

## **1. GENERAL**

The following supplemental sewer main specifications are intended to address the installation of high-density polyethylene pipe for sewer main using pipe bursting methods and technology for sanitary sewer lines.

### **a. Definitions**

1. Pipe Bursting: Method of trenchless construction in which a bursting tool splits/fractures the existing pipe while simultaneously installing a new Polyethylene Pipe of the same size or larger using a Static or Pneumatic Pipe Bursting Technique.
2. Engineer: Overall project engineer employed or retained by JEA.
3. Project Owner: JEA.
4. Contractor: Firm engaged in the construction of underground utility lines and with demonstrated competency using pipe bursting methods for the installation of sewer pipelines.

### **b. References:**

The Bid Workbook, references the following JEA Water & Wastewater Standards manual, located on JEA.com:

[https://www.jea.com/engineering\\_and\\_construction/water\\_and\\_wastewater\\_standards/](https://www.jea.com/engineering_and_construction/water_and_wastewater_standards/)

## **2. Scope**

This specification addresses the installation of sewer mains by the pipe bursting method, including connecting to existing sewer mains, connecting to existing services or installing house connections. The Contractor will furnish all labor, equipment, materials, tools and appurtenances necessary or proper for the performance and completion of the contract. Inspection and payment will be by the method stipulated in the contract.

### **a. Work Plan**

Prior to beginning work, the contractor should describe the installation procedures including equipment staging area requirements, means of sewer access, methods of maintaining sewage flow, methods used to reactivate service laterals, method used to rehabilitate service connections and whether or not access to private property, pits or other excavations are required.

## **3. MATERIALS**

### **a. HDPE Pipe**

1. Polyethylene Plastic Pipe shall be High Density Polyethylene Pipe (HDPE) and meet applicable requirements of ASTM F14.

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2. HDPE pipe and fittings will be used in accordance with the material specifications. All additional appurtenances (manholes, tees, gaskets, etc.) will meet the material specifications. All pipe installed by pipe bursting will be joined by butt fusion, electro fusion, or full circle repair clamp as detailed in paragraph B (Pipe Joining) of this section.
3. HDPE pipe will be produced from resins meeting the requirements of ASTM D1248, designation PE3408, ASTM D3350 cell classification PE345444C, and will meet the requirements of AWWA C901 and C906. HDPE pipe will meet the minimum stability requirements of ASTM D3350. Pipe will be legibly marked at intervals of no more than five feet with the manufacturer's name, trademark, pipe size, HDPE cell classification, appropriate legend such as SDR 19 or SDR 17, ASTM D3035, AWWA C901 or C906, date of manufacture and point of origin.
4. All pipe shall be made of virgin material. No rework material except that obtained from the manufacturers own production of the same formulation shall be used.
5. The pipe shall be homogeneous throughout and shall be free of visible cracks, holes, foreign material, blisters, or other deleterious faults.
6. Pipe color shall be solid black or gray unless otherwise specified in these contract documents.
7. HDPE Pipe shall be Iron Pipe Size (IPS) unless otherwise specified in these contract documents.
8. Dimension Ratios: The minimum wall thickness of the HDPE pipe shall meet the following minimum DR: DR 19 or DR 17

**b. Pipe Joining for Terminal Sections of HDPE Pipe.**

1. The polyethylene pipe shall be assembled and joined at the site using the butt-fusion method to provide a leak proof joint. Threaded or solvent cement joints and connections are not permitted. All equipment and procedures used shall be in strict compliance with the manufacturer's recommendations. Fusing shall be accomplished by personnel certified as fusion technicians by a manufacturer of polyethylene pipe and/or fusing equipment.
2. Terminal sections may also be joined by Electrofuse Couplings by Central Plastic Company, Friatec, or approved equal.
3. Terminal sections may also be joined by Full Circle Repair Clamps by Smith Blair, JCM, or approved equal. Refer to JEA W/WW Standards Wastewater Approved Materials AS-409

**c. Materials Related to Sewer Service Connections** (Refer to JEA W/WW Standards Section 428 – Lateral Connections)

1. Sewer service connections to the HDPE main may not be made by Plastic Saddles with Stainless Steel Straps or Rubber Saddles with Stainless Steel Straps
2. A wastewater saddle may be utilized in the construction of a new wastewater service lateral which is tapping an existing (in-use) clay or PVC gravity wastewater main.
3. The connection/tapping saddle shall include a ductile iron saddle casting with corrosion-resistant paint, SBR gasket, 304 stainless steel band with 304 S.S. adjusting bolts and 304 S.S. pipe clamp. Acceptable is ROMAC style "CB" or JEA approved equal.

**d. Materials for Sealing Manholes** (Refer to JEA W/WW Standards Section 427 – Epoxy Packing Grout)

1. The annular space between the wall and entering pipes shall be thoroughly plugged with an approved epoxy packing grout applied and cured in strict conformance with the manufacturer's recommendations so that there will be zero leakage through openings and around pipes. The grout shall be finished smooth and flush with the adjoining interior and exterior manhole wall surfaces. Coat packing grout on the interior and exterior surfaces with an approved compatible epoxy coating as specified above.

**4. EQUIPMENT**

The pipe bursting unit shall be designed and manufactured to force its way through the existing line by fracturing the pipe and compressing the broken pieces into the surrounding soil as the equipment progresses. The bursting unit shall generate sufficient force to burst and compact the existing pipeline. In each case the pipe bursting unit shall pull the polyethylene pipe with it as it moves forward.

**5. EXECUTION**

**a. General**

1. Bypass Pumping shall be accomplished when and where necessary. The Contractor shall provide flow diversion with pumps adequate in size and capacity to handle all flows generated during the pipe burst process. All costs for bypass pumping shall be incidental unless specific pay items for this work are included in the pay schedule.
2. Excavation of insertion pits shall be at locations determined by the Contractor.
3. Insertion pits shall be of sufficient length to allow the bursting head and new HDPE pipe to enter the host pipe at an angle that will maintain the grade of the existing sanitary sewer.

**b. Preparation**

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1. All sewer service connections shall be located and marked prior to pipe bursting the main by PACP Pre-CCTV Inspection. A report shall be created detailing, with exact measurements, each service connection to the sewer main line, in order to reconnect the service connections after installation of the new HDPE pipe. The report shall at least state the exact distance from the manhole wall to the middle of each service connection, the manhole number from where the measurement has been taken and the location of the service connection {i.e. 9 o'clock, 11 o'clock etc.)
2. If the PACP Pre-CCTV inspection reveals obstructions or pipe materials that will prevent the existing pipe from being pipe burst properly and cannot be removed by conventional cleaning equipment, a point repair will be made by the Contractor, with approval from the Owner/Engineer. Separate payment for this work will be made and it is not considered incidental to the pipe bursting process.
3. If the PACP Pre-CCTV inspection reveals a sag or hump, the Contractor shall install replacement pipe to provide an acceptable grade without the sag or hump, with approval from the Owner/Engineer. Separate payment for this work will be made and it is not considered incidental to the pipe bursting process.
4. Before any excavation is done for any purposes, the Contractor shall contact the appropriate One Call agency for determining field locations of existing utilities.

**c. Insertion of the HDPE Pipe**

1. The polyethylene pipe shall be assembled and joined at the site using the butt-fusion method to provide a leak proof joint. Threaded or solvent cement joints and connections are not permitted. All equipment and procedures used shall be in compliance with the manufacturer's recommendations. Fusing shall be accomplished by personnel certified as fusion technicians by a manufacturer of HDPE pipe and/or fusing equipment.
2. The butt-fused joint shall be in true alignment and shall have uniform rollback beads resulting from the use of proper temperature and pressure. The joint shall be allowed adequate cooling time before removal of pressure. The fused joint shall be watertight and shall have tensile strength equal to that of the pipe. All defective joints shall be cut out and replaced at the expense of the Contractor.
3. Service connections to the HDPE pipe shall be made with materials submitted and approved in accordance with the "Materials" section of these specifications.
4. The installed pipe shall be allowed to cure for the Manufacturer's recommended amount of time, but not less than four (4) hours, for cooling and relaxation due to tensile stressing prior to any reconnection of service lines, sealing of the annulus or backfilling of the insertion pit. Sufficient excess length of new pipe, but not less than six (6) inches, shall be allowed to protrude into the manhole to provide for occurrence.

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5. If concrete encasements are encountered, a point repair shall be performed to excavate and break out concrete prior to the bursting operation to allow the steady and free passage of the pipe bursting head, with approval from the Owner/Engineer. Separate payment for this work will be made and it is not considered incidental to the pipe bursting process.
6. The new HDPE pipe shall be inserted immediately behind the bursting head in accordance with the manufacturer's recommended procedures. The bursting tool shall be specifically designed and manufactured for the type of insertion process being used. It shall be utilized to guide and assist the bursting head during the operation. A pushing machine may be utilized to aid pipe insertion from the rear.
7. Restraint of pipe ends shall be achieved by means of Central Plastics Electrofusion couplings or equivalent. The Electrofusion couplings shall be slipped over pipe ends against manhole wall and fused in place. Installation of Electrofusion couplings shall be done in accordance with the Manufacturers recommended procedures.
8. Following the relaxation period, the annular space shall be sealed according to the "Materials for Sealing Manholes" section of this document in accordance with JEA W/WW Standards.

**d. Service Reconnections**

1. Service connections to the HDPE pipe shall be made with materials submitted and approved in accordance with the "Materials" section of these specifications. Services shall be reconnected so as to minimize disruption of service.
2. After the new HDPE pipe has been installed and tested, the Contractor shall be responsible for reconnecting existing sewer services in the manner described in the bid form. All service lines shall be the size indicated in the plans and specifications.

**e. Testing and Acceptance**

1. After the new HDPE pipe is installed and all services are reconnected, the line shall be inspected by CCTV. PACP Post-CCTV video shall be submitted to the Engineer or Owner for approval and acceptance of line.

**6. AUTHORIZATION TO COMMENCE WORK & PROJECT MANAGEMENT**

JEA will contact the Contractor and request the contractor provide a materials take off (estimate) for the JEA scope of the project for JEA review and approval. If JEA approves the project it is expected the Contractor will accept the job and commence work within 30 calendar days (45 days if a FDOT permit is required) of receiving the Purchase Order, unless otherwise mutually agreed to by the Parties. If the Contractor fails to commence work within 30 calendar days or other mutually agreed commencement date, the Contractor will be responsible for the costs incurred by any delays, including but not limited to, emergency work due to line failure,

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additional costs incurred by JEA to repair/replace the line beyond the estimate provided by the Contractor to perform the work.

The Contractor is responsible to repair any site damage and provide site restoration, which shall be remediated as follows: Sod – 7 calendar days, Concrete – 8 calendar days, Asphalt – 7 calendar days (<200 sq ft) or 21 days (>200 sq ft). The remediation time is additive. For example, if Sod and Concrete requires restoration, both must be complete within 15 calendar days.

Prior to the start of work, the Contractor will coordinate with JEA's Project Outreach team, via [ProjectOutreach@jea.com](mailto:ProjectOutreach@jea.com), to provide forward communication to JEA customers detailing the following: location, scope, tentative schedule, estimated completion, traffic concerns, etc. and place JEA approved door hangars in the neighborhoods where the work will be performed, as well as being responsive to JEA or COJ inquiries.

By Friday at the latest, the Contractor will provide the project schedule for the following week to: Construction Inspector, Project Outreach, Manager – Maintenance Planning and Engineering and Manager – Sewer O&M

The Contractor will complete all warranty work within 30 calendar days of notification, unless a mutually agreed alternate time frame is defined. The exception is in the case of a customer outage, where correction is should be completed immediately, but no later than 48 hours after notification.

## **7. Supervisor Qualifications**

- The Field Supervisory Personnel employed by the Pipe Bursting Contractor and assigned to supervise Work for JEA shall have three (3) years of current Field Supervisory experience and a minimum of 50,000 linear feet (total experience) of installation of underground piping using pipe bursting methods described in this Solicitation. The Contractor shall submit the resume and project experience, which shall include the amount (linear feet) of pipe bursting experience of the Field Supervisory Personnel (free form) no longer than two (2), single side, 8 ½ X 11 inch pages to demonstrate experience.
  - JEA may request and the Contractor shall provide in 48 hours the above requested documentation. If the Contractor cannot provide the documentation, JEA will reject the Bid and not Award the contract to this Bidder.
- The Contractor shall use the same supervisor during the performance of the contract. If the Contractor needs to utilize another supervisor, JEA will require the Contractor to meet the same qualifications listed above. If the Contractor cannot provide another approved Supervisor JEA may terminate the Contract.

## **SPECIAL CONDITIONS**

### **SPECIAL CONDITION ITEM Section 7 (Creates a new item outside the scope of JEA Water and Wastewater Standards)**

**7.3.22. Paving Removal and Replacement**Add the following to Section 801, Items 9.1 and 9.2. Pavement removal and replacement shall be based on a maximum asphalt saw cut width of 6' (3'-maximum trench width) and shall adhere to the COJ Pavement Repair Details referenced in the Bid Item. Pavement settlement will be inspected 11 months after installation. Areas experiencing 1/2" or more total dip in any cross section shall be considered a defect, and shall be corrected as directed by JEA.

Payment for removal and replacement (all types and thickness) shall be made at the square yard unit price at the Contract Unit Price Allowance set for in the Bid Form.

**7.3.24. Sewer Piping Remove and Replace Through Point Repairs**Add the following to Section 801, Item 16.2: Payment for a point repair and/or obstruction removal will be by sewer diameter, divided into 4' depth intervals and payment made for each point repair performed. Example: 6" – 10" and shall include an allowance for 6' length of pipe. Lengths beyond 6' shall be paid per the linear foot within the depth interval. 12" – 18" sewer pipes shall include an allowance for 10' length of pipe. Lengths beyond 10' shall be paid per the linear foot within the depth interval. All repair clamps, fittings, and street repair are included with the task. Payment shall be per the unit prices set forth. Point repairs for pipe sizes greater than 18" shall be handled by Supplemental Work Authorization. Point repairs developing as a result of the cleaning operation, shall be the full responsibility of the CIPP Contractor. In the event the Contractor cannot correct the problem in a timely manner, JEA will coordinate the repair and shall issue a back charge to the Contractor.

### **SPECIAL CONDITION ITEM 900 SERIES (Creates a new item outside the scope of JEA Water and Wastewater Standards)**

#### **931. SEWER PIPE PIPEBURSTING**

931.1 Measurement of each sewer pipe segment installed via sewer pipe bursting shall take into consideration the existing sewer pipe nominal diameter and the outside diameter of the new sewer pipe. The length for payment will be measured from the centerline of the launch manhole to the centerline of the receiving manhole. The elevations of the existing pipes shall fall into depth categories in 4' intervals, for each pipe diameter size 0' to 4', 4' to 8', 8' to 12', etc. Measurement for depth shall be the invert elevation from the rim at the downstream manhole. The range of pipe sizes are as follows:

- 6.0" Sewer Pipe burst to 7.125" O.D.
- 6.0" – 8.0" Sewer or Service Pipe burst to 9.05" O.D.
- 8.0" – 10.0" Sewer or Service Pipe Burst to 11.10" O.D.
- 10.0" – 12.0" Sewer or Service Pipe burst to 12.75" O.D.
- 12.0" – 15.0" Sewer or Service Pipe burst to 16.0" O.D.
- 15.0" – 18.0" Sewer or Service Pipe burst to 18.0" O.D.

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Payment for the installed pipe includes furnishing and placement of all materials, labor, tools, equipment, pre and post CCTV performed by the Contractor, advising JEA of unacceptable existing pipe conditions, and preparation of the existing pipe and manholes to receive the new pipe. All insertion / extraction pits, dewatering, bypass pumping, vacuum truck pumping, As-Builts, placing and removing all traffic signs and barriers, maintaining traffic, Project Outreach duties, removal and disposal of all sand in the pipe segments; removal and disposal of all pipe coupons; and any other items required to completing the task are incidental to the linear foot unit price as set forth in the Bid Form.

- 931.2 Measurement of each sewer service pipe segment installed shall take into consideration the existing sewer pipe nominal diameter and the outside diameter of the new pipe. The length for payment will be the horizontal distance measured from the centerline of the main pipe to the tie in at the property line at grade, or as directed by the JEA. The range of pipe size included are as follows:

3" – 8" Sewer Service Lateral Connection, 4.5", 6.625", or 9.05" O.D HDPE, or 6" OR 8" PVC SDR35

Acceptable replacement methods included are Open Trenching, Pipe Bursting, Ground Piercing, or Slip-Lining on a 6" line where a siamese connection will become two independent lines. When Trenchless methods are employed, 4.5" O.D. HDPE is an acceptable size and material for 3" or 4" replacement via pipe bursting, ground piercing, and for slip-lining one leg of a siamese connection. All open trench replacement must meet adhere to the JEA Water & Wastewater Standards, namely a minimum size of 6" or 8" PVC or HDPE service pipe to maintain or increase capacity. Payment for the installed pipe includes furnishing and placement of all materials, sewer service piping, fittings, labor, tools, equipment, and CCTV and cleaning if required. All excavation, native soil back-filling, sheeting and shoring, driven and pulled drag shields for trenches of all depths, placing and removing all traffic signs and barriers and maintaining traffic, insertion / extraction pits, dewatering, bypass pumping, vacuum truck pumping, As-Builts, and any other items required to complete the task are incidental to the linear foot unit price as set forth in the Bid Form.

**932. MANHOLE FRAME AND COVER ADJUSTMENT**

Measurement for payment of Remove and Construct Manhole Frame will include the two (2) vertical feet of replacement. For depths beyond two (2) vertical feet, payment will be per each additional vertical foot replaced. Payment will be compensation in full for removal of the existing manhole and disposal of the debris. Payment shall include furnishing from JEA inventory a new frame and 32" cover. Contractor is to obtain the JEA supplied frame and cover from the Pearl Street yard. All required removal of grassing; excavation; de-watering; native soil backfill; all sheeting, shoring and bracing; protecting existing structures, utilities and property; placing and removing all traffic signs and barriers and maintaining traffic; cleaning up the site; furnishing all labor, materials, tools and equipment for the construction of the new frame for the depth, and all work appurtenant thereto.

### **933. LATERAL CONNECTIONS AT SEWER MAIN**

933.1 Payment will be made for each sewer lateral connection furnished and installed at the Contract price and shall constitute full compensation for excavation; native soil backfilling; bypass pumping; de-watering; sheeting and shoring, driven and pulled; drag shields for trenches of all depths and furnishing and installing lateral connections at depths divided into 4' depth intervals; 0' to 4', 4' to 8', 8' – 12', etc. The cost of the tapping saddle over and above the price paid for the pipeline length measured through the saddle, locating the existing lateral piping and all other labor, materials, transition couplings, FERNCO couplings at the property line, dewatering, bypass pumping, tools, placing and removing all traffic signs and barriers and maintaining traffic, and equipment are incidental to the price set forth in the Bid Form. Refer to SPECIAL CONDITION ITEM 900 SERIES, Subsection 931.2 for additional instructions and materials for sewer service connections.

933.2 Payment will be made for multiple sewer lateral connections furnished and installed in an existing excavation pit paid under 933.1, at the Contract price and shall constitute full compensation for furnishing and installing lateral connections at all depths. The cost of each tapping saddle over and above the price paid for the pipeline length measured through the saddle, locating the existing lateral piping and all other labor, materials, transition couplings, FERNCO couplings at the property line, tools, and equipment are incidental to the price set forth in the Bid Form. Refer to SPECIAL CONDITION ITEM 900 SERIES, Subsection 931.2 for additional instructions and materials for sewer service connections, and an explanation of the existence of multiple sewer services.

### **934. LATERAL CONNECTIONS DEEMED OUT OF SERVICE**

Payment will be made for each sewer lateral connection excavated, but not restored (by JEA approval only) at the Contract price. The price set forth in the Contract shall constitute full compensation for excavation; native soil backfilling; de-watering; sheeting and shoring, driven and pulled; drag shields for trenches in depth increments, 0'-4', 4'-8', 8'-12', 12'-16', etc. The unit price shall also be full compensation for locating the service and all incidental work including all labor, materials, tools and equipment.

### **935. AS BUILTS**

Providing all data listed on the As-Built Data Sheet is incidental to the pipe rehabilitation task. When the existing invert information is suspected of being inaccurate, or when no invert data exists, and when directed by the JEA, an invert survey will be performed in order to supply elevations for the GIS Database.

### **936. CCTV AND MAINLINE CLEANING**

Measurement and Payment for Light Cleaning and CCTV of sewer pipe will be made only when requested by JEA, and is subsequently deemed unsuitable for rehabilitation. JEA shall reserve the right to use these line items for miscellaneous maintenance work on previously rehabilitated pipe sections. Measurement shall be from manhole to manhole, or manhole to

obstruction. The linear foot unit price shall be full compensation for all incidental work, including all labor, materials, tools, bypass pumping, light cleaning, tapes, and reports.

**947. SANITARY SEWER CLEANOUT**

947.1 Furnishing and installing cleanout: The quantity to be paid for will be the actual number of cleanouts installed. Measurement shall be made for each cleanout.

947.2 Payment for the work will be at the Contract unit price allowance and shall be full compensation for the item of work completed; including removal of grassing; excavation; de-watering; native soil backfilling; furnishing and installing 4" to 8" cleanout; connection to piping including all necessary fittings; furnishing and placing steel decking over excavations; all sheeting, shoring and bracing required to maintain excavation in a safe condition; protecting existing structures, utilities and property both public and private; placing and removing all traffic signs and barriers and maintaining traffic; cleaning up the site; furnishing all material, labor, tools, and equipment and all incidental and related work required to complete the work of the item unless indicated otherwise on the Contract Documents.

**960. REMOVAL AND REPLACEMENT OF SIDEWALK, DRIVEWAYS AND CURB & GUTTERS (ALL TYPES AND THICKNESSES)**

Measurement and Payment for curb and gutter, sidewalk, driveway (match existing), etc. shall be full compensation at the Contract Unit Price Allowance in the Bid Form for removal/disposal and subsequent replacement of the quantity actually furnished and installed, including excavation; backfill; forming; vibrating (if required); finishing; removal of all form work; furnishing and placing steel decking over excavations; all sheeting, shoring, and bracing required to maintain excavations in a safe condition; protecting existing structures, utilities and property both public and private; placing and removing all traffic signs and barriers and maintaining traffic; cleaning up the site; furnishing all labor, tools, and equipment; and all incidental and related work required to complete the work of the item.

**990. INSIDE DROP SYSTEM**

Payment shall be made for each size drop system furnished and installed inside a manhole. The unit prices set forth in the Contract shall constitute full compensation for maintenance of traffic; furnishing and installing drop bowl system, complete with 11 gauge 304 stainless steel (1-1/2" wide) adjustable clamping brackets and 3/8" diameter type 18-8 stainless steel hardware at four vertical foot intervals (minimum two each required) to secure bowl system to manhole wall, SDR 35 PVC drop pipe, and external pipe couplers, including all incidental work, labor, materials, tools, and equipment. Inside drop system shall be RELINER as manufactured by Duran, Inc., no exception.

**998. CONFLICT ENCASEMENT**

The quantity to be paid for will be the actual number of sanitary sewer pipe encasements furnished and installed. Payment for the work will at the contract unit price allowance for the class of encasement and shall be full compensation for the items of work, complete, including furnishing and installing the steel casing pipe(size as required), connections to manhole, sealing of connections, excavation and native soil backfilling; de-watering; sheeting and shoring driven and pulled and drag shields for trenches of all depths; placing

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and removing all traffic signs and barriers and maintaining traffic; the removal and disposal of the existing sewer piping; plus all incidental work including all labor, materials, tools and equipment. Class One encasement shall generally be comprised of providing the steel casing within the manhole with no excavation required. Class Two encasement shall generally include providing the steel casing with excavation. Class Three encasement shall generally include providing the steel casing, removal and replacement of existing structure, and provision of new conflict manhole structure.