



WASTEWATER DEPARTMENT
STANDARD SPECIFICATIONS

SECTION 402
CLEANING OF SANITARY SEWERS

JANUARY 1, 2019

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402.01 GENERAL**A. Description**

1. Provide all labor, materials, tools, equipment and incidentals as shown, specified, and required to clean the pipelines.
2. The cleaning Work required includes, but is not limited to, the following:
 - a. Field locating all manholes along the sewer reaches to be cleaned.
 - b. Normal and heavy cleaning of existing sanitary sewers.
 - c. Cutting of roots, grease, intruding sealing ring material and objects wedged in pipe joints from existing sanitary sewers.
 - d. Removal of debris from the sewers.
 - e. Disposal of waste and sediment.
 - f. Cleaning up as the Work progresses and after the completion of all Work activities.
 - g. All other Work required for the complete and satisfactory cleaning of the pipelines.

B. Definitions

1. Normal cleaning – cleaning accomplished using water jets to scour and remove debris, grease, etc. from pipe and manhole in 1 to 3 complete passes of the nozzle.
2. Root cutting and grease cutting – removal of roots larger than fine roots (as defined by PACP), hardened grease and intruding sealing ring material using cutting device.
3. Heavy cleaning – cleaning accomplished using water jets to scour and remove debris, grease, etc. from pipe in 4 or more complete passes of the nozzle.

C. General Precautions

1. This Contract requires work in active sewers. Adhere to all federal, state and local requirements for safety in confined spaces.
2. Take precautions to protect sewer mains, laterals and manholes from damage that might be inflicted by the improper selection of the cleaning process or improper use of the equipment.
3. When using hydraulically propelled devices, take precautions to ensure that the water pressure created does not cause damage or flooding to public or private property.
4. Do not surcharge the sewer beyond the elevation that could cause overflow of sewage into area waterways, homes, or buildings or onto the ground.
5. Some of the manholes accessing sections of the sewer included in this work are located outside the right-of-way.
6. Restore or repair any facility, public or private, which is damaged by CONTRACTOR actions at no cost to OWNER.

D. Submittals

Plan for disposal of debris and sediment removed from the sewer lines.

E. Qualifications

CONTRACTOR shall have experience in the cleaning of sewers. Documentation of experience shall be furnished to the ENGINEER upon request.

402.02 PRODUCTS

A. Mainline Sanitary Sewer Cleaning Equipment

1. Sewer cleaning equipment shall consist of truck-mounted, high velocity hydro-cleaning equipment. The equipment shall be provided with a minimum of 500 feet of one-inch inner diameter high-pressure hose with a selection of high velocity nozzles, as required for the cleaning operation. The various nozzles shall produce a scouring action from 10 to 45 degrees in all size sewers to be cleaned. Use nozzles matched to the pumps and the site-specific cleaning requirements. Mount all nozzles with skids. A tiger tail or boot or downhole roller is required. A pressure gauge shall show operating pressure and a flow meter shall show flow

rate. A table to translate shown pressures to delivery pressure shall accompany each cleaner unit.

2. The pumps shall be capable of delivering a minimum 60 gpm at 2,000 psi at the nozzle head. A relief valve shall regulate pressure to the nozzle. The unit shall carry its own water tank, minimum of 1,000 gallons, auxiliary engines and pumps, and a hydraulically-driven hose reel.
3. All controls shall be located so that the equipment can be operated above ground.
4. Include appropriate adaptors, hoses and nozzles for cleaning laterals from mainline sewer.

B. Vacuum Equipment

1. Provide equipment capable of removing all sand, dirt, rocks, roots, and other debris from the sewer and manhole.
2. Provide screens to prevent scoured debris from migrating downstream of the limits of the Work.

C. Cutting Equipment

Mainline Sewers: Provide equipment capable of mechanically removing roots, grease, and intruding seal material. Devices shall include a root saw, spring blade root cutter chuck, chaincutter, or approved equal.

D. Flushing/Cleaning Water

Provide all flushing water required for the cleaning of sewers either by truck or in accordance with surface water removal requirements. Provide proof that all flushing water was acquired lawfully. The CONTRACTOR may request to the OWNER a meter for use of hydrant water.

402.03 EXECUTION

A. Mainline Sanitary Sewer Cleaning

1. Thoroughly clean all pipeline reaches in order to permit an unrestricted inspection by closed circuit television. Particular emphasis shall be afforded to the removal of accumulated grease, roots, sand, rocks, sludge and other debris so that the video inspection will show clearly all portions of the pipe being inspected. Pressure at the nozzle shall be between 1500 psi and 2000 psi and flow rate shall be between 60 gpm and 75 gpm

during cleaning operations in the sewer, unless otherwise approved by the ENGINEER.

2. Clean upstream reaches of sewers before the downstream reaches.
3. Insert cleaning equipment into the downstream manhole of a given reach and pull the debris downstream. Reverse setups may be used if all debris is removed (i.e., no material is passed to the adjacent pipe segment).
4. In mainlines, at a minimum, make one pass with a 30° - 45° nozzle at a rate not greater than 20 feet per minute, and one pass with a 10° - 15° nozzle at a rate not greater than 30 feet per minute.
5. Rig winching equipment so as not to damage the existing pipeline or manholes.
6. During cleaning, restrict the flow level in the pipe to a maximum of 30 percent of the pipe diameter. Take particular care to avoid flooding house connections during cleaning operations.
7. Remove any blockages of lateral building connections resulting from the cleaning or other items of Work by cleaning of the building connection at no additional cost to the OWNER.

B. Root, Grease, and Intruding Seal Material Removal

1. Remove roots by suitable mechanical cutting devices or by hydraulic procedures such as with high-pressure jet cleaners. No roots of length greater than one and a half inches (1½-inch) shall remain following root removal procedures.
2. Remove all grease thicker than 1 inch. Use suitable mechanical cutting devices to remove grease.
3. Remove objects wedged in pipe joints and intruding sealing ring material.

C. Debris Removal

1. Remove all bricks, rocks, debris, sludge, dirt, sand, grease, roots, and other materials from the sewer and manhole and collect and remove the resulting debris from the downstream manholes of the sewer sections being cleaned. Utilize control measures in downstream manholes as necessary to prevent debris, sludge and other materials from passing

through manholes to a downstream sewer section not scheduled for cleaning by CONTRACTOR that same day.

2. When removing materials from manholes, return the discharge and drainage liquid stream to the downstream sewer and discharge downstream for disposal. Under no circumstances shall sewage or solids be dumped onto the ground surface, street, stream, ditches, catch basins, or storm drains. All solids and semi-solids shall be placed in a watertight container so that no spillage or leakage will occur, covered to minimize odors, and disposed by the CONTRACTOR. The CONTRACTOR is responsible for all operations and costs associated with removal, transportation, and disposal of debris collected during the cleaning operations.

D. Disposal

Disposal of the liquid only from mainline cleaning operations shall be decanted into the sanitary sewer system under the supervision of the Owner. Disposal of the debris/solids removed from the sanitary sewer system shall be made at a permitted facility.

E. Field Quality Control

Acceptance of pipeline cleaning shall be made upon the successful completion of the television inspection documenting that all required debris, roots, and grease are removed to the satisfaction of the ENGINEER. If television inspection shows debris, solids, sand, grease, or grit remaining in the line, re-clean and re-inspect the pipeline at no additional compensation.