

**SECTION 02620
STORM SEWER LINE CLEANING AND TELEVISIONING**

PART I: GENERAL

1.1 GENERAL REQUIREMENTS

- A. Cleaning of Storm Sewer Lines of foreign materials and complete a closed-circuit television (CCTV) inspection of all lines and facilities in this project to include all the equipment, labor and materials necessary to perform all work for sewer line cleaning and televising.

1.2 MEASUREMENT AND PAYMENT

- A. Unit Prices:
 - 1. No separate payment shall be made outside of those listed in Document 00300-Unit Price Bid Form.
 - 2. Refer to Section 01270 - Measurement and Payment for unit price procedures.

1.3 REFERENCES

- A. CFTS – City of Friendswood Technical Specifications.
- B. NASSCO – National Association of Sewer Service Companies.
 - 1. Jetter Code of Practice.
 - 2. Pipe Line Assessment and Certification Program (PACP).
 - 3. TV inspection form and sewer condition codes.

1.4 SUBMITTALS

- A. Conform to requirements of Section 01330 - Submittal Procedures.
- B. The Contractor shall submit all manufacturer's brochures and specifications for the cleaning equipment.
- C. Methods of cleaning and clearing lines shall submit for review and approval by the Project Manager.
- D. The Contractor shall provide a safety plan and identify designated safety supervisory personnel. The plan shall include confined space entry provisions and training, listing of personnel protective equipment (PPE), and a Traffic Control Plan (TCP).
- E. CCTV Technician NASSCO PACP Certification – The Contractor shall provide certification documentation for all technicians on this project.

1.5 QUALITY ASSURANCE

- A. The Contractor shall comply with all codes, laws, ordinances and regulations of the governmental authorities having jurisdiction over this work.
- B. The Contractor shall comply with the latest revision of the Occupational Safety and Health Administration manuals for construction and confined spaces.

- D. The storm sewer line cleaning shall remove foreign materials from the lines and restore the sanitary sewer to a minimum of ninety-five percent (95%) of the original carrying capacity or as required for proper seating of an internal pipe line. It is recognized that there are some conditions such as broken pipe and major blockages that prevent cleaning from being accomplished or where additional damage would result if cleaning were attempted or continued. Should such conditions be encountered, the Contractor shall immediately notify the Project Manager and the Contractor shall not be required to clean that section of pipe.

1.6 COORDINATION

- A. The Contractor shall completely remove and dispose of all dirt, rubbish and surplus, and unsuitable materials at the end of each work day at no additional cost to the City and in accordance of Section 01580 – Waste Material Disposal.
- B. The Contractor shall be allowed to use the City water supply for filling the tanks. The Contractor shall go to the Public Works Department and obtain, by leaving a deposit, a meter for fire hydrants. There shall be no charge for the water used during this operation. There shall be either an RPZ or and an air gap for filling of the tanks. All filling operations are to be reviewed by the Project Manager.

PART II: PRODUCTS

2.1 HIGH VELOCITY JET (HYDRO CLEANING) EQUIPMENT

- A. All high-velocity sanitary sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of two (2) or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from fifteen degrees (15°) to forty-five degrees (45°) in all sizes of pipe designated to be cleaned. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floors. The gun shall be capable of producing flows from a fine spray to a solid stream. The equipment shall carry its own water tank, auxiliary engines, pumps, hydraulically driven hose reel and recovery tank.
 - 1. The equipment shall have a minimum of six hundred feet (600 Ft) of one inch (1 In) I.D. high pressure hose.
 - 2. The nozzles shall have a capacity of sixty gallons per minute (60 GPM).
 - 3. The minimum working pressure shall be one thousand pounds per square inch (1000 psi).

2.2 CCTV EQUIPMENT

- A. The CCTV digital cameras used for inspection shall be specifically designed and constructed for such inspection. The cameras shall be operative in one hundred percent (100%) humidity conditions and

capable of withstanding exposure to concentrations of pollutants typically found in sewage.

- B. The view seen by the camera shall be transmitted to a monitor greater than or equal to (\geq) fifteen inches (15") as measured on a diagonal dimension.
- C. The view seen by the camera shall be transmitted to a monitor greater than or equal to (\geq) fifteen inches (15") as measured on a diagonal dimension.
- D. Camera systems shall be able to navigate minor objects, roots, and debris. The system used to move the camera through the storm sewer pipes shall not obstruct the camera's view or interfere with the proper documentation of the storm sewer conditions. The camera shall be capable of traversing the storm sewer line for a minimum distance of one thousand feet (1,000').
- E. The Contractor shall provide all ancillary wheels, crawlers, tracks, or other adjustment plates, skids, arms, axles, etc. as may be necessary or dictated by flow conditions, pipe diameter, etc. These accessories shall be utilized to stabilize the camera in the pipeline, provide adequate propulsion in the pipeline for the camera, and/or to raise the camera above the flow to provide a quality picture during CCTV inspection.
- F. Cameras shall record all images digitally in color. Cameras shall have pan and tilt capabilities and shall have a minimum of three hundred sixty-degree (360°) by one hundred eighty-degree (180°) rotation capability. Illumination sensitivity shall be three (3) lux or less and provide a minimum of four hundred sixty (460) lines of resolution. The focal distance shall be an adjustable range from one inch (1") to infinity. There shall be no geometric distortion of image.
- G. Cameras shall also provide ancillary or supplemental lighting packs or units to provide sufficient light and illumination in larger diameter pipes or pipes where additional lighting may be necessary. Lighting intensity shall be adjustable to minimize glare. Lighting and picture quality shall be adjustable to provide a clear picture of the entire periphery of the pipeline for all conditions encountered.
- H. The distances traveled by the camera shall be measurable to one-tenth of a foot (0.1') by an onboard measuring device and shall provide video display readout of said distances in units of one-tenth of a foot (0.1'). The cable footage counter shall be accurate to plus or minus one foot ($\pm 1.0'$) per one hundred feet (100').

2.2 RECORDING DEVICE

- A. Recording device shall be high quality color recording device capable of recording DVD's.
- B. The following information shall be available as follows:
 - 1. Each DVD media shall be permanently labeled with the following information:
 - a. Project Name.

- b. Project Number.
- c. Manhole to manhole designation.
- d. Name of Contractor.
- e. Date Televised.
- 2. The following information shall be recorded and visible on screen for ten seconds (10s) immediately before the start of televising each segment:
 - a. Project Name.
 - b. Project Number.
 - c. Upstream manhole number designation.
 - d. Downstream manhole number designation.
 - e. Pipe Material.
 - f. Pipe Size.
 - g. Name of Contractor.
 - h. Date Televised.
 - i. Street and/or Easement Location.
- 3. A continuous uninterrupted recording of distance from the insertion manhole shall be visible at the lower left-hand corner of the screen.
- 4. Video shall be formatted as Window Media Video v9 (.WMV) with a minimum compression of one (1) mb/sec, a resolution of six hundred forty (640) by four hundred eighty (480), and a NTSC format.

PART III: EXECUTION

3.1 CLEANING PRECAUTIONS

- A. During storm sewer cleaning operations, satisfactory precautions shall be taken in the use of the cleaning equipment to ensure that the water pressure does not create damage to public or private property. Extraordinary care shall be taken to prevent the nozzle from causing damage to people, vehicles or other property that are in the vicinity of or around the equipment.
- B. The Contractor shall be responsible to make notification to all residents and businesses with back-yard or side-yard storm sewer systems where work will be taking place. Notifications shall be no less than forty-eight (48) hours nor no more that two (2) weeks prior to commencing work.

3.2 STORM SEWER LINE CLEANING

- A. Water required for jetting and cleaning shall be furnished by the City at no charge, however the Contractor shall be required to supply a deposit for the fire hydrant meter. The Contractor shall provide a backflow protection device to prevent cross contamination of the City's water distribution system.
- B. The designated storm sewer sections shall be cleaned using high-velocity jet equipment. The equipment shall be capable of removing roots, dirt, grease, sand, rocks and other materials and obstructions from

storm sewer lines and manholes. There shall be a debris catcher on the downstream manhole. If cleaning of an entire section cannot be successfully performed from one (1) manhole, the equipment shall be set up on the other manhole and cleaning again attempted. If again successful cleaning cannot be performed or the equipment fails to transverse the entire section, it shall be assumed that a major blockage exists, and the cleaning effort shall be abandoned after notification to and approval by the Project Manager.

- C. The Contractor shall dewater and remove all sludge, dirt, sand, rocks, and other solid material and debris resulting from the cleaning operations from the downstream segment being cleaned.
- D. Passing material from sewer segment to sewer segment shall not be permitted.
- E. All removed material shall be dumped at an acceptable and approved location to receive the waste. The Contractor shall be responsible for all handling, hauling, and disposal of all debris, silt, and other accumulated solids removed from the storm sewers. All loads SHALL be weighed, and weigh tickets given to the Project Manager for verification.
- F. Cleaning of Storm Sewer lines from the last manhole to outfall shall be done in such a manner that the debris, silt, etc. shall not fall into detention ponds, drainage swales, or waterways.

3.2 ROOT REMOVAL

- A. All roots (with the exception of “fine roots” as defined in PACP) shall be cut to within one inch (1”) or closer of the pipe wall.
- B. All lines requiring root cutting shall have roots cut by mechanical means from the downstream manhole to the mass. No “reverse cutting” from the upstream side shall be permitted.
- C. Televising may be stopped, and root cutting executed while the video recording is paused.
- D. Storm Sewer Structures are not required to be inspected as part of the contract, however the Contractor shall make note and communicate to the Project Manager any structure appearing to be structurally deficient which may cause a safety hazard or flooding risk.

3.4 MATERIAL REMOVAL

- A. Sludge, dirt, rocks, sand, grease, roots and other solid or semi-solid material resulting from cleaning operation shall be captured and removed at the downstream manhole of the section being cleaned, loaded in a suitable container, transported to the nearest wastewater treatment facility and disposed of at that facility in accordance with all requirements and charges and as specified in Section 01580 – Waste Material Disposal.
- B. UNDER NO CIRCUMSTANCES SHALL SEWAGE OR SOLIDS OR ANY OTHER TYPE OF WASTE MATERIAL FROM THIS OPERATION THAT HAS BEEN REMOVED FROM THE CITY STORM SEWER SYSTEM,

BE DUMPED ONTO STREETS OR INTO DITCHES, CATCH BASINS, STORM DRAINS, EXISTING SANITARY SEWER MANHOLES, ON THE GROUND OR INTO STREAMS.

3.5 CLEANING WATER DISPOSAL

- A. Water used to clean the sewer lines shall be discharged into the sanitary sewer system downstream of the cleaning operation or as otherwise directed by the Project Manager.
- B. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR DISCHARGE WATER USED TO CLEAN THE SEWER LINES ONTO STREETS OR INTO DITCHES, CATCH BASINS, STORM DRAINS, EXISTING SANITARY SEWER MANHOLES, ON THE GROUND OR INTO STREAMS. Water discharge shall only be allowed to downstream manholes.

3.7 FINAL ACCEPTANCE

- A. Acceptance of storm sewer line cleaning shall be made upon completion of the television inspection Storm Sewer Lines. The DVD media and reports shall be reviewed and approved by the Project Manager. Any television inspection that shows the cleaning to be unsatisfactory shall require the process of re-cleaning and re-inspecting to be repeated until the sanitary sewer line cleaning is satisfactory to the Project Manager. Re-cleaning and re-inspection shall be done at no additional cost to the City.

END OF SECTION