

LS 2760

CURED-IN-PLACE SEWER LINING

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A. Related Documents

Drawings and the Front End Document provisions of the Contract, including General Trade Specifications and the General Trade Supplemental Specifications, apply to this section.

American Society for Testing and Materials (ASTM); sections as indicated herein.

B. Summary

This section includes all labor, tools, equipment and materials required to install a cured-in-place plastic liner in the sewer pipe detailed on the contract drawings, including all pre- and post-installation televising and cleaning and post-installation lateral opening and cleaning.

C. Submittals

The contractor shall submit the proprietary name of, and all catalog information detailing, the cured-in-place lining system he proposes to use on this project. The proposed lining system must meet all of the requirements of this specification. The proposed lining system is subject to approval by the City.

General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections:

- Product data for sewer pipe lining materials and installation procedures.
- Calculations, stamped by an engineer registered in the State of Ohio, demonstrating the adequacy of the liner design thickness and materials.
- Statement verifying that the installation contractor is certified by the liner manufacturer to install that manufacturer's products.

D. Quality Assurance

The contractor is responsible for all quality control/quality assurance aspects of his work. The manufacturers materials and installation instructions shall be strictly followed.

E. Project Conditions

Site Information: Perform site survey, research public utility records and physically locate and verify existing utility locations prior to beginning construction.

- Verify the subject sewer pipe condition, diameter, length and material prior to designing and fabricating liner.
- Accurately locate all existing laterals and other connections.

F. Sequencing and Scheduling

Coordinate with other infrastructure work.

Coordinate with other contractors in the project area.

G. Quantities

Quantities are as detailed on the drawings and noted in the tabulated items.

H. Liner and Resins

Cured-in-place fiber lining material shall conform to the requirements of ASTM F 1216-93 and shall be fabricated as one continuous section from one manhole to the next, including added length to facilitate sealing within the manholes.

Resins and catalysts shall be thermally cured and compatible with the liner and chemically inert with respect to the existing pipe materials and the waste water flow.

The contractor shall design the liner system with the following requirements: A polyester fiber lining system shall have a minimum SDR-35. A polyethylene lining system shall have a minimum SDR-32.5.

The liner, when installation is completed, shall conform tightly to the wall of the existing pipe with absolutely no annular space between the liner and the wall of the existing sewer pipe.

The cured liner shall conform to the minimum structural standards as follows:

<u>Requirement:</u>	<u>ASTM Standard:</u>	<u>Minimum Test:</u>
Tensile Strength, Yield	ASTM D-638	3000 PSI
Flexural Strength	ASTM D-638	4500 PSI
Flexural Modulus of Elasticity	ASTM D-790	130,000 PSI
Resistance to Reagents	ASTM D-543	Inert

Test results shall be submitted that will demonstrate compliance with these requirements.

I. Initial Sewer Cleaning

The contractor shall thoroughly clean the subject sewer by suitable non-destructive methods such as hydraulic or pneumatic jetting. All dirt, grease, rocks, loose tile, bricks, sand, roots and all other obstructing materials on the sewer bottom and on the tile walls shall be removed and properly disposed of.

All protruding laterals or other obstructions adhering to the sewer shall be cut back cleanly to within ½ inch of the sewer walls.

All damage to the sewer pipe structure or flow characteristics due to the cleaning process shall be repaired by the contractor at his expense.

J. Sewer Interior Inspection and Documentation

The contractor shall provide video documentation of the sewer conditions at all necessary stages of the lining process. At minimum, this shall include an inspection prior to and after the cleaning process and after every new cleaning pass. A video tape shall be made after the Engineer's representative has accepted that the cleaning requirement has been met.

A video tape shall be made after the lining installation and all associated work has been completed. It shall clearly show all lateral connections and their condition. Copies of all tapes shall be turned over to the City

K. Flow Control

The contractor is responsible for all required bypassing of sewage flow around the section being lined, including adequately sized pumps, temporary force mains, plugs and anything else required to isolate the lined section from the rest of the sewer system while maintaining through flow. Any structural damage to the sewer system or any flooding damage to private properties due to his actions shall be the contractor's responsibility.

L. Resident Notification

The contractor shall contact the property owners and residents being served by all laterals that will be need to be shut down during the work and shall fully inform them of the time period they will be out of service; this shall include exact dates and times of day. This shall be done in-person and by written notification. Every residence in a multi-family dwelling shall be so contacted. A copy of all written notifications shall be submitted to the Engineer. This notification shall be made at least 24 hour before the scheduled shut-down of lateral service.

M. Installation

The Contractor shall exercise care when handling, installing and securing the liner. All damage shall be repaired or replaced at contractor expense; no damaged liner will be accepted. This item shall include any and all excavation, backfill, pavement repair, etc. required to effect repairs to the installed liner.

Liner installation shall be by the inversion process.

The point where the liner intersects the manholes shall be completely sealed. These seals shall not interfere with the operation of, or proper access through, the invert plates. All damage to manholes resulting from liner installation shall be repaired by the contractor.

N. Service Connections

After liner installation, all lateral service connections shall be opened and restored. This shall be done from the interior of the sewer by televised remote robots unless otherwise specifically approved by the Engineer. All cut edges shall be completely free of all burrs, frayed edges or other protrusions.

O. Final Cleanup

All debris resulting from the lining work shall be removed from the sewer before final acceptance by the City. This shall include jetting and vacuuming to the downstream manhole. Also included shall be a complete cleaning and video taping of the reach of sewer between the last liner manhole and the next manhole downstream.

P. Warranty

The contractor shall fully warrant the liner installation for a full year following acceptance by the City against any and all structural defects and failures of performance.

Q. Method of Measurement

The City of Lakewood will measure and pay for Cured-In-Place Sewer Liner by the actual linear foot of sewer pipe lined. Payment for these items shall be considered full compensation for all labor and material.

R. Basis of Payment

The City will pay for accepted quantities at the contract unit prices as follows:

<u>Item</u>	<u>Unit</u>	<u>Description</u>
LS 2760	Foot	_____ Inch Storm Sewer Liner
LS 2760	Foot	_____ Inch Sanitary Sewer Liner

END OF SECTION LS 2760