

SECTION 810

SEWER LINE CLEANING

I. GENERAL

1.1 DESCRIPTION OF WORK

The work covered by this section consists of providing all labor, equipment, material and supplies and performing all operations required to clean sewer lines and manholes prior to the internal television inspection(s) and repair operations.

- A. **Sewer Line Cleaning:** The intent of sewer line cleaning is to remove foreign materials from the pipes to prepare the lines for television inspection and repair operations. Since the success of other phases of work depends a great deal on the cleanliness of the lines, the importance of this phase of the operation is emphasized. 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 not be required to clean those specific sewer sections. If, in the course of normal cleaning operations, damage does result from pre-existing and unforeseen conditions such as broken pipe, the Contractor shall not be held responsible for the damages.
- B. **Manhole Cleaning:** All concrete and masonry surfaces must be clean prior to repair. Grease, laitance, loose bricks, mortar, unsound concrete, wall mounted steps (cut flush with wall), and other materials must be completely removed. Water blasting (minimum 1200 psi) utilizing proper nozzles shall be the primary method of cleaning; however, other methods such as wet or dry sandblasting, acid wash, concrete cleaners, degreasers or mechanical means may be required to properly clean the surface. Surfaces on which these other methods are used shall be thoroughly rinsed, scrubbed, and neutralized to remove cleaning agents and their reactant products.
- C. **Disposal of Materials:** All waste materials, including but not limited to excavated materials, demolished pavement, arboreal (landscaping) waste and other debris, that are not suitable for project related purposes (e.g., backfill) or are surplus to the needs of the project, both as determined by the Owner, shall become the property of the Contractor. The Contractor shall dispose of all such material in accordance with local, Commonwealth, and Federal regulations at no additional cost to the Owner.

1.2 SUBMITTALS

Submittals shall be made by the Contractor in accordance with the procedures set forth in Section 105 - Control of Work, and as described below.

- A. The Contractor shall submit a Disposal Plan for preview and acceptance by the Owner prior to performing any work that might generate waste materials. The plan shall include a complete description of the materials that are expected to be encountered and their proposed disposal site(s). The Contractor may change his Disposal Plan only by written notice to the Owner. The acceptance of a plan and/or any related notice to the Owner must be evidenced by a written response from the Owner.

- B. The Contractor shall insure that all permits related to his disposal operations have been obtained, and the Contractor shall comply with all requirements of those permits. The Contractor shall show evidence that all required permits have been obtained for all disposal sites by submitting a copy of all such permits to the Owner as part of the Contractor's Disposal Plan. Expenses related to the disposal plan and related disposal activities, including debris disposal, shall be considered incidental.
- C. Copies of records of all disposals of solids or semisolids resulting from cleaning operations in accordance with Section 107 - Legal Relations and Responsibility to the Public.
- D. The Contractor shall submit clarification in writing that backup equipment is available and can be delivered to the site within 24 hours.
- E. The Contractor must have a valid Sewage Handling Permit from the Commonwealth of Virginia Health Department as required in 12VAC5-610. A copy of this permit must be on file with the Owner prior to beginning any sanitary sewer pipe cleaning or pump and haul operations.

II. EXECUTION

2.1 GENERAL

- A. Satisfactory precautions shall be taken to protect the sewer lines from damage that might be inflicted by the improper use of cleaning equipment. Sewers damaged, as a result of the Contractor's improper operations, shall be promptly repaired by the Contractor at no cost to the Owner.
- B. All equipment, devices, and tools required for this Contract shall be owned (or leased) and operated by the Contractor.
- C. Cleaning Equipment

It is at the Contractor's discretion which type of equipment used for cleaning of mainline sewers; however, the equipment may be subject to approval by the Owner.

- 1. Rodding: The Contractor shall provide all mechanically powered equipment necessary for proper rodding, bucketing, brushing, root cutting and flushing of the sewers in the sizes indicated in the Contract Documents. The equipment used for cleaning shall be that of a heavy-duty power rodding machine which is capable of rodding distances of up to 1,000 feet in one setup. It shall have the ability to spin the rod either clockwise or counterclockwise, be able to be pushed straight out or pulled back without rotating the machine. It shall also be capable of pulling pipe-size swabs or brushes back through the pipeline for cleaning and flushing purposes.
- 2. Bucket Machine: The Contractor shall also provide heavy-duty bucket machines, as necessary, for use on dragline work to clean the pipeline with buckets, brushes, scrapers, swabs or other similar devices in order to effectively remove the debris and provide a clean sewer for the inspection.
- 3. Hydraulic Flusher: Hydraulic high-pressure sewer cleaners used for sanitary sewer

cleaning shall be specifically designed and constructed for such cleaning. The sewer cleaner shall have a minimum usable water capacity of 600 gallons and a pump capable of delivering at least 30 gallons per minute (gpm) at 100 psi. Pressure to the nozzle shall be regulated by a relief valve adjustable from 1 to 1500 psi minimum.

4. All high-velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of two or more high-velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 to 45 degrees in all size lines designated to be cleaned. Equipment shall also include a high-velocity gun for washing and scouring manhole walls and floor. 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, and hydraulically driven hose reel.
5. **Pigging:** The hydraulically propelled equipment used shall be a movable dam type and be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer. The movable dam shall be equal in diameter to the pipe being cleansed and shall provide a flexible scraper around the outer periphery to insure removal of grease. If sewer cleaning balls or other equipment, which cannot be collapsed, are used, special precautions to prevent flooding of the sewers and public or private property shall be taken.

2.2 CLEANING OPERATIONS

A. General

1. Approval for potable water withdrawal from hydrants must be obtained from the Water System Owner prior to any cleaning operations. Any costs for such approval and delivery/disposal of such potable water shall be borne by the Contractor.
2. The specific project sections shall be cleaned using hydraulically propelled, high-velocity jet, or mechanically powered equipment. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the sewer lines and manholes. If cleaning of an entire sewer section cannot be successfully performed from one 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 traverse the entire pipeline section, it will be assumed that a major blockage exists and the cleaning effort shall be abandoned.
3. Cleaning shall be performed prior to lining of the sewer.
4. Existing flows shall not be interrupted for periods longer than specified in Section 110 - Special Provisions. The Contractor shall take necessary precautions to prevent sewage backup and shall be responsible if damage results there from. Sewage diverted during cleaning operations shall be returned to the sanitary system and not discharged into any surface water body, storm drain system.
5. Debris accumulated during cleaning operations shall be removed from the sewer and properly disposed of in accordance with the approved Disposal Plan.

B. Cleaning Precautions

1. During all cleaning and preparation operations, all necessary precautions shall be taken to protect the sewer from damage. During these operations, precautions shall be also taken to insure that no damage is caused to public or private property adjacent to or served by the sewer or its branches in accordance with Section 107 - Legal Relations and Responsibility to the Public. Any damage caused to public or private property as a result of such cleaning and preparation operations shall be restored to pre-existing conditions by the Contractor at no additional costs to the Owner.
2. Satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools (which depend upon water pressure to provide their cleaning force) or tools which retard the flow in the sewer line are used, precautions shall be taken to insure that the water pressure created does not damage or cause flooding of public or private property being served by the sewer. When possible, the flow of sewage in the sewer shall be utilized to provide the necessary pressure for hydraulic cleaning devices. When additional water from fire hydrants is necessary to avoid delay in normal work procedures, the water shall be conserved and not used unnecessarily. Access to fire hydrants for the purpose of fire protection shall be maintained at all times.

C. Root Removal

1. Roots shall be removed in the designated sewer sections and manholes where root intrusion is a problem and where authorized by the Owner. Special attention should be used during the cleaning operation to ensure almost complete removal of roots from the joints.
2. Any roots which could prevent the proper seating and application of the liner shall be removed. Procedures may include, but are not limited to, the use of equipment that can be used and operated remotely, mechanical equipment such as rodding machines, bucket machines and winches using root cutters and porcupine, and equipment such as high-velocity jet cleaners.
3. Chemical root treatment shall be used before or following the root removal operation, depending on the manufacturer's recommendation. Contractor shall capture and remove all roots from the line at the downstream manhole.

D. Chemical Root Treatment

To aid in the removal of roots, pipeline sections that have root intrusion shall be treated with an acceptable herbicide. The application of the herbicide to the roots shall be done in accordance with the manufacturer's recommendations and specifications in such a manner to preclude damage to surrounding vegetation. The active ingredients shall have no adverse effect on the performance of the wastewater treatment plant, and shall be registered with the Environmental Protection Agency. Any damaged vegetation so designated by the Owner shall be replaced by the Contractor at no additional cost to the Owner. All safety precautions as recommended by the manufacturer shall be adhered to concerning handling and application of the herbicide.

E. Material Removal and Disposal

1. All sludge, dirt, sand, rocks, grease, roots, and other solid or semisolid material resulting from the cleaning operation shall be removed at the downstream manhole of the section being cleaned. When hydraulic cleaning equipment is used a suitable dam or weir shall be placed in the downstream manhole to trap all such materials. Passing material from pipeline section to pipeline section, which could cause line stoppages, accumulations of sand in wet wells, or damage pumping equipment, shall not be permitted.
2. Under no circumstances shall sludge or other debris removed during these operations be dumped or spilled into streets, ditches, storm drains or other sanitary sewers, in accordance with Section 107 - Legal Relations and Responsibility to the Public. All solids or semisolids resulting from the cleaning operations shall be removed from the site and disposed of by the Contractor in accordance with the approved Disposal Plan at the Contractor's cost. Copies of records of all disposals shall be furnished to the Owner, indicating disposal site, date, amount and a brief description of material disposed. All materials shall be removed from the site no less often than the end of each workday. Under no circumstances will the Contractor be allowed to accumulate debris, etc., on the site of work beyond the stated time, except in totally enclosed containers and as acceptable to the Owner. The Contractor is advised that he shall not dispose of this material by legal or illegal dumping on private or public property, by sale to others, or any means other than those given above.
3. The Contractor shall keep his haul route and work area(s) neat and clean and reasonably free of odor, and shall bear all responsibility for the cleanup of any spill which occurs during the transport of cleaning/surface preparation by-products and the cleanup of any such material which is authorized by or pursuant to this Contract and in accord with applicable law and regulations. The Contractor shall immediately clean up any such spill, or waste. If the Contractor fails to clean up such spill, or waste immediately, the Owner shall have the right to clean up or arrange for its cleanup and shall charge to the Contractor all costs, including administrative costs and overhead incurred by the Owner in connection with such cleanup. The Owner shall also charge to the Contractor any costs incurred or penalties imposed on the Owner as a result of any spill, dump or discard. Under no circumstances is this material to be discharged into the waterways or any place other than where authorized to do so by the appropriate authority.
4. The general requirements for vehicles hauling such waste material are as follows. Transport vehicles must be of type(s) approved for this application by the political jurisdictions involved. General requirements are that the vehicles have watertight bodies, that they be properly equipped and fitted with seals and covers to prohibit material spillage or drainage, and that they be cleaned as often as is necessary to prevent deposit of material on roadways. Vehicles must be loaded within legal weight limits and operated safely within all traffic speed regulations.
5. The routes used by the Contractor for the conveyance of this material on a regular basis shall be subject to approval by the governing authority having jurisdiction over such routes.

F. Acceptance of Cleaning Operation

1. In Support of Rehabilitation Activities: Acceptance of sewer line cleaning shall be deemed sufficient when pipe is clean enough for installation of the particular rehabilitation method, in accordance with manufacturer's recommendations and the

Owner's approval.

CCTV inspection shall be performed immediately following cleaning of the line, and in no case more than 1 hour later. If the television inspection shows the cleaning to be unsatisfactory, the Contractor shall be required to re-clean and re-inspect the sewer line until the cleaning is shown to be satisfactory, at the Contractor's expense.

2. Sewer Cleaning Only: Acceptance of sewer line cleaning shall be when a minimum amount of debris is observed to be removed from the sewer section.

III. MEASUREMENT FOR PAYMENT

- A. Sewer line cleaning will be paid on the basis of:
 1. light cleaning (cost per linear foot for up to 3 passes), and
 2. heavy cleaning (light cleaning, plus cost per linear foot per extra pass) unless performed in conjunction with a rehabilitation procedure. No payment will be made until disposal tickets for debris removed are submitted.
- B. Manhole cleaning will be paid on the basis of each manhole structure cleaned, unless performed in conjunction with a rehabilitation procedure.

End of Section