

Internal Inspection & High Velocity Cleaning Specifications

High Velocity Cleaning

1. High velocity sewer cleaning equipment will be utilized to flush any debris in the pipeline that would restrict the camera from passing through the pipe or inhibit our visual inspection. The intent is to remove as much of the sediment, debris, blockages, mineral deposits, grease, etc. as possible to enable a complete and full inspection of the original pipe material.
2. Cleaning shall be achieved by access through the downstream manhole if at all possible. The high velocity sewer cleaning equipment will be placed in the downstream manhole and will be jetted up to the upstream manhole to ensure that cleaning is performed throughout the entire section.
3. The high velocity sewer cleaning equipment shall:
 - Be constructed and maintained in a manner for ease of use and safe operation.
 - Consist of a minimum of three (3) or more high velocity jet nozzles. The nozzles shall be capable of cutting roots, removing large debris or penetrating through pipeline blockages. The nozzles shall be capable of producing a scouring action from fifteen (15) degrees to forty-five (45) degrees in all size lines designated for cleaning and inspection.
 - Carry its own water tank, auxiliary engines, pumps and hydraulically driven hose reel.
 - Have all controls mounted in a location so that the equipment is operated from above the ground.
4. During the sewer cleaning process when any of the propelled cleaning equipment or any other tools or equipment is used that may inhibit the flow, precautions shall be taken with the use of this equipment by closely monitoring the water pressure generated so that:
 - The cleaning process will not cause the flooding of any public or private property being served by that particular section.
 - No further damage occurs to any existing defects. It is recognized that there are some conditions such as badly broken, eroded or immovable blockages that may prevent cleaning and inspection from being completed, or where additional sewer line damage would occur if further cleaning is attempted or continued. Should conditions of this nature be encountered, PPI™ shall notify the Client immediately with full and accurate details of the problematic section. The Client shall then determine an appropriate course of action for that section.
5. PPI™ shall take care to ensure that the cleaning process in one line segment does not affect or inhibit the flow in a downstream line segment. Passing material from one section to another section which could cause line stoppages, blockages or debris accumulations shall not be permitted.
 - PPI™ shall remove all sludge, dirt, sand, rocks, grease, roots, broken tile or other material that may accumulate during the cleaning process. This material shall be trapped at the downstream manhole then physically removed from that structure.
 - All solids or semisolids removed from the structure shall be removed from the jobsite and disposed of properly.
 - The client shall provide a suitable dumpsite for any debris removed from the sewer pipe unless alternative arrangements for disposal have been made.

Internal Inspection

1. The intent of performing the internal pipe inspection is to:
 - Locate problematic sections of pipe and identify existing or potential structural deficiencies.
 - Identify and locate existing lateral service connections.
 - Inspect new pipe construction prior to acceptance.
 - Assure sound pipe conditions prior to any above ground construction.
 - Pinpoint the cause, source and magnitude of any infiltration present.
 - Locate improper or illegal connections and sources of inflow.
 - Ascertain the applicability of various rehabilitation methods for any defects or irregularities found and give professional recommendations.

2. The mainline survey equipment shall be capable of:
 - Utilizing a pan and tilt camera head with a full three-hundred and sixty degree rotation capability.
 - Providing high quality color resolution for enhanced clarity and detail with zoom capabilities and recorded on standard VHS format.
 - Internal inspections in pipe segments with mainline diameters from six-inches (6) to twenty-four inches (24).
 - Self-propulsion for up to one-thousand feet of mainline sewer pipe.
 - Launching a satellite camera from mainline access only and simultaneously inspect both, the mainline section and up to approximately seventy-feet of any adjacent lateral service line.
 - Precisely locating above the ground, any portion of the mainline section and up to approximately seventy-feet of any adjacent lateral service line.
 - Displaying mainline and lateral footages on the screen and on the video recorded documentation.
 - Providing audio commentary voiced/dubbed for pipe line observations

3. The mainline survey equipment can be moved through the mainline section in either direction depending on access and pipe conditions. However, the preferable method is to televise from the upstream manhole towards the downstream manhole while following the cleaning equipment through the pipe section. Performing the inspection utilizing this method achieves three major goals:
 - To ensure all sediment, debris, blockages, mineral deposits, grease, etc. is being removed from the mainline pipe segment as intended.
 - To monitor the effects of the cleaning process on existing structures and/or structural deficiencies.
 - To create a vacuum and draw any remaining liquid down the pipe from existing flow or sagging pipe sections and enable a full visual inspection of the entire pipe section.

4. The inspection shall progress at an average rate of approximately fifteen-linear feet (15) per minute. This rate can fluctuate depending on the following factors:
 - Amount of sediment, debris, blockages, mineral deposits, grease, etc. in the line and the amount of time required to effectively clean and remove.
 - Structural integrity of pipe section such as collapsed pipe sections, offset joints, defects or other conditions that may inhibit the camera's progress.
 - Number of detailed observations required for that particular pipe section.
 - In the event that the inspection equipment encounters a severely deteriorated or damaged pipe section and there is a possibility that continuation of the inspection could cause additional damage or collapse, PPI™ shall notify the Client immediately with full and accurate details of the problematic section. The Client shall then determine an appropriate course of action for that section.
5. Accurate distance measurements shall be provided for the purpose of locating defects and general pipe observations. This measurement shall be provided with the survey equipment's internal cable counter. The measurement shall be started from the center of the manhole from which the inspection begins to the center of the manhole for which the inspection will end.
NOTE: With existing technology and methods of inspection, it is typical for footage counters to have a variance of approximately two-percent or two-feet per every one hundred-feet inspected.
6. Documentation of the internal inspection shall be performed in accordance with the technical specifications provided by the Client. If particular specifications are not required by the Client, then the following methods shall be used in conjunction with one another to provide complete and accurate documentation for each section inspected:
 - Video tape recordings, the purpose for which is to create a visual and audio record of the existing pipe conditions. A video log card shall accompany each tape. The primary purpose of the video log card is to quickly identify which inspections are on a given tape and where the footage can be located on the tape by means of the video counter column. (See Attachment #1 for video log card)
 - Pipe reports for each section, (See Attachment #2 for pipe report) the purpose for which is to identify and provide all pertinent information regarding the inspection section. (See Attachment #3 for an outline of all information that will be included for documentation)
 - All defects and general observations will be identified using NASSCO (National Association of Sewer Service Companies) standardized observation codes.
 - Information that remains onscreen at all times shall be limited to the upstream and downstream manhole numbers and the live footage counter. Onscreen information can be modified per Client request.
7. The site will be left clean and free of any debris that may be generated through the cleaning or inspection process and the property shall be returned to original condition.
8. Upon completion, PPI™ will deliver to the owner one copy of the videotape, video log card and the written report for each section. The owner should review the documentation and the site to determine that the scope of work is complete and the work is satisfactory.

9. Payment for the work will be in accordance with the prices as set forth in the proposal for all work performed.

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