

# BID SOLICITATION



**City of Chattanooga**  
**101 East 11th Street, Suite G13**  
**Chattanooga, TN 37402**

## BID OPENING DATE AND TIME:

07-SEP-17 at 2:00 PM

**BID NUMBER: 304846**

## SEALED BIDS

Mail or submit two (2) signed copies of bid form to this office in the enclosed envelope. Retain one copy for your file.

## BUYER:

**PHONE #:** (423) 643-7230

**DELIVERY REQUIRED:**

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City of Chattanooga  
 101 East 11th Street, Suite G13  
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Item	Class-Item	Quantity	Unit	Unit Price	Total
<p>Requisition No.: 158558                      Ordering Dept.: Waste Resources                      Buyer: Geoffrey Hipp 423-643-7233                      *****</p> <p>DESCRIPTION:                      This shall be a twelve (12) month blanket contract for Sanitary Sewer Cured In-Place Pipe Lining for the Waste Resources Division. The contract may be renewed for two (2) additional twelve (12) month terms under the same Terms and Conditions by Mutual Agreement. The City of Chattanooga and the Contractor may bilaterally extend the contract by Written Confirmation by both parties at least 30 days prior to the contract's current expiration date into any successive term as provided herein.                      *****</p> <p>ATTACHMENTS:                      - Specifications                      - Iran Divestment Act                      - Affirmative Action Plan                      - Standard Terms and Conditions:                      (<a href="http://www.chattanooga.gov/purchasing/standard-terms-and-conditions">http://www.chattanooga.gov/purchasing/standard-terms-and-conditions</a>)                      *****</p> <p>*** BIDS MUST BE RECEIVED NO LATER THAN ***                      ***** 2:00 PM ON SEPTEMBER 7, 2017 *****                      *****</p> <p>PLEASE SUBMIT BIDS IN DUPLICATE INDICATING                      BID NUMBER (304846) ON OUTSIDE PACKAGING                      *</p> <p>ALL ITEMS MUST BE QUOTED F.O.B. DESTINATION, FREIGHT ALLOWED.                      *****</p> <p>NOTE: All bids received are subject to the terms and conditions contained herein and as listed in the above referenced website. The undersigned Bidder acknowledges having received, reviewed, and agrees to be bound to these terms and conditions, unless specific written exceptions are otherwise stated.</p> <p>The City of Chattanooga reserves the right to reject any and/or all bids, waive any informalities in the bids received, and to accept any bid which in its opinion may be for the best interest of the city.</p> <p>The City of Chattanooga will be non-discriminatory in the purchase of all goods and services on the basis of race, color, or national origin.                      *****</p> <p>PRICE ESCALATION CLAUSE:                      All prices under this contract shall remain fixed during each twelve (12) month contract period. If as a result of a general change in prices or discounts, the contractor has changed prices to all of its customers, then, at the time of contract renewal, the price under this contract may be adjusted accordingly after acceptance. All price increases must be justified by providing a copy of the prevailing labor wage or material cost increases. Prompt notice of price changes (increases or reductions) must be furnished to the Purchasing Agent at least 30 days prior to the requested effective date and the prices for these services/materials shall remain firm for twelve (12) months. The effective date of price increases shall be the date the Purchasing Agent accepts the price changes or the effective date of increase stated by contractor's notice to Purchasing Agent, whichever is later.                      *****</p> <p>PLEASE PROVIDE US WITH THE FOLLOWING INFORMATION:</p> <p>Company Name _____</p> <p>Address _____</p> <p>Phone/Toll-Free No. _____</p> <p>Fax No. _____</p> <p>E-Mail Address _____</p>					

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Item	Class-Item	Quantity	Unit	Unit Price	Total
1	4-inch CIPP- 0-15 feet deep	1	Linear Foot	_____	_____
2	4-inch CIPP > 15-20 feet deep	1	Linear Foot	_____	_____
3	4-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____
4	4-inch heavy Cleaning	1	Linear Foot	_____	_____
5	6-inch CIPP-0-15 feet deep	1	Linear Foot	_____	_____
6	6-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____
7	6-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____
8	6-inch heavy cleaning	1	Linear Foot	_____	_____
9	8-inch CIPP-0-15 feet deep	1	Linear Foot	_____	_____
10	8-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____

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ALL BIDS MUST BE SIGNED – The undersigned offers the above quoted prices under the conditions contained herein.

The City is Exempt from all Federal and State Tax.  
Bids will be received at the above mentioned address.

COMPANY: \_\_\_\_\_

TERMS OF PAYMENT: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

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Item	Class-Item	Quantity	Unit	Unit Price	Total
11	8-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____
12	8-inch heavy cleaning	1	Linear Foot	_____	_____
13	10-inch CIPP-0-15 feet deep	1	Linear Foot	_____	_____
14	10-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____
15	10-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____
16	10-inch heavy cleaning	1	Linear Foot	_____	_____
17	12-inch CIPP-0-15 feet deep	1	Linear Foot	_____	_____
18	12-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____
19	12-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____
20	12-inch heavy cleaning	1	Linear Foot	_____	_____

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Item	Class-Item	Quantity	Unit	Unit Price	Total
21	15-inch CIPP-0-15 feet deep	1	Linear Foot	_____	_____
22	15-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____
23	15-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____
24	15-inch heavy cleaning	1	Linear Foot	_____	_____
25	16-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____
26	16-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____
27	16-inch heavy cleaning	1	Linear Foot	_____	_____
28	18-inch CIPP-0-15 feet deep	1	Linear Foot	_____	_____
29	18-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____
30	18-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____

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Item	Class-Item	Quantity	Unit	Unit Price	Total
31	18-inch heavy cleaning	1	Linear Foot	_____	_____
32	20-inch CIPP-0-15 feet deep	1	Linear Foot	_____	_____
33	20-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____
34	20-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____
35	20-inch heavy cleaning	1	Linear Foot	_____	_____
36	21-inch CIPP-0-15 feet deep	1	Linear Foot	_____	_____
37	21-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____
38	21-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____
39	21-inch heavy cleaning	1	Linear Foot	_____	_____
40	24-inch CIPP-0-15 feet deep	1	Linear Foot	_____	_____

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Item	Class-Item	Quantity	Unit	Unit Price	Total
41	24-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____
42	24-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____
43	24-inch heavy cleaning	1	Linear Foot	_____	_____
44	30-inch CIPP-0-15 feet deep	1	Linear Foot	_____	_____
45	30-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____
46	30-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____
47	30-inch heavy cleaning	1	Linear Foot	_____	_____
48	36-inch CIPP-0-15 feet deep	1	Linear Foot	_____	_____
49	36-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____
50	36-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____

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Item	Class-Item	Quantity	Unit	Unit Price	Total
51	36-inch heavy cleaning	1	Linear Foot	_____	_____
52	42-inch CIPP-0-15 feet deep	1	Linear Foot	_____	_____
53	42-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____
54	42-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____
55	42-inch heavy cleaning	1	Linear Foot	_____	_____
56	48-inch CIPP-0-15 feet deep	1	Linear Foot	_____	_____
57	48-inch CIPP>15-20 feet deep	1	Linear Foot	_____	_____
58	48-inch CIPP>20-25 feet deep	1	Linear Foot	_____	_____
59	48-inch heavy cleaning	1	Linear Foot	_____	_____
60	Restoring Services by Remote Cutting	1	Each	_____	_____

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Item	Class-Item	Quantity	Unit	Unit Price	Total
61	Manhole modification allowance for installation of liners 36-inch and larger	1	Each	_____	_____
62	Testing Allowance by Independent Testing Laboratory ASTM D638 (tensile) and ASTM D790 (flexural)	1	Each	_____	_____
63	Point Repair Allowance	1	Each	_____	_____
64	Mobilization For each Sub-Project.	1	Each	_____	_____
65	Emergency Mobilization (Sub-Project less than 1000 LF)	1	Each	_____	_____
66	CCTV Pre-Inspection where CIPP lining is not feasible	1	Linear Foot	_____	_____
67	16-inch CIPP>0-15 feet deep	1	Linear Foot	_____	_____

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***SPECIFICATIONS FOR BLANKET CONTRACT TO  
SUPPLY SANITARY SEWER CURED IN PLACE PIPE LINING  
FOR THE WASTE RESOURCES DIVISION  
CITY OF CHATTANOOGA, TENNESSEE***

**1.0     GENERAL**

**1.1     SCOPE OF SERVICES**

The Scope of Services included in these Specifications shall be for the provision of all labor, materials and equipment for the CIPP lining of existing 4-inch, 6-inch, 8-inch, 10-inch, 12-inch, 15-inch, 16-inch, 18-inch, 20-inch, 21-inch, 24-inch, 30-inch, 36-inch, 42-inch, and 48-inch sanitary sewer pipes in different locations throughout the City of Chattanooga Interceptor Sewer System (ISS). The locations will be determined by the Engineering Manager or designee and authorization for each Sub-Project shall be released to the Vendor at a time decided by the City. For bidding purposes Sub-Projects scopes will not be less than 5000 linear feet. The sewer line segments will in the Sub-Projects generally will not be contiguous but will be within the City of Chattanooga ISS.

It is the responsibility of each bidder to visit both the Moccasin Bend Wastewater Treatment Plant and the related WASTE RESOURCES DIVISION facilities to determine the types, sizes, and quantities of pipes in the City of Chattanooga ISS as well as the associated work areas and conditions, the sizes and types of equipment and parts, the safety requirements, and any other circumstances associated with the provision of these lining services.

Any questions or comments related to these specifications may be directed to the Engineering Manager or designee at Moccasin Bend Wastewater Treatment Plant, 455 Moccasin Bend Road, Chattanooga, Tennessee 37405 (423) 643-7400.

**1.2     BASIS OF BIDDING**

The Vendor shall submit one (1) bid on the Bid Form in Appendix A. The Bid shall include the cost per foot for labor and percent markup on materials and specialized equipment that may be required by the Vendor.

The cost per unit shall include any and all costs for wages, benefits, indirect costs overhead, profit, insurance, and any other related direct or indirect cost including bypass pumping. The cost per unit shall be for the services necessary to perform the work described herein.

Cost of these services shall be subject to all of the requirements of the Specifications.

The bid shall be awarded on the basis of the unit cost to provide the CIPP lining services for the Waste Resources Division as well as an evaluation of the Vendor's qualifications, experience, capabilities and other factors specified in the City Code.

The City of Chattanooga reserves the right to reject any and/or all bids, to waive any information in Bids received, and to accept any Bid which in its opinion may be in the best interest of the city.

### **1.3 QUALITY ASSURANCE**

- A. In order to establish minimum product quality and Installer capability, the following minimum requirements shall be met. The purpose for these submittals is to allow the Owner/Engineer the opportunity to conduct a complete, thorough and objective evaluation of proposed CIPP products and the Installing Vendor and to determine if the submitted products and Installer meet all experience, quality and utility standards required by the Specifications.
- B. CIPP System Manufacturer: The CIPP system must have a minimum proven performance record of 1,000,000 linear feet installed of the exact name-brand product bid in the United States, with a minimum of 20,000 linear feet in diameters 24-inch or larger over the last five years. In addition, a minimum of 10,000 linear feet of 36-inch diameter or larger of the exact name brand product must have been installed in the United States. Documentation shall be submitted with the Bid in accordance with the Instructions to Bidders.
- C. Vendor/Installer Experience: The installing Vendor for the cured-in-place reconstruction of sewers must have a minimum of five years of experience using the exact named product proposed, and have installed at least 300,000 linear feet of the exact named proposed product, including at least 20,000 feet of 24-inch diameter or larger cured-in-place product. Documentation along with contact names, telephone numbers and email addresses from the last ten projects shall be submitted with the Bid in accordance with the Instructions to Bidders.
- D. On-Site Field Superintendent: The Qualifying Superintendent must have a minimum of five years of experience with cured-in-place pipe products. In addition, the Qualifying Superintendent must have supervised jobs in which at least 20,000 feet of pipe has been reconstructed using the exact named product proposed including a minimum of 5,000 feet of 24-inch diameter or larger cured-in-place product. The Vendor shall submit information to document this with the Bid in accordance with the Instructions to Bidders. The Superintendent for the Project shall be on-site during all phases of the work involving any pre and post-installation video inspection, sewer cleaning or insertion and processing of the CIPP. The Vendor shall remove the onsite Field Superintendent at the request of the City at any point during the contract. The Superintendent shall be replaced with other qualified personnel.

E. Resin Class:

1. The Vendor shall designate a wet-out facility and shall provide wet-out liner tubes from this designated facility only. Multiple facilities to supply wet-out liner tubes for the duration of this Contract may not be used without prior approval of the Engineer.
2. The Vendor shall place a sampling valve in-line at a point in the resin/catalyst mixing stage so that a sample of non-catalyzed resin may be taken. A second sampling valve shall be placed in-line at a point after the resin/catalyst mixing stage, but prior to catalyzed resin injection into the liner so that a resin sample may be taken. Both sampling valves shall be left in place for the duration of the Contract.
3. The Engineer shall have the right to inspect the designated wet-out facility and draw samples from one or both sampling valves without prior notice to the Vendor for the duration of the Contract.
4. Infrared Analysis
  - a. The Engineer reserves the right to subject resin samples to an infrared analysis (IR) Scan. This standard analytical test involves shining a beam of light in the infrared frequency region through a thin sample of subject resin. The frequency of light is then varied across the infrared spectrum. Chemical functional groups present in the resin being analyzed will absorb infrared light at specific frequencies and with characteristic absorption intensities.
  - b. A spectrum created from the measurement of light transmitted through the sample across the range of infrared frequencies shall be used to determine the resin's chemical fingerprint. For Standard Polyester, an overlaid IR spectrum of Reichhold PolyLite® 33420 shall be used as a baseline comparison for the purpose of a test under this Contract. For Enhanced Polyester resin, an overlaid IR spectrum of Reichhold PolyLite® 33420-E shall be used as a baseline comparison for the purpose of a test under this Contract.
  - c. The Engineer may perform random Infrared Scans (IR Scans) and/or Composite Burn-offs to ensure resin quality and consistency throughout the duration of the Contract and shall be responsible for the cost of IR testing.

- F. Sub-Project Meetings: Prior to the initiation of work on each sub-project, the Vendor shall meet with the WRD and discuss the footage, depth, liner thickness, by-pass pumping and other variables particular to each sub-project.

#### **1.4 SUBMITTALS**

##### **1.4.1 Shop Drawings**

- A. Submit shop drawings in accordance with the requirements of City of Chattanooga Standard Specifications. Specific submittal information shall include the following:
1. The Vendor shall furnish submittal data establishing the structural capabilities, chemical composition, and other mechanical properties of the liner system proposed.
  2. The Vendor shall furnish the proposed liner thickness for each pipe size and depth categories, along with a certification, signed and sealed by an engineer registered in the state that the Project is located, to the effect that the proposed liner thicknesses were calculated based on the parameters specified in Article 2.04 of this section of the Specifications and the site specific external loads. In no case will the proposed liner thicknesses be less than those specified in Article 2.04 of this section of the Specifications. Vendor shall submit 5 hard copies of the design calculations.
  3. The Vendor shall furnish copies of the manufacturer's brochures giving a complete description of the product proposed, its physical and chemical composition, the same for the thermosetting resin or epoxy hardener.
  4. Pre- and post-installation videos and logs (CIPP Inspection Form, Cure Cook out Log, Wet out Request and Recommended Install and Cure Pressures) per Article 3.03 shall be submitted during the course of work.
  5. Catalyst system and resin/catalyst ratio.
  6. The proposed curing schedules and process shall be approved by the resin manufacturer in writing. Cure schedules shall include specific information on "post exothermic cooking times" duration and "cool down" procedures – all to be approved by the resin manufacturer in writing.
  7. The Vendor shall submit a Certificate of Authenticity from the resin manufacturer for each shipment to the wet-out facility to include the date of manufacture and Heat Distortion Temperature. This information shall be submitted before the manufacture or installation of any CIPP.

- B. The manufacturer shall submit written certification that the lining system complies with all applicable requirements of these Specifications.
- C. The Vendor shall submit its proposed plan for ensuring that the finished and installed CIPP meets the minimum thickness requirements. The plan shall include detailed inversion procedures to reduce stretching and resin loss and to minimize shrinkage.

#### **1.4.2 Bid Bond**

Not Required

#### **1.4.3 Performance Bond**

\$1,000,000.00 from successful bidder.

### **1.5 GENERAL CONDITIONS AND INSTRUCTIONS TO BIDDERS**

The Vendor shall comply with rules and conditions found in the City of Chattanooga Purchasing Department's "General Conditions and Instructions to Bidders" that are a part of the invitation to Bid for the equipment or services specified herein.

### **1.6 LENGTH OF CONTRACT**

The Contract for services described herein shall be for a period of one (1) year beginning the effective date of the award of the Contract. The Vendor shall provide the attached bid tabulation for the first year of the Contract.

The City shall have the option of extending the Contract for two (2) additional one (1) year periods at the Vendor's unit prices.

### **1.7 INSURANCE**

Contractor shall purchase and maintain during the life of this Agreement, insurance coverage which will satisfactorily insure Contractor against claims and liabilities which arise because of the execution of this Agreement, with the minimum insurance coverage as follows:

- a. **Commercial General Liability Insurance**, with a limit of \$1,000,000 for each occurrence and \$2,000,000 in the general aggregate.
- b. **Automobile Liability Insurance**, with a limit of \$1,000,000 for each accident, combined single limit for bodily injury and property damage.

c. **Worker's Compensation Insurance and Employer's Liability Insurance**, in accordance with statutory requirements, with a limit of \$500,000 for each accident.

d. **Professional Liability Insurance**, with a limit of \$1,000,000 for each claim and aggregate.

If any of the above cited policies expire during the life of this Agreement, it is the Contractor's responsibility to forward renewal Certificates within ten (10) days after the renewal date containing all the aforementioned insurance provisions. Certificates must specifically cite the following provisions:

- i. City of Chattanooga, its agents, representatives, officers, directors, officials and employees must be named an Additional Insured under the following policies:
  - a) Commercial General Liability
  - b) Auto Liability
  - c) Worker's Compensation Insurance and Employer's Liability Insurance
  - d) Professional Liability Insurance
- ii. Contractor's insurance must be primary insurance as respects performance of subject contract.
- iii. All policies, except Professional Liability Insurance, if applicable, waives rights of recovery (subrogation) against City of Chattanooga, its agents, representatives, officers, directors, officials and employees for any claims arising out of work or services performed by Contractor under this Agreement.

## **1.8 WARRANTY**

The Vendor shall warrant and guarantee the work performed for a period of five (5) years from the date of final acceptance. All CIPP liners shall have a design and service life of 50 years. The date of final acceptance by the City shall be the date final payment is made to the Vendor.

## **2.0 PRODUCTS AND OTHER REQUIREMENTS**

### **2.1 RESINS**

- A. The resin for CIPP installed under this Contract shall be a Standard Polyester Resin or ~~Enhanced Polyester Resin unless otherwise directed by the Engineer due to site-specific field conditions and/or design requirements.~~

B. Standard Polyester Resins

1. The resin used shall be a corrosion resistant isophthalic polyester specifically designed for the CIPP being installed. Only premium, virgin, non-recycled resin shall be used. The resin shall be manufactured under ISO 9002 certified procedures.
2. The resin shall have been tested according to ASTM D2990, D5813, and F1216 by accredited, third-party testing facilities. Results of these tests shall be made available to Engineer upon request.
3. The resin vendor must be able to reference the corrosion scale with the resin itself having a heat deflection temperature greater than 212 degrees Fahrenheit.

C. Enhanced Polyester Resins

1. The resin used shall be a corrosion resistant enhanced thixotropic, medium reactivity, high viscosity, and rigid, chemical resistant isophthalic resin. These resins contain a mineral filler to enhance mechanical properties and are specifically formulated for use in the cured-in-place pipe (CIPP) industry.
2. The resin shall have physical and chemical properties equal to those of Reichhold Polylite® 33420-E and shall have been tested according to ASTM D 2990, D 5813 and F 1216 by accredited third party testing facilities. Results of these tests shall be made available to the Engineer upon request.
3. The resin must be manufactured under ISO 9002 certified procedures. The resin vendor must be able to reference the corrosion scale with the resin itself having a heat deflection temperature greater than 224 degrees Fahrenheit. Only premium, non-recycled resins will be accepted.

- D. Resins shall be shipped directly from the resin manufacturer's facility to the CIPP wet-out facility. Resins shall not be sent to any intermediate mixing facility. Copies of the shipping documents from the resin manufacturer shall be submitted to the Engineer indicating dates of shipment, originating and receiving locations.

- E. Where required by the Engineer, the Vendor shall provide a styrene-free resin.



## **2.2 CATALYST SYSTEMS**

- A. The catalyst system shall be made up of a primary catalyst and a secondary catalyst. The primary catalyst shall be added at a maximum of 1% of the resin volume by weight unless otherwise approved by the Engineer. The secondary catalyst shall be added at a maximum of 0.05% of the resin volume by weight unless otherwise approved by the Engineer.
- B. Resins, catalysts and resin/catalyst mix ratios shall not be changed or altered during this Contract unless specifically approved by the Engineer in writing.

## **2.3 LINER TUBE**

- A. The tube shall consist of one or more layers of absorbent non-woven felt fabric and meet the requirements of ASTM F1216.
- B. The acceptable liner tube shall be constructed under ISO 9002 certified procedures. Proper certification shall be provided prior to the manufacture or installation of any CIPP.
- C. The tube shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular shaped pipe sections.
- D. The wet-out tube shall have a uniform thickness that when compressed at installation pressures shall meet or exceed design thickness.
- E. The tube shall be manufactured to a size that when installed shall tightly fit the internal circumference and length of the original pipe. In the event that under-sized pipe is present, liner tube shall be manufactured so that overlap folds or wrinkles do not occur. Allowances shall be made for circumferential stretching during inversion.
- F. The outside layer of the tube, before installation, shall have an impermeable polyurethane or polyethylene plastic coating. This coating shall be an impermeable, flexible membrane that shall contain the resin and facilitate monitoring of resin saturation during resin impregnation. This coating shall form the inner layer of the finished pipe and is required for enhancement of corrosion resistance, flow and abrasion properties.
- G. The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated layers. No material may be included in the tube that may cause de-lamination in the cured liner, and no dry or unsaturated areas or layer shall be evident.

- H. The wall color of the interior liner surface after installation shall be such that a clear, detailed inspection with closed-circuit television equipment may be conducted.
- I. The outside of the tube shall be marked for distance at regular intervals not to exceed 10 feet. Such markings shall include the manufacturer's name or identifying symbol. The tube shall be stamped with the manufacturer's name or identifying symbol in regular intervals not to exceed twenty feet.
- J. The minimum length shall be that deemed necessary by the Vendor to effectively span the distance between manhole sections of the segment to be lined unless otherwise specified. The line lengths shall be verified in the field before impregnation of the tube with resin.

## **2.4 CIPP DESIGN**

### **2.4.1 Liner Thickness**

- 1. The CIPP thickness shall be designed in accordance with the applicable provisions of ASTM F 1216 and D 2412 for "fully deteriorated gravity pipe conditions" and the following design conditions:
  - a. AASHTO HS-20-44 Live Load, whether under streets or not. The live load will vary based on depth of pipe.
  - b. A dead load based on the depth of pipe shown on the Drawings and a soil modulus of elasticity of 1,000 psi, soil weight of 120 pounds per cubic foot and a coefficient of friction of  $Ku'=0.130r$ .
  - c. Short-term flexural modulus and long-term modulus when tested in accordance with ASTM D790.
    - i. Standard Polyester: 250,000 psi and 125,000 psi, respectively
    - ii. Enhanced Polyester: 300,000 psi and 150,000 psi, respectively
  - d. Minimum Flexural Stress of 4,500 psi, when tested in accordance with ASTM D790.
  - e. Safety factor of 2.0.
  - f. Groundwater height at the ground surface.

- g. Maximum pipe ovality of 2%.
- h. Poisson ratio of 0.3.
- i. Enhancement factor (K) of 7.
- j. Service temperature range shall be 40 to 140 degrees F.
- k. Maximum long-term deflection shall be 5%.
- l. Any and all other site specific external loads. It is the Vendor's responsibility to determine the site specific external loads.

2. Minimum Acceptable pipe Thickness

Pipe Diameter (Inches)	Depth to Invert (Feet)	Minimum Thickness (mm)
8	0-17	6.0
10	0-9	6.0
10	9.1-16	7.5
12	0-11	7.5
12	11.1-13	7.5
15	0-8	7.5
15	8.1-11	9.0
18	0-13.5	10.5
18	13.6-17	12.0
24	0-9.5	12.0
24	9.6-12.5	13.5
24	12.6-15.8	15.0
24	15.9-19.5	16.5
27	0-9.5	13.5
27	9.6-12	15.0
27	12.1-15	16.5
36	0-9.5	18.0
36	9.6-11.7	19.5
36	11.8-14	21.0
36	14.1-16	22.5
36	16.1-18	24.0
36	18.1-21	25.5
36	21.1-22.5	27.0

3. The liner thickness shall be the greater of the calculated thickness to meet the design requirements of Paragraph 1 above or the minimum acceptable pipe thickness from Paragraph 2 above.
4. All references to liner thickness shall be defined as total thickness after installation and after curing is complete.
5. The finished CIPP shall provide a uniform smooth interior wall surface with a Manning "n" coefficient of 0.011.

## **2.5 OTHER REQUIREMENTS**

### **2.5.1 *Sole Vendor***

The Vendor shall not subcontract the services or assign the contract to others without the written consent of the City of Chattanooga.

### **2.5.2 *Compliance with Applicable Regulations***

All of the services provided by the Vendor shall be completed in a good and workmanlike manner. All services provided shall be in compliance with all applicable statutes, rules, ordinances and regulations of, but not limited to, the USEPA, TDOT, OSHA, and any similar federal, state, and local laws or regulations applicable to the Vendor or to the services described herein.

The Vendor's personnel shall comply with all City, Waste Resources Division, and Moccasin Bend WWTP work rules and regulations when on site.

### **2.5.3 *Inspection Excluding CCTV***

The services furnished by the Vendor shall be subject to inspection and approval by the City's designated representative, but the manner and method of providing the services shall be the responsibility of the Vendor.

### **2.5.4 *Failure to Provide Services and Termination of Contract***

In the event the Vendor:

- a. Fails to initiate services on the date specified or otherwise agreed to;
- b. Fails to provide all of the required documentation for his personnel, insurance, and any other documentation required by these Specifications at the specified times;

- c. After having begun services, abandons them for any reason;
- d. Suspends or refuses to continue services; or
- e. Defaults in any manner in the performance under the terms of the Contract for a period of two (2) consecutive working days (unless the Vendor is prevented from continuing for reasons beyond its control);

The City of Chattanooga shall have the right to terminate the Contract immediately upon the written notification by the City for the reasons listed above and the City shall complete the Contract or have the services completed by another vendor in any reasonable manner at the Vendor's expense.

The City shall have the right to terminate the Contract after giving a thirty-day (30) written notice to the Vendor.

## **2.6 DESCRIPTION OF CONTRACTED SERVICES**

### **2.6.1 General**

- A. The Vendor shall provide all labor, benefits and any other related expenses necessary to provide the CIPP lining services described herein for the WASTE RESOURCES DIVISION.
- B. The Vendor shall provide the services on an "as needed" basis as requested by the City. The City will attempt to schedule the work to optimize the use of the Vendor's operator when it is needed.
- C. Vendor shall perform work on straight time, i.e., non-emergency, unless otherwise noted. Overtime, weekend, or holiday work shall only be performed at the City's direction according to Section 2.6.2 of these Specifications.
- D. Vendor shall be responsible for locating all manholes utilized for any portion of work related to the contract.
- E. Vendor shall determine where bypass pumping will be necessary. In cases where bypass pumping will be required, vendor shall provide a bypass pumping plan and a contingency plan in case of bypass pump break down. All costs associated with bypass pumping shall be included in the unit price of CIPP lining in the bid schedule.
- F. Vendor shall be responsible for all traffic control measures. Vendor shall provide approved traffic control plans from TDOT, or CDOT for any instance where traffic control is required.

### **2.6.2 Emergency Mobilization**

An Emergency Mobilization charge, as outlined in the bid schedule, will be reserved for an instance where the city requires lining services immediately. The City anticipates that Emergency jobs would consist of 1000 linear feet or less. Once Emergency Mobilization has been requested by the City, the following conditions shall apply:

- A. Mobilization of personnel, equipment, material, and set up of by-pass pumping within 48 hours.
- B. Liquidated Damages: For each day past the 48-hour schedule for an emergency job, liquidated damages shall be assessed in the amount of \$1,500 per day.

## **3.0 EXECUTION**

### **3.1 GENERAL**

- A. All reconstruction of existing gravity sewers using an approved CIPP product and installer shall be performed in strict accordance with this Specification and ASTM F1216.
- B. Pull-in and inflate methods of CIPP installations (reference ASTM F1743) will not be acceptable unless approved by the Engineer.
- C. The Vendor shall carry out his operations in strict accordance with all applicable OSHA standards. Particular attention is drawn to those safety requirements involving work on an elevated platform, entry into a confined space and the operation of high-pressure air/steam equipment.
- D. The Vendor shall be responsible for obtaining water necessary for cleaning, inversion, and other work items requiring water. The Vendor shall be responsible for obtaining a hydrant use permit from Tennessee American Water or Eastside Utilities/Hixson Utility.
- E. The Vendor shall be responsible for locating and accessing all manholes.
- F. All surfaces which have been damaged by the Vendor's operations shall be restored to a condition at least equal to that in which they were found immediately prior to the beginning of the Vendor's operations. Suitable materials and methods, acceptable to the Engineer, shall be used for such restoration. The restoration of existing property or structures shall be performed as promptly as practicable and shall not be left until the end of the construction period. The cost for correcting damages resulting from the Vendor's actions shall be the responsibility of the Vendor.

- G. The tube shall be fabricated to a size that, when installed, will neatly fit the internal circumference of the conduit(s) designated for CIPP. Allowance shall be made for the circumferential stretching during insertion of the tube.
- H. The Vendor shall be responsible for determining the minimum length to effectively span the distance from the manhole to manhole and shall verify the length of the fabric tube in the field before the tube is either cut to length or wet-out with resin. The tube may run through one or more manholes with the approval of the Engineer.
- I. **Protruding Service Connections:** When service connections protrude into the existing pipe more than  $\frac{1}{2}$ " as measured from the inside pipe wall, then the Vendor shall remove the protruding portion of the service connection to within  $\frac{1}{2}$ " of the inside pipe wall. Removal of the protruding portion of the service connection shall be accomplished using a television camera and internal cutting device, which shall not damage the collection line or the portion of the service line to remain in place. This work shall be accomplished prior to the installation of the liner pipe.
- J. **Traffic Control:** The Vendor shall be responsible for traffic control during the course of each phase of the Work. Prior to beginning Work, Vendor shall submit a traffic control plan for each section of Work for review and approval. It is the intent that this Work is to be accomplished with as little disturbance to traffic, private property, and the public as is reasonably possible, consistent with timely completion thereof. The traffic control plan shall reflect such requirements where applicable. Signs, signals, and detours shall conform to the local and state requirements for streets and highways. The Vendor shall have and maintain on site a sufficient supply of traffic cones and other traffic signaling devices, including trained and properly equipped flagmen, to safely control all traffic through the work zone(s). Road closures and / or detours will require advance scheduling and prior approval by the Engineer.

### **3.2 BY-PASS PUMPING**

- A. By-Pass Pumping shall be the responsibility of the vendor, and requirements will be agreed upon at each sub-project meeting. All by-pass pumping shall be sufficient to meet or exceed the capacity of the existing collection system.
- B. The installation methodology contemplated requires the temporary blocking and back-ups of sewers and sewage. Vendor shall be responsible to limit the extent and duration of such blockages and back-ups so that overflows and spillage onto public or private property and into storm sewers, waterways, and streets does not occur. In the event that such spillage or overflows do occur during the course of or as a result of the Work, the Vendor performing the Work shall immediately report the spillage or overflow to the Engineer or designee, as well as, eliminate the spillage or overflow and, as necessary, remove the blockage and eliminate the back-up. On elimination of the

spillage or overflow, the Vendor is to clean up and disinfect the area. Work to stop or contain such events is to be deemed emergency in nature and sufficient justification for total mobilization of resources, the use of overtime or double time, and any other reasonable measures to assure correction of the problem without delay. Damages arising from blockages, back-ups, spillage, or overflows of sewage during the course of the Work or because of the Work shall be the sole responsibility of the Vendor.

- C. Sewage flow shall be pumped around segments during the installation and testing of cured-in-place pipe, the televising of sewers and lateral service reinstatement.
- D. Pumping equipment shall have the capacity to convey 100% of peak flows around the construction area. The flow shall be intercepted at the upstream end of the construction area and shall be pumped through temporary piping of adequate size. The flow shall be discharged into a manhole on the downstream side of the construction area, thus by-passing the sewer segment(s) under construction. The Vendor shall be required to contact all residential and commercial customers whose service lines connect to the sewer main being bypassed and inform them that they will be temporarily out of service. The Vendor shall also advise those customers against water usage until the mainline is back in service. After completing the necessary work on the main line to allow its reuse, the Vendor shall advise those customers that the sewer main is back in service. The Vendor shall maintain a high degree of professionalism, both in workmanship and appearance, at all times. Should a condition arise that the Vendor cannot restore service within 12 hours of service interruption, the Vendor shall make provisions for pumping all flows within the service interruption area at no cost to the Owner.

### **3.3 PRELIMINARY INSTALLATION REQUIREMENTS**

- A. Vendor shall notify the Engineer prior to beginning cleaning activities and pre-construction closed-circuit televising (CCTV) inspection. Vendor shall plan cleaning and pre-construction CCTV inspection activities far enough in advance of CIPP lining activities to allow Engineer time to review and possibly correct any critical damage reports that may develop from the CCTV inspection results. There will be no additional mobilization fee given to Vender to revisit pipelines following damage repairs.
- B. Prior to CIPP installation, the pipe shall be cleaned to the satisfaction of the Engineer.
  - 1. Cleaning:
    - a. Cleaning shall be accomplished by utilizing a high pressure, hydraulic sewer pipeline cleaner. Pressure jetting equipment used shall be sufficient for the purposes of attaining the degree of cleanliness in sewers as specified.



- b. The cleaning unit(s) shall be capable of routinely operating up to a minimum of 500 feet from the point of access to the sewer. Minimal hose diameter shall be one-inch.
- c. Cleaning shall be performed immediately prior to the internal inspection to preclude the buildup of sediment. Should television inspection reveal that a sewer pipeline is not clean, the cleaning operations shall be repeated until the sewer pipeline is clean. This additional cleaning shall be performed at the expense of the Contractor, at no additional cost to the Owner unless "Heavy Cleaning" as described in Article 3.03 below is authorized by Engineer.
- d. During preconditioning and cleaning work and all other associated Contract operations, wastewater service shall be maintained at all times. This requirement may be relaxed only with the written approval of the Engineer.
- e. Cleaning shall include the trapping and removal of all sediment from successive manholes as the cleaning progresses. When hydraulic cleaning equipment is used, a suitable weir or dam shall be constructed in the downstream manhole, in such a manner, that the sediment and water are trapped. Under no circumstances shall sewage or sediment removed from the pipeline or manhole, be dumped onto streets, in catch basins or in storm drains. Material which could cause pipeline stoppages, accumulations in wet wells, or damage to pumps, shall not be permitted to pass from manhole section to manhole section. Sediment shall be removed and transported to the Moccasin Bend Wastewater Treatment Facility or other pre-approved disposal facility in a manner approved by the Engineer.
- f. The Contractor shall provide bypass pumping, if required, during the cleaning operation, at no additional cost.
- g. Blockages in the system shall be reported to the Engineer immediately.
- h. A responsible representative of the Contractor shall be present on the site of the work, or other location approved by the Engineer, to provide supervision of the work. At all times, and especially when a change of work location is underway, the Contractor's representative shall keep the Engineer continuously aware of the location, progress, planned execution of the work, and problems encountered.

- i. Flows may be attenuated using suitable flow control devices such as plugs designed and manufactured specifically for use in sanitary sewers. Sand bags or other types of devices shall not be used within sanitary sewer pipelines or manhole.
- 2. Heavy Cleaning
  - a. If during the course of cleaning and/or inspection operations, the Contractor believes a pipeline will require "heavy cleaning", the Contractor shall inform the Engineer prior to conducting "heavy cleaning" operations. Visual evidence in the form of a CCTV image or digital image of the pipeline shall be provided by the Contractor to the Engineer to justify heavy cleaning operations. After reviewing the evidence, the Engineer shall make a determination if the evidence provided meets the definition of "heavy cleaning". If it is determined that "heavy cleaning" is required, the Engineer shall provide written authorization to the Contractor to proceed with "heavy cleaning" operations at the unit price in the Bid for the pipe or pipes determined to require "Heavy Cleaning". If roots are present within the sewer pipeline which require the use of mechanical apparatuses (i.e. buckets, "pigs", rodding machines, grinders or dragging devices) or, if in the judgment of the Engineer the pipe is more than 25% full of debris, the pipe shall be cleaned to the satisfaction of the Engineer and the additional payment authorized under the pay item set forth in the bid form. Heavy cleaning shall be defined as the pipe being more than 25% full of debris or requiring the use of apparatuses other than normal high-pressure jetting equipment. The contractor shall be paid for heavy cleaning on the basis of the distance loosened debris is moved to the nearest point of extraction from the sewer. Payment shall be calculated on a lineal foot basis and be paid in addition to the normal cleaning rate shown on the bid form. Any heavy cleaning must be pre-approved by the Engineer.
- C. Debris Disposal: All debris cleaned from the pipe shall be removed and disposed of at the Owner's Wastewater Treatment Plant. Debris shall not be allowed to wash into any other pipe segment either upstream or downstream from the pipe segment being cleaned. All waste disposal at the Owner's Wastewater Treatment Plant shall meet the requirements set forth by the Owner.
- D. Pre-Installation CCTV Video Inspection: The section of sewer designated for CIPP shall be televised over its full length using a remote television camera and shall be submitted to the Engineer for review.

- E. Pre-CCTV where CIPP lining is not feasible will only be awarded, after the Engineer has reviewed the evidence, to make a determination if all possible solutions have been exhausted.

### **3.4 RESIN IMPREGNATION OF THE CIPP TUBE (WET-OUT)**

The Vendor shall designate a location where the tube shall be impregnated or "wet out" with resin, using distribution rollers and a vacuum impregnation system to thoroughly saturate the tube's felt fiber prior to installation in the field. The impregnated tube shall be free of pinholes, resin voids and other defects. If the cured-in-place pipe is impregnated at the manufacturing plant, it shall be delivered to the job site in a refrigerated truck, and remain refrigerated (below 450 Fahrenheit or as specified by the resin manufacturer) prior to installation to prevent premature curing. The flexible tube shall be vacuum impregnated with resin under controlled conditions or by other means provided such means can assure thorough resin impregnation to the full satisfaction of the Engineer. The volume of resin used shall be sufficient to fill all voids in the tube material at normal or required thickness and diameter. The volume of resin shall be adjusted by adding seven to ten percent excess resin for the change in resin volume due to polymerization and allow for any migration of resin into the cracks and joints in the original pipe.

### **3.5 INVERSION OF CIPP**

- A. The impregnated tube shall be inverted through an existing manhole or other approved access point utilizing a hydrostatic water column until it has fully traversed the designated line length and the inversion face breaches the destination manhole or termination point. The fluid column shall have been adjusted and maintained to be sufficient to cause the impregnated tube to hold tight against the existing pipe wall, produce dimples at side connections, and flared ends at the manholes. Lubricant during inversion shall be used as necessary in accordance with the CIPP manufacturer's recommendations. The lubricant used should be a nontoxic, oil-based product that has no detrimental effects on the tube, heating source and pump system, will not support the growth of bacteria, and will not adversely affect the fluid to be transported. Lubricant shall be used in processes with permeable coatings. Thermocouples shall be placed at the top and bottom interface of termination manhole which is furthest from the heat source for monitoring temperature during the cure cycle. Care should be taken during tube installation not to over-stress the fabric fiber and to minimize longitudinal stretch, resin loss and thinning of the liner wall.
- B. Before the inversion begins, the tube manufacturer shall submit to the Vendor, and the Vendor to the Engineer, the minimum pressure required to hold the tube tight against the host pipe and the maximum allowable pressure so as not to damage the tube.

- C. Once the inversion has started, pressure shall be maintained between the minimum and maximum pressures until the inversion has been accomplished.

### **3.6 CURING**

#### **A. Using Circulated Water**

1. A suitable source of heat and water recirculation equipment is required to circulate heated water throughout the pipe. The equipment shall be capable of delivering hot water throughout the inverted tube to uniformly raise the temperature required to affect a cure of the resin.
2. Initial cure will occur during temperature heat-up and is completed when exposed portions of the new pipe appear to be hard and sound and the thermocouples indicate that the temperature is of a magnitude to realize an exothermic or cure in the resin. After initial cure is reached, the temperature should be raised to the post-cure temperature recommended by the resin manufacturer. Post-Cure temperature should be held for a period as recommended by the resin manufacturer, during which time the recirculation of the water and cycling of the heat source to maintain the temperature continues.
3. Prior to any inversion, the Vendor shall provide a Post-Cure Hold Time and Temperature Table. This table shall indicate the minimum time and temperature the inverted tube will be held at in order to achieve desired physical properties. The resin manufacturer shall certify both the time and temperatures presented in the table.
4. Curing must take into account the existing pipe material, the resin system, and the ground conditions (temperature, moisture level, and thermal conductivity of the soil).

### **3.7 COOL-DOWN**

Cool-down of the cured pipe liner shall be in accordance with the manufacturer's recommendations. Care should be taken during the cool-down process so as to minimize shrinkage of the CIPP.

### **3.8 TERMINATION AND SEALING AT MANHOLE OUTLETS**

- A. Termination of the cured-in-place pipe at the manhole shall be completed by trimming the inverted pipe end back in accordance with the CIPP manufacturer's recommendations.

- B. No annular space shall be visible between the CIPP and manhole wall. If, in the judgment of the Engineer, the CIPP does not fit tightly against the sewer main at its termination point(s), the void between the host pipe and the CIPP shall be sealed by filling it with a resin/epoxy mixture compatible with the CIPP approved by the Engineer, or by utilizing manhole end seals or hydro-tight gaskets, all at no additional cost to the Owner.

### **3.9 TESTING OF CIPP**

- A. The Vendor shall prepare CIPP Acceptance Tests for each CIPP line segment during the duration of this Contract. The samples shall be for laboratory determination of flexural strength, flexural modulus and wall thickness for each test sample. These three individual analyses shall comprise one completed test. All samples shall be collected per the sampling protocols set forth in ASTM F1216.
- B. From the point most distant from the heat source, the Vendor shall remove one restrained sample of the installed liner at least 12 inches in length for testing. For sewers 15 inches and larger, plate samples may be taken and cured in the same water as the installed CIPP. For each sample taken, the Vendor shall cut and deliver a 12 inch in length representative sample (taken at least 2 inches from the end of the specimen) to the Engineer. The sample delivered to the Engineer shall be labeled and removed from any restraining mold. The samples shall be taken in the presence of the Engineer. The Engineer may return such samples to the Vendor for disposal.
- C. The tests shall be used to verify that the installed CIPP meets these Specifications. CIPP thickness shall be measured in accordance with ASTM D5813. Flexural properties shall be determined per ASTM D790. The Vendor shall label and date all samples and deliver the samples directly to the Engineer along with a filled out Chain of Custody Form. All testing shall be performed by an independent, ASTM-certified testing laboratory of Engineer's designation. Payment to the Vendor shall be withheld pending the Engineer's acceptance of the CIPP test results. The Laboratory costs will be paid in accordance with the terms and conditions of Cash Allowances specified elsewhere.
- D. Any liner that does not meet the specified strength and/or thickness requirements, regardless of the amount below the specified requirements, shall be corrected by the Vendor in a manner approved by the Engineer at no additional cost to the Owner. The Engineer's decision on how to correct deficient CIPP installations shall be final. Options for correcting deficient liners that may be considered by the Engineer include removing the liner and re-lining the sewer, or excavating and replacing the sewer from manhole to manhole, or providing the Owner with a credit. The primary option that will be considered will be to re-line the sewer. Credits will only be authorized for CIPP that does not meet required thickness. If a credit is acceptable to the Owner, the credit shall

be calculated by multiplying the bid price by the percent that the liner thickness is below the required installed thickness as follows:

$$\text{Credit} = (1 - \text{Installed CIPP thickness}/\text{required CIPP thickness}) \times \text{bid price}$$

- E. The Vendor shall not assume a credit will be acceptable to the Owner in any case.

### **3.10 LATERAL SERVICE RECONNECTION**

#### **3.10.1 Lateral Service Reconnection - Internal**

- A. After the CIPP has been cured, the existing service connections and laterals shall be reinstated. In general, reinstatement of service connections and laterals shall be accomplished internally, without surface excavation, using a remote control cutting device equipped with a television monitor. Reopened services shall be wire brushed to the satisfaction of the Engineer. In some cases, remote reinstatement may not be possible. In these instances, reconnection by excavation as specified below is acceptable. All connections must be reinstated by at least 95-percent of the original opening. Holes cut outside the lateral opening or oversized cutting (more than 100%) must be repaired at the Vendor's expense. Particular attention shall be given to the lower quadrant of the opening to ensure that no accumulation of solids or debris will occur at the service tie-in.
- B. All capped or factory plugged service connections shall not be opened unless otherwise directed by the Engineer.

#### **3.10.2 Lateral Service Reconnection by Excavation**

- A. General: Sewer lateral house connections accomplished by excavation shall be connected to the pipe by dual-strapped saddles. The Vendor shall connect existing sewer house lateral service pipe to the saddle using a flexible coupling. After connection to the saddle, the sewer house connection pipe shall have a slope toward the newly lined sewer equal to the pre-existing on the lateral pipe, or a minimum of two percent.
- B. Execution
1. The Vendor shall excavate the area of the lateral connection so that the host pipe and existing connection is exposed. The host pipe shall be broken back or removed in such a manner that the new CIPP liner is exposed without causing damage to the liner.

2. An appropriately sized hole acceptable to the Engineer shall be cut into the CIPP using a circular hole cutter. Hanging or loose cuttings shall be removed so that the newly opened hole is smoothed around its edges.
3. A sealant compatible with CIPP and acceptable to the Engineer shall be liberally applied around the newly cut hole to form a watertight seal between the CIPP liner and PVC pipe saddle used to make the connection.
4. A dual-strap PVC pipe saddle acceptable to the Engineer shall be secured to the CIPP in accordance with the manufacturer's recommendations.
5. Before the service lateral pipe is connected to the saddle, the Vendor shall hand wipe a hydrogen sulfide resistant composite epoxy resin mixture inside the saddle where the saddle and CIPP surfaces meet to ensure a watertight seal.
6. The Vendor shall connect the lateral service pipe to the saddle according to the manufacturer's recommendations and in a manner acceptable to the Engineer.

### **3.11 DAILY WORK SCHEDULE**

Insofar as is possible, Work shall be so scheduled that the lining of the pipe, curing of the tube, and the reinstatement of service connections can be accomplished in a single working day or shift. The City's project manager will be contacted at the beginning of every working day to discuss the work schedule. Prior approval must be obtained from the Engineer if work is to be performed at night or on weekends to minimize traffic disturbance. At the end of each working day, temporary tie connections shall be made between the relined section of pipe and the existing system, and the plug in the upstream manhole removed, but not before the section being lined has been properly cured in accordance with the manufacturer's instructions, and all service connections are reinstated. In some instances, it may be necessary to bypass effluent from service connections.

### **3.12 CONTRACT STARTING DATE**

The Contract for the full services shall begin immediately on the effective date of the award of the Contract.

### **3.13 PAYMENT OF SERVICES**

#### ***3.13.1 General***

The City will make payment to the Vendor no later than the 30th of the month for the preceding month's service provided invoices are received by the first day of the month. Once the Engineer reviews the final payment request and feels the contractor has met the requirements of the

contract, the 5% retainage amount will be awarded, this will signify the close out of the project. Payment requests should be submitted to the Moccasin Bend Wastewater Treatment Plant, 455 Moccasin Bend Road, Chattanooga, Tennessee 37405.

- A. No separate payment shall be made for clearing and constructing access roads to sewers.
- B. The cost of moving and reestablishing landscape features, including labor and materials, shall be included in the unit price bid for the item to which it pertains.
- C. No separate payment shall be made for the cost incurred to repair damaged property. This includes concrete or asphalt driveways, except where payment is authorized for Same Trench Sewer Replacement.
- D. Construction along Highways, Streets and Roadways: No separate payment shall be made for traffic control or maintaining highways, streets, roadways and driveways.
- E. No additional payment will be made for replacement of defective materials.
- F. All costs related to the implementation of the easement and permit stipulations shall be included in the unit price bid for the item to which it pertains.
- G. No separate payment will be made for clean-up and testing. Any cost for labor, materials and equipment required for clean-up shall be included in the unit price bid for the item to which it pertains.
- H. No separate or additional payment will be made for any special or unique method, means, techniques or equipment necessary for the Contractor's compliance with these Specifications, regulatory requirements, permits, laws or regulations which govern this Project.

### **3.13.2 Clean Sewer**

- A. Pre-Installation Cleaning of Pipelines
  - 1. Payment will be made at the unit price bid for each pipe diameter. Quantities shall be determined from field measurements verified in writing by the Engineer.
  - 2. Measurement for payment for sewers shall be from centerline of manhole to centerline of manhole.



3. Payment will be based on the actual footage of pipe cleaned. Additional passes required to clean lines to the level specified in Section 33 01 30.14 will not be counted for payment purposes. Unit prices shall include jetting in sewers both upstream and downstream.
  4. The sewers to be cleaned convey sanitary sewage and/or or combined sewage. In many instances such sewers are subject to high flows, either continuously or in a periodically varying cycle, due to rainfall, infiltration, and/or pumping operations. The Contractor shall include in the unit price bid all costs for dealing with such variations, and where necessary, schedule the work to accommodate such variation in flows.
  5. The cost of trapping, removing, hauling and disposing of the residual wastes captured during cleaning operations shall be included in the unit price bid.
- B. Heavy Cleaning of Pipelines
1. The Contractor shall be paid for heavy cleaning on the basis of the distance loosened debris is moved to the nearest point of extrication from the sewer. Payment shall be calculated on a lineal foot basis and be paid in addition to the normal cleaning rate on the bid form. Heavy cleaning must be pre-approved by the Engineer.
- C. Cleaning of service laterals will be considered as incidental costs with no separate payment being made.

***3.13.3 Pre-Installation and Post-Installation Closed Circuit Television (CCTV) Inspection of Sewers and Service Laterals***

- A. Payment will be made at the unit price bid for each pipe diameter and service lateral. Quantities shall be determined from field measurements verified in writing by the Engineer.
- B. Measurement for payment for sewers shall be from centerline of manhole to centerline of manhole. Measurement for payment for laterals shall be for lengths authorized by the Engineer.
- C. Payment will be based on the actual footage of pipe inspected and shall include all items necessary to perform the specified work and provide the specified work product.

### **3.13.4 Sewer Cured-In-Place Rehabilitation**

- A. Payment will be made at the unit price bid for each diameter and CIPP thickness constructed. Quantities shall be determined from field measurements verified in writing by the Engineer. Post inspection videos conforming to Section 33 01 30.73 of these Specifications shall be submitted to and reviewed and approved by the Engineer prior to application for payment of the completed CIPP.
- B. Measurement shall be from centerline of manhole to centerline of manhole.

### **3.14 CUSTOMER NOTIFICATIONS**

- A. The Vendor shall contact all residential and commercial customers whose service is to be interrupted by rehabilitation work or who may be affected by upstream or downstream rehabilitations. The customer shall be informed that they will be temporarily out of service. This notification shall be made a minimum of 24 hours prior to beginning rehabilitation work.
- B. For all residences, the Vendor shall leave a door hanger detailing the service outage and providing contact information. Door hanger samples shall be submitted to the Engineer for review and approval. The Vendor shall also advise those customers against water usage until the mainline and lateral are back in service. After completing the necessary work on the main line and lateral to allow their reuse, the Vendor shall advise those customers that the sewer is back in service. Should a condition arise that the Vendor cannot restore service within 12 hours of service interruption, the Vendor shall make provisions for pumping all flows within the service interruption area at no cost to the Owner.
- C. All customer notification documentation and procedures shall meet the requirements of the Owner.

### **3.15 FINAL ACCEPTANCE**

- A. Post-installation videos shall be conducted and submitted to the Engineer. The finished CIPP shall be continuous over the length of pipe between two manholes and shall be an impermeable, joint-less conduit, free from visual defects such as foreign inclusions, dry spots, pin holes, lifts, or delamination.
- B. Wrinkles in the CIPP, (other than minor, longitudinal pressure wrinkles) will not be acceptable. The Engineer shall determine as to the acceptability of pressure wrinkling with that decision being final.

- C. After curing of the resin is completed, the hardened CIPP shall extend from manhole to manhole of the section designated providing a structurally sound, corrosion-resistant, watertight conduit that excludes exfiltration and infiltration, is tight-fitting within the existing pipe, and is free of voids or annular spaces between the CIPP and the existing pipe walls. K-Factor for tightness shall equal 7.0 or greater. All terminations into manhole walls shall be watertight at the time of final inspection. No annular space shall be visible between the CIPP and manhole wall.
- D. The finished pipe must be such that when the thermosetting resin cures, the total wall thickness will be a homogeneous, monolithic felt and resin composite matrix that will be chemically resistant to withstand internal exposure to domestic sewage. When cured, the CIPP must form a mechanical bond with the host pipe.

**APPENDIX A**  
**Bid Schedule**

Note: Unless Otherwise stated, all bid items shall be complete installation as specified					
Item No.	Description of work	Unit	Est. No of Units	Unit Price	Item Total
<b>1.</b>	<b>4-inch (To include By-Pass pumping)</b>				
1a	4-inch CIPP- 0-15 feet deep	LF	200		
1b	4-inch CIPP > 15-20 feet deep	LF	200		
1c	4-inch CIPP>20-25 feet deep	LF	200		
1d	4-inch heavy Cleaning	LF	30		
<b>2.</b>	<b>6-inch (To include By-Pass pumping)</b>				
2a	6-inch CIPP-0-15 feet deep	LF	200		
2b	6-inch CIPP>15-20 feet deep	LF	200		
2c	6-inch CIPP>20-25 feet deep	LF	200		
2d	6-inch heavy cleaning	LF	30		
<b>3.</b>	<b>8-inch (To include By-Pass pumping)</b>				
3a	8-inch CIPP-0-15 feet deep	LF	10000		
3b	8-inch CIPP>15-20 feet deep	LF	10000		
3c	8-inch CIPP>20-25 feet deep	LF	10000		
3d	8-inch heavy cleaning	LF	1500		
<b>4.</b>	<b>10-inch (To include By-Pass pumping)</b>				
4a	10-inch CIPP-0-15 feet deep	LF	1000		
4b	10-inch CIPP>15-20 feet deep	LF	1000		
4c	10-inch CIPP>20-25 feet deep	LF	1000		
4d	10-inch heavy cleaning	LF	100		
<b>5.</b>	<b>12-inch (To include By-Pass pumping)</b>				
5a	12-inch CIPP-0-15 feet deep	LF	1000		
5b	12-inch CIPP>15-20 feet deep	LF	1000		
5c	12-inch CIPP>20-25 feet deep	LF	1000		
5d	12-inch heavy cleaning	LF	100		
<b>6.</b>	<b>15-inch (To include By-Pass pumping)</b>				
6a	15-inch CIPP-0-15 feet deep	LF	1000		
6b	15-inch CIPP>15-20 feet deep	LF	1000		
6c	15-inch CIPP>20-25 feet deep	LF	1000		
6d	15-inch heavy cleaning	LF	100		
<b>7.</b>	<b>16-inch</b>				
7a	16-inch CIPP>15-20 feet deep	LF	1000		
7b	16-inch CIPP>15-20 feet deep	LF	1000		
7c	16-inch CIPP>20-25 feet deep	LF	1000		
7d	16-inch heavy cleaning	LF	100		
<b>8.</b>	<b>18 inch</b>				
8a	18-inch CIPP-0-15 feet deep	LF	1000		
8b	18-inch CIPP>15-20 feet deep	LF	1000		
8c	18-inch CIPP>20-25 feet deep	LF	1000		

Specifications  
CIPP Lining  
Waste Resources Division

Note: Unless Otherwise stated, all bid items shall be complete installation as specified					
Item No.	Description of work	Unit	Est. No of Units	Unit Price	Item Total
8d	18-inch heavy cleaning	LF	100		
9.	<b>20-inch</b>				
9a	20-inch CIPP-0-15 feet deep	LF	1600		
9b	20-inch CIPP>15-20 feet deep	LF	1600		
9c	20-inch CIPP>20-25 feet deep	LF	1600		
9d	20-inch heavy cleaning	LF	250		
10.	<b>21-inch</b>				
10a	21-inch CIPP-0-15 feet deep	LF	1600		
10b	21-inch CIPP>15-20 feet deep	LF	1600		
10c	21-inch CIPP>20-25 feet deep	LF	1600		
10d	21-inch heavy cleaning	LF	250		
11.	<b>24- inch</b>				
11a	24-inch CIPP-0-15 feet deep	LF	500		
11b	24-inch CIPP>15-20 feet deep	LF	500		
11c	24-inch CIPP>20-25 feet deep	LF	500		
11d	24-inch heavy cleaning	LF	100		
12.	<b>30-inch</b>				
12a	30-inch CIPP-0-15 feet deep	LF	500		
12b	30-inch CIPP>15-20 feet deep	LF	500		
12c	30-inch CIPP>20-25 feet deep	LF	500		
12d	30-inch heavy cleaning	LF	100		
13.	<b>36-inch</b>				
13a	36-inch CIPP-0-15 feet deep	LF	500		
13b	36-inch CIPP>15-20 feet deep	LF	500		
13c	36-inch CIPP>20-25 feet deep	LF	500		
13d	36-inch heavy cleaning	LF	100		
14.	<b>42-inch</b>				
14a	42-inch CIPP-0-15 feet deep	LF	500		
14b	42-inch CIPP>15-20 feet deep	LF	500		
14c	42-inch CIPP>20-25 feet deep	LF	500		
14d	42-inch heavy cleaning	LF	100		
15.	<b>48-inch</b>				
15a	48-inch CIPP-0-15 feet deep	LF	500		
15b	48-inch CIPP>15-20 feet deep	LF	500		
15c	48-inch CIPP>20-25 feet deep	LF	500		
15d	48-inch heavy cleaning	LF	100		
16.	Restoring Services by Remote Cutting	EA	100		
17.	Manhole modification allowance for installation of liners 36-inch and larger	EA	5		\$5,000
18.	Testing Allowance by Independent Testing Laboratory ASTM D638 (tensile) and ASTM D790 (flexural)	Per Sample	20		\$10,000
19.	Point Repair Allowance				\$20,000
20.	Mobilization For each Sub-Project.	EA	5		

Specifications  
CIPP Lining  
Waste Resources Division

Note: Unless Otherwise stated, all bid items shall be complete installation as specified

Item No.	Description of work	Unit	Est. No of Units	Unit Price	Item Total
21.	Emergency Mobilization (Sub-Project less than 1000 LF)	EA	1		
22.	CCTV Pre-Inspection where CIPP lining is not feasible	LF	1500		

**Chapter No. 817 (HB0261/SB0377). "Iran Divestment Act" enacted.**

**Vendor Disclosure and Acknowledgement**

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to § 12-12-106.

**(SIGNED)**

\_\_\_\_\_

**(PRINTED NAME)**

\_\_\_\_\_

**(BUSINESS NAME)**

\_\_\_\_\_

**(DATE)**

\_\_\_\_\_

**For further information, please see website:**

**[https://www.tn.gov/assets/entitles/generalservices/cpo/attachments/List\\_of\\_persons\\_pursuant\\_to\\_Tenn.\\_Code\\_Ann.\\_12-12-106,\\_Iran\\_Divestment\\_Act-July.pdf](https://www.tn.gov/assets/entitles/generalservices/cpo/attachments/List_of_persons_pursuant_to_Tenn._Code_Ann._12-12-106,_Iran_Divestment_Act-July.pdf)**

## **Affirmative Action Plan**

The City of Chattanooga is an equal opportunity employer and during the performance of this Contract, the Contractor agrees to abide by the equal opportunity goals of the City of Chattanooga as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, or handicap. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, national origin, or handicap. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, or handicap.
3. The Contractor will send to each labor union or representative of workers with which he/she has a collective bargaining agreement or other contract or understanding, a notice advising said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. During the term of all construction contracts or subcontracts in excess of \$10,000 to be performed for the City of Chattanooga, the following non-discriminatory hiring practices shall be employed to provide employment opportunities for minorities and women:
  - a. All help wanted ads placed in newspapers or other publications shall contain the phrase "Equal Employment Opportunity Employer".
  - b. Seek and maintain contracts with minority groups and human relations organizations as available.
  - c. Encourage present employees to refer qualified minority group and female applicants for employment opportunities.
  - d. Use only recruitment sources which state in writing that they practice equal opportunity. Advise all recruitment sources that qualified minority group members and women will be sought for consideration for all positions when vacancies occur.



5. Minority statistics are subject to audit by City of Chattanooga staff or other governmental agency.
6. The Contractor agrees to notify the City of Chattanooga of any claim or investigation by State or Federal agencies as to discrimination.

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(Signature of Contractor)

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(Title and Name of Company)

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(Date)