CURED-IN-PLACE PIPE LATERAL RECONSTRUCTION

1. INTENT:

It is the intent of the specification to provide for the reconstruction of service lateral pipes, normally without excavation, by the installation of a resin impregnated, flexible felt tube. The cured-in-place pipe will be installed into the existing service lateral consistent with ASTM F-1216 or F-1743 through the clean-out/access point or positioned in the mainline pipe. The resin and tube shall be held in place using internal pressure and cured into a hard impermeable pipe. When cured, the pipe should be a continuous, tight-fitting pipe-within-a-pipe. If required, the rehabilitation can provide a junction at the mainline pipe and the service lateral pipe.

2. REFERENCE SPECIFICATIONS:

This specification references ASTM test methods, which are made a part hereof by such reference and shall be the latest edition and revision thereof.

3. GENERAL CORROSION REQUIREMENTS:

3.1 The finished cured-in-place pipe shall be fabricated from materials which when cured will be chemically resistant to withstand internal exposure to domestic sewage, and meet the chemical corrosion resistance requirements of ASTM F-1216 & D-5813.

3.2 All constituent materials will be suitable for service in the environment intended. The final product will not deteriorate, corrode or lose structural strength to reduce the projected product life.

3.3 In areas subject to possible flows other than domestic sewage, the Owner shall obtain samples of the dry weather sewage flow to be analyzed for chemical content. This analysis shall be supplied to the Installer to recommend the resin per the sample.

4. CURED-IN-PLACE PIPE MATERIALS:

4.1 The tube shall be fabricated to a size that when installed cured-in-place pipe will neatly fit the internal circumference of the conduit specified by the Owner.

4.2 The Owner shall determine the installation’s length.

4.3 The Installer shall furnish a resin system compatible with the cured-in-place process that provides cured physical strengths and required corrosion resistance specified herein.

5. PHYSICAL STRENGTH:

5.1 The structural performance of the finished pipe must be able to accommodate all anticipated loads throughout the design life of the cured-in-place pipe. No cured-in-place pipe reconstruction technology will be allowed that requires bonding to the existing pipe for any part of its structural strength. If reinforcing materials (fiberglass, etc.) are used, those materials must be corrosion resistant grade materials and be fully encapsulated within the resin to assure that the reinforcement is not compromised when exposed to the sewage.

5.2 The cured-in-place pipe shall conform to the minimum structural standards as listed below:

PROPERTY	**ASTM Standard**	**RESULTS**
Flexural Strength	ASTM D-790	4,500 psi
Flexural Modulus or Elasticity	ASTM D-790	250,000 psi

NOTE TO DESIGNER:
Values shown in 5.2 are for commonly used polyester resins in the United States at the time of this writing. Values for non-typical polyesters, vinyl esters, and epoxies should be substituted, when applicable. Unless otherwise specified, these values shall be supported using lab test samples.

6. INSTALLATION PREPARATIONS:

The following installation procedures shall be adhered to unless otherwise approved by the Owner's representative.

6.1 Access – The Owner shall ensure that a clean out or access point exists at or beyond the termination point of the length of service lateral to be rehabilitated. This will allow for the passage of the required cleaning and video equipment. The clean-out will be equal to or greater than the diameter of the lateral pipe. Lack of such an access point could affect the service laterals available for rehabilitation.

6.2 Safety – The installer shall carry out his operations in accordance with all applicable OSHA standards. Particular attention is drawn to those safety requirements involving entering confined spaces.

6.3 Cleaning of the existing pipe –Internal debris must be removed before installing the lateral lining system.

6.4 Inspection of the existing pipe – Pipeline inspection shall be performed by experienced personnel trained in closed circuit television systems. The interior of the pipeline shall be carefully inspected to determine the location of any condition, which may prevent proper installation of the lateral lining system. A videotape and log shall be kept for the Owner.

6.5 Bypassing Sewage – Bypassing the flow of sewage around the section or sections of mainline pipe where the service lateral(s) is/are located may be required. The pump and bypass lines shall be of adequate capacity to handle the flow. It is required that the service lateral be inactive during the time of installation. This is normally accomplished by requesting that the homeowner refrain from using their services during the period of installation. This notification shall be offered to the homeowner at least 24-hours prior to starting their lateral repair.

6.6 Line Obstructions – If the inspection reveals an obstruction that cannot be removed using conventional sewer cleaning equipment, the obstruction will be removed or repaired by other methods approved by the Owner.

6.7 The service lateral pipe opening at the confluence with the mainline sewer should be prepared in a manner that is consistent with ASTM F-1743, Section 6.9,

7. INSTALLATION OF THE LATERAL LINING SYSTEM

7.1 The Installer shall allow the Owner to inspect the materials and “wet-out” procedure.

7.2 The installer should have a minimum of 500 successful installs to assure the quality of the installations.

7.3 The wet out tube shall be loaded on a pressure apparatus above ground. Installation shall take place by one or both of the following installation methods.

7.3.1 The pressure apparatus, with an end attached to a robotic device, shall be winched through the mainline pipe to the service connection. The robotic device, together with a television camera, will be used to position the pressure apparatus installation hardware at the service connection opening. Air pressure will be used to install the wet out tube into the lateral pipe.

7.3.2 The pressure apparatus shall be pulled in to place through the cleanout or access pit. Air pressure will be used to install the wet out tube into the lateral pipe.

7.4 Curing –Curing shall take place per the manufacturer's recommendations.

7.5 Finish – The finished cured-in-place pipe shall be free of dry spots, lifts, or delamination. The cured-in-place pipe shall not inhibit the closed circuit television post video inspection of the mainline or service lateral pipes.

7.6 During the warranty period, any defects, which will affect the integrity or strength of the cured-in-place pipe, will be repaired at the Installer's expense in a manner mutually agreed upon by the Owner and the Installer.

7.7 After the work is completed, the Installer will provide to the Owner a video record showing the completed work.

8. CLEAN-UP:

Upon completion of the installation work, the Installer will restore the area affected to its original condition at the time the rehabilitation was started.

9. PAYMENT:

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