



North American Society for Trenchless Technology
NO-DIG 2006



Nashville, Tennessee
March 27-29, 2006

Thermoset Pipe & Panels Quality Assurance / Quality Control

Thermoset resin pipe was introduced in North America in the late 1970's. These pipes come as several material types. Thermoset pipe may be centrifugally cast, filament wound, polymer concrete, etc. Different fillers and reinforcements are used in the various offerings. Installation methods to install this type of pipe section may be slip lining, pipe jacking, or carry in. Depending on the installation method, bypass pumping may or may not be required. The Thermoset Pipe and Panel section will exemplify the different products available and the QA/QC methods used in determining a quality installation.

Thermoset Pipe and Panel QA/QC issues address both the component products, its design and installation. The components products are the resin, the fillers and the reinforcing agents. Design elements are thickness, host pipe configuration, corrosion resistance, hoop strength and fit. Installation QA/QC issues include joint fit, installation method, lateral restoration and grouting.

Raw Materials

There are several generic types of resins including polyester, vinyl ester, and epoxy. Resin exhibit varying characteristics depending on the formulation. Reinforcements may be natural fiber, fiberglass, carbon fiber and others. Fillers may be sand, various diameter rocks, inorganic fillers and others. Construction methods may include sandwich construction or homogeneous construction throughout the laminate thickness.

Reference to standards during manufacture include:

Polymer Concrete

- ASTM D6738 – Standard Specification for Polymer Concrete Pipe
- ASTM D4161 - Standard specification for “fiberglass” pipe joints using flexible elastomeric seals

Centrifugally Cast Fiberglass Reinforced Polymer

- ASTM D 3262 – Standard Specification for Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer Pipe
- ASTM D 3754 – Sewer Force Mains and Industrial Affluents
- ASTM C 950 – Pressure Water Systems
- AWWA M45 – Fiberglass Design

Installation Process

Pipeline Assessment. Prior to beginning the design and installation, the condition of the host pipe must be assessed and the pipe cleaned. The topic of pipeline assessment is discussed in a separate paper entitled – *Quality Assurance/Quality Control in Closed Circuit Television (CCTV) Pipeline Assessment*.

Bypass Planning and Use. The flow of the existing service generally must be diverted/bypassed during installation. The topic of bypass is discussed in a separate paper entitled – *Quality Assurance/Quality Control in Pumps*.

Testing. The owner must assure himself that the material chosen will meet the project criteria. During the installation, joint fit and seal must be confirmed. Grouting requirements must be met. In some cases, pressure testing in the field needs to be verified. Laterals must be reconnected and verified operational. The line should be inspected with CCTV after completion.

For Further Information on Thermoset Pipe & Panel Please Visit



For Further Information on Thermoset Resins Please Visit



Booth 424 & 426



Booth 417 & 516



Booth 209 & 211



Booth 618

For Further Information on Testing, Inspection & Bypass Please Visit



Booth 417 & 516



Booth 505



Booth 500



Booth 316



Booth 200



Booth 223



Booth 123 & 125



Booth 612