth variation and sags
- Protruding gaskets
- Service connections and type (in-line or inserta-tee)

b) The reference location shall include the distance away from the reference manhole and also the position of the fault as referred to the crown of the pipe using the clock face notation. Significant faults are to warrant audio commentary on the video tape duplicating report information. The camera shall be stopped briefly at these locations. Colour photographs shall be taken of all sewer defects. The photographs shall be coordinated with the written report by reference numbers. Photographs of all deficiencies are required. Additional photographs shall be taken as deemed necessary.

c) One copy of the final typewritten report with corresponding photographs and one copy of the video inspection DVD's shall be furnished to Aquatera or the Municipal Engineer within one week after completion of the inspection.

d) All video inspection DVD's shall be numbered and cross indexed to the typewritten report. Reports shall be bound and if more than one report is submitted in one binding, then there shall be an index sheet provided with the binding indicating the contents. Separate reports shall be submitted for mains and for services.

25.4 TESTING REQUIREMENTS OF THE CONTRACTOR

25.4.1 PRE-INSTALLATION

a) Materials

None required.

b) Systems

The Contractor must examine the mains and manholes to ensure that these facilities are adequately clean to allow video inspection.

25.4.2 INSTALLATION

a) Materials

None required.

b) Systems

None required.

25.4.3 POST-INSTALLATION

a) Materials

None required.

b) Systems

None required.

25.5 PAYMENT

Payment shall be full compensation for the procurement of all permits and processes, the supply and the installation of all materials, equipment, labour, supervision and incidentals necessary to complete the work to these specifications.

25.5.1 TELEVISION INSPECTION

Television inspection of sewers shall be measured in lineal metres (L.M.) from the inside of the manhole wall of the upstream manhole to the inside of the wall of the downstream manhole. Payment for television inspection of sewers shall be at the tendered unit price. Only one payment shall be made for the successful inspection of each section of sewer main, regardless of the number of attempts made.

25.5.2 TESTING REQUIREMENTS OF THE CONTRACTOR

There shall be no separate payment for Testing required to be done by the Contractor.

Adopted: November 2005