

# REHABILITATION OF A 42-INCH INDUSTRIAL PRESSURE PIPE AT PAPER PROCESSING PLANT

## Overview

Industrial rehabilitation projects require special solutions. A paper plant in the Charleston, South Carolina area had a 42-inch pressure pipeline that had fully deteriorated and required rehabilitation. The original pipe was a series of ductile iron process sewer pipes running approximately 872 linear feet. Holes and voids had become visible, putting the plant's crucial operations at severe risk.

InsituMain®cured-in-place pipe (CIPP), Insituform's fiber-reinforced, polyurethane-coated CIPP tube with epoxy resin, was selected for the project. This unique project had three 45-degree bends and three 22-degree bends and required a precise installation and quality engineered lining products.

Insituform's fiber-reinforced CIPP lining system is in its second generation of technological advancement. Improvements made to the product for the pressure market address the level of difficulty in manufacturing, transport and installation. Long oriented chop (LOC) fiberglass fabric allows us to manufacture the liner more like conventional CIPP, eliminate overlaps and provide a tighter fitting, wrinkle-free liner product with better adhesion capabilities. The increased composite strength also allows us to construct liners of equivalent strength with fewer layers, thus reducing finished liner thickness.



The CIPP tube hoisted into place prior to inversion



Composite CIPP tube being inverted into FRP end spool piece

## Pipeline Details and Project Summary

<b>Project:</b>	Industrial Pressure Pipeline Rehabilitation
<b>Location:</b>	Charleston, South Carolina
<b>Length:</b>	872 LF
<b>Diameter:</b>	42 inches
<b>Installation:</b>	InsituMain® CIPP

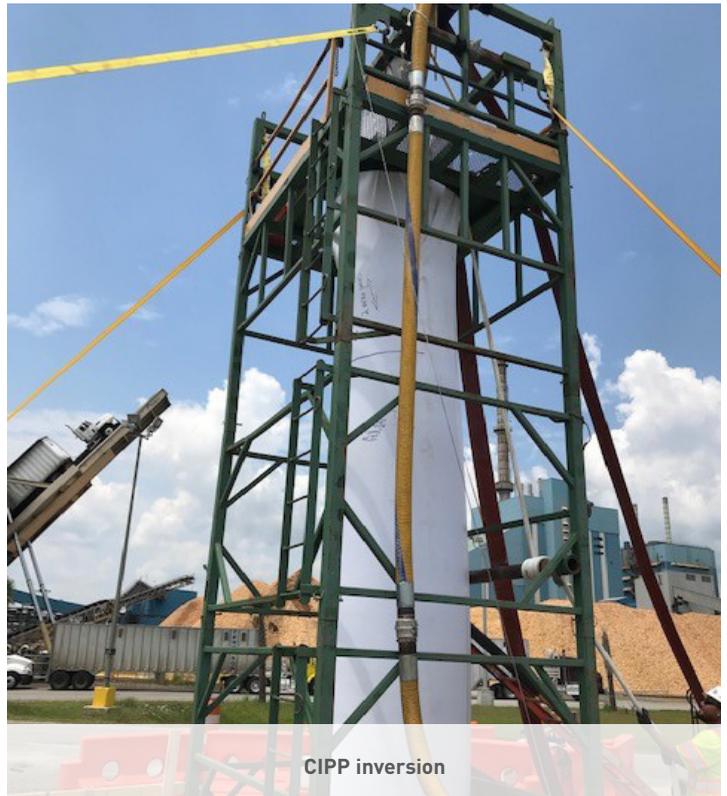
## INSTALLATION

The project consisted of two CIPP installations: a shorter install of just over 120 feet, and a longer shot around 750 feet. The use of fiberglass reinforced plastic (FRP) spool pieces were used as end terminations in order to terminate the CIPP liner.

The number one consideration was to comply with safety programs at the plant. All workers underwent specialized safety training to ensure a safe work environment. Other special considerations made while working in the proximity of the plant's operations included heavy semi-truck traffic around the jobsite perimeter.

Flow management is often one of the larger cost-drivers in CIPP rehabilitation projects, particularly in large-diameter projects with heavy flows. In this instance, bypass was unnecessary as the plant had an emergency twin backup line that ran parallel to the line undergoing renovation.

Work was completed ahead of the plant's strict deadline and the CIPP was connected to the system using Weko-Seal® internal joints and an FRP spool piece. Both installations were tested with a single pressure test at 20 psi. The pipe was then put back into service and resumed full operation ahead of the client's deadline.



CIPP inversion



Rehabilitated line with end fittings attached



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