#### SP- XX PIPE CLEANING

Version Date: 8/20/2015 Revision Date: XX/XX/XXXX by XXX

1. **DESCRIPTION**

Work covered by this specification includes providing all labor, materials, equipment, and incidentals required to remove silt accumulation, debris, trash, and other impediments from pipes as shown on the plans and specified herein.

1. **CONSTRUCTION METHODS**

Cleaning shall include the high-velocity water jetting, rodding, snaking, bucketing, brushing and flushing of pipes, laterals, and manholes. Cleaning shall dislodge, transport and remove all sludge, mud, sand, gravel, rocks, bricks, grease, roots, sticks, and all other debris from the interior of the pipe and manholes.

**High Velocity Jet (Hydro Cleaning) Equipment**

All high velocity storm drainage cleaning 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, pumps, and hydraulically driven hose reel. High velocity jetting equipment must be adjustable and capable of producing a minimum of 120 GPM but preferably up to 250 GPM at a working pressure of 2,000 PSI. All controls shall be located so that the equipment can be operated above ground

**Hydraulically propelled Pipe Cleaning Equipment**

Hydraulically propelled pipe cleaning equipment shall be the movable dam type. The dam shall be constructed such that a portion of it may be collapsed during cleaning to prevent flooding of the pipe. The movable dam shall be the same diameter as the pipe being cleaned and shall provide a flexible scraper around the outer periphery to ensure total removal of silt and debris. The Contractor shall take precautions against flooding prior to using pipe cleaning balls or other such equipment that cannot be collapsed instantly.

**Mechanical Cleaning Equipment**

Mechanical cleaning equipment shall be either power buckets or power rodders. Bucket machines shall be furnished with buckets in pairs and with sufficient dragging power to perform the work efficiently and use V-belts for power transmission or have an overload device. No direct drive machines will be permitted. Power rodding machines shall be either sectional or continuous, be fully enclosed, and have an automatic safety throw out clutch.

**Root Removal Equipment**

Roots shall be removed in sections designated by the City. Special attention shall be used during the cleaning operation to assure almost complete removal of roots from the joints. Any roots that could prevent the proper repair or application of repair materials shall be removed.

Procedures may include the use of mechanical equipment such as rodding machines, winches using root cutters and porcupines, and equipment such as high-velocity cleaners. Chemical root treatment may not be used. The Engineer will evaluate the need for additional root removal upon completion of preliminary cleaning. Additional root removal if indicated by examination of line conditions may be required.

**Removal and Disposal of Debris**

Removal and disposal of all solids and semi-solids shall occur at the downstream manhole of the section being cleaned. Passing debris from one section of a line to another will not be permitted. No pipe cleaning shall take place in a segment until all upstream pipe segments have been cleaned. If cleaning is done in a downstream pipe segment in order to facilitate cleaning operations, the segment shall be re-cleaned at no additional cost, after all pipes upstream of that segment have been cleaned.

The Contractor shall keep the site as clean and neat as possible. The effort shall include washing streets with high-pressure water, as necessary and as directed by the Engineer. The Contractor shall dispose of all refuse resulting from the cleaning operations. The Contractor is responsible for disposal of all spoiled materials in compliance with local and state environmental regulations and requirements. The City will not be responsible for any fines or penalties associated with illegal disposal of waste material from the construction site.

**Access to the Project Sites**

Access to some of the cleaning sites may be difficult and may require building access paths or temporary creek crossings, or other suitable access ways. Contractor will work with Engineer to secure rights-of-entry or encroachment permits on abutting properties if additional work area is needed.

**Water Supply**

The Contractor is responsible for providing water to be used for cleaning. If the Contractor intends on using Charlotte Water sources, the Contractor must obtain any necessary permits from Charlotte Water. The Contractor must adhere to all requirements for connections to Charlotte Water operated fire hydrants and may only connect to hydrants, which are approved by Charlotte Water. The Contractor shall be responsible for any damage caused by improper operation of hydrants. The Contractor is responsible for meeting all requirements whether listed herein or not.

**Acceptance of the Work**

Acceptance the work shall be dependent upon the results of the television inspection. Lines that are not acceptably clean to permit television inspection or rehabilitation shall be re-cleaned and re-inspected at no additional cost to the City.

1. **MEASUREMENT**

The quantity of Pipe Cleaning to be paid for will be the actual number of linear feet (LF) of pipe cleaned, which has been inspected and accepted.  Measurement will be made horizontally along the centerline of the pipe defined as the distance between the centerline of the upstream and downstream structures.

1. **PAYMENT**

The quantity of Pipe Cleaning, measured as stated above, will be paid for at the contract unit price per linear foot (LF) per pipe size diameter for “Pipe Cleaning.” Such payment will be full compensation for all work covered by this special provision including but not limited to: permitting costs, CCTV inspections, materials, labor, equipment, and any other items necessary.

 Payment will be made under:

**XX – Inch Pipe Cleaning LF**