

SECTION 1

SEWER LINE AND MANHOLE CLEANING

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. It is the intent of this specification to provide for the cleaning of debris, roots, grease, scale (mineral deposits), and obstructions from sewer lines and manholes. The CONTRACTOR will furnish all labor, materials, equipment and incidentals required to perform high pressure water jetting, rodding, brushing, bucketing, and flushing of designated sewer lines and manholes.

The CONTRACTOR will be responsible for the cleaning of sewer lines on an as needed basis starting November 1, 2015 and ending June 30, 2018. The City of Lowell (CITY) will supply the CONTRACTOR with written work schedules. The work schedule will include as much work as is currently available to be completed. There is no guarantee as to the minimum amount of work per proposed work schedule. A portion of the work will include the cleaning of cross-country sewer lines with limited access.

The work to be done and paid for under any item shall not be limited to the exact extent mentioned or described but shall include **all** incidental work necessary or customarily done for the completion of that item.

1.02 RELATED WORK

- A. Maintenance of sewer flow is included in Section 2.

PART 2 PRODUCTS

2.01 EQUIPMENT

- A. High Velocity Jet (Hydrocleaning) Equipment
 - 1. 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 velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 degrees to 45 degrees in all size lines 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 long distance solid stream. The equipment shall carry its own water tank, auxiliary engines, pumps and hydraulically driven hose reel. All controls shall be located so the equipment can be operated above ground.
- B. Mechanical Cleaning Equipment
 - 1. 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 that could cause damage to the pipe shall not be acceptable.

PART 3 EXECUTION

3.01 PREPARATION

- A. Selection of cleaning equipment shall be based on the conditions of the sewer lines at the time the work commences. The equipment and methods selected shall be acceptable to the CITY; however acceptance of proposed method of cleaning does not relieve the CONTRACTOR of his responsibility to adequately clean the pipe and manholes to allow performance of other work.
 - 1. The CONTRACTOR shall use high pressure water jetting equipment wherever possible.
- B. The CONTRACTOR is responsible for obtaining all necessary permits.

3.02 PERFORMANCE

- A. Each designated sewer manhole section shall be cleaned using hydraulically propelled, high velocity jet, or mechanically powered equipment. The equipment selected for cleaning shall be capable of removing dirt, scale, grease, rocks, sand and other deleterious materials and obstructions from the sewer lines and manholes. If cleaning of an entire section cannot be successfully performed from one manhole, the equipment shall be set up on the other manhole and cleaning again attempted. If successful cleaning cannot be performed from the second manhole, or the equipment fails to traverse the entire length between manholes, it will be assumed that a major blockage exists and the cleaning effort shall be abandoned. Blockages or any structural differences from the existing TV tapes, if any, shall be reported to the CITY immediately.
- B. During all sewer cleaning operations, satisfactory precautions shall be taken to protect the sewer lines from damage that might be inflicted by the improper use of cleaning equipment. Whenever hydraulically propelled cleaning tools which depend upon water pressure to provide their cleaning force or any tools which retard the flow of water in the sewer line are used, precautions shall be taken to ensure that the water pressure created does not cause any damage or flooding to public or private property being served by the manhole section involved. The flow of sewage in the sewer lines shall be used to provide necessary pressures for hydraulic cleaning devices whenever possible. When additional quantities of water from fire hydrants are necessary to avoid delay in normal working procedures, the water shall be conserved and not used unnecessarily. No fire hydrant shall be obstructed so as to prevent its use in case of a fire in the area served by the hydrant, nor shall a hydrant be used for the purpose described unless a vacuum break is provided. The CITY must be notified and the proper fire hydrant permit must be obtained prior to the opening of any fire hydrants.
- C. Roots shall be removed in the designated sections where root intrusion is a problem. Special precautions should be exercised during the cleaning operation to assure virtually complete removal of visible roots from the joint area. Procedures may include the use of mechanical devices such as expanding root cutters, and porcupines; or hydraulic procedures such as high pressure jet cleaners.
- D. All sludge, dirt, sand, rocks, grease and other solid or semisolid residue, debris, and material resulting from cleaning operations shall be removed at the downstream manhole of the 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.

- E. All debris, residue and other materials resulting from cleaning operations shall be removed from the site at the end of each workday and shall be disposed of in an approved manner at the LRWWU Duck Island Treatment Facility. Under no circumstances will the accumulation of debris, residue, etc., on the site of Work beyond the stated time be permitted, unless prior written authorization is given for storage in totally enclosed containers.

3.03 ACCEPTANCE

- A. Acceptance of sewer line cleaning shall be contingent on satisfactory completion of the television inspection. The televised inspection will be performed by the CITY and is not the CONTRACTOR's responsibility. If television inspection shows the cleaning to be unsatisfactory, the sewer line shall be re-cleaned and re-inspected until the cleaning is shown to be satisfactory.

END OF SECTION

SECTION 2

MAINTENANCE OF FLOW IN EXISTING SEWERS AND DRAINS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. CONTRACTOR shall be responsible for maintaining wastewater and storm drainage flow in all public and private pipes during construction including individual house service connections. The CONTRACTOR shall man all bypass pumping systems during non-working hours, 7 days per week.
- B. Provide all labor, equipment, power and materials necessary to maintain flow in existing sewers (including individual house services), drains and manholes, and handle existing wastewater and stormwater flows. Construct and maintain all temporary bypass sewers and drains and be responsible for all bypass pumping of sewage and drainage that may be required to prevent backing up of sewage or drainage during installation of all new pipe and manhole and catch basin structures and to allow proper inspection and testing of the new Work. The CONTRACTOR shall immediately remove and dispose of all offensive matter spilled during the bypass pumping at his own expense. Note that some pipes have a continuous base flow and some sewers are force mains, which must be handled.
- C. When bypass pumping is required, the CONTRACTOR shall supply pumps, conduits, power, and other equipment to safely divert the flow of sewage or drainage around the section in which work is to be performed. The bypass system shall be of sufficient capacity to handle existing flows plus additional flows that may occur during a rain event. The CONTRACTOR shall determine the minimum bypass system capacity for each street assuming non-surcharged full pipe flow and manning coefficient of $n=0.013$ and using the existing pipe sizes and inverts shown on the plans.
- D. The CONTRACTOR shall have adequate standby equipment available and ready for immediate operation and use in the event of an emergency or breakdown. Standby pump(s), of equal or greater capacity than the largest pump utilized, shall be installed at the mainline flow bypassing locations, ready for use in the event of primary pump failure.
- E. Bypass pumping system shall be capable of bypassing the flow around the work area and of releasing any amount of flow up to full available flow into the work area as necessary for satisfactory performances of work.
- F. The CONTRACTOR shall be required to repair at his own expense any damage to property, public or private, caused by his operations.
- G. The CONTRACTOR shall maintain sewer flow around the work area in a manner that will not cause surcharging of sewers, or damage to sewer, and that will protect public and private property from damage and flooding.
- H. Wastewater flows from existing sewers shall not be allowed to enter the new facilities, unless specified or approved by the CITY, until the new facilities have been cleaned and tested as required in the Specifications.

- I. Should damage of any kind occur to the existing drains or sewers, the CONTRACTOR shall at his own expense make repairs to the satisfaction of the CITY.
- J. The CONTRACTOR shall not be permitted to overflow, bypass, pump or by any other means convey drainage to any brook or water course without permission of the CITY.
- K. Work area open trenches for sewer pipe shall not be used for bypassing flows. Work area open trenches for drainage pipe shall not be used for bypassing flows, unless otherwise directed by the CITY.
- L. Sewage shall be bypassed only to existing sewers, as directed by the CITY.
- M. The CONTRACTOR shall perform leakage and pressure test of the bypass pumping discharge piping using clean water prior to actual operations. The CITY will be given 24-hour notice prior to testing.
- N. The CONTRACTOR is responsible for locating any existing utilities in the area the CONTRACTOR selects to locate the bypass pipeline. The CONTRACTOR shall locate his bypass pipelines to minimize any disturbances to existing utilities and shall obtain approval of the pipeline locations from the City and the CITY. The CONTRACTOR shall pay all costs associated with relocating utilities and obtaining all approvals.
- O. The installation of the bypass pipelines is prohibited in all wetland areas. The pipeline must be located off streets and sidewalks and on shoulders of the roads. When the bypass pipeline crosses local streets and private driveways, the CONTRACTOR must place the bypass pipelines in trenches and cover with temporary pavement. Upon completion of the bypass pumping operations, and after the receipt of written permission from the CITY, the CONTRACTOR shall remove all the piping, restore all property to pre-construction condition and restore all pavement. The CONTRACTOR is responsible for obtaining any approvals for placement of the temporary pipeline within public ways from the City.

1.02 SUBMITTALS

- A. All procedures for maintaining flows must meet the approval of the CITY and the CONTRACTOR shall be required to submit to the CITY, for approval, a detailed written plan of all methods of flow maintenance ten (10) days in advance of flow interruption, in accordance with Section 01300.
- B. The plan shall include but not limited to details of the following:
 - 1. Number, size, material, location and method of installation of suction piping;
 - 2. Number, size, material, method of installation and location of installation of discharge piping;
 - 3. Bypass pump sizes, capacity, number of each size to be on site and power requirements;
 - 4. Standby power generator size, location;
 - 5. Downstream discharge plan;
 - 6. Calculations for selection of bypass pumping pipe size;

- 7. Schedule for installation of and maintenance of bypass pumping lines;
- 8. Plan indicating location of bypass pumping line.
- C. Submit name(s) of proposed restoration/cleanup companies to be used in the event of sewer backups into homes or businesses caused by CONTRACTOR work operations.

1.03 RELATED WORK

- A. Submittals are included in Section 01300.
- B. Connections to and work on the existing gravity system is included in Section 02658.

END OF SECTION

SECTION 6

TRAFFIC REGULATION

PART 1 GENERAL

1.01 REQUIREMENTS

- A. The CONTRACTOR shall furnish, install, operate and maintain equipment, services and personnel, with traffic control and protective devices, as required by an accepted traffic plan from the City Traffic Engineer.
- B. The CONTRACTOR shall submit to the CITY a traffic plan, done in accordance with the Lowell Traffic Engineer, detailing all temporary changes in traffic control equipment, street or road closures, detours, etc. The plan shall address the coordination with other contractors working within the area of work. No work shall commence until this plan has been reviewed and approved by the CITY. After approval, copies of this plan shall be submitted to the Lowell Regional Wastewater Utility (LRWWU). The CONTRACTOR shall make every effort to adhere to this plan. When necessary, the CONTRACTOR shall update this plan and forward these changes to the CITY and the City agencies for approval. The CITY reserves the right to modify the plan through the course of the Contract.
- C. The CONTRACTOR shall remove temporary equipment and facilities when no longer required and restore grounds to original or to specified conditions.
- D. The CONTRACTOR shall notify all property CITYs in writing at least 48 hours in advance of any work that will interfere with access to their residence or place of business.
- E. No road shall be closed to traffic without the prior consent of the CITY, the Lowell Public Works and Lowell Regional Wastewater Utility and the Lowell Police Department.
- F. Traffic control, including but not restricted to signing and devices, shall be provided for all openings in roads by the CONTRACTOR in accordance with City and State standards.

1.02 MINIMUM REQUIREMENTS OF THE TRAFFIC PLAN

- A. Traffic plan shall provide for access to all buildings including businesses and parking areas at all times.
- B. Plan shall illustrate traffic detours as approved by the Lowell Public Works and Lowell Regional Wastewater Utility, location, type and size of signage.
- C. Plan shall include schedule for traffic control in relation to construction.

END OF SECTION

SECTION 7
POLICE DETAILS

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. All necessary policing will be coordinated and supplied by the CITY. The CITY will arrange, documentation, and pay the costs of police required for traffic control.
- B. The intent is to insure public safety by police direction of traffic. Police are not to serve as watchmen to protect the Contractor's equipment and materials, or to warn pedestrians of such hazards as open trenches.
- C. Nothing contained herein shall be construed as relieving the Contractor of any of his/her responsibilities for protection of persons and property under the terms of the Contract.

END OF SECTION

SECTION 8

HEALTH, SAFETY, AND EMERGENCY PROCEDURES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. It is the intent of this specification to ensure the general health and safety of contractors, workers and the public conducting maintenance and construction activities within the City of Lowell (CITY).
- B. The CONTRACTOR shall notify all applicable local and state agencies and appropriate utilities prior to the onset of work. The CONTRACTOR must also notify Dig Safe at 811 or 888-DIG-SAFE.
- C. The CONTRACTOR shall comply with all OSHA safety regulations (specifically 29 CFR 1926 and 1910). Additionally, the CONTRACTOR shall be knowledgeable of and compliant with the Lowell Regional Wastewater Utility Confined Space Entry Program and Lock-Out Tag-Out LO/TO procedures.
- D. The CONTRACTOR shall provide fences, barriers, warning lights, signs CITY provided police officers, and any other safety features as may be necessary for the protection of the public. These precautions shall apply particularly to open excavations and structures.
- E. Where the CONTRACTOR performs work on any public roads or thoroughfares, he shall first obtain approval from the CITY and then perform his work in accordance with all CITY requirements. He shall be responsible for maintaining traffic control with flagman, signs, CITY provided police, etc. If roads are to be disturbed, he shall maintain the work until such time that he restores the road base and surface to the satisfaction of the local controlling government agency, in accordance with the specifications herein or as detailed on the approved plan.
- F. The CITY retains the right to immediately cease work at any time if proper safety protection standards are not being maintained.

END OF SECTION