LMK Technologies®

PERFORMANCE LINER®

CIPP Lateral Connection Solutions

www.PerformanceLiner.com

T-Liner® by LMK Technologies

THE MOST PRECISE LONG-TERM ENGINEERED CIPP SOLUTION FOR DEFECTIVE LATERALS AND THE MAIN/LATERAL CONNECTION.

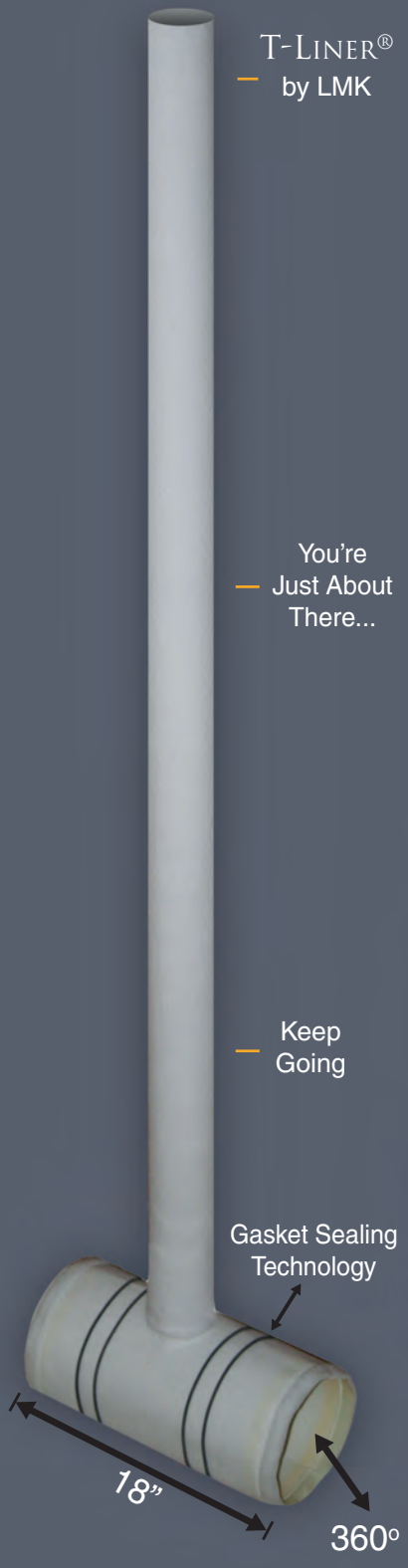
T-Liner® by LMK Technologies is the trenchless cured in-place pipe system being utilized in collection systems throughout the world for renewing the entire lateral and the main to lateral connection without the need of conventional excavation. With its Compression Gasket Sealing Technology and more than 50,000 successful installations, LMK's technology has been proven time and time again to be the most effective, most non-disruptive, long lasting lateral renewal system.

STRATEGIC SOLUTIONS

LMK's T-Liner® is engineered and constructed as a one-piece homogeneous main and lateral lining. The T-liner® incorporates compressible material that forms a smooth engineered taper at all transition ends. Every T-Liner® passes a stringent 27 point quality assurance program.

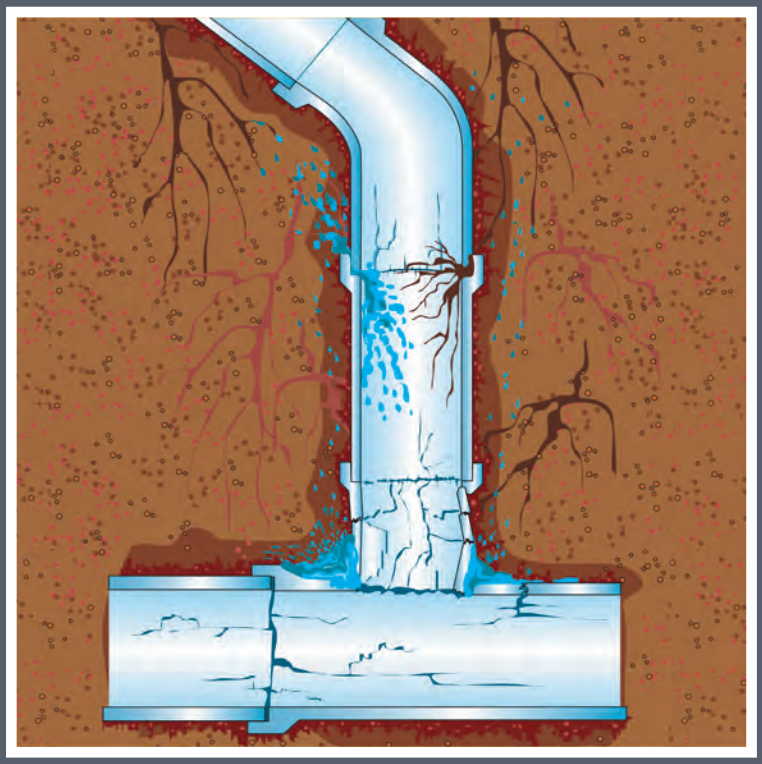
LMK's T-Liner® conforms to ASTM F2561-06 and is constructed in a cylindrical design making it a true Structural, Stand Alone "Main and Lateral" CIPP Lining. Since both the main and lateral are tubular, everyday engineering design calculations are applicable using flexural modulus, flexural strength, liner thickness, soil modulus, depth and other commonly used design factors. The T-Liner® provides a VNLC™ (verifiable non-leaking connection) by use of expanding O-rings embedded between the host pipe and the liner. This compression gasket seal is the same type of seal used for direct burry pipe and is compatible to seal with all types of piping including polyethylene and olefin based coatings that are common on CIPP linings from manhole to manhole. Other less precise lateral connection systems try to convince you their liner will bond to the pipe for 50 years, and will withstand hydrostatic pressures.

DESIGNED USING ENGINEERING PRACTICES
ASTM - F2561-06
Standard Practice for Rehabilitation of a Sewer Service Lateral and its connection to the Main Using a One Piece Main and Lateral Cured-in-Place Liner.

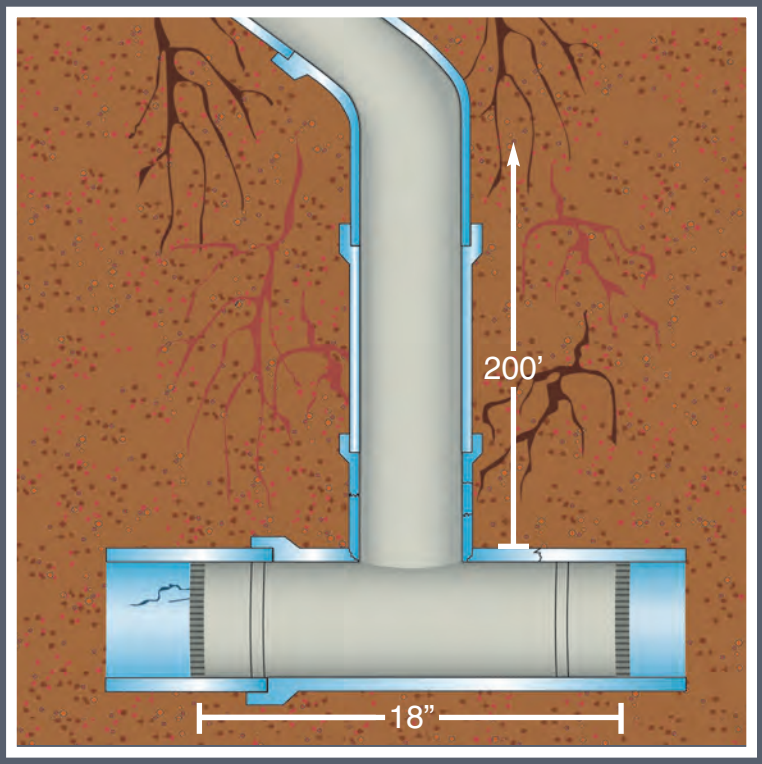


T-Liner®

THE PROBLEM



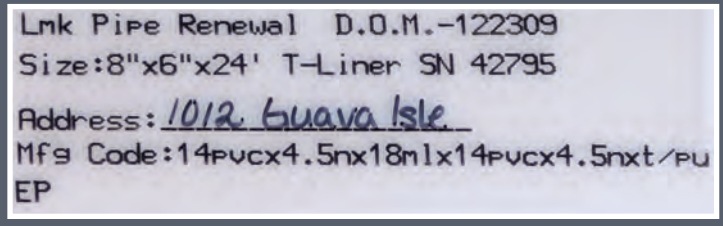
T-LINER®



Laterals have been constructed using a variety of construction materials and constructed using poor installation methods that allow root intrusion and water infiltration. Mainlines are renewed from manhole to manhole using fold & form, spiral wound and CIPP linings. Cities and specifying engineers have been told for years that the resin used in CIPP has "glue-like qualities" and that it bonds to the inside of the main pipe.

The truth is, ground water migrates behind mainline linings and re-enters the collection system at service connections.

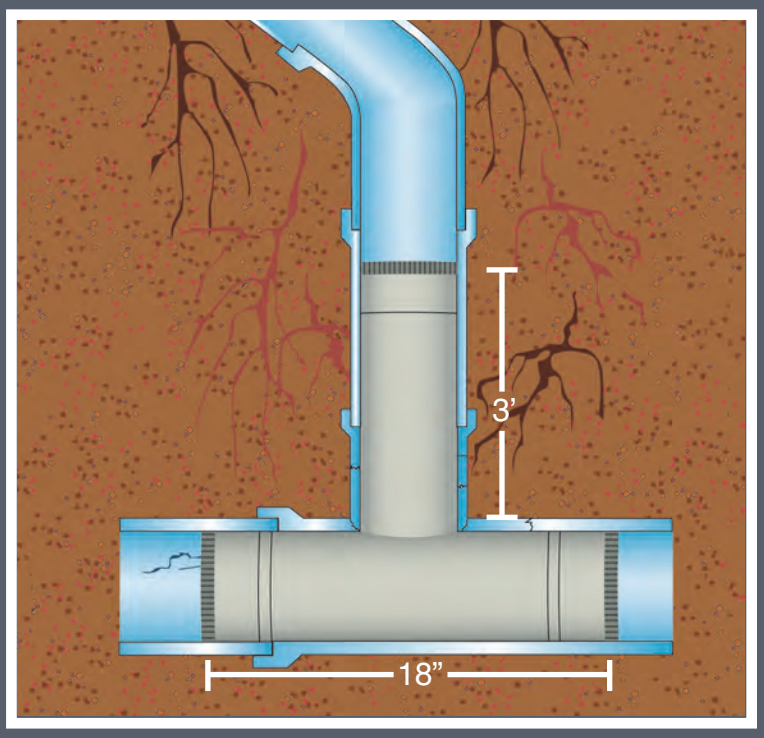
The end result is a one-piece, structural, new continuous Main/Lateral CIPP that eliminates root intrusion and infiltration, and is engineered to resist compressive hoop stress. Every T-Liner® is permanently marked with a "Lateral Identification" as described in the ASTM F2561-06 Standard Practice for Rehabilitation of a Sewer Service Lateral and its Connection to the Main Using a One-Piece Main and Lateral Cured in-Place Pipe.



SHORTY™ & STUBBY™

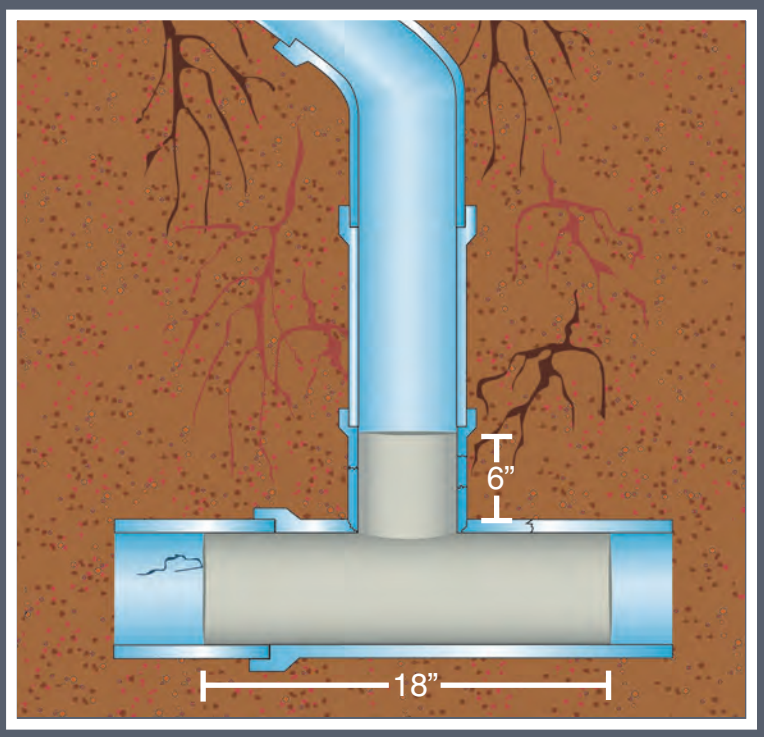
SHORTY

LMK's T-Liner® Shorty™ system is a one-piece, structural, stand-alone homogenous Main/Lateral CIPP connection liner that extends 3 feet up into the lateral pipe. Shorty™ was designed for municipalities that want the connection sealed and the most value without the cost or legal issues associated with installing a cleanout. Shorty™ is the trenchless, one-piece, Main/Lateral CIPP Solution that utilizes Gasket Sealing Technology and all of the other unique features as found in a standard T-Liner® including vacuum impregnation, inversion installation, full-circle main liner construction, tapered ends for a smooth transition, lateral identification, and a long-term sealed impervious coating, all without the need for an outside cleanout.



STUBBY

LMK's Stubby™ is a one-piece, structural, stand-alone homogenous Main/Lateral CIPP connection liner extending 6-inches into the lateral pipe. Stubby™ is installed using a TEE-shaped inflatable packer and is robotically positioned from within the main pipe. Stubby™ was designed for municipalities that needed to structurally renew and seal only the Main/Lateral junction from root intrusion and infiltration of ground water. Stubby™ provides an economic structural solution because it allows multiple connections to be sealed at the same time. The entire process is accomplished without the need for an outside cleanout.



Installation

LMK's T-Liner® is constructed from a one-piece engineered textile producing a structural Main/Lateral lining tube. The lining tube is positioned inside of the patented translucent inversion bladder. This translucent bladder allows the installer and inspector to visually verify the liner is thoroughly saturated with a thermo-set resin during the vacuum impregnation process, therefore ensuring there are no dry spots.

LMK's one-step liner/bladder assembly allows the simultaneous CIPP lining of the main pipe and the lateral pipe. Excess resin migrates into fractures and open joints producing a homogenous, structural, new CIPP that eliminates water infiltration, sewage ex-filtration, and root intrusion. The lateral lining tube and bladder are loaded into the launching hose as the main liner and bladder are wrapped around the T-launching device. The patented hydrophilic swelling O-rings are now placed around the Main lining tube. The T-Launcher is now attached to LMK's robotic positioning device and is inserted into the main pipe and positioned at the service lateral. The mainline sheet is inflated creating a full-circle connection while embedding the hydrophilic O-rings between the liner and the host pipe. The lateral lining is then inverted up into the old lateral pipe with the bladder extending beyond the end of the liner so no cutting is required. The T-Liner® is available with a variety of proven and engineered resin systems; Polyester, Vinyl-ester, Epoxy or Silicate. The T-Liner® is cured at ambient temperatures in as little as two hours or steam cured as fast as thirty minutes.

T-Liner® can be installed in main pipe diameters ranging from 6 to 30-inches and lateral pipe diameters ranging from 3 to 12-inches while negotiating multiple bends and pipe diameter transitions. Best of all, the main and lateral portions of a T-Liner® are resin saturated, inserted, and cured all at the same time producing a truly homogenous structural lining that incorporates gasket sealing technology and provides a verifiable non-leaking connection.

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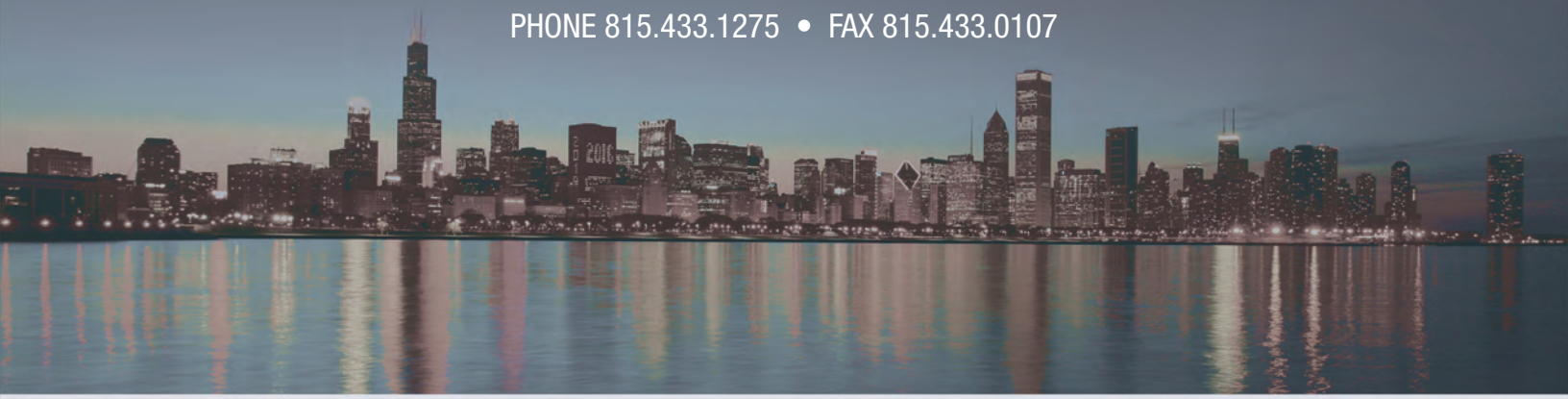

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