



**SPECIAL PROVISIONS
FOR
CURED-IN-PLACE PIPE LINING**

**Woodbury County
IM-029-8(36)150--13-97**

**Effective Date
February 16, 2010**

THE STANDARD SPECIFICATIONS, SERIES 2009, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

090049.01 DESCRIPTION.

- A. Cured-in-place Pipe (CIPP) Lining: Resin impregnated, cured-in-place.
- B. Pipe spot repairs.

090049.02 MATERIALS.

A. Substitutions.

The Engineer may allow substitution. Provide as a minimum the following information for evaluation:

1. Product Information:

- a. Product name.
- b. Year product first available in the United States.
- c. Total footage or number of line segments installed in the United States.
- d. Results of all available product testing, including but not limited to leakage, physical properties, pipe stiffness, chemical resistance, strain-corrosion, external loading, flow characteristics, infiltration/inflow reductions, structural capacity, and external hydrostatic loading capacity.
- e. Samples of before and after product.
- f. Design method.
- g. Typical lining thickness for pipe sizes included in the project.

2. Manufacturer Information:

- a. Manufacturer name.
- b. Years of experience manufacturing the product.
- c. Country of manufacture of all product components.
- d. Quality control procedures for product manufacture, including inspection requirements, testing procedures, and allowable tolerance levels.
- e. Related ASTM standards, or other nationally recognized standards for product manufacturing.

3. Installer Information:

- a. Installer name.
- b. Completed project list for last five years including for each project and year completed, client name/address/contact person/phone number, footages installed by pipe diameter, and number of lateral reinstatements.
- c. Detailed installation procedures, including estimated times for each task, lateral reinstatement methods, number of required excavations, and other items unique to each product.
- d. Video of installation process, if available.
- e. Evidence of properly trained personnel.
- f. Related ASTM standards or any nationally recognized standards for product installation.
- g. Available equipment list.
- h. Detailed procedures for repairing the product in the event of future damage or failure and for tapping future service connections, including and required specialized equipment or training.
- i. Videos of two rehabilitated sewer sections showing before and after conditions.
- j. Additional information may be required. The submittal of prequalification information does not imply the product, manufacturer, or installer will be deemed qualified. The Engineer will determine whether a product, manufacturer, or installer may be used as an approved equal.

B. RESIN-IMPREGNATED TUBE FOR CIPP Lining

1. Pipe Lining:

- a. Comply with ASTM F 1216.
- b. Use one or more layers of flexible needled felt or equivalent non-woven material.
- c. Stretch material to fit irregular pipe and negotiate bends.
- d. Outside layer plastic coated with a translucent flexible material. No delamination of plastic coating.
- e. Fabricated to a size that when installed tightly fits length without joints.
- f. Designed as per Equation X-1, ASTM F 1216.

2. Resin and Catalyst:

- a. Unsaturated, styrene-based, thermoset resin and catalyst system or an epoxy resin and hardener that is compatible with the inversion process.
- b. Cures in the presence of water with temperature greater than 150°F and less than 180°F.
- c. Initial structural properties complying with ASTM F 1216 and the following table.

Table 4050.01: CIPP Lining Properties

CIPP Properties	ASTM Test Method	Minimum Value
Flexural Strength	D 790	4,500 psi
Flexural Modulus of Elasticity	D 790	250,000 psi

3. CIPP Lining Dimensions:

- a. Use nominal internal diameter and length such that CIPP forms to internal circumference and length of original pipe.
- b. Field verify diameter and length.
- c. Use one continuous length without joints.

090049.03 CONSTRUCTION

A. EXAMINATION

1. Cleaning:

- a. Clean and remove soil, grit, debris, and obstructions prior to video inspection and/or insertion of pipe lining.
- b. Do not flush debris to downstream sections.
- c. Deposit removed material at an approved site.

2. Video Inspection:

- a. Furnish the Engineer with a recording of pipe: 1) before the lining process and while the flow is being bypassed; and 2) after the lining process and service reconnections have been completed.
- b. Provide an on-screen numerical display of the camera location, indexed from the starting end, in feet.

3. Service and Obstruction Location:

- a. Coordinate and cooperate with the Engineer for service and obstruction location.
- b. Locate the active connections by one of following:
 - 1) Use video inspection to observe service locations, breaks, obstructions, and structural failures.
 - 2) Insert a sounding device through the service, noting its location on the ground surface.
 - 3) Dye testing.

B. OBSTRUCTIONS

1. Remove all obstructions.
2. If an obstruction is encountered that cannot be removed by equipment operating within the pipe, excavate and remove the obstruction upon approval of the Engineer.
3. Place backfill, compact, and restore the surface according to the contract documents.

C. RESIN IMPREGNATED CIPP LINING

1. Install according to the manufacturer's recommendations and ASTM F 1216.
2. Use a resin impregnated tube, hydraulically inverted in place with an approved lubricant, and cured-in-place according to ASTM F 1216, Section 7.
3. Ensure tube is free of uncured spots, lifts (spots cured away from the pipe), and delaminations. Remove and replace deficient sections.

D. CLEANUP AND CLOSEOUT

1. Submit initial and final video tapes, CDs, or DVDs to the Engineer.
2. Remove equipment and debris.

090049.04 METHOD OF MEASUREMENT

A. Pipe Lining.

Measurement for each type and size of pipe lining will be measured in linear feet along the centerline of the pipe lining from inlet to outlet of pipe.

090049.05 BASIS OF PAYMENT

A. Pipe Lining.

1. Payment will be made at the contract unit price per linear foot for each type and size of pipe lining.
2. Payment is full compensation for pipe lining removal of internal obstruction, pipe cleaning, and inspection.