

# S-19 CLEANING OF GRAVITY SEWERS, MANHOLES and CATCHBASINS

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### 19.01. SCOPE OF WORK

This specification shall cover the flushing and cleaning of all combined, storm and sanitary sewers, manholes and catchbasins including the removal and disposal of all debris from the system.

### 19.02. REFERENCES OR RELATED DOCUMENTS

This specification refers to the following standards, specifications, or publications:

- S-32 – CCTV Sewer Inspections

### 19.03. EQUIPMENT

Sewers shall be cleaned using a high velocity sewer jet and must have a 246 LPM / 13,800 kPa (65 gpm / 2000 psi) water pump and 25mm (1”) I.D. hose. The minimum size of the nozzle shall be 125mm (5”) for sewers up to 375mm (15”) in diameter. The nozzle shall be capable of producing a scouring action from 15 to 45 degrees in all diameters of sewers to be cleaned.

In a sewer with a diameter of 450mm (18”) or greater, the nozzle to be used must be a heavy duty action nozzle that rides the invert of the pipe with a 360 degree rotating swivel

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attachment so that the hose cannot rotate the nozzle while in the pipe. All jets to be located on the bottom half of the nozzle and must be capable of removing heavy debris.

The equipment shall also include a high pressure wand attachment for washing and scouring manhole walls and benching/bottoms. The wand shall include an attachment capable of producing flows from a fine mist to a solid stream.

The equipment shall also include a vacuum unit for the removal of sewer debris that includes positive displacement pumps or fans producing a minimum of 700 litres per second (1483 cubic feet per minute) of air movement, a storage tank that will allow the liquid portion of the debris to be returned to the sewer (dewatering) and minimum 150mm (6") diameter suction hoses attached to a hydraulic boom.

The equipment shall also include a water tank with an approved backflow prevention device for filling the water tank from an approved source.

The equipment shall also include a communication system that is enables all crew members to easily communicate with each other and, when required, to the representative of the City Engineer.

The contractor shall provide any required traffic control signage, equipment or personnel as per the Ontario Traffic Manual - Book 7 and have all required documentation on site at all times.

#### 19.04. MATERIALS

The contractor shall supply all required materials. Arrangements for the water required for the cleaning operations will be made by the contractor with the Windsor Utilities Commission. ***Note that hydrant taps are no longer allowed in the City of Windsor.***

#### 19.05. CONSTRUCTION

##### 19.05.01 SEWERS & MANHOLES

The contractor shall completely clean all sewers and manholes of all debris including sludge, dirt, sand, gravel, rocks, bricks, grease, and other solid and semi-solid materials. This material is to then be removed from the system and disposed of by the equipment mentioned above.

The contractor shall take all necessary precautions to ensure that no flooding of public or private property occurs during the operation. The contractor shall lower the pressure of the cleaning equipment when directed by the City Engineer.

The cleaning shall begin at the upstream sewers in the system and proceed downstream with the direction of flow.

The manhole walls and benching is to be cleaned prior to cleaning of the downstream sewer.

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The contractor shall immediately notify the City Engineer upon the discovery of any pipe material or backfill material during the cleaning or removal operation and stop the cleaning operation until further directed by the City Engineer.

If a blockage is discovered that prevents the completion of the cleaning of the sewer, the contractor shall attempt to clean the blockage by a reverse setup. This would involve the cleaning equipment to be positioned at the upstream manhole and cleaning the entire sewer run from that location. The contractor is to attempt removal of the blockage for a minimum of one hour before notifying the City Engineer.

Should the blockage not be removed from the system or the sewer condition prevents the completion of the cleaning process, the contractor shall mark the location of the blockage or obstruction on the surface.

The City Engineer will arrange for an emergency sewer repair upon review of the CCTV video of the affected area.

The contractor shall immediately advise the City Engineer should any of their cleaning equipment become stuck in the sewer system. The contractor shall attempt to remove their equipment for a minimum of 4 hours using whatever means necessary. If the equipment cannot be freed after the 4 hour period then the position of the stuck equipment shall be marked on the surface. The City Engineer will then make the necessary arrangements to have the sewer pipe exposed within 48 hours of the equipment being stuck. The contractor shall be available when the sewer is exposed and opened for the remove of their equipment. The City Engineer shall then have the sewer repaired and the contractor shall being their cleaning process again from the manhole upstream of the repaired section.

The contractor shall continuously remove all debris from the downstream manhole while the cleaning operation is being undertaken. No debris is to enter the downstream sections of the system during cleaning unless approved by the City Engineer.

The contractor shall dewater the debris removed from sewers or catchbasins and legally dispose of the debris. All dewatered liquid is to be returned to the system as soon as possible at a location approved by the City Engineer. The contractor shall provide a written procedure to the City Engineer for their method of dewatering and debris disposal prior to the beginning of any work. The contractor shall provide all necessary logs and weigh tickets to prove that the debris was disposed of legally.

Any confined space entry is to be undertaken by the contractor as per the Occupational Health & Safety Act of Ontario.

### **19.05.02 CATCHBASINS**

All catchbasins are to be completely cleaned of debris including sludge, dirt, sand, gravel, rocks, bricks, and all solid or semi-solid materials.

The contractor shall document the existing condition of the catchbasins as well as the catchbasin frame and grates. The cleaning locations shall be documented using the closest

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municipal address adjacent to the catchbasin, the closest intersecting municipal streets and the compass orientation of the location.

This list shall be provided to the City Engineer to track locations that have been cleaned.

#### **19.06. QUALITY ASSURANCE**

All cleaned sewer and manholes shall be video inspected by CCTV and the inspection results provided to the City Engineer for review and acceptance as per City of Windsor Standard Specification S-32 CCTV Sewer Inspections. The submissions will be reviewed within 10 working days of their submission.

All manholes and catchbasins are to be opened by the contractor for visual inspection by the City Engineer.

Any areas determined to be deficient by the City Engineer shall be cleaned again at the contractor's expense and resubmitted for approval following the procedures above.

#### **19.07. MEASUREMENT FOR PAYMENT**

Sewer cleaning will be paid by the linear metre as per the contract document. The measurement is from the center of manhole to the center of manhole for the sewer run cleaned and will be accepted and measured by the City Engineer.

Manhole cleaning will be included in the sewer cleaning price per metre.

The dumping of all debris shall be included in the sewer cleaning price per metre.

Catchbasin cleaning will be measured on a per unit basis.

The dumping of all debris shall be included in the sewer cleaning price per metre.

#### **19.08. BASIS OF PAYMENT**

The contractor shall submit all documentation as per this specification for review and acceptance as the basis of payment.

The City Engineer shall undertake all required documentation for any required information for payment.