ADDENDUM NO. 2

TO

TOWN OF CHESHIRE, CT

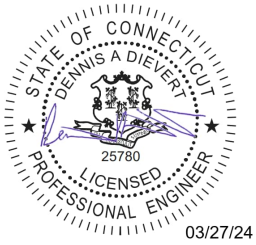
BIDDING AND CONTRACT REQUIREMENTS AND SPECIFICATIONS

FOR

PHASE 1 SEWER SYSTEM REHABILITATION PROJECT

BID #2324-21

March 27, 2024



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ADDENDUM NO. 2

TOWN OF CHESHIRE, CT

PHASE 1 SEWER SYSTEM REHABILITATION PROJECT

As a point of clarification, it should be understood that the Contract Documents govern all aspects of the project. Informal discussions held during the Pre-Bid Conference, or over the telephone are informational only. All official changes to the Contract Documents are made only by addenda. The following changes and additional information are hereby made a part of the Contract Documents:

CLARIFICATIONS

1. CIPP liners for this project may also be cured with UV light. Any curing references in the specifications shall encompass both steam and UV light.

SPECIFICATIONS

1. **ADD** the following specifications Section 02756C – SEWER PIPE LINING USING UV CURING, to the Technical Specifications Manual in Appendix A.

QUESTIONS

1. Will UV CIPP liners be accepted in lieu of the heat cured felt liners that have been specified? ***Yes, UV cured CIPP liners will be allowed. Technical specifications for UV cured CIPP liners have been added to the Technical Specifications by this Addendum.***

2. Will the Town locate and uncover the buried manholes? ***Any known buried manholes will be located and uncovered by the town prior to the start of any work to the extent practical. CIPP lining crew(s) shall be responsible for surveying the areas to be lined and televised at least 2-weeks in advance and provide the town with a list of any additional manholes requiring location and uncovering that may have been missed.***

3. Will the Town clear the easements and provide access for the equipment/vehicles for the CIPP lining installations? ***All areas to be lined were accessed for cleaning and CCTV in 2022 with no issues. Upon project award, the town and contractor will visit each location to be lined and determine what, if any, additional clearing will be required prior to contractor mobilization.***

** END OF ADDENDUM NO. 2**

SECTION 02756C

SEWER PIPE LINING USING UV CURING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: Provide all equipment necessary for the relining of sanitary sewer lines by the cured-in-place-pipe (CIPP) method and the reinstatement of sewer services.

B. The system shall provide for the rehabilitation of pipes by the installation of a resin impregnated fiberglass or polyester tube patch inserted against the inside of the existing pipe utilizing air pressure (manhole-to-manhole lining) or an inflatable element and air pressure (short lining). Curing shall be accomplished by passing a UV light through the liner to cure the resin into a hard, impermeable pipe within a pipe. The CIPP should extend over the length of the repair in a continuous, tight-fitting, watertight pipe within a pipe.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

A. Additional Requirements are specified elsewhere.

1.3 QUALITY ASSURANCE

A. Standards:

1. Cured-in-place-pipe (CIPP) shall meet all the requirements of the following standards:
    a. ASTM F1216 – Standard Practice for rehabilitation of existing pipelines and conduits by the inversion and curing of a resin-impregnated tube
    b. ASTM F1743 – Standard Practice for rehabilitation of existing pipelines and conduits by pulled-in-place installation of cured-in-place thermosetting resin pipe
    c. ASTM F2019 – Standard Practice for rehabilitation of existing pipelines and conduits by the pulled-in-place installation of glass reinforced plastic cured-in-place thermosetting resin pipe
    d. ASTM D790 – Standard test methods for flexural properties of unreinforced and reinforced plastics and electrical insulating materials
    e. ASTM F2454 – Standard Practice for Sealing Lateral Connections and lines from the mainline Sewer Systems by the Lateral Packer Method, Using Chemical Grouting

B. References:

1. NASSCO (National Association of Sewer Service Companies) Recommended Specifications for Sewer Collection System Maintenance and Rehabilitation.

C. Acceptable Contractors:

1. Layne Inliner, LLC.
2. Insituform Technologies, Inc.
3. Vortex Companies

4. Or qualified equivalent contractor with a minimum of 5 years experience in sewer pipe relining and a minimum of 100,000 feet of installed CIPP liner.

D. Contractor's Staff
   1. The CIPP superintendent shall have a minimum experience of 3 years.
   2. The CIPP lateral reinstatement operator shall have a minimum experience of 1 year.
   3. If the above minimum years of experience for both roles cannot be met, an acceptable alternative is to have a manufacturer representative onsite during the lining work.

1.4 SUBMITTALS

A. The Contractor shall submit to the Owner and/or Engineer, complete design calculations for the liner that meet the requirements of ASTMs F1216, F1743, or F2019, whichever is applicable for the installation and curing methods to be used. The design shall be based on the following physical conditions of the existing pipe to be rehabilitated:
   1. All pipes shall be considered fully deteriorated and no bonding to the existing pipe shall be assumed.
   2. All pipes are subjected to a soil load of 120 lbs/cf with an H-20 live traffic load.
   3. The water table is assumed to be 3 feet below the ground surface.
   4. Pipe lengths and depths are shown on the Plans and shall be verified by the Contractor during the pre-installation inspection.
   5. The minimum pipe ovality is 2%, unless documented, measured by the Contractor and submitted to the Engineer.
   6. The minimum wall thickness for a felt tube CIPP liner is 6 mm. The minimum wall thickness for a fiberglass reinforced tube CIPP liner is 2.8 mm.
   7. The minimum flexural modulus of elasticity of the cured liner shall be 250,000 psi, with a flexural strength of 4,500 psi, as tested in accordance with ASTM D-790.
   8. The calculations shall account for a 50-year design life and include a documented factor of safety.

B. Contractor to submit materials and installation procedures for review by Owner and/or Engineer, including information on resin, tube material including certifications, internal and exterior liner coatings, a pre-liner layer if required, manhole and service sealants, an installation schedule, the manufacturer's recommended curing schedule, means of obtaining and collecting samples for testing, method of monitoring liner temperature during curing, and other quality management programs, plans for by-passing or handling of sewer flows, and traffic control.

C. Contractor to submit video format with electronic video files on external hard drives of pre-installation CCTV inspection and post-lining CCTV inspection, and a 1-year warranty inspection as specified in Section 02753.

D. Contractor shall provide the location of the wet-out facility to manufacturer the liner, and include documentation of its permitting status and QA/QC controls. If requested in writing by the Engineer, the Contractor shall assist the Engineer in setting up an inspection of the wet-out facility in advance of the manufacturing of the liner.

E. Contractor to submit an outreach plan to the Engineer at least 1 week prior to the commencement of lining activities, this plan shall at minimum include a schedule for

1-week and 24-hour advance notices to residents who will be affected by the pipe relining, samples of notices to be provided to residents, and an odor and noise mitigation plan.

F. Contractor to submit documentation relative to the qualifications, training and experience of the installers.

G. Contractor to supply an equipment listing including redundant tools and spare parts to be on site during the lining work.

H. Contractor to submit an odor mitigation plan to be implemented during the liner installation.

I. Contractor to supply information on proposed or potential repair and/or rehabilitation methods based on manufacturer's recommendations in the event of a failed liner installation including step-by-step repair procedure and how the finished product will meet the requirements of this contract specification.

J. Prior to liner installation, Contractor shall supply wet-out logs, saturation charts, and curing schedules.

K. During liner installation, Contractor shall supply wet-out logs; curing schedules, including curing logs from the light train quality control software; and collected samples for testing.

PART 2 - PRODUCTS

A. Pipe Liner

1. The liner shall be fabricated from materials that are chemically resistant to exposure to domestic sewage and septic tank effluent.
2. The resin, tube and curing methods shall be compatible with each other and the installation method to be used, in accordance with manufacturer's recommendations.
3. The completed liner shall be continuous, seamless, and jointless from manhole to manhole.
4. Liner shall be sized to provide a tight fit to the host pipe.
5. The interior surface of the liner shall be a relatively light reflective color so that a clear detailed examination with closed circuit television equipment can be made.
6. Interior and exterior liners shall be provided to mitigate styrene migration. The interior and exterior liners shall be included as part of the pipe design, or removed as part of the installation.
7. Liner thickness calculations are discussed in Part 1.
8. Liner material shall meet the requirements of ASTM F1216, F1743, or F2019, whichever is applicable based on the materials, installation and curing methods to be used.
9. Short liners are small sections of liner meant to repair smaller sections of defects within the existing pipe. These short liner locations are noted in the Contract Documents with approximate length of liners and the distance from upstream manhole and/or downstream manhole.
10. The information on the existing pipeline(s) to be lined in the Contract Documents is provided for reference only and should be verified during CCTV

inspection prior to spot relining. Any adjustments to the scope should be discussed with the Engineer prior to installation.

11. All materials shall be stored and handled in accordance with the manufacturer's recommendations and consistent with the type or curing method to be used.

B. Manhole End Seals
   1. The manhole end seals shall be a single-component, hydrophilic mastic water stop.

C. Service connection grouting
   1. The grout materials and equipment used to seal service connections shall be in accordance with ASTMF2454.

PART 3 - EXECUTION

3.1 GENERAL

A. All work shall be done in compliance with all current OSHA safety regulations.

3.2 BEFORE INSTALLATION

A. Prior to conducting any work, Contractor shall deliver notices to all residents and/or building owners within the area of the pipe relining. Notice shall indicate when the work will take place and who to call with questions or in the event of an emergency. Notice to be approved by the Owner prior to distribution.

B. Contractor to control sewer flow and bypass pump per Section 02751.

C. Prior to relining the sewer main, the sewer shall be cleaned in accordance with Section 02752 and inspected with CCTV equipment per Section 02753. Contractor to verify that the conditions of the sewers are acceptable for the methods of liner installation required. Prior to lining of pipe, Contractor shall trim back any protruding pipes/services extending into the pipe. Pipes shall be trimmed back to within ½-inch of the pipe wall, or as close as possible to avoid damaging the host pipe and also to prevent bulges in the liner to be installed. All debris from cleaning and trimming operations shall be removed from the sewer system and not flushed downstream.

D. Active leaks shall be stopped prior to lining if they could, in the opinion of the Engineer, create pockets of trapped water or heat sinks which could cause improper curing of the liner.

E. Contractor shall inspect the liner for any defects and if it had prematurely started to cure during transportation and storage.

F. Install odor mitigation devices per submitted odor mitigation plan to deflect odors for both workers and general public.

3.3 LINING METHOD AND CURING

A. The Contractor shall install and UV cure the liner per the method recommended by the liner manufacturer and as submitted in the shop drawing.

B. Following liner installation and curing, leakage testing shall be performed on the liner according to the requirements of ASTM F1216.

C. After liner installation and curing, Contractor shall cool the liner down to at least 100 degrees Fahrenheit prior to commencing service reinstatement and collection of samples. Liner parameters during curing and cool-down shall be monitored, and recorded from the quality control software guiding the light-train.

3.4 POST LINING INSTALLATION

A. After liner installation, curing, and cool down, the Contractor shall reinstate the existing service connections, using remote controlled equipment including a television camera meeting the requirements of Section 02753. The opening created for the service lateral shall be at least 95% of the original opening. After creating the hole in the liner, polish the edges of the hole to remove sharp edges and improve flow conditions from the service pipe into the lined sewer main. Coupons of the lining material removed during service reinstatement shall be collected at the downstream manhole and shall not be left within the sewer system.

1. The Contractor shall grout and seal each service connection to prevent leakage between the existing pipe, the existing service connection, and the new liner. Any connections to the sewer main that are not to be reinstated after liner installation shall be coordinated with the Owner. It is the Contractor's sole responsibility to confirm with the Owner that a connection is to be abandoned and not reinstated to the main. For each connection not reinstated, the Contractor shall obtain a sign-off from the Owner, using the form included at the end of this Section.

3.5 PROVIDE A WATERTIGHT SEAL AT THE INSERTION AND TERMINATION POINTS IN THE MANHOLES. SEAL ANY ANNULAR SPACE BETWEEN THE LINER AND HOST PIPE IN THE MANHOLES AND PROVIDE FOR SMOOTH MERGING OF FLOWS FROM OTHER PIPELINES ENTERING THE MANHOLE.

A. The use of the video from the light train shall not be used for post inspection documentation purposes.

3.6 TESTING

A. For every 2,500 linear feet of liner installed, two samples shall be processed and tested. If the project will have less than 2,500 linear feet of liner installed, a minimum of two samples shall be processed and tested.

1. For pipe diameters less than 18-inches, restrained end samples shall be utilized and tested.
2. For pipe diameters 18-inches and larger, flat plate samples shall be utilized and tested.
3. The CIPP physical properties shall be tested in accordance with ASTM F1216, Section 8, using either allowed sampling method. The flexural properties must meet or exceed the values listed in Section 1.3 of this Specification and the values submitted to the Owner by the Contractor for this project's CIPP wall design, whichever is greater.
4. The installed CIPP thickness shall be measured.
    a. For pipe diameters less than 18-inches, the restrained end samples shall be measured for thickness.
    b. For pipe diameters 18-inches and larger, two-inch cores sample shall be removed from the CIPP liner at the 12 o'clock position to check thickness. The core hole shall be repaired as recommended by the manufacturer.
5. Testing shall be completed by an accredited, independent laboratory. Testing results shall be provided to the Owner and the Engineer within 7 days of receipt of such results.

B. Following liner installation, leakage testing shall be performed on the liner.
   1. For pipe diameters less than 15-inches that were cured by steam, air testing shall be performed.
   2. For pipe diameters less than 15-inches that were cured by water, exfiltration leakage testing shall be performed on the liner according to the requirements of ASTM F1216.
   3. For pipe diameters between 15-inches and 30-inches, air testing or exfiltration leakage testing shall be performed on the liner according to the requirements of ASTM F1216.
   4. For pipe diameters larger than 30-inches, visual inspection of leakage is acceptable.

C. After completion of the work, perform post-installation CCTV inspection of the completed liner and the restored service connections per the requirements of Section 02753. Any of the following defects that are observed shall be repaired immediately at the expense of the Contractor in accordance with the liner manufacturer's recommendations:
   1. Visible leaks, weeping or pinholes
   2. Fins, bulges, wrinkles or other obstructions located:
      a. Outside of the flow line of the pipe that are 5% or greater of the cross-sectional area of the host pipe shall be repaired.
      b. In the lower third of the pipe or inside the flow line and in circumferential configuration that are 3% or greater of the cross-sectional area or 0.5-inches, whichever is smaller.
   3. Soft or uncured sections of the liner
   4. Visual discoloration or other visual anomalies

D. During the one-year warranty period, any defects which will affect the integrity, the strength and/or leak resistance of the liner shall be repaired at the expense of the Contractor.

E. At a time approaching the end of the one-year warranty period, the Contractor shall pay for a third party (approved by the Owner) to clean and CCTV inspect up to 15% of the total lined sewers in the contract. During the one-year warranty period, any defects which will affect the integrity, or the strength of the liner shall be repaired at the expense of the Contractor.

CONFIRMATION TO ABANDON AN EXISTING CONNECTION TO THE SEWER MAIN

Complete this form for each connection to the sewer main that is not reinstated after relining.

Connection Location:

Street Address: _____

_____ LF upstream/downstream (circle one) of MH _____ as indicated on CCTV inspection prior to relining of the main.

Purpose for Abandonment (check all that apply):

_____	Service No Longer Active	_____	Served by Separate Lateral
_____	Connection to Storm Drain	_____	Other:_____

Method of Determining Connection can be Abandoned:

_____	Dye Test	_____	Direction from Owner
_____	CCTV Inspection	_____	Visual Inspection
_____	Building Inspection	_____	Other:_____

Confirmation that Connection is to be Abandoned (not reinstated):

_____	_____
Owner	Contractor
_____	_____
Date	Date

Submit copy of the signed form to the Engineer.

END OF SECTION