

## Submittal

General Contractor North American Pipeline Services, LLC

Job Name: SEWER & MANHOLE REHABILITATION

Contract Number: SR-01-15-15B

Submitted to: North American Pipeline Services, LLC  
210 Bennett Road, Freehold, NJ 07728

Engineer: Maser Consulting, P.A.  
331 Newman Springs Road, Suite 203, Red Bank, NJ 07701  
Project No. 15001124A

Allstate Submittal #: 4

Item Submitted: Installation & Quality Control

Manufacturer: N/A

Date Submitted: March 17, 2016

Specification Section: 02607

Item is as specified  
in contract documents: Yes

### Certification Statement:

By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and contract requirements.

Submitted By:



Al Hickson  
Allstate Power Vac, Inc

## **Fast Pipe Liner**

### **Installation & Quality Control Plan**

The following quality control procedures will be utilized when installing a felt liner:

1. All sewer collection lines to be rehabilitated using the cured-in-place pipe system will be cleaned via hydraulic cleaning and video inspected. This procedure is usually performed at least a couple of weeks prior to actual liner installation to allow time for felt liner delivery.
2. The cleaning and video inspection is performed to ensure the sewer collection system is in condition to be lined, confirm diameter of sewer pipe to be lined, free of debris or obstructions.
3. The video inspection also confirms the lengths of each manhole reach (manhole to manhole) and the number of service connections active and inactive. It will be determined prior to liner installation which services should be reinstated.
4. At the actual time of the liner installation, another video inspection will be performed to reconfirm the sewer line is clean and the number of service laterals. The number of service laterals must coincide with the number of service laterals of the initial video inspection.
5. All information regarding the diameter size and length of sewer pipe is given to the job Project Manager. The Project Manager, after the liner designs for thickness have been approved by the outside Engineer, will order the felt and resin material for that particular project according to the material submitted and approved by the outside Engineer for the project.
6. Upon delivery of the felt and resin material to Allstate Power Vac's yard, the material is visually verified and compared to the shipping manifest to determine that it was the same felt and resin material as ordered.
7. The Project Manager will also decide, after reviewing the plans, the number and length of each inversion necessary to complete the project.
8. Wet-Out Request sheets will be submitted to the Wet-Out technician detailing the length of each liner. The Wet-Out request sheet details the length of the impregnation, length of dry liner needed for head pressure and desired thickness. The job name, street location and manhole reaches will also be written on the liner detailing exactly where the liner is to be installed.

9. Prior to each impregnation and after the accelerants are mixed with the resin, a small sample is taken from the mixed resin batch and a gel test is performed. The gel test consists of a small sample of mixed resin put in a test tube and heated in water at 180 degrees. The resin should gel within seven minutes. After it is determined that the mixed resin achieved a positive test, mixed resin is pumped into the liner.
10. The impregnated liner is then loaded into a refrigerated truck for storage. The temperature in the refrigerated portion of the truck is maintained at approximately 25 degrees. A temperature gauge is mounted in the cab of the truck to easily monitor the temperature. It is the intention of Allstate Power Vac to install the impregnated liner within a 24 hour period. However, the resin impregnated liner can be stored up to two weeks as long as the temperature is maintained at approximately 25 degrees.
11. Upon installation the impregnated liner will be installed into the selected manhole either in a downstream position or upstream position via the inversion method.



### **Fast Pipe Liner Method**

#### **Cured-in-Place Pipe Installation with Water**

1. Physically inspect sewer to confirm exact sewer diameter.
2. At least 24 hours prior to field liner installation a construction notice is distributed to the local residences to inform them about the field operation and to limit their water usage.
3. Prior to liner installation the sewer is by-passed.
4. Prior to liner installation Allstate performs another pre-video inspection to confirm the sewer line is free of debris and the number of service laterals to be reinstated. Allstate also temporarily installs thermocouple wires at the inversion point and downstream stop or end manhole. The thermocouple is used to monitor temperature to ensure that the proper temperature is reached. The thermocouple is a temperature reading between the host pipe and the newly installed liner.
5. The liner is then installed utilizing the water inversion method. Attached to the end of the liner are circulation hoses that aid in the curing of the liner.
6. Once the liner is fully inverted, the water is then pumped from the liner into a heat source, usually a truck mounted boiler, and heated to approximately 180 degrees. Achieve an interface temperature of 130 degrees.
7. Once 130 degree interface temperature has been reached the temperature will be maintained for a minimum of 1 hour (curing period) if the diameter is 18 inches or less. If the diameter is greater than 18 inches the curing period should be a minimum of 2 hours. The temperature from the thermocouple will be approximately 130 degrees.
8. After the curing period the water will be cooled down to 100 degrees in stages at a rate of approximately 30 degrees every hour.
9. After the cool down period has expired water is drained from the liner by cutting the downstream end of the liner allowing the water to drain from the newly installed liner.
10. After the water is drained the ends and intermediate manholes are cut out.
11. Then the laterals are reinstated.
12. A post video is performed.

## MH to MH Hot Water Curing Log

[illegible]

**Check heat every 5 minutes**