

NASSCO REPORT: LATERALS

Trenchless Lateral Rehabilitation with Chemical Grouting

By NASSCO Lateral Committee

Chemical grouting of sewers has been used to stop infiltration and exfiltration in collection systems for more than 50 years. It will not provide you with a new pipe, but it will, in structurally sound pipe, stop infiltration of groundwater and the surrounding soil into the system and exfiltration of sewage into the groundwater.

Chemical grouting of lateral connections from the mainline made its debut in the early 1990s. Its use has been growing with the increased awareness of significant amounts of groundwater from this portion of the system.

Often misunderstood, chemical grouting is not used to fill the joint, but actually uses the defects of the pipe as

a pathway for the grout to be pumped beyond this point and out into the surrounding soil or bedding, forming a cohesive, watertight collar around the structure.

The chemical grouting of the lateral connections in relined pipes will also seal the annulus between the relined pipe and host pipe and the first few joints of both the mainline and lateral, fill and stabilize the supporting soil around the lateral connection.

Work is being done all across North America where lateral connection grouting is an integral part of grouting and lining projects. In many cases, the bid documents call for "Lateral Grouting of the Connections" without referring to specifications, grouting dis-



Above-ground demonstration where the chemical grout seals the voids between the backfill materials around the service connection and 20 in. and up

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There are a variety of solutions for the structural repair of water and wastewater pipeline rehabilitation. One technology is the widely accepted cured-in-place pipe, or CIPP, a trenchless solution that creates a new pipe-within-a-pipe without digging or destruction. This product has recently been modified to include a fiber-reinforced structural solution.

Another technology that can add structural reinforcement to pipelines is a product known as the Tyfo® Fibrwrap® System. This system consists of a fiber reinforced polymer product that is applied manually using an epoxy matrix. It is suitable for pipelines greater than 30 inches in diameter for projects with poor accessibility, limited timeline, sectional repairs, bends and laterals, complex geometry, above-ground pipe, and high pressure requirements.

Providing long-term repair, Fibrwrap® can sometimes be combined with CIPP on projects to provide a more comprehensive pipeline solution. This presentation will detail the technical properties and various pipeline applications. A recent project utilizing both technologies will be highlighted.

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tances, testing or grouting pressures, approved materials, mixing ratios or volumes, gel times vs. pumping rates vs. voids, etc.

Over the years, it has become standard practice in many cities across North America to test and seal the lateral connections after lateral reinstatement (post-sewer relining). Some cities have adopted an even more proactive approach and request not only that the lateral connections be grouted, but also the first 5 ft of the lateral. Some grouting projects have pushed the envelope even further to seal laterals as far as 20 and 30 ft from the connection.

No other rehab process is as versatile as chemical grouting, as it is not dependent upon mechanical bonds or pipe shapes. All it needs is a pathway so that the grout may be pressurized beyond the pipe defect and seal it from the outside of the structure.

Recent ASTM and ICGA/NASSCO Suggested Standards (available at www.sewergROUTING.com) are being used for more test and seal projects around the country, and are gradually gaining acceptance within the municipal and engineering community.

No single technology solves all the problems that can be encountered in the underground. There are different tools for different situations, and when the tools are better understood, they can be used more effectively for successful projects. The goal at Infiltration Control Grouting Association (ICGA), a division of NASSCO, is to educate sewer owners and engineers about this unique and highly versatile process, and support and promote the proper use of chemical grouting as a safe, economical and effective means to reduce ground water infiltration into sewer collection systems. To learn more, please visit sewergROUTING.com.

This article was provided by the Lateral Committee of NASSCO.



The use of chemical grouting of lateral connections has been growing with the increased awareness of significant amounts of groundwater from this portion of the system.

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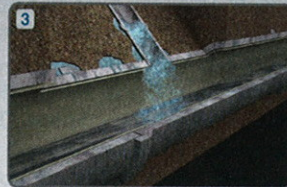
Lateral Grouting with Liner Installed



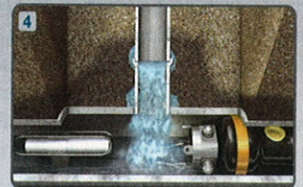
Leaking lateral



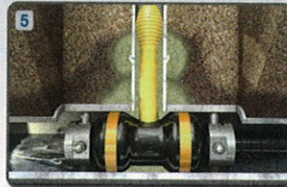
Liner installed



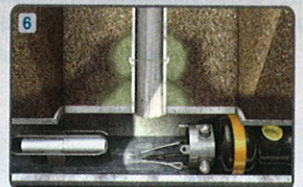
Continues to leak in annular space



Water infiltration at lateral

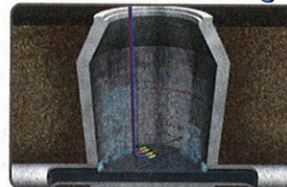


Lateral packer injecting grout



Grout collar stops infiltration

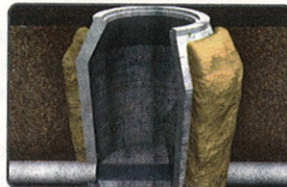
Manhole Grouting



Leaking manhole



Curtain grouting with wand

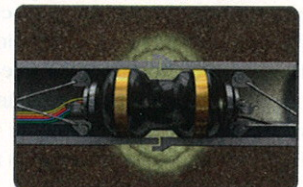


Grout curtain stops infiltration

Mainline Grouting



Leaking joint in mainline sewer



Chemical grout injected into soil



Grout collar stops infiltration

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