

## 1.0 GENERAL

### 1.1 DESCRIPTION

*This section addresses the procedures to be employed for pipe bursting existing water/sewer pipelines, as identified on the drawings, and replacing with new high density polyethylene pipe (HDPE).*

### 1.2 QUALIFICATIONS

- 1.2.1 The contractor shall be trained and certified by TT Technologies to operate GRUNDOBURST pipe bursting equipment and systems. The contractor shall provide certifications of training and proficiency in the use of the equipment. Only the contractor's employees trained and certified by TT Technologies shall operate the GRUNDOBURST equipment.
- 1.2.2 The contractor must be an existing licensee to perform pipeline replacement operation using the pipe bursting methodology patented by Advantica Technologies (British Gas Plc).
- 1.2.3 The contractor shall be trained by the respective manufacturer of the pipe bursting equipment in the use of that machinery. The contractor shall provide certification from the manufacturer that the contractor has been trained and is proficient in the use of the equipment. Only the contractor's employees trained and certified by the manufacturer shall be allowed to operate the equipment during the project.
- 1.2.4 The contractor must have successfully completed 3,000 feet of pipe bursting which includes one successful static pipe bursting project. Contractor shall submit a list of these projects including the owner, engineer, addresses, phone numbers and dates that said projects were completed with their proposal.

### 1.3 METHODS

*The method approved for rehabilitation of existing sanitary sewers by pipe bursting and installation of new polyethylene pipe is TT Technologies, Inc. GRUNDOBURST system, (800) 533-2078) or approved equal. The contractor shall be licensed to use the required technology proposed for this work. Bids, submitted by unlicensed or inexperienced contractors, will be non-responsive and not allowed.*

### 1.4 EQUIPMENT

- 1.4.1 Pipe bursting tool shall be static. The bursting action of the tool shall increase the external dimensions sufficiently, causing breakage of the pipe at the same time expanding the surrounding ground. This action shall not only break the pipe, but also create the void into which the burster can be statically pulled which enables forward progress to be made. Simultaneously, the new polyethylene pipe, directly attached to the expander, shall also move forward.
- 1.4.2 The static pulling frame shall be telescopic in design to allow the cutting head to release at the termination of the pull. This also provides minimal trench length by telescopic adjustment.
- 1.4.3 Quick lock bursting rods are required to guarantee snap lock connections. Quick Lock rods also stabilize cutting wheels at a 90\_ plane to invert pipe. Threaded bursting rods are not allowed. This insures the same cutting location eliminating threaded rod failures and turning of rods which effect cutting ability of blades.
- 1.4.4 The unit must maintain automatic thrust and pull back.
- 1.4.5 The static unit is capable of pipe bursting in two directions from the same excavation.

**1.5 SUBMITTALS**

- 1.5.1 Submit manufacturer's specific technical data with complete information on physical properties of pipe and pipe dimensions pertinent to this job. A certificate of "Compliance with Specification" or suitable alternative shall be furnished for all materials to be supplied.
- 1.5.2 Complete calculations including lists of parameters, all formulas and all other data showing the design of the new pipe.
- 1.5.3 Detail drawings and written descriptions of the entire construction procedure to install pipe, bypass sewage flow, pit sizes, pit construction and shoring, dewatering and sewer service reconnections.

**1.6 LICENSE AGREEMENTS**

*The contractor shall submit evidence acceptable to the City, such as a certified copy of a license or agreement that it has the method usage authority from the patent holder and licensed manufacturer. The contractor agrees to defend, indemnify and hold harmless the City and the Engineer against all claims, suits, and actions or other damages as a result of negligence of any person or property arising out of patent infringement by the contractor or the contractor's employees, agents, the suppliers, or any tier of subcontractors involved in the work.*

**2.0 MATERIALS**

*Polyethylene Plastic Pipe shall be high density polyethylene pipe and meet the applicable requirements of ASTM F714 Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter, ASTM D1248, ASTM d3550.*

- 2.1 All pipe shall be made of virgin material. No rework except that obtained from the manufacture's own production of the same formulation shall be used.
- 2.2 The pipe shall be homogenous throughout and shall be free of visible cracks, holes, foreign material, blisters or other deleterious faults.
- 2.3 Dimension Ratios: The minimum wall thickness of the polyethylene pipe shall meet Minimum 17 SDR of Pipe.
- 2.4 Material color shall be white, black or whatever is specified with interior of pipe having a light reflective color to allow easier/better viewing for television inspection.

**3.0 EXECUTION****3.1 SAFETY**

*The contractor shall carry out operations in strict accordance with all applicable OSHA Standards. Particular attention is drawn to those safety requirements involving work entry into confined spaces. It shall be the contractor's responsibility to familiarize and its employees with OSHA Standards and regulations pertaining to all aspects of the work.*

**3.2 INSERTION AND RECEIVING EXCAVATIONS**

- 3.2.1 The location and number of insertion and receiving excavations shall be planned by the contractor and submitted in writing for approval by the Engineer 10 days (or as determined by the Engineer) prior to excavation.

- 3.2.2** Before excavation is begun, it will be the responsibility of the contractor to check with the various utility companies and determine the location of existing utilities in the vicinity of the work area. The contractor at no cost to the City, if required, will arrange temporary construction easement and/or right-of-way areas.
- 3.2.3** Damage to utilities and the resulting repair, temporary service cost, etc., shall be borne by the contractor. Access pits shall be backfilled in accordance with the appropriate specifications.
- 3.2.4** All excavations shall be properly sheeted/shored in accordance with relevant specifications for trench safety systems. Any damage resulting from improperly shored excavations shall be corrected to the satisfaction of the Engineer with no compensation due to the contractor.
- 3.2.5** All open excavations shall be kept secure at all times by the use of barricades with appropriate lights and signs, construction tape, covering with steel plates, etc., or as directed by the Engineer.
- 3.2.6** One or more receiving pits shall be excavated at the end(s) of the sewer pipe to be replaced or at appropriate points within the length of the existing pipe. Pit shall be centered over the existing pipe.
- 3.2.7** The number of pits for machine and pipe insertion shall be the minimum necessary to most efficiently accomplish the work. The contractor shall give consideration to the use of excavation required for other purposes such as for sanitary sewer service reconnections and manhole replacement.
- 3.2.8** Where manholes are used as machine or new pipe insertion pits, the contractor shall identify such manholes and replace them at no additional cost to the City if damaged. Any manhole modification or replacement required shall be considered incidental to the installation of the new pipe.
- 3.2.9** The cost of diversion pumping around a manhole or insertion pit, if required, from a manhole upstream to a manhole downstream, shall be incidental to the installation of the new pipe.

#### **4.0 MEASUREMENT AND PAYMENT**

- 4.1** Payment for the work in this section will lump sum or as stipulated in the contract documents. The price for replacing the sewer pipes by pipe bursting shall be full compensation for all materials, labor, equipment, cost of insertions and retrieval pits, machine pits, pavement removal and replacement, testing, and incidentals required to complete the replacement process.