



**CITY OF EAST PROVIDENCE
RFP EP 22/23 - 03**

**STORM DRAIN CCTV INSPECTION AND
CLEANING**

December 2022

STORM DRAIN CCTV INSPECTION AND CLEANING

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SECTION 01150

MEASUREMENT AND PAYMENT

PART 1.00 - GENERAL

1.01 PAYMENT GENERAL

- A. Payment of the price set forth in the proposal is deemed to be full compensation for all mobilization and demobilization, materials, labor, tools, equipment and incidentals necessary to perform the work.
- B. It is the intention of these specifications and associated contract drawings to call attention to certain project features. Any related miscellaneous or incidental work not specified but obviously necessary to adequately complete the work, shall be included within the Unit Prices.

1.02 CCTV Inspection of 12-48 drainage pipe (all types)

- A. Payment

Payment will be based on the number of linear feet videoed and recorded and the recordings provided to the City on a portable hard drive. Pipe segments requiring a second pass due to improper cleaning shall not be paid by the City. The Contractor shall also update the GIS drainage plans with redline mark-ups based on the CCTV inspection and provide these plans to the City either at the end of each month or at the end of the job.

1.03 Light Cleaning drainage pipe 12-48-inch.

- A. Payment

Payment will be based on the number of linear feet

cleaned. 1.04 Heavy Cleaning drainage pipe 12-48-inch

- A. Payment

Payment will be based on the number of linear feet cleaned as described in section 02765 Storm Drain and Manhole Cleaning.

1.05 Police Detail

- A. Payment

The contractor shall be responsible to coordinate all police details by calling 401-435-7601. Failure to notify the Police Department for cancellations shall result in the contractor paying for those hours billed. Otherwise the City shall pay for the police details.

1.06 WORK BEYOND SCOPE OF CONTRACT

A. Measurement and Payment

1. Necessary work outside the scope of this contract shall be undertaken only after submittal and approval of a change order request. Payment for work completed as part of any change order shall conform to the following.
 - **LABOR** including foreman, not including superintendent, to include all insurance and fringe benefits such as social security, pension, unemployment, etc.
 - **COST OF MATERIALS** entering permanently into the work. All invoices must be submitted to the City.
 - **THE RENTAL COSTS** of all construction plant and equipment used in performing this work. Blue Book rates will be used.
 - **POWER AND CONSUMABLE SUPPLIES** for the operation of power equipment.

1.07 APPLICATION FOR PAYMENT

- A. CONTRACTOR shall submit an Application for Payment for completed work in accordance with Article 8, Payments to Contractor, on a monthly basis.
- B. Application for Payment may be submitted using standard AIA Original Document G702, or other agreed upon format.
- C. Application for Payment shall include an itemized breakdown of work completed in tabular form with the following information: Description of Work, Total Cost, Quantity for Payment this Application, Quantity Previously Paid, Quantity to Date, Amount this Application, Amount Previous Application, Amount Paid to Date, Percent Complete.
- D. Each Application for Payment shall be accompanied by a Work Summary Sheet detailing quantities installed at each location for the application period.
- E. Certified weekly payroll documents shall be included with the payment request.

END OF SECTION

SECTION 01570

TRAFFIC CONTROL

PART 1.00 GENERAL

1.01 DESCRIPTION OF WORK

- A. The CONTRACTOR shall keep the roadway under construction open to traffic for the full length of the project and shall provide a sufficient number of travel lanes and pedestrian passway to move that traffic ordinarily using the roadway. The travel lanes and pedestrian passway shall be drained and kept reasonably smooth, clean and in suitable condition at all times in order to provide minimum interference to traffic consistent with the proper prosecution of the work.
- B. Related Requirements Specified Elsewhere:
 - 1. Temporary Facilities and Controls - Section 01500.

PART 2.00 PRODUCTS

2.01 MATERIALS

- A. All the materials provided to be utilized as traffic control devices shall conform to the requirements of the Manual on Uniform Traffic Control Devices and the Rhode Island Department of Transportation.

PART 3.00 EXECUTION

- A. The CONTRACTOR is placed on notice that the maintenance and protection of traffic over this roadway during construction period is considered as important and necessary an item of work as is the actual construction itself. The CONTRACTOR shall at all times conduct his operation in a manner to insure the safety of not only the motorist but also the pedestrian and his own employees.
- B. Suitable ingress and egress shall be provided at all times where required, for all intersecting roads and for all abutting properties having legal access.
- C. The CONTRACTOR shall furnish all signs, barricades, traffic cones, traffic delineators, pavement markings and warning devices necessary to forewarn, safeguard, and guide the traveling public through the construction area.
- D. The CONTRACTOR shall erect, maintain, wash, move, adjust, replace, relocate, re-erect and store these signs, barricades, traffic cones, delineators and warning devices when, where and as directed by the CITY.
- E. All signs, barricades, traffic cones, traffic delineators and warning devices shall conform to the "Manual of Uniform Traffic Control Devices."

- F. All signs and markers shall indicate actual conditions existing and shall be moved, removed or changed immediately, as conditions require.
- G. The CONTRACTOR shall provide police officers as may be deemed necessary by the Chief of Police for the direction and control of vehicular traffic and pedestrians within the limits of the project and such officers shall wear regulation policemen's uniforms and should be regular, reserve or special officers.
- H. If the CONTRACTOR fails to maintain and protect traffic adequately and safely by means of traffic control devices and/or traffic officers for a period of 24 hours, the CITY may correct the adverse condition by the use of police officers, augmented if necessary by such other equipment and personnel as it may be necessary to hire, and the entire cost of this work by such forces shall be deducted from any monies due to the CONTRACTOR on this contract.
- I. It shall be the responsibility of the CONTRACTOR to post temporary "No Parking" signs 24 hours in advance of any work. The CITY will be responsible for closing and opening the road to traffic. The CONTRACTOR shall notify the CITY at least 48 hours in advance of any proposed work. Temporary "No Parking" signs will be provided by the CITY.
- J. Proposed Detours shall be coordinated with the CITY.

END OF SECTION

SECTION 02764

TELEVISION INSPECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. TV inspect storm drainage system from the upper-most catch basins in the water shed toward the discharge point. All pipes between catch basins, catch basins and manholes and manhole to manhole shall be TV inspected.
- B. Storm drain pipes which cannot be TV inspected due to sediment or other obstructions shall be cleaned in accordance with Section 02765.
- C. Video recordings shall be made of the television inspections and both copies of the recordings and printed inspection logs shall be supplied to the Owner. Recordings and inspection logs shall be saved such that it can readily found. Each TV inspection shall be broken down to include the sheet number based on the key sheet, and manhole id from upstream manhole to downstream manhole.

1.02 RELATED WORK

- A. Pipe line cleaning is included in Section 02765.

PART 2 PRODUCTS

2.01 MATERIALS

- A. The television camera used for the inspection shall be one specifically designed and constructed for such inspection. Lighting for the camera shall be suitable to allow a clear picture for the entire periphery of the pipe. The camera shall be operative in 100 percent humidity conditions. The television camera shall be equipped with a pan and tilt head. The camera, television monitor and other components of the video system shall be capable of producing a minimum 500 line resolution video picture. Picture quality and definition shall be to the satisfaction of the Engineer. The Lighting System shall minimize reflective glare.
- B. All television work shall be recorded in digital format as the work is being conducted.

PART 3 EXECUTION

3.01 PERFORMANCE

- A. The camera shall be moved through the line in either direction at a uniform rate, stopping when necessary to insure proper documentation of the storm drains condition but in no case will the television camera be pulled at a speed greater than 30 fpm. Manual winches, power winches, TV cable and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions shall be used to move the camera through the sewer line. If, during the inspection operation the television camera will not pass through the entire sewer section, the Contractor shall re-set up his/her equipment in a manner so that the inspection can be performed from the opposite manhole. If, again, the camera fails to pass through the entire section, the Contractor shall remove the obstruction by either cleaning or if necessary excavation and replacement of that section of pipe as specified herein, if directed by the Engineer.
- B. Whenever non-remote powered and controlled winches are used to pull the television camera through the line, telephones, radios, or other suitable means of communication shall be set up between the two manholes of the section being inspected to ensure that good communications exist between members of the crew.
- C. The accuracy of the measurements cannot be stressed too strongly. Measurement for location of defects shall be above ground by means of a meter device. Marking on cable, or the like, which would require interpolation for depth of manhole, will not be allowed. Measurement meters will be accurate to two tenths of a foot over the length of the section being inspected. Accuracy of the measurement meters shall be checked daily by use of a walking meter, roll-a-tape or other suitable device.
- D. Documentation of the television results shall be as follows:
 1. Television Inspection Logs
 - a. Printed location records shall be kept by the Contractor and will clearly show the location, in relation to adjacent manholes, of each source of infiltration discovered. In addition, other data of significance including the locations of building and house service connections, along with an estimation of infiltration from such services, joints, unusual conditions, roots, storm sewer connections, collapsed sections, presence of scale and corrosion and other discernible features will be recorded and a copy of such records will be supplied to both the Owner and the Engineer.

STORM DRAIN CCTV INSPECTION AND CLEANING
SECTION 02764

2. Video and audio recordings of the data on the television monitor shall be made during each inspection, one copy of which, in a DVD format, shall be provided to the Owner.
3. Photographs
 - a. Instant developing, 35 mm, or other standard size photographs of the television monitor of problem areas shall be taken as directed to document unusual, questionable, or severe conditions found during the course of the work.
4. Video Tape Recordings
 - a. The purpose of tape recording shall be to supply a visual and audio record of problem areas of the lines that may be replayed both daily and at future presentations by the Owner. Video tape recording playback shall be at the same speed that it was recorded. Slow motion or stop motion playback features shall be supplied at the option of the Contractor. Video tape recordings shall be made in color and in DVD format. The Contractor shall be required to have all tapes and necessary playback equipment readily accessible for review by the Owner/Engineer during the project. At the completion of the project, the Contractor shall furnish all of the original video tape recordings to the Owner. The Contractor shall keep a copy of the tapes for 30 days after the completion of the project, at which time the tapes may be erased at the Contractor's option.

END OF SECTION

STORM DRAIN CCTV INSPECTION AND CLEANING

SUMMARY OF WORK

SECTION 01010

SECTION 01010

SUMMARY OF WORK

PART 1.00 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

- A. The work under this Contract includes, but is not limited to the following:
1. The Contractor shall be responsible for the CCTV inspection and cleaning of the storm drainage system as listed within these specifications. At a minimum each pipe between catch basins and storm drain manholes shall be CCTV inspected with a wheeled robotic camera situated in the pipe such as the condition of the pipe can be evaluated and repairs categorized to prioritize repairs if needed. Not all storm drains will require cleaning. Contractor shall provide to the City redline mark-ups of the GIS plans updating pipe size, material, direction, etc.
 2. Schedule work to begin within Drainage areas 4 and 6 at Mauran Avenue and heading toward Laura Street
 3. Contractor shall coordinate all police details. Details will be required on State Roads (Taunton Ave, Waterman Ave) and on the busier City Roads such as N Broadway if working near the centerline of the roadway. The contractor will be responsible to maintain safe vehicle passage through the work area. Contractor shall also be responsible to cancel details in a timely manner so as not to be charged time. Any time related to untimely cancellations shall be paid by the contractor directly to the Police Department.
 4. Provide and maintain a safe pedestrian walking path in the general area of the existing walking path if applicable.
 5. Perform miscellaneous work and clean up as required to complete the project as listed in these contract documents.
 6. Attend weekly project status meetings with City Officials to discuss schedule and quantities.
- B. Clean up of the area after construction is considered part of the work covered under the lump sum cost. Unsatisfactory clean up shall be grounds for withholding payment, as directed by the CITY.

C. Related Requirements Specified Elsewhere:

1. Temporary Facilities and Controls - Section 01500.

D. Contractor's Duties:

1. Except as specifically noted, provide and pay for:
 - a. Labor (Davis-Bacon wages), materials and equipment
 - b. Tools, construction equipment and machinery
 - c. Transportation, supervision and temporary construction
 - d. Water, heat and utilities required for construction
 - e. Other facilities and services necessary for proper execution and completion of work
2. CITY is exempt from sales taxes on products permanently incorporated in work.
 - a. Perform all administrative functions required by law in conjunction with use of the CITY's tax exempt blanket certificate.
 - b. Pay legally assessed penalties for improper use of exemption certificate.
3. Secure and pay for, as necessary for proper execution and completion of work, and as applicable at any time of receipt of bids:
 - a. Permits (RICRMC and RIDEM Permits Excluded)
 - b. Government Fees
 - c. Licenses
4. Give required notices and provide the CITY with the DIGSAFE number for work under this contract.
5. Comply with Local, State and Federal codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on performance of work.
6. CONTRACTOR shall be responsible for compliance with all pertinent OSHA regulations.

7. Promptly submit written notice to CITY of observed variance of CONTRACT DOCUMENTS from legal requirements. It is not the CONTRACTOR's responsibility to make certain that drawings and specifications comply with codes and regulations.
 - a. Appropriate Modifications to Contract Documents will adjust changes.
 - b. CONTRACTOR shall assume responsibility for notifying CITY concerning work known to be contrary to such requirements.
8. Enforce strict discipline and good order among employees. Do not employ on work:
 - a. Unfit persons
 - b. Persons not skilled in assigned task.
9. No valve or other control on the City's water system shall be operated for any purpose by the CONTRACTOR. The Water Utility Division (435-7741) will operate all valves, hydrants, blow-offs and curb stops.
10. CONTRACTOR shall lay out all the contract work and be responsible for the accuracy of all lines, grades and measurements. The Contractor shall guarantee no ponding or puddling within the completed work zones.
11. CONTRACTOR is responsible for notifying DIGSAFE (1-888-DIGSAFE) in accordance with State law prior to commencing any earthwork activities.
12. CONTRACTOR shall be prepared to attend a pre-construction meeting within ten (10) days after date of Notice to Proceed. The agenda of the pre-construction meeting shall include but not be limited to:
 - a. Presentation of project construction schedule and work sequencing
 - b. Project coordination and designation of responsible personnel
 - c. Use of subcontractors
 - d. Emergency telephone numbers
 - e. Procedures and processing of field decisions, submittals, change orders, applications for payment
 - f. Construction facilities, controls and equipment storage
 - g. Safety and traffic issues
 - h. Place, date and time for regular progress meetings.

13. CONTRACTOR shall be prepared to attend regular scheduled progress meetings. Progress meetings shall be held on weekly basis or as discussed and agreed upon at the pre-construction meeting. The agenda for the progress meetings shall include but not be limited to:
 - a. Review of work progress since previous meeting
 - b. Field observations, problems, conflicts
 - c. Work progress in relation to schedule. Revision of schedule if required
 - d. Review of quantities for completed work
 - e. Proposed changes to work, if any
 - f. Other issues.

1.02 - CONTRACT

- A. Construct work under Unit Price contract. Unit prices shall be held for quantities greater or less than listed on the bid sheet.
- B. CONTRACTOR is to begin work within ten (10) days after the date of the NOTICE TO PROCEED and shall complete the work within 90 consecutive calendar days. The CITY has the right to extend this schedule as a result of ongoing utility work.
- c. The time for completion noted above has been developed on the assumption that work will continue during the winter season. Additional time will be provided as a result of winter storms and snow plowing operations and access to the structures.
- d. The CITY shall notify the CONTRACTOR in writing if there is a change in the winter shutdown period due to weather, environmental or other conditions which preclude the work from being executed in accordance with these Documents.

1.03 - CONSTRUCTION SCHEDULE AND SEQUENCE OF WORK

- A. The CONTRACTOR shall submit to the CITY for approval a detailed work sequence and schedule for the completion of all work associated with this contract. Approval of the work sequence and schedule is required prior to the start of any work associated with this contract. The proposed sequence and schedule must consider and address the safe pedestrian and vehicle passage through the project and vehicle and pedestrian access to the abutting properties and side streets. The CITY reserves the right to adjust the sequence and schedule at any time at no cost to the CITY.

- B. Construction by the CONTRACTOR shall be limited to the hours of 7:00 AM to 4:00 PM Monday through Friday. Work after 4:00 PM will only be allowed with prior approval by the Director of Public Works. No work shall take place on Saturdays, Sundays or on the following holidays:
 - 1. Christmas Eve (Friday December 23, 2022)
 - 2. Christmas Day (Monday December 26, 2022)
 - 3. New Year's Eve (Friday December 30, 2022)
 - 4. New Year's Day (Monday January 2, 2023)
 - 5. Martin Luther King Jr Day (Monday January 16, 2023)
 - 6. President's Day (Monday February 20, 2023)
 - 7. Good Friday (noon-4 Friday April 7, 2023)
 - 8. Memorial Day (Monday, May 29, 2023)
 - 10. Independence Day (Tuesday July 4, 2023)
 - 11. Victory Day (Monday, August 14, 2023)
 - 12. Labor Day (Monday, September 4, 2023)
 - 13. Columbus Day (Monday, October 13, 2023)
 - 14. Election Day N/A
 - 15. Veterans Day (Friday, November 10, 2023)
 - 16. Thanksgiving Day (Thursday, November 23, 2023)

- C. CONTRACTOR shall be aware of any CITY, civic or church/funeral events. If a designated street is within the area of an event, work must be scheduled around the event so as not to impede vehicular or pedestrian traffic.

1.04 - CONTRACTOR USE OF PREMISES

- A. Confine operations at site to areas permitted by:
 - 1. Law
 - 2. Ordinances
 - 3. Permits
 - 4. Contract Documents
- B. Do not unreasonably encumber site with materials or equipment.
- C. Assume full responsibility for protection and safekeeping of products stored on premises.
- D. Move any stored products which interfere with operations of CITY and other Contractors.
- E. Obtain and pay use of additional storage or work areas needed for operations.
- F. Remove all surplus material, temporary structures, and debris resulting from the work and put the site in a neat, orderly condition before final payment.
- G. Assume full responsibility to maintain roadway safe for vehicular and pedestrian traffic during construction.

END OF SECTION

SECTION 02765

STORM DRAIN AND MANHOLE CLEANING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to clean storm drain pipe and fittings installed and/or rehabilitated, complete as shown on the Drawings and as specified herein.
- B. Cleaning shall include proper high pressure water jetting, rodding, bucketing, brushing and flushing of storm drain pipes and manholes prior to inspection by closed circuit television, pipeline rehabilitation or replacement, point repairs, manhole preparation, and testing operations. Debris shall be vacuumed out from the downstream manhole. Debris collected can be disposed of at the Forbes Street Compost Facility.
- C. Goal of cleaning is to remove debris, roots, intruding services, deposits, and other blockages to a minimum of 95 percent open. Contractor shall perform pipe cleaning work to an acceptable level as necessary to perform a thorough television inspection of sewer. If pipe condition is such that cleaning may cause a potential collapse, then pipe shall be televised without attempting to clean it to 95 or 98 percent condition, pending approval by Engineer.

1.02 RELATED WORK

- A. Closed Circuit Television Inspection of Sewers is included in Section 02764.
- B. Traffic Control is specified in Section 01570.

1.03 SUBMITTALS

- A. Submit a safety plan prior to performing any on-site work that includes the following as a minimum:
 - 1. Confined Space Entry.
 - 2. Personal Protective Equipment.
- B. Closeout Documents: Submit one complete set of documentation regarding inspections and work performed. Based on work scope, submit written reports, photographs taken, and DVDs that incorporated color video recordings.

1.04 QUALITY ASSURANCE

- A. Contractor shall have a minimum of five years' experience in pipe and underground structure cleaning. Submit a list of at least three customers who have had similar work complete. Furnish trained and qualified technicians with proper experience operating equipment that is being used on this project.

1.05 PROJECT/SITE REQUIREMENTS

- A. Recording of Field Observations: Record video inspections in color on a portable hard drive provide by the contracting company. Submit inspection report in Microsoft Access format database and recorded onto a portable hard drive. Original recordings and inspection reports shall become property of Owner. Observations shall include:

- L Television Inspection Logs: Each segment inspection shall have a separate inspection report that is recorded onto a portable hard drive, in a Microsoft Access or Excel format that shall be given to Owner for its use; also submit a paper copy of the report that is clear and concise to reader. Clearly show location, in relation to adjacent manholes, of each source of infiltration discovered. In addition, other data of significance including locations of building and house service connections, along with an estimation of infiltration from such services, joints, unusual condition, roots, cracked or collapsed sections, presence of scale and corrosion, sewer line sections that the camera failed to pass through and reasons for failure and other discernible features shall be recorded.

- 2. Photographs: During CCTV inspection, stop camera at significant observations to ensure a clear and focused view of pipe condition. At this point, if video equipment has video printer capabilities for instantaneous photographs, take photographs of significant observations for use in inspection documentation report. If the video equipment does not have capabilities for instantaneous photographs, take digital photographs of monitor with significant observations on screen. Provide Owner with a portable hard drive that includes all photographs.
 - 3. DVD Recordings: Purpose is to supply a visual and audio record of problem areas of sewer lines that may be replayed both daily and at future presentations by Owner. DVD recording playback shall be at same speed that it was recorded. Slow motion or stop motion playback features shall be supplied at option of the Contractor. Make DVD recordings in color. Have DVD disc and necessary playback equipment readily accessible for review by Owner during the project. At

project completion, furnish original DVD recordings to the Owner. Contractor shall keep a copy of DVD discs for 30 days after Substantial Completion, at which time DVDs may be erased at Contractor's option.

- B. Traffic Control: Coordinate traffic control required to perform work of this Section under provisions of Section 01570.

1.06 DEFINITIONS

- A. Light Cleaning: Small amounts of debris existing within pipe line and where drain reaches do not require heavy cleaning, as defined below, and that produce little or no debris.
- B. Heavy Cleaning: Large deposits of debris or heavy root growth existing within sewer line and where sewer reaches require debris removal of depths up to 25 percent of pipe height.

PART 2 PRODUCTS

2.01 EQUIPMENT

- A. Hydraulic Pipe Cleaning Equipment:

- L Equipment used shall be of a movable dam type and be constructed so that a portion of the dam may be collapsed at any time during cleaning operation to protect against flooding of sewer. Movable dam shall be same diameter as pipe being cleaned and shall provide flexible scraper around outer periphery to ensure total removal of grease. If sewer cleaning balls or other such equipment which cannot be collapsed instantly are used, take special precautions against flooding of sewers and public or private property.

- B. High Velocity Jet (Hydrocleaning) Equipment:

- 1. Have a minimum of 500 feet of high pressure hose.
 - 2. Have a selection of two or more velocity nozzles that are capable of producing a scouring action from 15 to 45 degrees in all size lines to be cleaned. Also include a high velocity gun for washing and scouring manhole walls and floor.
 - 3. Be capable of producing a minimum of 80 gallons per minute flows from a fine spray to a long distance solid stream and delivering up to 1000 psi. Be able to carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel. Locate controls so equipment can be operated above ground. Select flowrates and pressures as required for each size of sewer, type of debris, and amount of debris, and as recommended by nozzle manufacturers.

4. Have a water tank, auxiliary engines and pumps, and a hydraulically driven hose reel.
5. Have root cutting blades that are hydraulically

spun. C. Mechanical Cleaning Equipment:

L Bucket machines shall be in pairs and with sufficient power to perform the work in an efficient manner. Machines shall be belt operated or have an overload device. Machines with direct drive that could cause damage to the pipe shall not be acceptable.

2. Power rodding machines shall be either sectional or continuous type capable of holding a minimum of 750 feet of rod. Rod shall be specifically treated steel. To ensure safe operation, machine shall have a fully enclosed body and an automatic safety release clutch or relief valve.

PART 3 EXECUTION

3.01 GENERAL

- A. Cleaning Precautions: During pipe cleaning operations, satisfactory precautions shall be taken in use of cleaning equipment. When hydraulically propelled cleaning tools (which depend upon water pressure to provide their cleaning force) or tools which retard flow in sewer line are used, precautions shall be taken to ensure that water pressure created does not damage or cause flooding of public or private property being served by sewer. When possible, flow of sewage in sewer shall be utilized to provide necessary pressure for hydraulic cleaning devices. When additional water from fire hydrants is necessary to avoid delay in normal work procedures, water shall be conserved and not used unnecessarily. Water Department approval will be required prior to connecting to any hydrant. Water Department typically has specific hydrants contractors are allowed to use, one being at 60 Commercial Way.
- B. No pipe cleaning shall take place in a particular drainage segment until upstream pipe segments have been cleaned. If cleaning is done in a downstream pipe segment in order to facilitate overall cleaning operations, segment shall be re-cleaned at no additional cost to Owner, after pipes upstream of that segment have been cleaned.
- C. Drain line walls shall be cleaned adequately to provide for proper operation of joint testing and sealing equipment or internal inspection to discern structural defects, misalignment and infiltration/inflow sources. Cleaning shall be performed immediately prior to joint testing and sealing and internal

inspection to preclude build-up of debris from infiltration/inflow sources and discharges from upstream pipeline sections.

- D. Designated drainage manhole sections shall be cleaned using hydraulically propelled, high velocity jet, or mechanically powered equipment. Selection of equipment used shall be based on conditions of lines at the time the work commences. Equipment and methods selected shall be satisfactory to Owner's Representative. If cleaning of an entire section cannot be successfully performed from one manhole, equipment shall be set up on other manhole and cleaning again attempted. If, again, successful cleaning cannot be performed or equipment fails to traverse entire manhole section, it will be assumed that a major blockage exists and cleaning effort shall be repeated with other types of equipment. Immediately report any blockages to Engineer.
- E. Water for pipe cleaning shall be purchased by Contractor and obtained at locations in accordance with East Providence Water Department. If water is obtained from a potable supply, provide appropriate backflow prevention devices as required by authority having jurisdiction to protect potable system from cross connections and contamination. Contractor shall be solely responsible for preventing cross contamination of any public or private water systems used for this purpose.

3.02 PREPARATION

- A. Selection of cleaning equipment shall be based on conditions of manhole and drainage lines at the time the work commences. Equipment and methods selected shall be acceptable to Engineer. Acceptance of proposed method of cleaning does not relieve Contractor of its responsibility to adequately remove dirt, grease, rocks, sand, and other materials and obstructions from sewer lines and manholes to allow performance of other work.
- B. Take satisfactory precautions to protect drain lines from damage that might be caused by improper use of cleaning equipment. Whenever using hydraulically propelled cleaning tools that depend upon water pressure to provide their cleaning force, or any tools that retard flow of water in sewer line, take precautions to ensure that water does not cause damage or flooding to public or private property.
- C. No fire hydrant shall be obstructed in case of a fire in area served by hydrant.
- D. Remove water meters, piping, and related equipment from fire hydrants at end of each work day.

3.03 PERFORMANCE

- A. Selection of cleaning equipment shall be based on conditions of manholes and sewer lines at the time the work commences based on pre-construction CCTV inspection to be conducted by Contractor.
- B. Contractor shall provide appropriate screening to stop passing of materials into downstream sewers. Sludge, dirt, sand, rocks, grease, and other solid or semisolid residue, debris, and material resulting from cleaning operations shall be removed at downstream manhole of section of sewer being cleaned. Passing material from manhole section to manhole section which could cause line stoppages, accumulations of sand in wet wells, or damage to pumping equipment shall not be permitted.
- C. Debris, residue, and other materials resulting from cleaning operations shall become property of Contractor and shall be removed from site at end of each workday and shall be disposed of in an approved and lawful manner. Under no circumstances will accumulation of debris, residue, and other matter be permitted on site beyond stated time, unless prior written authorization is given for storage in totally enclosed containers. Debris can be disposed of at the City's Forbes Street compost facility.
- D. Light Cleaning: Use balls, scooters, and 3 passes of high pressure water jetting equipment, brushes and swabs. Costs related to cleaning of such sewers shall be included in Contractor's unit prices for CCTV and Light Cleaning.
- E. Heavy cleaning: Use bucket machines, scrapers, and augers with cleaning which requires more than 3 passes with hydraulic cleaning equipment to achieve acceptance results. Heavy cleaning will be conducted only upon approval and direction of Engineer. Costs related to cleaning of such sewers shall be included in Contractor's unit prices for Heavy Cleaning. Costs related to televising of such sewers following heavy cleaning shall be included in Contractor's unit prices for CCTV and Light Cleaning. Compensation for heavy cleaning of a particular line will only be paid if:
 - 1. Heavy cleaning was authorized by Engineer prior to Contractor performance of the work.
 - 2. Contractor proves that both significant time and effort was necessary to clean the line, (i.e. time required to clean and inspect the line must have been at least twice the average time required to clean and inspect other sewers of comparable length and diameter in project area.
 - 3. Adequate video proof of blockage, debris, grit or grease build-up, or other condition is provided by Contractor.

Heavy Cleaning will be paid for on a lineal foot basis only for length required to be cleaned, i.e., from downstream manhole to approximate location of heavy cleaning. This may or may not include entire pipe section, unless otherwise approved by Engineer or Owner.

- F. Obtain video proof of heavy cleaning by acquiring a 'before' video of accessible portions of obstructed reach; submit to Engineer along with completed inspection.
 - 1. A submerged camera does not justify a need for heavy cleaning; proof that submergence was due to a blockage or heavy debris and not a sag in the line will be required.
- G. Pipes that contain roots or debris depths greater than 25 percent of pipe height may be paid on a time and material basis, upon approval by Engineer. Engineer or Owner may determine any individual pipe be cleaned on a time and material basis.
- H. Flushing of sanitary sewers to facilitate cleaning activities without the capture of solids and debris is expressly prohibited.
- I. Retrieval of equipment lodged in pipes or a wet well is Contractor's responsibility and shall be performed at Contractor's expense.

3.04 FIELD QUALITY CONTROL

- A. Acceptance of drain line cleaning shall be contingent on satisfactory completion of television inspection. If television inspection shows cleaning to be unsatisfactory, sewer line shall be re-cleaned and re-inspected until cleaning is shown to be satisfactory.
- B. If internal joint testing and sealing is to follow cleaning, give particular attention to adequacy of cleaning to ensure that proper seating of sealing packer can be achieved.
- C. Inspection of cleaning operations will be made on a daily basis by the Engineer.

3.05 CLEANING

- A. Upon cleaning of underground sewer lines or structures, removal debris from finish grade and clean work areas so conditions at conclusion of the work are equal to or better than areas prior to work of this Section.

END OF SECTION