FAYETTEVILLE PUBLIC WORKS COMMISSION

PROCUREMENT DEPARTMENT

https://www.faypwc.com/bids/

Bid Addendum

PWC Number:	PWC2324052
Bid Title :	Water Main Rehabilitation
Bid Opening Date and Time:	May 30, 2024 @ 2:00 pm
Addendum Number:	1
Addendum Date:	May 17, 2024
Procurement Advisor:	*Shelby Lesane* *procurement@faypwc.com*

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1. Return one properly executed copy of this addendum with bid response or prior to the Bid Opening Date/Time listed above.

2. Following are questions received about the solicitation and the SME's answers to the questions.

Q1. The Prime contractor's qualifications require 500,000 LF of rehabilitation over the last 5 years. Will you make it over 10 years as the market for lining has been reduced?

A1. The contractors' qualifications shall be changed from 500,000 LF over the last 5 years to 500,000 LF over the last 10 years. Also, this qualification shall be changed from Prime contractor to Lining Contractor. The lining contractor can be either the Prime Contractor or Sub-Contractor. Please see revised Contractor Qualifications Form attached.

Q2. Does the city maintain a bidders list, and can that be made public?

A2. The bidders list from the Non-Mandatory Pre-Bid has been posted to PWC's website.

Q3. I have downloaded the maps. It is not clear what mains will be lined and what mains are scheduled to be replaced.

- Can you answer prior to the Prebid meeting?
- Also, can you advise which mains will receive what class of lining?
- Do the AC mains get lined or replaced?
- We would want to make a site visit at the same time as the meeting, if possible, to avoid 2 trips.

A3. The maps included in the bid package are typical maps that the contractor would receive for a non-permitted project. Bid prices should be based on lining the entirety of each map for the lining line items and replacement for the replacement line items.

Q4. Section Page 176
The polymeric lining system shall be Scotchkote 2400 as manufactured by 3M, Resiline 320 as manufactured by Resiline, Subcote FLP II as manufactured by Radius Subterra, or an approved equal.

- Scotchkote 2400 by 3M is no longer manufactured. Will you accept Warren Environmental product 301-01 as an equal?
- FLP II is not available
- You are limited to the number of contractors that could bid the way the specifications are written

A4. Warren Environmental product 301-01 will be accepted.

Q5. Page 245 and 252:
The epoxy lining system shall be GEOPOX GX014 as manufactured by Mercol Products LTD, Copon Hycote 162PWX by E. Wood Ltd., Hunting Waterline Epoxy 8100 by Hunting Industrial Coatings, or an approved equal.

All manufacturers of epoxy lining must be ISO 9001 or 9002 certified for the design, production, installation and service of epoxy lining for a potable water distribution system, and will be required to furnish evidence of such certification.

- Again, will you accept Warren Environmental as an approved equal? The products listed are not all available

A5. Warren Environmental product 301-01 will be accepted.

Q6. Will you accept Warren Environmental as an approved product for lining both class III and IV items? There are no specifications for cleaning and lining Class IV.

A6. Warren Environmental product 301-01 will be accepted.

Q7. Provide specifications for Water Main Cleaning and Lining Class IV (Line Items 26,27,28 and 29)

A7. Please remove line items 26, 27, 28, and 29. See revised Bid Form attached.

Q8. Supplemental Conditions, Section 1.62 – AWWA Class III Semi-Structural Liner (Pay Items 30,31,32 and 33)

- Please consider adding the Warren Environmental 301-01 product as an approved/equal – documentation attached. Adding Warren's product will allow PWC to receive more competitive bids.
    - Scotchkote 2400 is no longer manufactured
    - Subcote FLP II is no longer offered in the United States
    - Currently, best to our knowledge, there is only one contractor in the United States that solely installs Resiline 320

A8. Warren Environmental product 301-01 will be accepted.

Q9. Division 2, Site Work, Section 02680 – Epoxy Lining of Water Mains

- Please specify which pay items fall under this specification section
- Please consider adding the Warren Environmental 301-01 product as an approved/equal.
- The specified epoxy lining systems (Geopox GX014, Copon Hycote 162PWX, and Hunting Waterline Epoxy 8100) have either been discontinued or the manufacturers no longer exist.

A9. Any line item that has to do with lining of Water Mains falls under Section 02680 – Epoxy Lining of Water Mains. Warren Environmental product 301-01 will be accepted.

Q10. Please consider adding “AWWA Standard C620-19 Spray in Place Polymeric Lining for Potable Water Pipelines 4” and larger” and “AWWA M28 Rehabilitation of Water Mains Manual” to the project specifications. The specified “WRC manual,” mentioned in Specification Section 02680, is a European-based standard/guideline document.

A10. “AWWA Standard C620-19 Spray in Place Polymeric Lining for Potable Water Pipelines 4” has been added to Section 02680 – Epoxy Lining of Water Mains. Please see revised Section 02680 - Epoxy Lining of Water Mains attached.

Q11. If possible, please provide the latest pay requisition application received by PWC for the existing Water Main Rehabilitation Contract.

A11. The latest pay requisition will not be posted but I have attached the bid tab from 2020.

Attachments:

1. Revised Contractor Qualifications Form
2. Revised Bid Form
3. Revised Section 02680 – Epoxy Lining of Water Mains
4. 2020 Water Main Rehabilitation Bid Tab

Failure to acknowledge receipt of this addendum may result in rejection of the response. [If you have checked "This addendum does not need to be returned" in #1 above, then delete this]

Check ONE of the following options:

☐ Bid has not been mailed. Any changes resulting from this addendum are included in our bid response.

☐ Bid has been mailed. No changes resulted from this addendum.

☐ Bid has been mailed. Changes resulting from this addendum are as follows:

Execute Addendum: [If you have checked "This addendum does not need to be returned" in #1 above, then delete this]

Offeror: _____

Authorized Signature: _____

Name and Titled (Typed): _____

Date: _____

WATER MAIN REHABILITATION
CONTRACTOR QUALIFICATION FORM

*****MUST BE COMPLETED AND INCLUDED WITH BID*****

Fayetteville PWC reserves the right to request information from the contractor to complete its assessment of the contractor or subcontractors qualifications. Partially complete forms may be considered non-responsive based on the quantity and quality of information provided. Wholly incomplete forms will be considered non-responsive and will result in rejection of the bid.

CONTRACTOR DOCUMENTATION

(1) Name of **Prime Contractor** and **NC License Number**:	Name: NC License No.:
a. Within the **last five (5) years**, has the contractor been involved in any judgments, claims, or arbitration with regard to construction contracts **If so, provide list and describe each event fully. Attach additional information, as necessary.**	☐Yes (provide list and describe each event fully) ☐No
b. Within the **last five (5) years**, has any officer or principal of the organization ever been an officer or principal of another organization when it failed to complete a construction contract? **If so, provide list and describe each event fully. Attach additional information, as necessary.**	☐Yes (provide list and describe each event fully) ☐No
(2) Name of **Water Main Lining Subcontractor (if applicable)** (If Prime Contractor intends to complete all work, skip to Item 3)	Name: NC License No.:
a. Within the **last five (5) years**, has the subcontractor been involved in any judgments, claims, or arbitration with regard to construction contracts **If so, provide list and describe each event fully. Attach additional information, as necessary.**	☐Yes (provide list and describe each event fully) ☐No
b. Within the **last five (5) years**, has any officer or principal of the subcontractor's organization ever been an officer or principal of another organization when it failed to complete a construction contract? **If so, provide list and describe each event fully. Attach additional information, as necessary.**	☐Yes (provide list and describe each event fully) ☐No

(3) Provide list of other **Subcontractors** and field of specialty (paving, excavation, etc.), if applicable. Additional subcontractors can be attached to the qualifications form, if necessary.	
a. Subcontractor Name:	
Specialty:	
b. Subcontractor Name:	
Specialty:	
c. Subcontractor Name:	
Specialty:	
d. Subcontractor Name:	
Specialty:	

WATER MAIN LINING CONTRACTOR EXPERIENCE AND RESOURCES

***NOTE: The following information (Items 1 and 2) SHALL be completed by Prime Contractor if the water main lining will be completed with its own forces.**

1. The water main lining contractor shall be trained and certified to operate the water main lining equipment with at least **five (5) years** of experience in lining obtained over the last **ten (10) years**. The water main lining contractor shall have a minimum of **500,000 linear foot (LF)** of lining experience. Provide not less than four (4) references within the last ten (10) years in the United States to document the water main lining subcontractor's ability and qualifications on projects of similar size and scope. A minimum of **three (3)** of the following projects should be of similar size and scope to this project. Each reference shall be from separate projects.
2. All certifications shall be current. The water main lining subcontractor shall complete the lining installation utilizing its own equipment and labor forces. The lining superintendent shall be an employee of the water main lining subcontractor. **SECOND TIER SUBCONTRACTORS WILL NOT BE ALLOWED**. Additional similar projects may be attached at the Contractor's discretion.

A. Project Name:			
Location:			
Superintendent:			
Pipe Size/Material:		Length:	
Start Date:		End Date:	
Client:			
Client Contact Name:		Client Phone:	
Completed with own equipment and labor forces:			☐ Yes ☐No
If "No" was checked above, provide name of the Contractor completing work:			

Scope/**Project Cost**/Additional Information:			
B. Project Name:			
Location:			
Superintendent:			
Pipe Size/Material:		Length:	
Start Date:		End Date:	
Client:			
Client Contact Name:		Client Phone:	
Completed with own equipment and labor forces:			☐ Yes ☐No
If “No” was checked above, provide name of the Contractor completing work:			
Scope/**Project Cost**/Additional Information:			
C. Project Name:			
Location:			
Superintendent:			
Pipe Size/Material:		Length:	
Start Date:		End Date:	
Client:			
Client Contact Name:		Client Phone:	
Completed with own equipment and labor forces:			☐ Yes ☐No
If “No” was checked above, provide name of the Contractor completing work:			
Scope/**Project Cost**/Additional Information:			
D. Project Name:			
Location:			
Superintendent:			
Pipe Size/Material:		Length:	
Start Date:		End Date:	
Client:			

Client Contact Name:		Client Phone:	
Completed with own equipment and labor forces:			☐ Yes ☐No
If "No" was checked above, provide name of the Contractor completing work:			
Scope/**Project Cost**/Additional Information:			
E. Project Name:			
Location:			
Superintendent:			
Pipe Size/Material:		Length:	
Start Date:		End Date:	
Client:			
Client Contact Name:		Client Phone:	
Completed with own equipment and labor forces:			☐ Yes ☐No
If "No" was checked above, provide name of the Contractor completing work:			
Scope/**Project Cost**/Additional Information:			

WATER MAIN LINING SUPERINTENDENT EXPERIENCE AND RESOURCES

***NOTE: The following information (Items 1 through 3) SHALL be completed by Prime Contractor if the water main lining will be completed with its own forces.**

1. Provide the name of the **proposed water main lining subcontractor superintendent and proposed crew leaders/foremen** who are qualified and available to perform the work stated in this proposal:	Proposed Superintendent:	Certified and Trained: ☐ Yes ☐No
	Crew:	☐ Yes ☐No

IF YOU PLAN TO HAVE MORE THAN ONE SUPERINTENDENT, THEN FILL OUT THIS FORM FOR EACH PROPOSED SUPERINTENDENT.

2. All water main lining operations shall be performed under the constant direction of a superintendent employed by the water main lining subcontractor who shall remain on site and be in responsible charge throughout the lining operation. The supervisor shall, in the **last five (5) years**, have successfully supervised a **minimum of 250,000 linear feet (LF)** of pipe rehabilitated via water main lining of which **100,000 linear feet (LF)** shall be of similar or greater diameter, of similar scope, and of similar or greater lengths as proposed on this project. The references should be from separate projects. Additional projects may be attached to meet the qualification requirements.

****The linear footage (LF) in the following Superintendent's References DOES NOT COUNT towards the WATER MAIN LINING CONTRACTOR EXPERIENCE AND RESOURCES total numbers above.****

A. Project:			
Start Date:		End Date:	
Pipe Size/Material:		Length:	
Client:			
Client Contact Name:		Client Phone:	
B. Project:			
Start Date:		End Date:	
Pipe Size/Material:		Length:	
Client:			
Client Contact Name:		Client Phone:	
C. Project:			
Start Date:		End Date:	
Pipe Size/Material:		Length:	
Client:			
Client Contact Name:		Client Phone:	
D. Project:			
Start Date:		End Date:	
Pipe Size/Material:		Length:	
Client:			
Client Contact Name:		Client Phone:	
E. Project:			
Start Date:		End Date:	
Pipe Size/Material:		Length:	
Client:			
Client Contact Name:		Client Phone:	

3. Provide a list of applicable equipment **(including make/model/size/quantity) <u>owned</u> by the water main lining contractor (or the Prime Contractor, should the Prime Contractor complete the lining)** that will be utilized to complete the **lining** scope of work:			
A. **Equipment:**			
Make:			
Model:		Year:	
Size:		Quantity:	
B. **Equipment:**			
Make:			
Model:		Year:	
Size:		Quantity:	
C. **Equipment:**			
Make:			
Model:		Year:	
Size:		Quantity:	
D. **Equipment:**			
Make:			
Model:		Year:	
Size:		Quantity:	
E. **Equipment:**			
Make:			
Model:		Year:	
Size:		Quantity:	
F. **Equipment:**			
Make:			
Model:		Year:	
Size:		Quantity:	
G. **Equipment:**			
Make:			
Model:		Year:	
Size:		Quantity:	
H. **Equipment:**			
Make:			
Model:		Year:	
Size:		Quantity:	
I. **Equipment:**			
Make:			
Model:		Year:	
Size:		Quantity:	
J. **Equipment:**			
Make:			
Model:		Year:	
Size:		Quantity:	

ADDITIONAL ITEMS	
The following items shall be submitted as attachments with the Bid:	
a. The Contractor and/or subcontractor shall be certified and/or licensed as an installer by the manufacturer of the lining system. The **Contractor and/or subcontractor shall submit** a certified statement from the manufacturer that they are certified and/or licensed installer of the epoxy lining material.	
b. All manufacturers of epoxy lining shall be ISO 9001 or 9002 certified for the manufacturing of the epoxy lining system for a potable water distribution system, and **shall submit** proof of certification.	
c. Number of years of experience in performing this type of work:	
d. Number of years of experience installing proposed lining system:	
e. The Prime Contractor and must provide most recent W3 Transmittal of Wage and Tax Statement indicating wages and taxes paid by employer.	
f. Affidavit stating any OHSA violations occurring in the past three (3) years.	
g. A statement provided by the Surety Company stating the Bidder's bonding limit and a statement of the amount of work currently under bond.	
The Owner may conduct such investigations/verifications as deemed necessary to establish the responsibility, qualification and financial ability of the Bidder. Should the Owner adjudge that the apparent low bidder is not the lowest responsive, responsible bidder by virtue of the above information furnished, said apparent low bidder will be so notified and his bid security shall be returned to him without prejudice. Failure or refusal to furnish any items of information requested by the Owner shall be considered as non-responsive and therefore basis for rejection of the bid.	
Submitted By (print):	Date:
Title:	
Company:	
Signature:	

Line Item #		Measurement & Payment Description	Estimated Quantity	Unit	Unit Price	Extend Price
		BASE BID				
1	1.01	Mobilization and Demobilization	1	LS		
2	1.02	Temporary Water System | 4-inch Bypass	15,000	LF		
3	1.02	Temporary Water System | 2-inch Bypass	20,000	LF		
4	1.03	Access Pits	20	EA		
5	1.04	Miscellaneous Excavation	500	CY		
6	1.05	Install New Valve	100	EA		
7	1.06	Replace Fire Hydrant	40	EA		
8	1.07	Install New Water Main – Ductile Iron | 16-inch	1,000	LF		
9	1.07	Install New Water Main – Ductile Iron | 12-inch	1,000	LF		
10	1.07	Install New Water Main – Ductile Iron | 8-inch	10,000	LF		
11	1.07	Install New Water Main – Ductile Iron | 6-inch	500	LF		
12	1.07	Install New Water Main – PVC | 16-inch	1,000	LF		
13	1.07	Install New Water Main – PVC | 12-inch	1,000	LF		
14	1.07	Install New Water Main – PVC | 8-inch	2,000	LF		
15	1.07	Install New Water Main – PVC | 6-inch	500	LF		
16	1.08	Install New Water Main – PVC | 2-inch	2,500	LF		
17	1.09	Grout Fill Abandoned Water Main	100	CY		
18	1.10	Install 2-inch Blow Off	15	EA		
19	1.11	Replace Existing Water Services with Copper	450	EA		
20	1.12	Remove and Replace Concrete Curb and Gutter	200	LF		
21	1.13	Remove and Replace Asphalt Curb	100	LF		
22	1.14	Asphalt Permanent Patch – City Streets	300	SY		
23	1.15	Sod	2000	SY		
24	1.16	Seeding	500	SY		
25	1.17	Select Material	30	CY		
26	2.01	Water Main Cleaning/Lining – Class-III | 16-inch	100	L.F		
27	2.01	Water Main Cleaning/Lining – Class-III | 12-inch	300	L.F		
28	2.01	Water Main Cleaning/Lining – Class-III | 8-inch	500	L.F.		
29	2.01	Water Main Cleaning/Lining – Class-III | 6-inch	500	L.F.		
30	2.02	Closed Circuit TV Inspection | 16-inch	100	L.F.		
31	2.02	Closed Circuit TV Inspection | 12-inch	300	L.F.		
32	2.02	Closed Circuit TV Inspection | 8-inch	500	L.F.		
33	2.02	Closed Circuit TV Inspection | 6-inch	500	L.F.		
34	2.03	Remove Obstruction in Existing Line	20	EA		

TOTAL BID $_____

DIVISION 2
SITE WORK

02680 EPOXY LINING OF WATER MAINS

SCOPE

The intent and purpose of these specifications is to require a complete and satisfactory rehabilitation of existing water mains utilizing an epoxy lining system. The Contractor shall furnish all necessary labor, materials, equipment, services, and incidentals necessary to rehabilitate the existing water mains using epoxy lining. Any defects in material or installation shall be cause for the replacement and correction of such defect as directed by the PWC Project Engineer at no expense to the Public Works Commission.

RELATED SECTIONS

A. Section 02222 – Excavation, Trenching, and Backfill for Utility Systems
B. Section 02272 – Erosion Control - General Provisions
C. Section 02660 – Water Distribution
D. Section 02760 – Television Inspection

QUALITY ASSURANCE

The Contractor is solely responsible for quality assurance during the length of the project. The Contractor shall be responsible for any costs associated with corrective measures required to replace or repair items not meeting the quality standards specified by the Public Works Commission.

WARRANTY

The Contractor shall warrant to the Public Works Commission that the equipment used on this Contract where covered by patents or license agreements is furnished in accordance with such agreements and that the prices included herein cover all applicable royalties and fees in accordance with such license agreements. The Contractor shall defend, indemnify and hold the Public Works Commission harmless from and against any and all costs, loss, damage or expense arising out of or in any way connected with any claim of infringement of patent, trademark or violation of license agreement.

MATERIALS

EPOXY RESIN LINING

The epoxy resin and hardener shall be certified by The National Sanitation Foundation (NSF) International - Standard 61. When properly applied, it shall produce a smooth finished lining with a minimum of 40 mils dry film thickness (DFT) after 16 hours cure time. The epoxy lining shall be approved for use in potable water mains 1-inch and larger in diameter. The epoxy lining shall be a two component, solvent free, moisture tolerant, VOC, and benzyl alcohol free system.

The epoxy lining system shall be packaged in clearly distinguishable colors, which when uniformly mixed, give a distinctive third color to provide a visual check of proper mixing. The

epoxy lining system shall be supplied in clearly marked containers. Each container shall be marked with a batch number, date of manufacture, shelf life information, mix ratio and instructions for storage and safe handling.

The epoxy lining system shall be GEOPOX GX014 as manufactured by the Mercol Products LTD, Copon Hycote 162PWX by E. Wood Ltd., Hunting Waterline Epoxy 8100 by Hunting Industrial Coatings, or an approved equal.

All manufacturers of epoxy lining must be ISO 9001 or 9002 certified for the manufacturing of epoxy lining for a potable water distribution system, and will be required to furnish evidence of such certification.

EQUIPMENT

The lining equipment shall be certified by the epoxy manufacturer and shall be manufactured in accordance with the latest revision of the AWWA Standard C620-19 Spray in Place Polymeric Lining for Potable Water Pipelines 4" and larger. The equipment shall be suitable for storing, heating, mixing and applying the epoxy material in accordance with the epoxy manufacturer's requirements. All key components on the lining application equipment shall be calibrated in accordance with the equipment manufacturer's instructions and requirements.

Each lining rig shall have facilities to store the epoxy resin and hardener separately and to heat both according to the manufacturer's instructions. The lining rig shall provide devices to re-circulate the components in the reservoirs and through the lining hoses prior to lining.

The lining rig shall use suitable positive displacement pumps capable of dispensing the two components separately at the correct mix ratio. The rig shall be fitted with facilities for monitoring and recording the flow rates of both materials and the mix ratio, and provide a hard copy printout of this information. The output of the pumps shall be linked to the winch speed control to ensure that the correct thickness of lining is applied to each pipe diameter.

INSTALLATION

GENERAL

All work under this Contract shall be performed by skilled workmen experienced in similar installations, with the best current accepted practices of the building trades, and to all applicable codes.

The Contractor shall carry out their operations in strict accordance with all applicable OSHA, local and state safety standards. Though the installation process may be licensed or proprietary in nature, the Contractor shall not change any material, thickness, design values or procedural matters stated in the submittals, without the prior knowledge and written approval of the Public Works Commission. The Contractor shall submit, in writing, full details about component materials, their properties and installation procedures and abide by them fully during the entire course of work.

PIPE CLEANING

The Contractor shall clean the water mains by either the drag scrape or power bore method. The cleaning device shall be designed for the size of pipe to be cleaned. The Contractor shall

furnish all the necessary tools, equipment, materials, back flow prevention devices and other appurtenances to readily complete this operation, including all dewatering of the water mains, which may not completely drain.

The Contractor shall ensure that rollers are fitted on the pipe to prevent possible damage to the pipe crown by the winch cables during drag cleaning operations.

Should drag scraping be utilized as the cleaning method, a foam swab shall be 'washed' through the cleaned pipe prior to drying and CCTV inspection. The foam swab shall be propelled through the entire length of the cleaned pipe with the use of water or compressed air.

The Contractor is required to dispose of any cleaning water and solid residue resulting from the cleaning operations in accordance with the applicable regulations and ordinances. The Contractor shall be responsible for obtaining the required approvals and permits for the disposal of the waste materials. Cleaning water shall not be discharged into storm drains, the sanitary sewer system, or onto the ground surface. The Contractor shall minimize to the view of the public, the materials removed in the cleaning operations including the flushing water.

The inside of the pipe and fittings shall be thoroughly cleaned and flushed of all material to as smooth and clean a surface as possible. All cleaned pipe and fittings shall meet the latest revision of AWWA Standard C602. Any sections of the pipe and fittings, which do not meet the above AWWA Standard, shall be re-cleaned.

The Contractor shall complete a CCTV inspection at the completion of the cleaning, prior to lining. The CCTV inspections shall be used by the Contractor to verify the degree of cleanliness of all pipe and fittings. The Contractor shall keep the Project Coordinator informed of when CCTV inspection is forthcoming so the Project Coordinator can be present. No epoxy lining shall be placed until the interior surface is inspected and found to be clean and dry. Any unknown fittings discovered during the television inspection shall be removed prior to lining the pipe and will be paid for with the "Remove Obstruction in Existing Pipe" Pay Item. The Contractor shall provide the video and output report to the Public Works Commission monthly with pay estimate. The video format and storage media shall be as approved by the Public Works Commission.

No payment will be made until all videos have been submitted and reviewed by the Public Works Commission.

Any section of the water main, such as near gate valves, short radius bends, ends of sections, and other areas that are inaccessible for machine cleaning shall be cleaned by hand. The degree of cleanliness for handwork shall be the same or better than results obtained from machine work. Rust, tubercles, deposits, old bituminous lining, etc., shall be completely removed by machine or hand in order to expose a clean surface for correct lining operations.

PIPE LINING

The Lining Supervisor and Lining Rig Operator shall be fully trained in the operation and understanding of the entire Epoxy Resin Lining application process, and shall be certified by an Approved Certifying Body.

The Contractor shall conduct pre-lining checks on the lining equipment and epoxy in accordance with the manufacturer's recommendations. Included shall be verification of pump output, mix

ratio, and material temperatures. This information and all pertinent site information shall be recorded on a lining sheet form. **A separate Epoxy Record Lining form shall be completed for each separate lining run and turned over to the Public Works Commission upon completion of the lining**.

Prior to inserting the delivery hoses into the main, the epoxy components shall be pumped and re-circulated until the uniform operating temperature, specified by the epoxy manufacturer has been reached. The pumping is then discontinued, the hoses immediately pulled through the pipe, and the lining operation begun without delay.

Once the hoses are inserted, the approved static mixer and application head are connected and checked for proper operations. The correct mixing of the two-epoxy components shall be visually checked by test spraying the mixed epoxy into a container outside the pipeline and the observed epoxy color recorded on the lining record sheet.

Application of the epoxy lining may begin when the Lining Rig operator is satisfied that the material flows are established and the epoxy lining color is consistent. The minimum lining thickness of 40 mils (DFT) shall be achieved in a single application. Any lined pipes shown to have a thickness of less than 40 mils at any point on the Record Lining Sheet shall be re-lined. Epoxy lining shall not be placed when the pipe temperature is below 38 degrees Fahrenheit.

The Contractor shall dispose of all excess epoxy and cleaning agents in accordance with all applicable Local, State, and Federal rules and regulations.

CURING

Immediately after the epoxy lining has been applied, the ends of the main shall be capped in order to prevent contamination and/or water from entering the pipe. Cure time shall be in accordance with the epoxy manufacturer's specifications.

LINING FAULTS

The latest edition of the AWWA Standard C620-19 Spray in Place Polymeric Lining for Potable Water Pipelines 4" and larger will govern regarding acceptable and unacceptable lining faults and suggested methods of correction. All repairs shall be reviewed and approved by the Public Works Commission, prior to the Contractor commencing the repairs.

RESTORATION

All backfill shall be in accordance with Specification Section 02222 – Excavation, Trenching, and Backfilling for Utility Systems, and the requirements outlined in these Contract Documents. All trenches and excavations shall be compacted in accordance with these Contract Documents.

Prior to backfilling lateral and access pits, the Contractor shall ensure that the new pipe and service laterals are properly supported and on the correct line and grade. Stone or other suitable material, as approved by the Public Works Commission, shall be utilized under the new pipe to provide support and prevent sagging after backfill and compaction.

All work areas and rights-of-way shall be cleaned up, properly graded and vegetated, free of debris, and left in condition satisfactory to the Public Works Commission.

LINING INSPECTION

The Contractor shall provide the PWC Project Coordinator the opportunity to visually inspect and measure the lining thickness of both ends of each lining run. The Contractor shall complete a post-installation CCTV inspection for the Public Works Commission to determine the acceptability of the installation. The CCTV inspection shall be completed prior to placing the main into service. The Contractor shall video and record the lined pipe after the curing time period using a CCTV color camera with self-contained lighting, and remote focus. Lighting for the camera shall be suitable to allow a clear picture for the entire periphery of the pipe. The speed of the camera through the main shall be at a rate that ensures the entire pipe bore can be properly inspected. The camera shall be a color pan and tilt and the picture quality and definition shall be to the satisfaction of the PWC Project Engineer.

Videos shall be standard digital video file format and shall become property of Public Works Commission upon completion of project. All videos shall be properly labeled on outside with the project name, contractor's name, date, street name and block numbers or addresses. The onscreen display shall show date cleaned and lined, date CCTV inspected, street, block numbers or addresses, pipe diameter and material, and shall show the distance traveled. The counter shall be set to zero at the beginning of each run. All required information shall be entered on the Epoxy Resign Lining sheet. A CCTV Inspection Record for each run shall be completed and submitted to the Public Works Commission.

The purpose of recording the television inspection is to supply a visual aid and audio record of the inspection that may be re-played by the Public Works Commission. Video recording playback shall be at the same speed that it was recorded. All video recordings shall be in color and shall be made in digital video file format.
Upon completion of the lining, the Contractor shall seal the ends of the lined main in order to eliminate water from entering the lined main. Any water that enters the lined main shall be removed prior to conducting the post-rehabilitation television inspection.

EQUIPMENT

The television camera used for the inspection shall be one specifically designed and constructed for such inspection. Lighting for the camera shall be suitable to allow a clear picture for the entire periphery of the pipe. The camera shall be operative in 100 percent humidity conditions. The camera, television monitor, and other components of the video system shall be capable of producing a minimum 500-line resolution video picture. Picture quality and definition shall be to the satisfaction of the Public Works Commission, and if unsatisfactory, inspection shall be performed again with the appropriate changes made as designated by the Public Works Commission, at no additional cost. The television inspection equipment shall have an accurate footage counter that shall display on the monitor, the exact distance of the camera from the centerline of the starting access pit.

PROCEDURE

The camera shall be moved through the line in either direction at a uniform rate, stopping when necessary to ensure proper documentation of the water main's condition, but in no case will the television camera be pulled at a speed greater than 30 feet per minute. Manual winches, power winches, TV cable, and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the conditions shall be used to move the camera through the water main. If during the inspection operation, the television camera will not pass

through the entire water main section, the equipment shall be removed and repositioned in a manner so that the inspection can be performed from the opposite access pit. All set-up costs for the inspection shall be included in the unit prices bid. If, again, the camera fails to pass through the entire section, the Contractor shall remove any obstructions or re-clean the main. Re-cleaning shall be done at no additional cost to the Public Works Commission.

Whenever non-remote powered and controlled winches are used to pull the television camera through the line, telephones, radios, or other suitable means of communication shall be set up between the two access pits of the water main being inspected to ensure that good communications exist between members of the crew.

The camera height shall be adjusted such that the camera lens is always centered (at one-half the ID) in the pipe being inspected.

RECORD OF VIDEO AND LOGS

Prior to returning any main to service, the Contractor shall allow the Project Coordinator sufficient opportunity to examine the relevant documentation of all lining runs, to ensure compliance with the Operational Requirements and Code of Practice Manual. The Contractor and Project Coordinator shall sign off on all approved documentation. Copies of all documentation shall be submitted on a monthly basis as part of the Contractor's pay request. Pay requests will not be processed until all documentation for the area being billed is submitted.

The following completed sheets shall be provided for every lining run:

- Epoxy Resin Lining Record, to include a copy of the rig printout and dip cards.
- CCTV Inspection Record, to include video recordings

The following sheets shall be provided when circumstances dictate:

- Non-Conformance Record – to report any defects experienced during lining
- Pipe Sample Quality Record – for each pipe sample exhumed
- Spin-Up Determination Record

A copy of each record sheet is located in the Appendix of these Contract Documents. The Contractor shall copy and use these sheets for submittals. No variation of these record sheets shall be utilized, unless specifically approved in writing by the Public Works Commission.

A. Television Inspection Logs

Printed location records shall be kept which shall clearly show the location, in relation to adjacent access pits, of service connections, tees, hydrant branches, and other items of significance. Additionally, unusual conditions, offset joints, cracked or collapsed sections, water main sections that the camera failed to pass through and reasons for the failure and other discernible features shall be recorded and a copy of such records shall be furnished to the Public Works Commission.

B. Video Recordings

The purpose of recording the inspection is to supply a visual aid and audio record of problem areas of the lines that may be re-played by the Public Works Commission. Video recording playback shall be at the same speed that it was recorded. All video recordings shall be in color. Initial pre and post video recordings shall be supplied in a standard digital video file format (i.e., mp4, mpg, or AVI) and supplied on standard portable digital media (i.e., USB flash drive, USB hard disk drive, DVD) as approved the Public Works Commission.

The Contractor shall furnish the video and logs of the pre and post video inspections to the Public Works Commission at each of the progress meetings. The Contractor shall pre-screen the videos and note any areas of concern, including, but not limited to: potential point repairs, offset joints, and obstructions that may pose problems with the lining process. The Contractor shall provide the Public Works Commission with a minimum of two weeks' notice for any potential repairs that are necessary to proceed with the work.

At the completion of each task order, the Contractor shall provide the Public Works Commission with digital videos and logs containing the pre and post tapes for all work completed during that task order. Each digital media device shall be labeled as to its contents. Labels shall include the disc number, date televised, water main segment reach designation, and street location on the disc. The digital media device shall be provided to the Public Works Commission within 30 days of completing the work authorized in the task order.

TESTING

All testing shall be in accordance with the applicable Specification Section governing water and/or sewer. All testing shall be satisfactorily completed prior to placing the system into service. All mains and laterals, to include fire hydrants, shall be tested.

Unless otherwise required by the Public Works Commission, lined water mains are not required to be hydrostatically tested. All lined water mains shall be chlorinated and disinfected, in accordance with PWC requirements.

ACCEPTANCE

Acceptance of the installed mains and laterals shall be based on conformance with the requirements herein, the Public Works Commission's review of all required construction submittals (as-builts, logs, CCTV inspection, etc.) and results of all testing.

PUBLIC WORKS COMMISSION

WATER MAIN REHABILITATION

Line Item #	Reference to Section 01 20 00-Article 1 Measurement & Payment Description	Estimated Quantity	UNIT	J. Fletcher Creamer & Son, Inc Hackensack, NJ 07601		Michels Pipe Services Watertown, CT 06795		Mainlining America, LLC Livingston, NJ 07039	
				UNIT PRICE	Extend Price	UNIT PRICE	Extend Price	UNIT PRICE	Extend Price
1	1.01 Mobilization and Demobilization	1	LS	$ 55,500.00	$55,500.00	$ 30,000.00	$ 30,000.00	$ 50,000.00	$ 50,000.00
2	1.02 Cleaning and Pre-Lining Inspection | 12-inch	1,000	LF	$ 12.00	$12,000.00	$ 10.00	$ 10,000.00	$ 5.50	$ 5,500.00
3	1.02 Cleaning and Pre-Lining Inspection | 8-inch	4,000	LF	$ 12.00	$48,000.00	$ 7.75	$ 31,000.00	$ 5.50	$ 22,000.00
4	1.02 Cleaning and Pre-Lining Inspection | 6-inch	6,000	LF	$ 12.00	$72,000.00	$ 7.50	$ 45,000.00	$ 5.50	$ 33,000.00
5	1.03 Lining and Post-Lining Inspection - Class-IV | 12-inch	500	LF	$ 284.00	$142,000.00	$ 86.00	$ 43,000.00	$ 69.00	$ 34,500.00
6	1.03 Lining and Post-Lining Inspection - Class-IV | 8-inch	2,000	LF	$ 177.00	$354,000.00	$ 63.00	$ 126,000.00	$ 45.00	$ 90,000.00
7	1.03 Lining and Post-Lining Inspection - Class-IV | 6-inch	3,000	LF	$ 152.00	$456,000.00	$ 52.20	$ 156,600.00	$ 35.00	$ 105,000.00
8	1.03 Lining and Post-Lining Inspection - Class-III | 12-inch	500	LF	$ 82.00	$41,000.00	$ 63.00	$ 31,500.00	$ 39.00	$ 19,500.00
9	1.03 Lining and Post-Lining Inspection - Class-III | 8-inch	2,000	LF	$ 64.00	$128,000.00	$ 53.00	$ 106,000.00	$ 28.00	$ 56,000.00
10	1.03 Lining and Post-Lining Inspection - Class-III | 6-inch	3,000	LF	$ 51.00	$153,000.00	$ 43.50	$ 130,500.00	$ 23.00	$ 69,000.00
11	1.04 Temporary Water System | 4-inch Bypass	10,000	LF	$ 6.00	$60,000.00	$ 13.50	$ 135,000.00	$ 15.00	$ 150,000.00
12	1.04 Temporary Water System | 2-inch Bypass	7,500	LF	$ 5.50	$41,250.00	$ 12.15	$ 91,125.00	$ 13.00	$ 97,500.00
13	1.05 Access Pits	40	EA	$ 5,000.00	$200,000.00	$ 1,625.00	$ 65,000.00	$ 1,400.00	$ 56,000.00
14	1.06 Remove Obstruction in Existing Line	20	EA	$ 3,300.00	$66,000.00	$ 50.00	$ 1,000.00	$ 100.00	$ 2,000.00
15	1.07 Miscellaneous Excavation	150	CY	$ 475.00	$71,250.00	$ 200.00	$ 30,000.00	$ 75.00	$ 11,250.00
16	1.08 Install New Valve	40	EA	$ 150.00	$6,000.00	$ 869.00	$ 34,760.00	$ 500.00	$ 20,000.00
17	1.09 Replace Fire Hydrant	20	EA	$ 5,900.00	$118,000.00	$ 3,700.00	$ 74,000.00	$ 2,700.00	$ 54,000.00
18	1.10 Install New Water Main - Ductile Iron | 12-inch	800	LF	$ 122.00	$97,600.00	$ 88.35	$ 70,680.00	$ 86.00	$ 68,800.00
19	1.10 Install New Water Main - Ductile Iron | 8-inch	2,400	LF	$ 99.00	$237,600.00	$ 78.65	$ 188,760.00	$ 71.00	$ 170,400.00
20	1.10 Install New Water Main - Ductile Iron | 6-inch	800	LF	$ 91.00	$72,800.00	$ 76.75	$ 61,400.00	$ 68.00	$ 54,400.00
21	1.10 Install New Water Main - PVC | 12-inch	400	LF	$ 106.00	$42,400.00	$ 71.35	$ 28,540.00	$ 66.00	$ 26,400.00
22	1.10 Install New Water Main - PVC | 8-inch	1,200	LF	$ 131.00	$157,200.00	$ 54.60	$ 65,520.00	$ 56.00	$ 67,200.00
23	1.10 Install New Water Main - PVC | 6-inch	300	LF	$ 119.00	$35,700.00	$ 52.00	$ 15,600.00	$ 52.00	$ 15,600.00
24	1.10 Install New Water Main - PVC | 2-inch	800	LF	$ 119.00	$95,200.00	$ 40.50	$ 32,400.00	$ 30.00	$ 24,000.00
25	1.11 Grout Fill Abandoned Water Main	100	CY	$ 150.00	$15,000.00	$ 660.30	$ 66,030.00	$ 200.00	$ 20,000.00
26	1.12 Install 2-inch Blow Off	25	EA	$ 1,500.00	$37,500.00	$ 528.00	$ 13,200.00	$ 100.00	$ 2,500.00
27	1.13 Replace existing Water Services with Copper	250	EA	$ 3,100.00	$775,000.00	$ 1,469.50	$ 367,375.00	$ 1,100.00	$ 275,000.00
28	1.14 Remove and Replace Concrete Curb and Gutter	150	LF	$ 105.00	$15,750.00	$ 51.50	$ 7,725.00	$ 75.00	$ 11,250.00
29	1.15 Remove and Replace Asphalt Curb	150	LF	$ 50.00	$7,500.00	$ 26.50	$ 3,975.00	$ 40.00	$ 6,000.00
30	1.16 Asphalt Permanent Patch	150	TONS	$ 425.00	$63,750.00	$ 750.00	$ 112,500.00	$ 1,100.00	$ 165,000.00
31	1.17 Sod	600	SY	$ 26.00	$15,600.00	$ 19.50	$ 11,700.00	$ 7.25	$ 4,350.00
32	1.18 Seeding	200	SY	$ 7.50	$1,500.00	$ 10.80	$ 2,160.00	$ 3.00	$ 600.00
33	1.19 Select Material	50	CY	$ 110.00	$5,500.00	$ 85.30	$ 4,265.00	$ 60.00	$ 3,000.00
	Total Bid Price			**$3,699,600.00**		**$2,192,315.00**		**$1,789,750.00**	