

(Revised October 20, 2021)

SECTION 02520

INTERNAL POINT REPAIRS TO SANITARY SEWERS

PART 1 — GENERAL

1.01 SECTION INCLUDES

- A.** The work covered under this section includes furnishing all labor, equipment, and materials required to furnish, install, test, and inspect internal point repairs of sanitary sewers with cured-in-place pipe (CIPP) liner as shown on the Plans and specified in this section.

1.02 RELATED SECTIONS

- A.** Section 01510 - Sanitary Sewer Main and Lateral Television Sonar Inspection
- B.** Section 01520 - Sewer Flow Control
- C.** Section 02276 – Site Restoration and Erosion Control
- D.** Section 02500 - Lining with Cured-In-Place Pipe (CIPP)
- E.** Section 02956 - Sanitary Sewer Cleaning

1.03 REFERENCES

- A.** ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
- B.** ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- C.** ASTM D2990 - Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics.
- D.** ASTM D5813 - Standard Specification for Cured-In-Place Thermosetting Resin Sewer Piping Systems.
- E.** ASTM F1216 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
- F.** ASTM F1743 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe.
- G.** ASTM F2019 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled in Place Installation of Glass Reinforced Plastic (GRP) Cured-in-Place Thermosetting Resin Pipe.
- H.** Potable Water Main, Gravity Sewer, Gravity Sanitary Sewer, and Sanitary Sewer and Force Main Design Standards, DeKalb County Department of Watershed Management.

1.04 QUALIFICATION REQUIREMENTS

- A. See requirements stated during the procurement process.

1.05 SUBMITTALS

- A. The Contractor shall submit a comprehensive construction sequencing plan for approval prior to the beginning of the project. At minimum the plan shall include the following:
1. A proposed schedule.
 2. Identification of all proposed access routes.
 3. Identification of set-up locations for CIPP point repair installation.
 4. Bypass pumping plan in accordance with the requirements of the Section 01520 Sewer Flow Control.
 5. Traffic Control Plan in accordance with Georgia Department of Transportation (GDOT) requirements (where applicable).
 6. Erosion Control Plan in accordance with the DeKalb County Department of Watershed Management Protocol for Providing Erosion & Sedimentation Controls on Construction Projects.
- B. The Contractor shall submit the following items for product and installer pre- approval:
1. Manufacturer's certificate the materials to be used meet the referenced standards and the requirements of these Specifications.
 2. License or certificate verifying manufacturer's/licensor's approval of the installer.
 3. Proposed equipment and procedures for accomplishing the work.
 4. Product data and manufacturer's installation for resin and catalyst system.
- C. The Contractor shall submit the following information during the project for approval of the use of CIPP point repair at a particular location:
1. Calculations for the wall thickness designs including data, field measurements, and assumptions. To be completed by a Georgia registered professional engineer proficient in the design of CIPP systems.
 2. The Contractor's procedures and materials for service renewal including time and duration of sewer service unavailability, if point repair area contains service connections.
- D. A final certificate of compliance with this specification shall be provided by the manufacturer for all lining material furnished. Tests for compliance by an independent laboratory shall be performed in accordance with applicable ASTM standards and the manufacturer's quality control program.

- E.** The Contractor shall furnish an extended warranty for liner materials from the Contractor and the liner manufacturer for a total of one (1) year from the date of Final Acceptance.
- F.** The Contractor shall complete a daily written record (diary) detailing the work performed and any small items incidental to the Work in the form of an email. The Contractor shall include the following information in his daily record:
 - 1. Delays and causes of delays: Dense traffic, lack of information, sickness, labor, or equipment shortage, etc.
 - 2. Weather conditions: Rain, sunny, windy, temperature, snow, etc.
 - 3. Types of equipment on site: Specialty cleaning, by-pass equipment, etc.
 - 4. Submittals: To the Owner's Engineer (Project Manager).
 - 5. Personnel on site: Name, labor category, specialty personnel, etc.
 - 6. Accidents/injuries: Injuries, vehicle/equipment accidents, etc.
 - 7. Incidents: Vehicle and equipment damage, damage to property, property owner complaint, etc.
 - 8. Major defects encountered: Collapsed pipe, cave-ins, sink holes, etc.
 - 9. Visitors: Names and affiliations.

10. Disposals: Type and quantity of debris (including liquids).

- G. The Owner's Representative shall certify receipt of the daily record (in email format) noting any items and adding any observations with reference to claims for payment to the Contractor. The Owner's Representative may, at his/her discretion, for which the Contractor must receive direction in writing, provide weekly submission in the form of progress report.
- H. As-built drawings including the identification of the work completed by the Contractor and the post-installation CCTV shall be submitted within 2 weeks after the project is completed.

1.06 EXPERIENCE

- A. Manufacturer – see the above requirements in Section 1.04 – Qualification Requirements.
- B. Installer – see the above requirements in Section 1.04 – Qualification Requirements.
- C. The Contractor shall have a company history of supporting this type of function including the proper training in these types of materials, equipment, and activities and have a minimum of three (3) years, or three (300) successful installations, experience in performing such assignments including safe work practices, etc.
- D. Supervisor of the field crews shall have a history of supporting this type of function including these types of materials, equipment and activities and have a minimum of three (3) years, or two hundred (200) successful installations, experience in performing such assignments including safe work practices, etc.
- E. Field crew leaders shall have a history of supporting this type of function including the proper training in these types of materials, equipment, and activities and have a minimum of two (2) years, or one hundred (100) successful installations, experience in performing such assignments including safe working practices, etc.
- F. The Contractor shall provide the Owner's Representative with written documentation (certification) indicating the supervisor, field crew leader, and all crewmembers responsible for these assignments have the proper training and the requisite experience.
- G. No crewmembers of the Manufacturer, Installer, or Contractor shall enter confined spaces without the necessary certified training.
- H. The required training and experience shall be documented in the Contractor's bid submittal.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall be responsible for the delivery, storage, and handling of products. No product shall be shipped to the Site of the Work without the approval of the Owner's Representative.
- B. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the Work Site and replace damaged products with undamaged products acceptable to the Owner's Representative.

- C. Comply with the requirements of the CIPP point repair manufacturer.

1.08 RESPONSIBILITY FOR SANITARY SEWER OVERFLOWS AND DAMAGE TO PROPERTY AND UTILITY

- A. Reference Specification Section 01030 – Special Project Procedures, Paragraph B.

1.09 SAFETY

- A. All work shall be performed in accordance with OSHA standards and State and Federal safety regulations.
- B. No person shall enter a confined space without the documented requisite training, certification, and entry permit.

PART 2 – PRODUCTS

2.01 GENERAL

- A. All materials shall be in strict compliance with the requirements of ASTM, ANSI, and/or AWWA and the requirements of these Specifications.
- B. The finished pipe liner in-place shall be fabricated from materials when completed is chemically resistant to and will withstand internal exposure to domestic wastewater.
- C. Field measurements of the existing pipe diameters, ovality, and length shall be taken by the Contractor to verify actual pipe dimensions.

2.02 CURED-IN-PLACE LINER

- A. All cured-in-place lining products shall comply with the most recent versions of ASTM F-1216, ASTM F-1743 or intent thereof as determined by the Owner's Representative.
- B. The flexible tube shall be fabricated to a size when installed will neatly fit (minimum 99.75%) the internal circumference of the existing sanitary sewer lines (including services). Allowance shall be made for circumferential stretching during insertion so the final cured product is snug against the wall of the host pipe.
- C. The minimum length shall be, as deemed necessary by the Contractor, to effectively span the distance from the adjacent pipe joints plus 1.0 feet each side unless otherwise shown on the Plans or directed by the Owner's Representative. The Contractor shall verify the lengths in the field before impregnation.
- D. Unless otherwise shown on the Plans or directed by the Owner's Representative, the Contractor shall furnish a general purpose, unsaturated, polyester or vinyl ester resin and catalyst system compatible with the reconstruction inversion process providing cured physical strengths specified in this section.
- E. Physical Strength:
 - 1. The cured pipe shall conform to the following minimum structural standards:

Addendum No. 3
ITB No. 21-101431 On-Call Water And Sewer
(Multiyear Contract With 2 Options To Renew)

Test Method		Results
Flexural Stress	ASTM D790	4,500 psi Flexural
Modulus of Elasticity	ASTM D790	250,000 psi Tensile
Strength	ASTM D638	3,000 psi

2. The liner thickness shall be sized for a minimum hydrostatic load of eight (8) feet and the maximum depth of earth cover as shown on the Plans. The hydrostatic load shall be increased to manhole depth plus one (1) foot for bury depths in excess of eight (8) feet.
- A. Corrosion Requirements: The cured pipe shall be chemically resistant to internal exposure of sewage having a pH range of 5 to 11 and a peak temperature of 180°F.

PART 3 – EXECUTION

3.01 PREPARATION

- A. The following installation procedures shall be adhered to unless otherwise approved by the Owner's Representative.
1. The Contractor shall carry out his operations in strict accordance with all OSHA and manufacturer's safety requirements. Particular attention is drawn to those safety requirements involving entering confined spaces.
 2. It shall be the responsibility of the Contractor to remove all internal debris and clean the existing sewer line prior to installation of the liner. Cleaning and disposal of material shall be performed in conformance with the requirements of the Sanitary Sewer Cleaning section of these Specifications. The debris is to be disposed of properly in accordance with all applicable laws. The Owner's Representative can furnish a letter to the landfill stating the Contractor is authorized to dispose of non-hazardous materials. Debris and liquids quantities are to be tracked in the daily contractor diary.
 3. Experienced personnel trained in locating breaks, obstacles, and service connections by closed circuit television shall perform inspection of existing sewer lines. The interior of the line shall be carefully inspected to determine the location of any conditions preventing proper installation of the CIPP point repair into the lines, and such conditions shall be noted so they can be corrected. A video recording and suitable log shall be kept for later reference by the Owner's Representative as specified in Section 01510, Sanitary Sewer Main Television and Sonar Inspection (CCTV).
 4. The Contractor shall provide for the flow of wastewater around the section or sections of pipe designated for internal point repairs as specified in Section 01520, Sewer Flow Control.
 5. The Contractor shall clear the line of obstructions such as solids, dropped joints, protruding service connections or collapsed pipe preventing the insertion of the materials or equipment. If inspection reveals an obstruction cannot be removed by conventional sewer cleaning equipment or robotic equipment, then the Contractor may be ordered to make a point repair excavation to uncover and remove or repair

6. Groundwater temperatures and ambient temperatures shall not be excessive for the product installation procedures.

3.02 INSTALLATION

A. Cured-in-Place Liner:

1. The Contractor shall designate a location where the reconstruction tube will be impregnated prior to installation. The Contractor shall allow the Owner's Representative to inspect the materials and "wet out" procedure. A catalyst system compatible with the resin and reconstruction tube shall be used. Sufficient excess resin will be provided to insure a mechanical bond with the host pipe after curing.
2. The wet out reconstruction tube shall be inserted through an existing manhole or other approved access and moved through the pipe to the termination point. The insertion bladder will then be inflated to hold the CIPP point repair snugly against the existing pipe in the correction location. Care shall be taken during the elevated curing temperature so as not to overstress the felt fiber. Alternative methods of liner insertion and pressurization may be used for products and processes approved by the Georgia Department of Natural Resources and the Owner's Representative, and when the final cured-in-place product meets the intent of ASTM F1216. Installation shall be in accordance with the manufacturer's recommendations and available for verification by the inspector.
3. The CIPP point repair shall be an ambient cure system and the cure period shall be of a duration recommended by the resin manufacturer.
4. The finished pipe shall be continuous over the length of the internal point repair, overlap point repairs if necessary, and be as free as commercially practicable from visual defects such as foreign inclusions, wrinkles, dry spots, pinholes, and delamination. It shall also meet the leakage test requirements.
5. Alternate curing mediums may be used, including, but not limited to steam and ambient cure. When alternate curing mediums are used, the end product must meet or exceed the requirements of this section. Alternate curing mediums and alternate installation methodologies must be submitted for approval to the Owner's Representative prior to the bid opening date as specified in the bid documents. Notification of approval (or rejection) shall be made prior to bid opening.
6. When alternate curing mediums and/or alternate installation methodologies are approved for use, the Contractor shall follow all of the manufacturer's recommendations for installation and curing, no exceptions shall be permitted.

3.03 POST INSTALLATION

- A.** Portions of any piece of liner material removed during installation shall be available for inspection and retention by the Owner's Representative.
- B.** Each internal point repair shall be CCTV inspected as soon as practical after internal repair. The Contractor shall provide a copy of the video to the Owner's Engineer on an

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(Multiyear Contract With 2 Options To Renew)
External Hard Drive media.

3.04 MANUFACTURER CERTIFICATION

- A. The manufacturer shall certify the Contractor is properly trained in the method or system being used.
- B. The manufacturer should be on site for 2 to 5 eight-hour days or more depending on project size to confirm the Contractor is doing the installation correctly.

3.05 TESTING

- A. After installation every liner shall be CCTV inspected with a 360-degree integral light-head camera as soon as practical to verify proper installation.
- B. At the existing pipe/internal point repair interface, no visible leaks shall be allowed.

3.06 EXISTING UTILITIES

- A. The Contractor shall protect all known and unknown existing sewer lines, water lines, gas lines, sidewalks, curbs, gutters, pavements, electric lines, and other utilities and structures in the vicinity of the work from damage at all times. Where it is necessary for the proper execution of the work to repair, remove, and/or replace any such utility or structure, the Contractor shall do so in accordance with the provisions set forth in the General and Special Conditions of the Contract. Any such work to be done at the Contractor's expense shall be considered incidental to the construction of sewers, and no additional payment will be allowed therefore.

3.07 COLLAPSED SEWERS/DEFECTIVE MANHOLES

- A. Any sewer found with greater than ten (10) percent deformation (i.e. collapsed or near collapse) shall be reported to the Owner's Representative immediately for remedial action.
- B. Any manhole found broken, cracked, with missing covers, or surcharged, shall be reported to the Owner's Representative immediately for remedial action.
- C. Any sewer found where the existing conditions pose a threat of personal injury to the public, such as a collapsed sewer with attendant depression to roadway, shall be protected by the Contractor until the Owner's Representative arrives at the Work Site.
- D. Any manhole found where the existing conditions pose a threat of personal injury to the public, such as broken, cracked, or missing covers, or covers found in traveled portions of any sidewalk or roadway shall be protected by the Contractor until the Owner's Representative arrives at the Work Site.

3.08 PRIVATE SERVICE LINE SHUTDOWN

- A. When it is necessary to shut down a private sewer service line while work is in progress and before the service lines are reconnected, the residents shall be notified by the Contractor at least forty-eight (48) hours prior to the shutdown. No sewer or water service is to remain shut down for more than a period of eight (8) hours unless the Contractor provides substitute services/accommodations to the residents. Commercial sewer services shall be maintained at all times the business is open. No wastewater from the services or main line shall be discharged on the ground or in waterways. Holding pits or

tanks are not allowed unless permitted by the State and the County.

3.09 CLEANUP

- A.** After the CIPP liner installation work has been completed and all testing acceptable, the Contractor shall clean up the work area. All excess material and debris not incorporated into the permanent installation shall be disposed of by the Contractor. The debris and liquids are to be disposed of properly in accordance with all applicable laws. The Owner can furnish a letter to the landfill stating the Contractor is authorized to dispose of the non-hazardous materials. Debris and liquids type and quantities are to be tracked in the daily Contractor diary. Hauling and disposal costs will be borne by the Contractor. The work area shall be left in a condition equal to or better than prior condition. Disturbed grassed areas shall be seeded or sod placed as directed by the Owner's Representative at no additional cost to the Owner. The work site restoration work shall be completed in accordance with the requirements of Section 02480 – Site Restoration and Erosion Control.

3.10 WARRANTY

- A.** The Contractor shall guarantee his work for a warranty period of three (3) years from the date of final acceptance. If, at any time during the warranty period, any leakage, cracking, loss of bond, or other discontinuity/abnormalities is identified the Contractor shall make repairs acceptable and at no additional cost to the Owner. In this case, the Contractor shall warrant the work for one (1) year in addition to the warranty required by the Contract.
- B.** If the frequency of similar defects requiring repair increases, then the entire project will be re-evaluated.

END OF SECTION