**Tech Perspective** looks at technology-related issues and provides information and advice that cleaning professionals can apply to equipment selection and to their daily work in the field. Industry members are welcome to offer ideas for this column. Please direct them to editor Kim Peterson, editor@cleaner.com.

# TESTS OF STRENGTH

Third-party testing is an important part of ensuring quality and proper installation of CIPP liners
// By Allison Symonds

**WHEN A PIPE REHABILITATION** crew installs a CIPP liner, they typically do the job in just a few hours, and then move on to the next installation.

But that's not the end of the story. CIPP is designed to last for decades, and the wastewater systems that use it need to be confident in its efficacy. In some cases, installers are required to submit a sample of every liner installed for third-party testing. Only once testing is complete and the results are approved and reported is the job really "done."

Rick Eastwood has operated in the world of CIPP testing for over 30 years. As vice president of business development for HTS, which provides consulting, materials testing and inspection services for both the public and private sectors, he and his team are largely invisible to many rehab professionals. But the work they do is essential to public safety and wastewater management.

Before joining the firm, Eastwood spent almost 20 years before working for various lining contractors. He's seen a lot of change in the relining industry, from the development of new materials and curing methods to the introduction of more efficient and affordable techniques. But different materials and methods don't change the role played by the tester.

"Materials are designed to meet a standard or a specific design criteria depending on the material and/or application," he explains. "Once it's installed and samples are sent to HTS, we test the material in accordance with the appropriate ASTM method. The results will indicate if the samples meet the desired design criteria."

## RELIABLE TESTING METHODS

Testing measures vary depending on materials used in the construction of the liner and the design requirements of the material. Many different parameters go into designing the material and thickness of a CIPP liner, but key factors include depth, water levels and loads. A deeper look into liner design may examine operating pressures and temperatures, potential impact on sensitive environments, pipe diameter, etc.

"Then there's the strength of the liner itself," Eastwood says. "CIPP liners are designed to last 50 years, known as the design life, and testing can help you confirm this."

The standard way to determine design life is with an ASTM D2990 Flexural Creep test. "In this test, five specimens are placed under a calculated stress load for 10,000 hours — about 13 and a half months," Eastwood explains.

"We record the deflection during this time; then we extrapolate from this data to determine the strength retention of the material at 50 years — typically around 50% or more of the initial strength. This is why job specifications and design programs indicate that the long-term flexural modulus is 50% of the initial short-term value." It's the value contractors input

« HTS Pipe Consultants lab manager Khamla Phouangsavanh records ASTM D2990 flexural creep test deflection measurements of a felt liner sample.