

The Challenges in Structurally Renewing and Sealing Mains & Laterals



Major Source for Infiltration

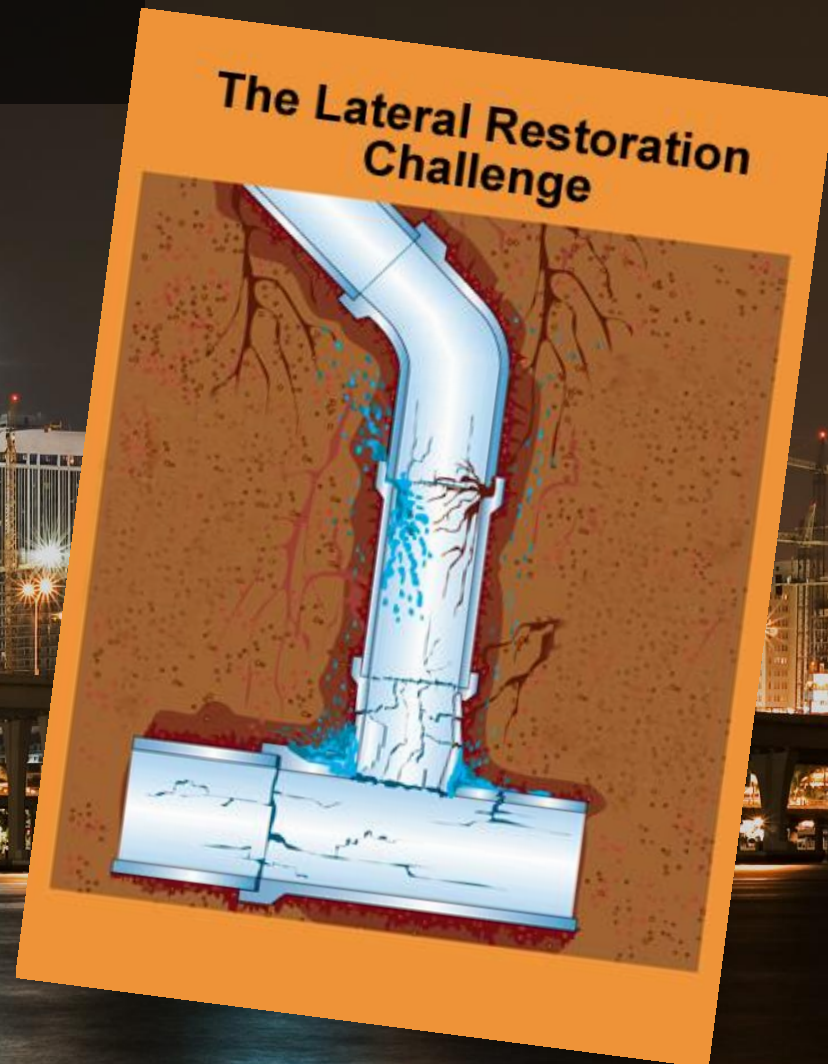
- Laterals are Truly the Most Neglected Portion of a Collection System



The Lateral Challenge

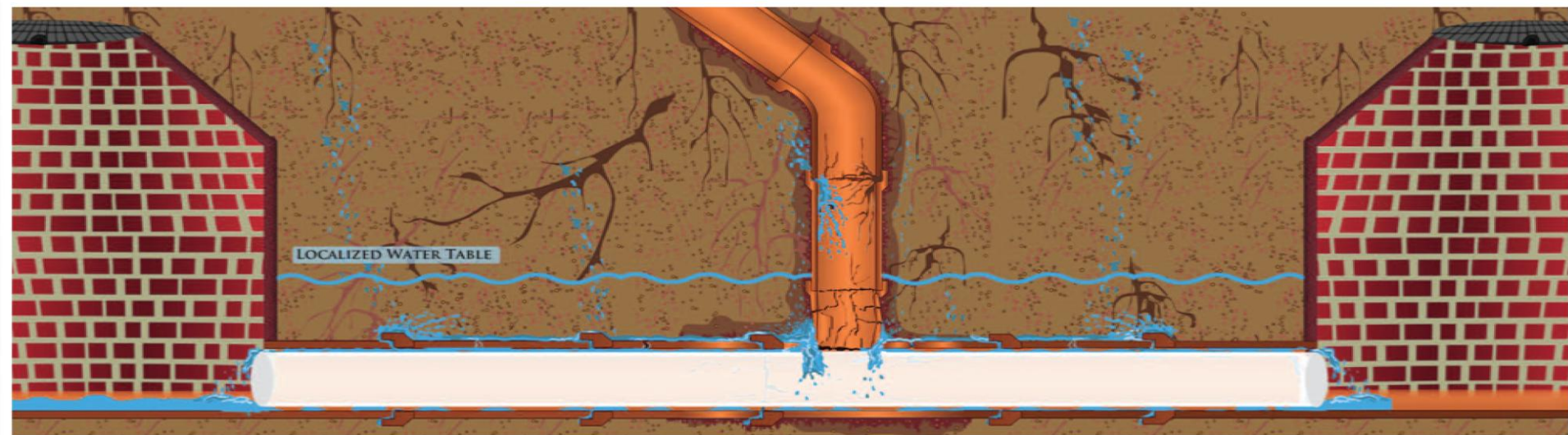
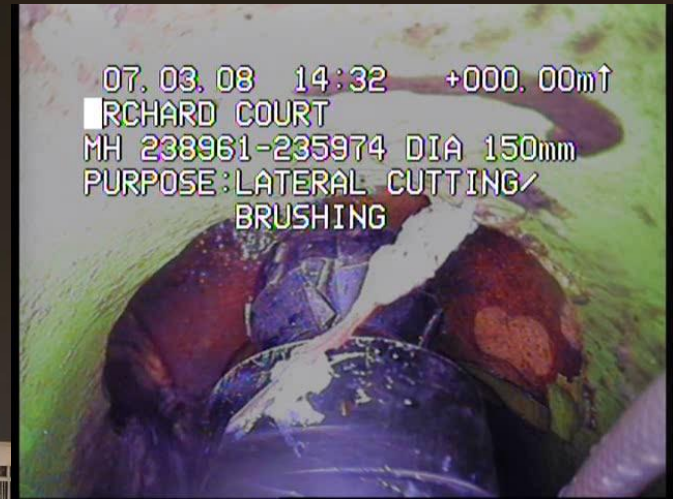
Educating Communities

- The Impact Laterals have on a Collection System and...
- How to Effectively Renew Laterals and seal Main/Lateral Connections.



Lateral Sealing after Mainline

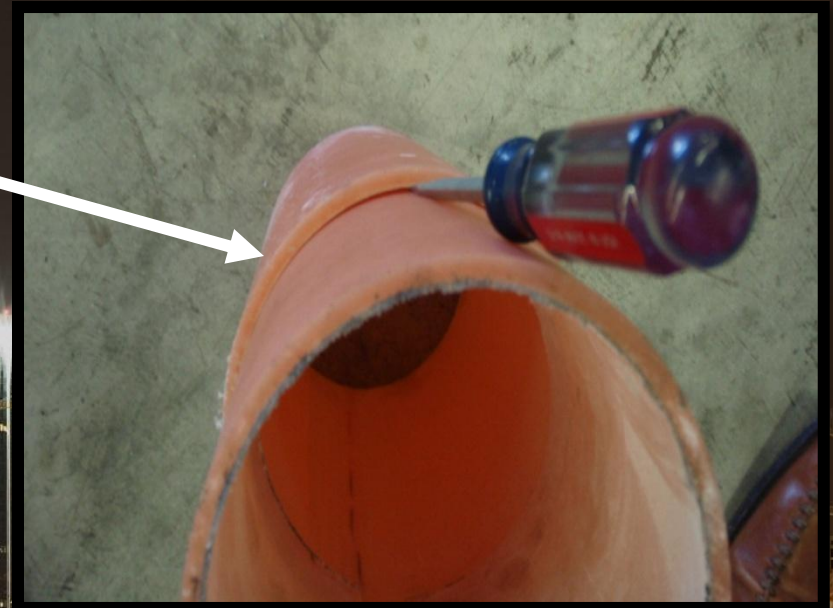
Things aren't always what they appear to be.
At this point you may have thought the work was complete.



CIPP Does Not Permanently Bond to CIPP

The Resin in CIPP

- Overlapping a Liner produces nothing more than a Surface Bond
- Continuous Single Piece CIPP



Not One-Piece
Not Homogeneous

The Myths in our Industry

The Resin in CIPP

- “Glue Like Qualities”
- Actually Bonds with F.O.G.
- Seals with all Pipe Materials
- Eliminates Points of

Infiltration



The Main to Lateral
Junction Must be Sealed

F.O.G. Fats Oils and Grease?

The Merriam Webster
Dictionary Defines
Adhesion as:

*“The Molecular
Attraction Exerted
Between the Surfaces
of Bodies in Contact.”*



Preparing the Pipe for Gluing a Liner!



**Sewer Pipes are Cleaned
using High Pressure
Tap Water
Not Hot Water and
No Detergent**

Preparing the Pipe for Gluing a Liner!

CIPP liners are lubricated with mineral oil, vegetable oil or the like. The result is a new CIPP with an inner surface greased up with materials known to be release agents.



Preparing the Pipe for Gluing a Liner!

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[LMKKiestLetterAdhesionImprovement100125.pdf](#)

Glue in-place Connection Seals



F.O.G. Fats. Oils & Grease



Compatible Mainline Materials

Design Calculations?

Does Flexural Modulus Apply?

What Test Methods are used to Verify the Bond Strength?

Adhesion in Sewer Renovations

Factors

- Pipe Types
- PE Coatings
- F.O.G.
- Does Not Comply ASTM F1216



Adhesion in Sewer Renovations

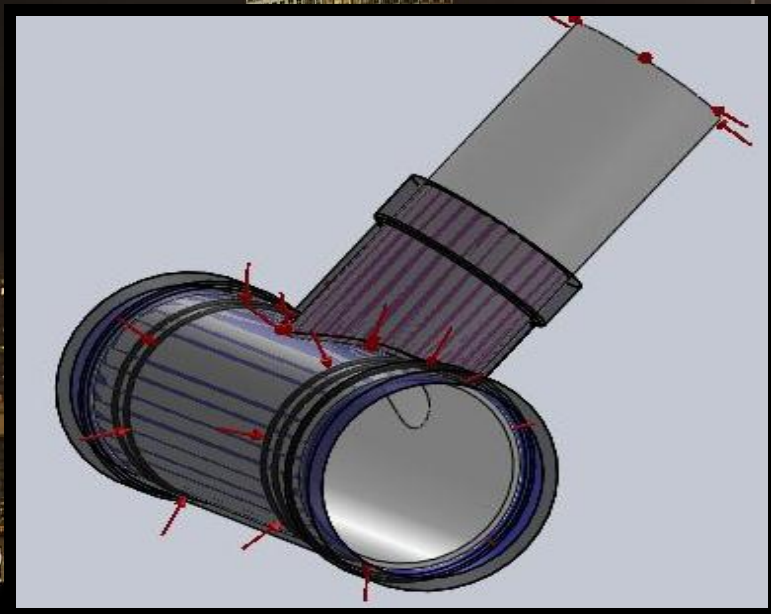
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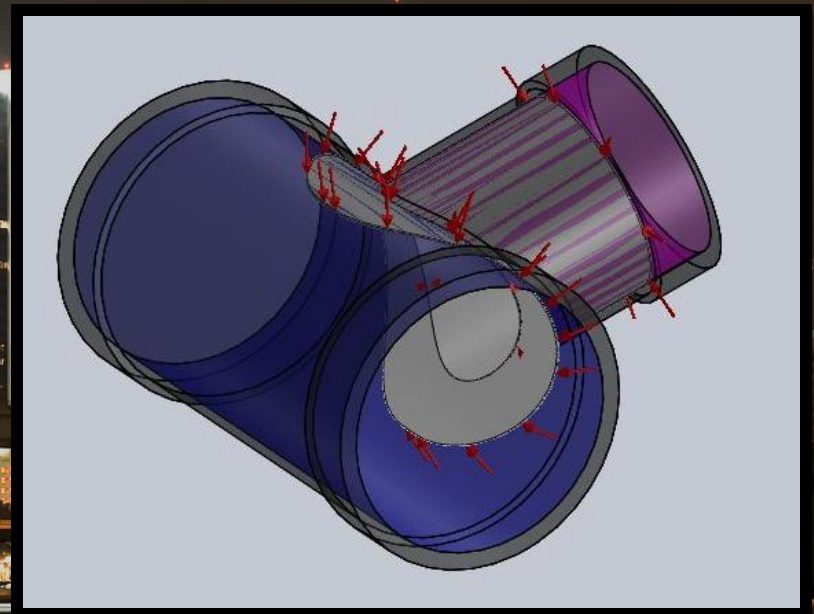


ASTM F1216

F1216 only works with a cylindrical shaped lining, i.e. tubular CIPP, a collar (hat) does not comply with 1216 nor can it be designed with 1216.



ASTM F1216 Appendix
X1.2.1



A Diving Board

ASTM F1216 Appendix X1.2.1

The “Design Calculator” as taught in the F1216 standard is a simple tool for easily calculating the proper thickness for a long-term structural repair.



Not a Structural Bridge

IKT Testing House Germany

TESTING TOP HAT LINERS AND ROBOTIC SYSTEMS FOR REPAIR OF LATERAL CONNECTIONS

Such information has been almost completely missing for the pipeline construction and rehabilitation area until now. The clients attain information on product characteristics almost exclusively from advertisements and the offerers' brochures, who try to convince potential customers of the alleged quality of a product.

Conclusion

The repair results are normally not comparable to those of a new construction. Many of the tested methods do not fulfil the test requirements. The lateral connections were mostly permeable immediately after the repair, and nearly always after high-pressure flushing.

CCTV of a Liner



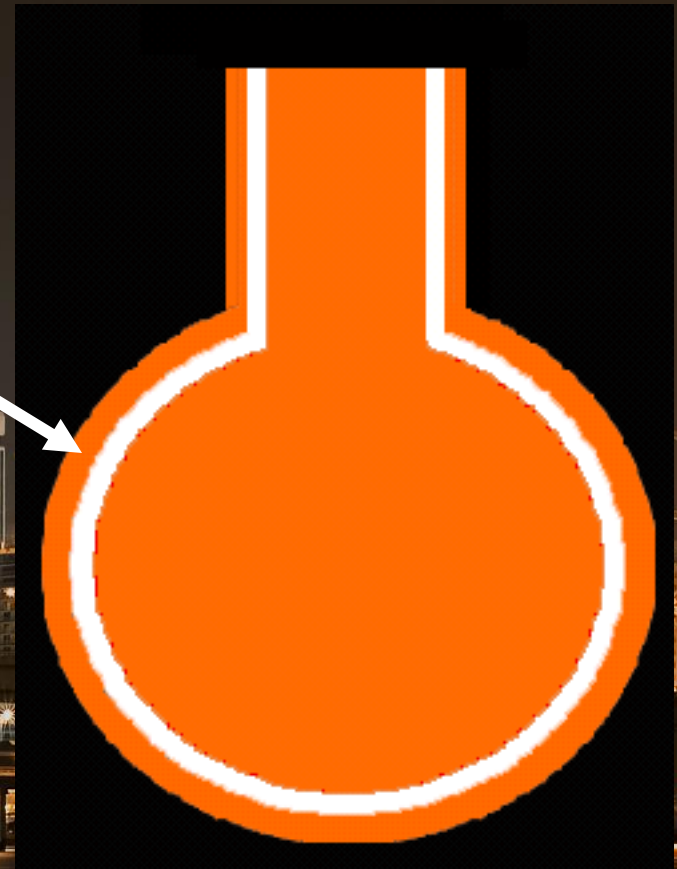
S.O.P. for Hat Liner Removal

1. Identify & Locate
2. Cut-off Collar
3. Remove Collar
4. Repair Per ASTM F2561-06

Easily Removed and Renewed

One-piece Main/Lateral CIPP

- **Single Unit**
- **Saturated and Cured**
- **Resist Buckling Hydraulic Loading**
- **Structural Seal does**
- **No Cold Joints**
- **Designed, Stamped and Sealed by a licensed P.E.**



Vacuum Impregnation



**Main and Lateral Tubes
are Vacuum Impregnated**

Loading Liner on Launcher



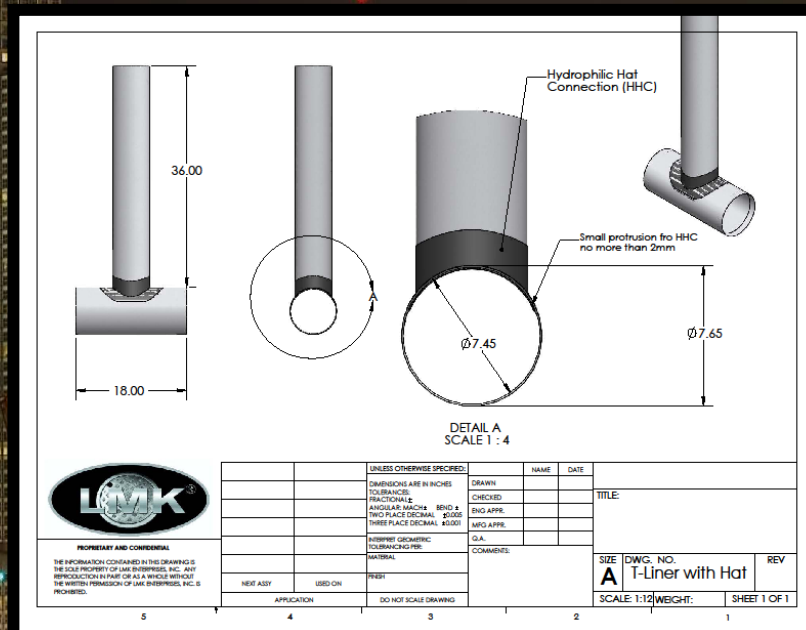
**Four (4) Expanding O-Rings
Placed Around the Liner Produce
Compression Seal**

Compression Gasket Sealing Technology

Compression gasket sealing technology is a globally accepted method for sealing pipe joints and is not affected by CIPP lubricants or F.O.G.



Two Methods of Compression Gasket Sealing Technology



Utilizing the Cleanout



- **Cleaning**
- **Positioning from Cleanout**
- **Measuring**



Positioning & Launching



**Robotic Positioning
Rotates, Extends,
Retracts**

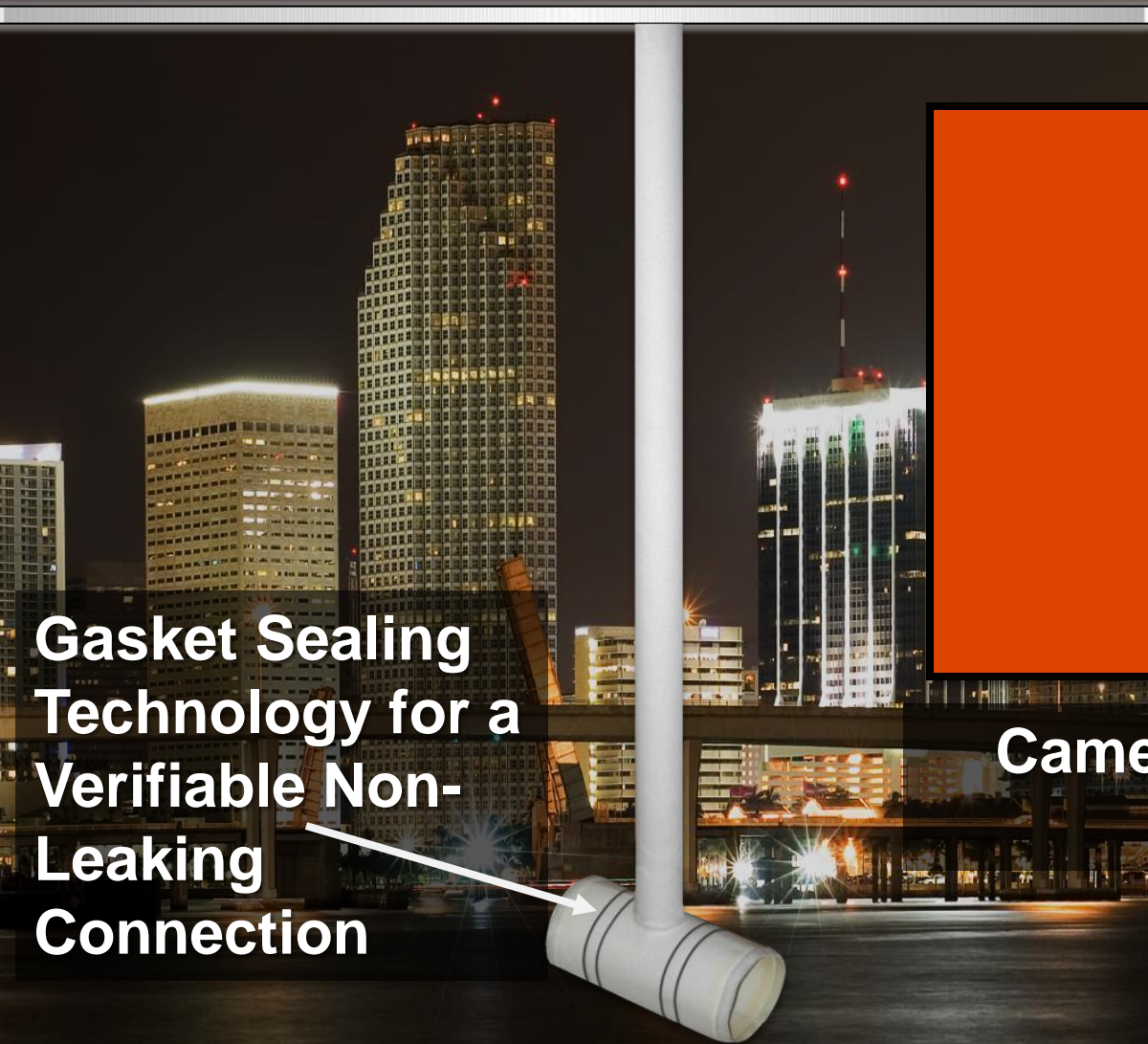
Liner/Bladder Air Inverted

Steam Cure as Quick as 30-Minutes

- Lower Cost
- Thorough Cure
- Increased Production
- Minimal Homeowner Disruption



Post Video from Cleanout



**Gasket Sealing
Technology for a
Verifiable Non-
Leaking
Connection**



**Camera Dropping into
Main Pipe**

Cleanouts Are Made Simple

A PVC saddle is remotely snapped onto a Lateral pipe through a small diameter vacuum excavated hole.



Vacuum Excavated Cleanout

**Small Borehole versus Open
Trench : No Shoring**

**No Damage to Adjacent Utilities
or Landscaping**

No Large Piles of Dirt

Minimal Restoration



Lateral Launch from the Main



Locating Camera Sonde



**Pan/tilt Push Lateral Camera
Launched from the Main**

Surgically Access the Pipe



Soil Dispensed in Truck

No Large Piles of Dirt

Homeowner Friendly

Small Isolated Footprint



- Soil is Pulled Away from Pipe
- Pipe is cleaned with High Pressure Water

Saddle Attached to Riser Pipe



- Depth measurement taken
- Riser pipe cut Attached Saddle
- Adhesive/Sealant



Saddle is Snapped onto Pipe

Bore Hole filled w/ Sand

Riser Pipe filled w/ Water

Leak Test is Performed

Crown of Pipe is Cut

Sod is Replaced



Same Day Restoration



Vacuum Excavation in Close Quarters



Minimal Disruption

Vacuum Excavation in Close Quarters



Maybe we use the
lady yelling and tell
why a cleanout
should be used.??

City of Naperville

"The City of Naperville has been using the Vac-A-Tee® procedure for the last 6-years and has installed 1,400 plus cleanouts."

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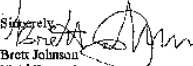


To whom it may concern:

The City of Naperville has been using the vac-a-tee procedure for the last 6 years and has installed 1,400 plus cleanouts via this procedure. We have found this to be the most non-invasive procedure available. Upon completion of a vac-a-tee installation, often, the resident does not even know we were there, except for the white cleanout cap now in their yard. An overwhelming percentage of the residents are thrilled to have the cleanout installed due to the new available outside access for a plumber.

The procedure of installing a cleanout is very back. With proper planning and training it was no problem for us to install 5 cleanouts a day with a crew. The epoxy which holds the vac-a-tees to the clay is extremely effective and adheres excellent with a few precautions. The vac-a-tee procedure is extremely effective in limiting restoration costs, and a majority of the time, eliminating them completely.

With an effective floating program and minimal training on the vac-a-tee procedure, this is by far the most cost effective and efficient trenchless technology for lateral lining on the market.

Sincerely,

Brett Johnson
Field Supervisor
City of Naperville

"Upon completion of a Vac-A-Tee® installation, often, the resident does not even know we were there..."

"The Vac-A-Tee® procedure is extremely effective in limiting restoration costs, and, a majority of the time, eliminating them completely."

Don't want to go all the way?

Installed without a Cleanout!



**Extends 3-feet
Up the Lateral**

**ASTM F2561 Fully Compliant
One-Piece Continuous MLCIP
Gasket Sealing Technology
Structural Cylinder**

Post Video from the Main

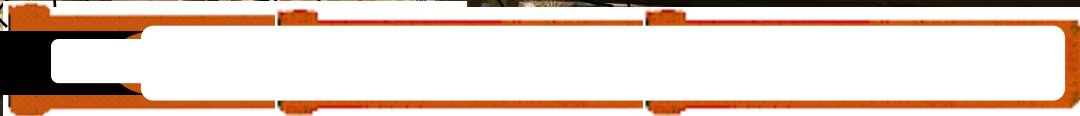


- Gasket Sealing Technology
- Seals with All Types of Pipe
- Continuous One-Piece Main & Lateral Lining

Sealed Transitions

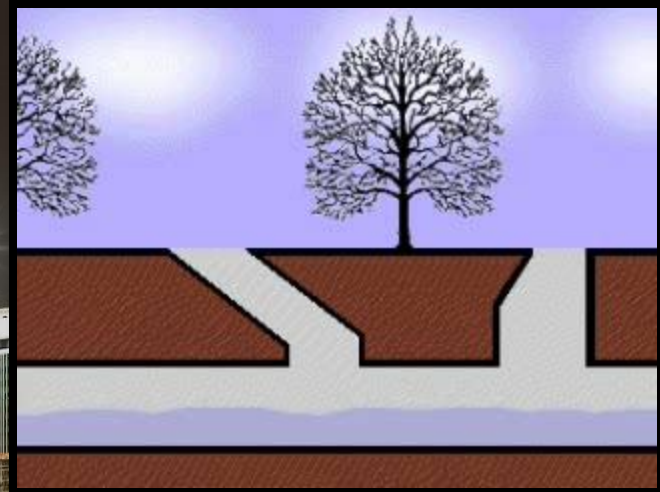


4" x 6" Transition





Thank You!



For a Copy of this
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www.performanceliner.com

ASTM F2561-06