



City Hall • 333 West Ellsworth Street • Midland, Michigan 48640-5122 • 989.837.3300 • 989.835.2717 Fax • www.midland-mi.org

February 10, 2012

RE: Changes to Bid #3405
Sewer Lining for WWTP

Dear Bidder;

The City of Midland, Michigan's original bid included an error in the pipe diameter. A portion of this job is 10" pipe not 12" as specified. Section 5719 is 10" CIPP of a length of 302 LF. Please use the enclosed update specs and bid form for your firm's response. No other changes are being made at this time.

If further clarification is needed, please direct inquiries to Steve Smith at (989) 837-3504.

Thanks for your interest in supplying the City of Midland with goods and services and we look forward to your participation in the bid process. If you have any questions, please contact me at (989) 837-3331 or email at mmeyer@midland-mi.org.

Sincerely,

Mike Meyer, CPPB, C.P.M.
City Purchasing Agent

**CITY OF MIDLAND
TRENCHLESS RECONSTRUCTION OF
PATRICK RD CLAY SANITARY SEWER**

1. INTENT

It is the intent of this specification to provide for the reconstruction of clay or concrete sanitary sewer by the installation of a resin-impregnated flexible tube, which is formed to the original conduit by use of a hydrostatic head. The resin is cured using hot water under hydrostatic pressure within the tube or steam. The Cured-In-Place Pipe (CIPP) will be continuous and tight fitting. The work shall be completed within 60 calendar days from the "Notice to Proceed".

1.1 SCOPE OF WORK

1.2 Install approximately 1338' of 12" and 302' of 10" diameter liner, installed through six continuous sections of sanitary sewer.

- a. Price to include cleaning prior to installation.
- b. Price to include internal TV inspection prior to, and after installation.
- c. Price to include bypass of sewage during installation.
- d. Price to include trimming of up to ten protruding laterals.
- e. Price to include any repair of damage done to street or yards caused by contractor.

2. REFERENCED DOCUMENTS

2.1 This specification references ASTM F1216 (Rehabilitation of pipelines by the inversion and curing of a resin-impregnated tube), ASTM F1743 (Rehabilitation of pipelines by pulled-in-place installation of a cured-in-place thermosetting resin pipe), and ASTM D790 (Test methods for flexural properties of non-reinforced plastics) which are made a part hereof by such reference and shall be the latest edition and revision thereof. In case of conflicting requirements between this specification and these referenced documents, this specification will govern.

3. PRODUCT, MANUFACTURER/INSTALLER QUALIFICATION REQUIREMENTS

3.1 Since sewer products are intended to have a 50-year design life, and in order to minimize the Owner's risk, only proven products with substantial successful long term track records will be approved. All trenchless rehabilitation products and installers must be pre-approved prior to the formal opening of proposals.

Products and Installers seeking approval must meet all of the following criteria to be deemed Commercially Acceptable:

3.1.1. For a Product to be considered Commercially Proven, a minimum of 1,000,000 linear feet or 4,000 manhole-to-manhole line sections of successful wastewater

collection system installations in the U.S. must be documented to the satisfaction of the Owner to assure commercial viability.

- 3.1.2 For an Installer to be considered as Commercially Proven, the Installer must satisfy all insurance, financial, and bonding requirements of the Owner, and must have had at least 5 (five) years active experience in the commercial installation of the product bid. In addition, the Installer must have successfully installed at least 50,000 feet of the product bid in wastewater collection systems. Acceptable documentation of these minimum installations must be submitted to the Owner.
- 3.1.3 Sewer Rehabilitation products submitted for approval must provide Third Party Test Results supporting the long term performance and structural strength of the product and such data shall be satisfactory to the Owner. Test samples shall be prepared so as to simulate installation methods and trauma of the product. No product will be approved without independent third party testing verification.
- 3.1.4 Both the rehabilitation manufacturing and installation processes shall operate under a quality management system that is third party certified to ISO 9000 or other internationally recognized organization standards. Proof of certification shall be required for approval.
- 3.1.5 Proposals must be labeled clearly on the outside of the proposal envelope, listing the product name and installer being proposed. Only proposals using pre-approved products and installers will be opened and read. Proposals submitted on products and/or from installers that have not been pre-approved will be returned unopened.

Documentation for products and installers seeking pre-approved status must be submitted no less than 2 weeks prior to proposal due date to allow time for adequate consideration. The Owner will advise of acceptance or rejection a minimum of three days prior to the due date. All required submittals must be satisfactory to the Owner.

4. SUBMITTALS

- 4.1 Contractor shall submit the completed bid proposal form. All items not listed on this form shall be considered incidental to the project. Designs for lining wall thickness and finished inside diameter shall also be submitted with the Contractor's bid proposal form. Design calculations shall show technical assumptions, identify the design formulas used, and show the wall thickness and finished inside diameter. The design shall graphically illustrate the installation conditions (i.e., depth of pipeline, water table, pipe invert and crown, and full details of the parameters used).
- 4.2 The final design for the lining shall be submitted to the Owner for approval 14 Days prior to installation. The final ovality condition used in the calculations shall be identified. The final design shall bear the seal and signature of a professional engineer.
- 4.3 The following information shall be submitted to the Owner 7 Days prior to commencing Work:
 - a) A work plan outlining the schedule, procedures, and work site.

- b) A list of personnel, including backup personnel, with their qualifications and experience.
- c) Safety plan, including the company safety manual and emergency procedures.
- e) Product by-pass or temporary supply system plans, including methods, with a list of equipment to be used.
- f) Manufacturer's technical data containing complete information on:
 - i. Material composition, physical properties, and dimensions of the new product.
 - ii. Recommendations for transportation, handling, and storage.
 - iii. Repair of product damaged during installation.
 - iv. Installation and connection details.
 - v. Inversion pressures.
 - vi. Product curing procedures listing the curing temperature and duration, including cool down time for the product.
- g) Contingency plans for the following potential conditions:
 - i. Damage to the existing service connections.
 - ii. Improper placement of the CIPP.
 - iii. Damage to the host pipe.
 - iv. CIPP's failure to achieve structural integrity.

5. MATERIALS

- 5.1 Tube – The sewn Tube shall consist of one or more layers of absorbent non-woven felt fabric and meet the requirements of ASTM F1216 or ASTM F1743, Section 5. The tube shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular pipe sections.
 - 5.1.1 The wet out Tube shall have a uniform thickness that when compressed at installation pressures will meet or exceed the Design thickness.
 - 5.1.2 The Tube shall be sewn to a size that when installed will tightly fit the internal circumference and length of the original pipe. Allowance should be made for circumferential stretching during inversion. Overlapped layers of felt in longitudinal seams that cause lumps in the final product shall not be utilized.
 - 5.1.3 The outside layer of the Tube (before wet out) shall be coated with an impermeable, flexible membrane that will contain the resin and facilitate monitoring of resin saturation during the resin impregnation (wet out) procedure.
 - 5.1.4 The Tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated electrometric layers. No material shall be included in the Tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be evident.
 - 5.1.5 The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made.
 - 5.1.6 Seams in the Tube shall be stronger than the non-seamed felt.

5.1.7 The Contractor shall confirm the exact size and length of all existing pipes to be rehabilitated prior to undertaking the manufacturing of any tubes.

5.2 Resin – The resin system shall be a corrosion resistant polyester, vinyl ester, or epoxy and catalyst system that when properly cured within the tube composite meets the requirements of ASTM F1216 and ASTM F1743, the physical properties herein, and those that are to be utilized in the Design of the CIPP for this project. The resin shall produce CIPP, which will comply with the structural and chemical resistance requirements of this specification.

6. STRUCTURAL REQUIREMENTS

6.1 The CIPP shall be designed as per ASTM F1216, Appendix X.1. The CIPP design shall assume no bonding to the original pipe wall.

6.2 The Contractor must have performed long-term testing for flexural creep of the CIPP pipe material installed by his Company. Such testing results are to be used to determine the Long-term, time dependent flexural modulus to be utilized in the product design. This is a performance test of the materials (Tube and Resin) and general workmanship of the installation and curing. A percentage of the instantaneous flexural modulus value (as measured by ASTM D-790 testing) will be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, will be verified by this testing. Values in excess of 50% will not be applied unless substantiated by qualified third party test data. The materials utilized for the contracted project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in Design.

6.3 The Enhancement Factor 'K' to be used in 'Partially Deteriorated' Design conditions shall be assigned a value of 7. Application of Enhancement (K) Factors in excess of 7 shall be substantiated through independent test data.

6.4 The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers. If separations of the layers occur during testing of field samples, new samples will be cut from the work. Any reoccurrence may cause rejection of the work.

6.5 The cured pipe material (CIPP) shall conform to the structural properties, as listed below.

MINIMUM PHYSICAL PROPERTIES

<u>Property</u>	<u>Test Method</u>	<u>Minimum Value</u>
initial Flexural Modulus	ASTM D-790 (short term)	400,000 psi
initial Flexural Strength	ASTM D-790	4,500 psi

- 6.6 The required structural CIPP wall thickness shall be based as a minimum, on the physical properties in Section 5.5 and in accordance with the Design Equations in the appendix of ASTM F 1216, and the following design parameters:

DESIGN CRITERIA

Safety Factor	2.0
Long Term Flexural Modulus Retention Factor (*See Paragraph 5.2)	50%
Ovality (Unless otherwise verified during prelining inspection)	5%
Enhancement Factor, k (See Paragraph 5.3)	7
Groundwater Depth	Full Depth
Soil Modulus	700 psi
Soil Density	120 pcf
Live Load	H-20

- 6.7 Refer to the attached table for specific pipe section design criteria including pipe condition, depth, etc.
- 6.8 Any layers of the tube that are not saturated with resin prior to insertion into the existing pipe shall not be included in the structural CIPP wall thickness computation.

7. TESTING REQUIREMENTS

- 7.1 **Chemical Resistance** – The CIPP shall meet the chemical resistance requirements of ASTM F1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical testing requirements.
- 7.2 **Hydraulic Capacity** – Overall, the hydraulic profile shall be maintained as large as possible. The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.
- 7.3 **CIPP Field Samples** – When requested by the City, the Contractor shall submit test results from field installations in the USA of the same resin system and tube materials as proposed for the actual installation. These test results must verify that the CIPP physical properties specified in Section 5.5 have been achieved in previous field applications. Samples for this project shall be made and tested as described in Section 10.1.

8. INSTALLATION RESPONSIBILITIES FOR INCIDENTAL ITEMS

- 8.1 It shall be the responsibility of the City to locate and designate all manhole access points open and accessible for the work, and provide rights of access to these points. If a street must be closed to traffic because of the orientation of the sewer, the City shall institute the actions necessary to do this for the mutually agreed time period. The City

will also provide **access** to water hydrants for cleaning, inversion and other work items requiring water. Contractor shall provide an approved double check valve backflow preventer at all hydrant connections.

- 8.2 **Cleaning of Sewer Lines** – The Contractor, when required, shall remove all internal debris out of the sewer line that will interfere with the installation of CIPP. The City will also provide a dumpsite for all debris removed from the sewers during the cleaning operation. Unless stated otherwise, it is assumed this site will be at the City Landfill
- 8.3 **Bypassing Sewage** – The Contractor, when required, shall provide for the flow of sewage around the section or sections of pipe designated for repair. The bypass shall be made by plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the flow. Contractor shall have a backup pump and power supply at all bypasses. The City may require a detail of the bypass plan to be submitted.
- 8.4 **Inspection of Pipelines** – Inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles and service connections by close circuit television. The interior of the pipeline shall be carefully inspected to determine the location of any conditions that may prevent proper installation of CIPP into the pipelines, and it shall be noted so that these conditions can be corrected. The Contractor shall submit to the City a videotape and suitable log for later reference.
 - 8.4.1 After completion of the preparation of a pipeline section, a video inspection of the full length of the pipeline section shall be made and submitted to the City. Prior to the delivery of the service interruption notice and any lining installation taking place, approval of the prepared section shall be obtained from the City.
 - 8.4.2 After completion of all work required for the lining of the pipeline section, a video inspection of the full length of the pipeline section shall be made and submitted to the City for approval of the work.
- 8.5 **Line Obstructions** – It shall be the responsibility of the Contractor to clear the line of obstructions such as solids and roots that will prevent the insertion of CIPP.
- 8.6 **Public Notification** – The Contractor shall make every effort to maintain service usage throughout the duration of the project. In the event that a service will be out of service, the maximum amount of time of no service shall be 8 hours for any property served by the sewer. A public notification program shall be implemented, and shall as a minimum, require the Contractor to be responsible for contacting each home or business connected to the sanitary sewer and informing them of the work to be conducted, and when the sewer will be off-line. The contractor shall also provide the following:
 - 8.6.1 Written notice to be delivered to each home or business the day prior to the beginning of work being conducted on the section, and a local telephone number of the Contractor they can call to discuss the project or any problems that could arise.
 - 8.6.2 Personal contact with any home or business, which cannot be reconnected within the time stated in the written notice.

- 8.7 The Contractor shall be responsible for confirming the locations of all branch service connections prior to installing and curing the CIPP and reinstatement.
- 8.8 If the pre-installation inspection reveals an obstruction such as a protruding service connection, a dropped joint, or a collapse that prevents the lining process and it cannot be removed by conventional sewer cleaning equipment, then the Contractor shall attempt a trenchless technique to remove or repair the obstruction. Any necessary additional work shall be approved in writing by the City prior to the commencement of the work.
- 8.9 When the filling of voids is necessary to ensure structural integrity of the pipeline and to prevent bridging of the liner, the Contractor shall submit a detailed procedure outlining the process and materials to be used to fill the voids to the City for approval.

9. INSTALLATION

- 9.1 CIPP installation shall be in accordance with ASTM F1216, Section 7, or ASTM F1743, Section 6, with the following modifications:
- 9.1.1 Resin Impregnation – The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used.
- 9.1.2 Tube Insertion – The wet out tube shall be positioned in the pipeline using either inversion or a pull-in method. If pulled into place, a power winch should be utilized and care should be exercised not to damage the tube as a result of pull-in friction. The tube should be pulled-in or inverted through an existing manhole or approved access point and fully extend to the next designated manhole or termination point. Removal of manhole casting for insertion shall be at contractor's expense.
- 9.1.3 Temperature gauges shall be placed inside the tube at the invert level of each end to monitor the temperatures during the cure cycle.
- 9.1.4 Curing shall be accomplished by utilizing hot water under hydrostatic pressure in accordance with the manufacturer's recommended cure schedule.

10. REINSTATEMENT OF BRANCH CONNECTIONS

- 10.1 It is the intent of these specifications that branch connections to buildings be reopened without excavation, utilizing a remote controlled cutting device, monitored by a video TV camera. The Contractor shall certify he has a minimum of 2 complete working cutters plus spare key components on the site before each inversion. Unless otherwise directed by the owner or his authorized representative, all laterals will be reinstated. No additional payment will be made for excavations for the purpose of reopening connections and the Contractor will be responsible for all costs and liability associated with such excavation and restoration work.

11. INSPECTION

- 11.1 CIPP samples shall be prepared and physical properties tested in accordance with ASTM F1216 or ASTM F1743, Section 8, using either method proposed. The flexural properties must meet or exceed the values identified by the Contractor in the final liner design.
- 11.2 Wall thickness of samples shall be determined as described in paragraph 8.1.6 of ASTM F1743. The minimum wall thickness at any point shall not be less than 87 ½% of the design thickness as calculated in paragraph 5.6 of this document.
- 11.3 Visual inspection of the CIPP shall be in accordance with ASTM F1743, Section 8.6.

12. CLEAN-UP

- 12.1 Upon acceptance of the installation work and testing, the Contractor shall restore the project area affected by the operations to a condition at least equal to that existing prior to the work.

13. PAYMENT

- 13.1 Payment for the work included in this section will be in accordance with the prices set forth in the proposal for the quantity of work performed.

14. WARRANTY

- 14.1 If, after the approval of final payment and prior to the expiration of one year after the date of Substantial Completion, any work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions, either correct such defective work, or, if it has been rejected by OWNER, remove it from the site and replace it with nondefective work. If CONTRACTOR does not promptly comply with the terms of such instructions, OWNER may have the defective work corrected or the rejected work removed and replaced, and all direct and indirect costs of such removal and replacement, shall be paid by CONTRACTOR.

**BID RESPONSE NO. 3405
SEWER LINING
BID OPENING: FEBRUARY 28, 2012 AT 2:00 PM**

In compliance with the City of Midland's specifications and Standard Instructions to Bidders, the undersigned hereby proposes to supply for the price of:

Item No.	Item Description	Qty	Unit	Unit Price	Total Price
1.	Patrick Rd. CIPP Rehabilitation				
1.1	10" CIPP Section 5719	302	LF	\$	\$
1.2	12" CIPP Section 1891	316	LF	\$	\$
1.3	12" CIPP Section 1889	325	LF	\$	\$
1.4	12" CIPP Section 1888	333	LF	\$	\$
1.5	12" CIPP Section 1887	330	LF	\$	\$
1.6	12" CIPP Section 1886	30	LF	\$	\$
8	Reinstatement of Sewer Services	15	EA	\$	\$

TOTAL BID \$ _____

ALL BIDDERS SHALL COMPLETE AND RETURN THE CONTRACTOR SAFETY QUALIFICATION STATEMENT FORM ENCLOSED. FAILURE TO SUBMIT THIS FORM SHALL BE JUST CAUSE FOR REJECTION OF YOUR BID. IF YOU NEED THE CITY'S "CONTRACTOR SAFETY PROGRAM" BOOKLET, PLEASE CONTACT THE PURCHASING AGENT.

BID SECURITY REQUIRED: X YES NO FIVE PERCENT(5%) AMOUNT

IF VARIATIONS ARE PROPOSED, LIST VARIATIONS ON SEPARATE SHEET OF PAPER AND RETURN.

I hereby state that all of the information I have provided is true, accurate, and complete. I hereby state that I have the authority to submit this bid, which will become a binding contract, if accepted by the City of Midland.

COMPANY NAME

BY (Signature)

STREET ADDRESS OR PO BOX

(Print Name of Above)

CITY, STATE ZIP CODE

TITLE OF SIGNATORY

TELEPHONE NUMBER

DATE OF OFFER

TERMS OF PAYMENT

ESTIMATED COMPLETION ARO

Bids shall be returned to the Office of the City Clerk, City Hall, 333 West Ellsworth, Midland, MI 48640-5132 no later than the time and date listed above. Sealed envelopes shall be marked with the bid number, title, and opening date. Bids may be inspected at the bid opening or in the Purchasing Office during normal business hours.

If you desire a copy of the bid tabulation to be mailed to you, please enclose a self-addressed, stamped envelope with your bid response. Tabulations will be available at our website, www.midland-mi.org under the Purchasing Department.

LATE BIDS WILL BE REJECTED.