

# URETEK

Zero Excavation Inflow & Infiltration Restoration

RESTORATIVE SOIL COMPACTION  
INFLOW & INFILTRATION ELIMINATION  
MANHOLE & LATERAL LINE STABILIZATION  
ECO-FRIENDLY, LOW IMPACT SOLUTION

POLYMER TECHNOLOGY FOR INFLOW & INFILTRATION CHALLENGES

URETEK

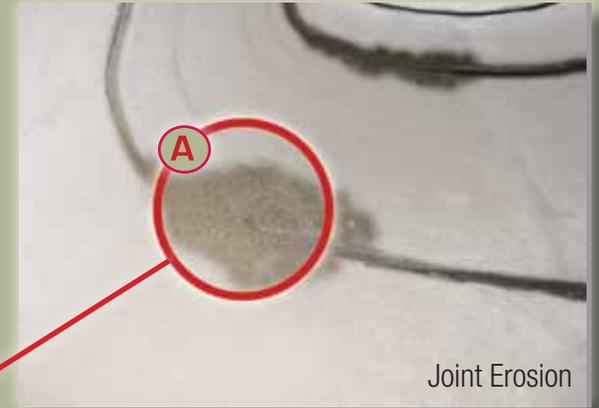
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# Why **URETEK** for Inflow a Infiltration Restoration?

As an industry inventor and pioneer, URETEK has perfected the art and science of using expanding polymers to densify loose, weak soils in a wide variety of applications throughout the United States. As more and more uses for URETEK's expanding polymer became evident, restoring soil and structural integrity for underground infrastructure was an ideal application for URETEK's high-density, expanding structural polymer.

## **URETEK** Application Short List

- Storm/Waste Infrastructure Restoration
- Infrastructure Stabilization, Soil Erosion Control
- Manhole, Joint, and Lateral Line Encapsulation and Sealing
- Restore and Increase Soil Load-Bearing Capacity around Infrastructure Assets
- Emergency Infrastructure Restoration (Dams, Spillways, Levees)

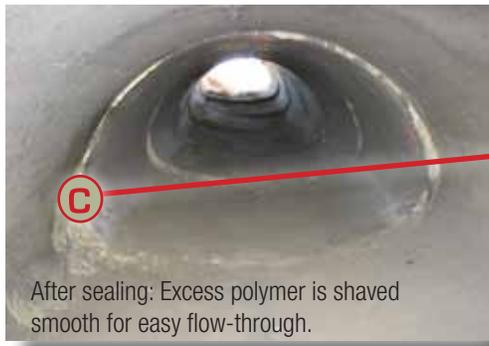


**A** Joint failure allows outside soil erosion to enter the drainage system, causing flow inefficiencies and structural concerns for not only the conduit, but for the road as well.

**B** URETEK prepares to inject expanding polymer by drilling small 5/8" port holes along faulty, eroded joint connections to restore and resupport underground infrastructure.



**C** As URETEK polymer is injected, material expansion begins to compact and fill voids around the drainage system. Outcropping of polymer occurs, confirming voids are filled.



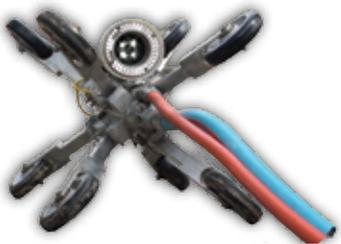
Excess material is either shaved off or hydro-blasted to complete the sealing process and restore proper drainage.

# URETEK

## Zero Excavation Inflow and Infiltration Solutions

**A**

**Lateral Line Sealing & Stabilization:** Sagging lateral lines along with joint and radial cracks cause major disruptions and inefficiencies in storm and sewer drainage systems. As URETEK polymer is injected, material expansion begins to compact and fill voids around the lateral lines. Outcropping of polymer occurs, confirming voids are filled, as well as eliminating further infiltration.



**ABOVE:** URETEK uses real-time, robotic high resolution video to identify cracks and leaks before and to verify complete sealing of the lateral line after the injection process.



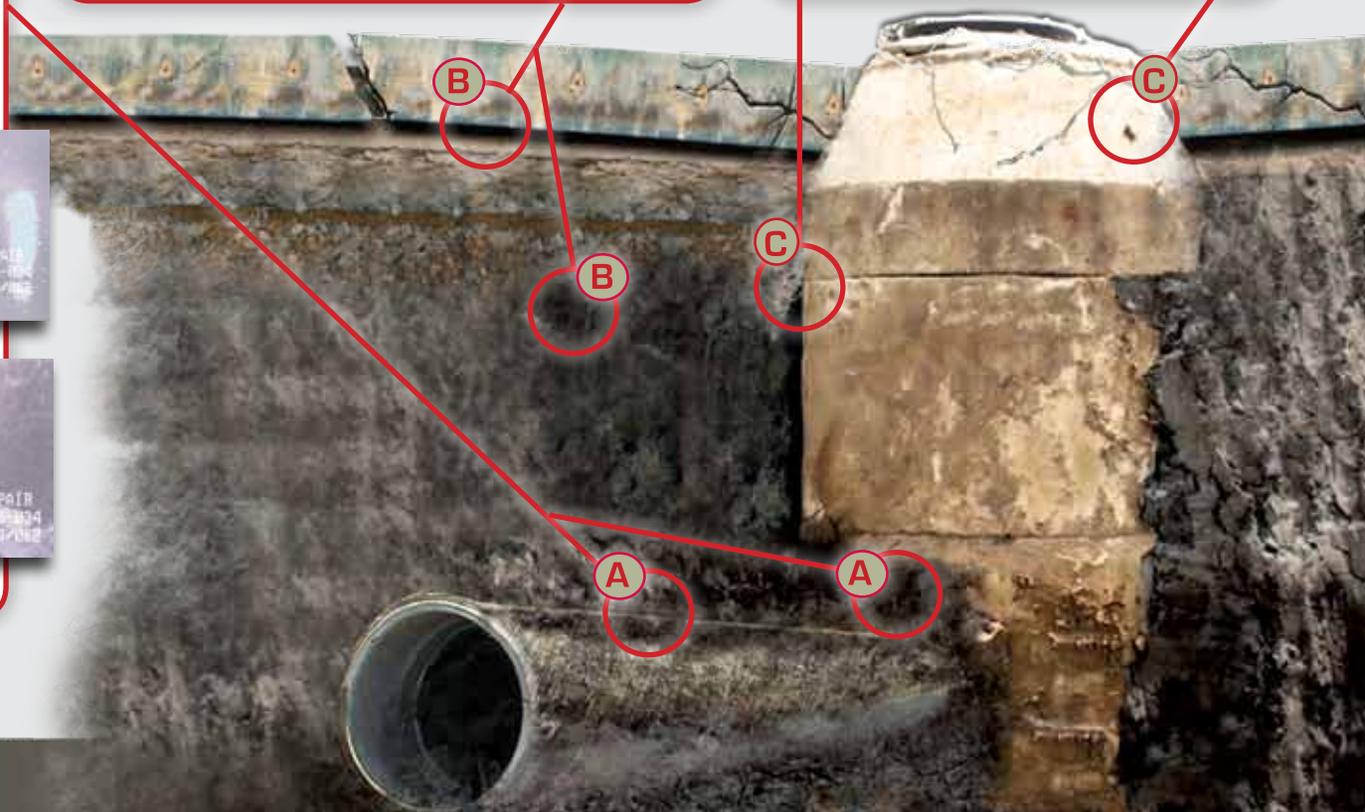
**B**

**Concrete Realignment & Soil Densification:** Ground water from rain and natural drainage accompanied by the constant pounding of above ground traffic shortens the useful life and efficiency of city infrastructure. URETEK polymers lift, realign, and stabilize the roadway above ground. Using the high-tech patented Deep Injection method, URETEK also will locate and densify weak soil strata at depth, drastically increasing the soil's collective load bearing capacity where needed.

**C**

**Manhole Sealing & Encapsulation:**

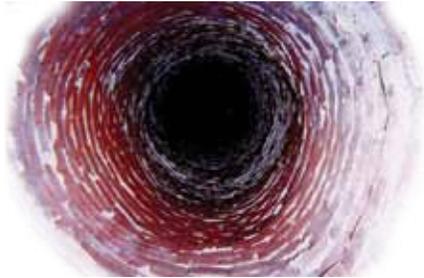
URETEK seals, stabilizes, and stiffens weak soils around leaking manholes, encapsulating buried infrastructure where soil erosion has created shifts in the drainage structure as well as infiltration of soil. URETEK operators are certified to work in confined spaces as well as technically trained to understand infrastructure systems and how to correctly install structural polymers to complete the restoration of an infrastructure asset.



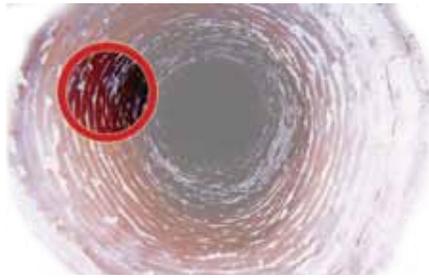
**URETEK**

# PROVEN, PREPARED & READY

## Zero Excavation Infrastructure Rehabilitation



Manhole View (down hole)



Infiltration Location



Sealed Joints

**RESTORING AMERICA:** From older brick infrastructure to newer concrete systems, URETEK's zero excavation inflow and infiltration rehabilitation solution restores, resupports, and brings aging, inefficient working drainage systems back to efficiency, without the cost or excavation of the area.

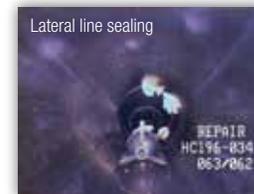


**RESTORING AMERICA:** URETEK polymers seal the manhole where inefficiencies exist as well as compact and void fill loose soil around the manhole structure to complete the restoration of the infrastructure system.

TECHNOLOGY  
CHEMISTRY  
EXPERIENCE



**WHAT ABOUT LATERAL LINES?** With the smaller diameter of lateral lines, URETEK locates infiltration and radial cracks using robotic cameras. Once the real-time video locates the joint or crack concern, URETEK injects patented, expanding polymer through an extended injection nozzle to seal the crack and stabilize the surrounding soils. High-powered water jets are used to remove excess cropped material inside the lateral lines to restore efficient drainage flow.



**POLYMER TECHNOLOGY FOR INFLOW & INFILTRATION CHALLENGES**

**URETEK**

# CRITICAL SITUATIONS

Proven, Prepared & Ready



**DAMAGE CONTROL:** The small dam (Missouri City, Texas) pictured above had no indication of structural problems until the watchful eye of a city inspector noticed soil deposits collecting around the conduit outlet (about 24" in diameter). After further inspection, not only was the compacted soil and fill around the drainage conduit eroding, but the force of the small reservoir was rapidly eroding the compacted fill under the concrete dam. URETEK responded to the emergency by mobilizing within 24 hours to stabilize, void fill, and restore the dam. No matter how large or small a dam or spillway is, a breach in the structure can be catastrophic, polluting local drinking water, eroding land, risking lives, and causing costly city damage.



## IMAGE DESCRIPTIONS:

- A** A strategic, methodical pattern of 5/8" injection holes are drilled so that a consistent coverage of URETEK's expanding polymers effectively stabilizes the dam.
- B** As technicians carefully inject material, polymer seals erode seams in the concrete structure. Voids from erosion are filled and the overall load bearing strength of the structure is restored.
- C** City officials asked URETEK to completely fill the rotted conduit with polymer, creating one solid mass, eliminating the chance of conduit failure.



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# URGENT & COMPELLING

## Infrastructure Stabilization

URETEK specializes in emergency infrastructure restoration. URETEK operations mobilize within days, many times within 24 hours to address emergency structural concerns.



Before Injection



After Injection

**URGENT & COMPELLING:** After major flooding in Houston, Texas (2009), Army Corps of Engineers took pre-emptive action to void fill and stabilize the two main reservoir outlets (Addicks & Barker Outlets) that controlled the United States 4th largest city's flood

levels. URETEK stabilized and restored the aging outlet structures (built 1940's) in 8 days. URETEK's expanding polymers were ideal for the highly saturated environment. The low impact nature of URETEK's processes minimized the danger of the structure fracturing during the restoration process.



**SOIL EROSION AROUND LEVEE SYSTEM:** Joint erosion inside the outfall structures (Ft. Bend County), along with debris flow, concerned local officials to investigate the structural integrity of this levee system drainage. Visual signs of erosion through eroded conduit joint gaps indicated soil erosion concerns that could render the drainage gates unsafe, creating a potential of flooding nearby subdivisions. URETEK injected high-density, expanding polymers above, around, and at the base of each conduit to ensure the infrastructure asset was structurally sound. This eroded soil was re-compacted and the soil load bearing capacity restored.



# URETEK EXPERIENCE

A nationwide network of URETEK affiliates with over twenty years of real project experience, provide efficient, cost-effective, eco-friendly, zero excavation solutions for inflow and infiltration restoration. URETEK has successfully completed over 85,000 projects using the most experienced, professionally trained, certified operators in the industry. Many URETEK operators having over 10 years of project experience.



## Safely Restoring Infrastructure

URETEK Safety Equipment: Full Body Harness, Tripod, Personal Headlamp, Specialized Hardhats, Two-Way Radio, Gas Detection/Monitor Device, Protective Gloves, Heavy Duty Waterproof Boots, Air Exchange Device, SRL (Fall Arrestor), Retrieval Winch

URETEK Safety Certifications: Confined Space Training (OSHA), TWIC (Transportation Worker Identification Card), Polymer Handling Safety Training, CPR/First Aid Training. URETEK affiliates nationwide continually meet and exceed state and federal safety requirements.

TECHNOLOGY  
CHEMISTRY  
EXPERIENCE



“URETEK is passionate about restoring America’s aging infrastructure. URETEK’s unique zero excavation inflow and infiltration solutions require skill, expertise, and above all, EXPERIENCE. Our URETEK operators are problem solvers, knowledgeable, and on a mission to get America’s infrastructure back on track.”





# URETEK CHEMISTRY

URETEK, partnering with Bayer Material Science, a world leader in custom polymers, offers an exclusive line of structural polymers specifically formulated to maintain structural rigidity and compressive strength in highly saturated soil environments. URETEK's structural polymers are battle tested, capable of compacting the weakest soils under the heaviest loads and in the harshest of environments. As the pioneer and industry inventor of using expanding structural polymers to re-support heavy loads and compact unstable soil, URETEK leads the industry in superior expanding polymers suited specifically for inflow and infiltration restoration.



# URETEK TECHNOLOGY

For twenty years URETEK has steadily improved technology deploying expanding polymers to restore inflow and infiltration concerns where inefficiencies exist. Using newer, safer, more efficient equipment, URETEK offers a faster, cost effective, eco-friendly, zero excavation solution for inflow and infiltration projects to ensure ultimate quality control on each project. URETEK equipment modifications allows operations to inject polymer in extreme weather conditions, difficult to access areas, and hazardous environments requiring low-impact, precision solutions.



# URETEK Quick Facts

- Over 85,000 successful URETEK projects completed worldwide, ranging from residential to emergency infrastructure restoration
- Industry pioneer and inventor of using high-density polymers to address structural concerns
- Most eco-friendly materials and technology available today
- World-class custom polymer research and development team
- Over twenty years experience using polymers to lift, stabilize, and realign concrete and soil concerns
- Highly trained and certified supervisors and technicians

**POLYMER TECHNOLOGY FOR INFLOW & INFILTRATION CHALLENGES**



**URETEK**

# EXPANDING POLYMER

**A**

URETEK's family of expanding polymers are capable of addressing numerous structural and soil stability concerns in the harshest of environments. The low viscosity and lubricity of URETEK's polymer allow for easy penetration into soils while compacting surrounding soils and displacing water without loss of dimensional stability. URETEK's patented chemical composition allows for direct application into water or saturated soils making it ideal for lifting and stabilizing areas with elevated soil moisture.



**B**

**URETEK**

## URETEK Polymer Key Features

- A** URETEK polymers are extremely light-weight (4lbs/cu.ft.), but maintain an outstanding compressive strength. The ultra light weight properties do not add stress to already weakened soil base.
  - Material expands up to a 1:25 ratio, capable of compacting soils and/or realigning structures at almost any strata level.
  - Material quickly cures and reaches 90% strength in less than 15 minutes. This allows operators to control material usage and have total control (1/8" tolerance) when realigning structures.
- B** URETEK polymer aggressively fills voids and expands to bond weak, unconsolidated aggregate soil strata.
  - URETEK polymers have a patented chemical composition developed by Bayer Material Science which allows for direct application into saturated soils while maintaining good physical properties. These patented polymers clearly outperform the outdated hydrophobic materials currently available.
  - Low impact, small injection holes do not weaken existing structures while URETEK injects the polymer into weak soils during polymer injection.

## Polymer Material Properties

Physical Property	Polymer Free Rise Range
Grout Density	2-8 lbs/ft <sup>3</sup>
Compressive Strength	20-120 lbs/in <sup>2</sup>
Tensile Strength	40-140 lbs/in <sup>2</sup>
Shear Stress	30-85 lbs/in <sup>2</sup>
Water Absorption	< 2%
Dimensional Stability	< 2%

\*Testing performed in a free-rise state; results will vary depending on soil conditions, structural weight, and general conditions of injection site.

## Chemical Resistance

Chemical	Resistance
Water	Excellent
Gasoline	Excellent
Carbon Tetrachloride	Excellent
Brine Saturated	Excellent
Formaldehyde	Good
Ethylene Glycol	Good
Turpentine	Excellent
Sulfuric Acid 10%	Excellent
Hydrochloric Acid 10%	Good
Ammonium Hydroxide	Good
Isopropanol	Excellent
Benzene	Excellent
Motor Oil	Excellent
Mineral Spirits	Excellent
Diesel Oil	Excellent
Sulfuric Acid Concentrate	Not Recommended
Ammonium Hydroxide	Excellent
Nitric Acid Concentrate	Not Recommended
Acetone	Not Recommended

\*Testing performed in a final cured state.

# History of **URETEK**

## 1979

URETEK advanced the equipment technology of total proportion and injection control of the product. After years of experimental development and technique modification, The

URETEK Method™ was patented in the United States (U.S. Patent No. 4,567,708) and other countries around the world.



URETEK International offers direct service offices in 13 European countries, Canada, Japan, South Korea and Australia.

## 1988

URETEK USA, Inc., was granted the exclusive license rights for sales of product and services in the United States and Mexico. With corporate headquarters in Houston, Texas, the company serves public works, commercial, industrial, and residential markets through a network of direct offices and authorized URETEK representatives.

## 1992

URETEK established a nationwide network of sales representatives to directly serve departments of transportation, cities, and airport authorities more effectively.

## 2000

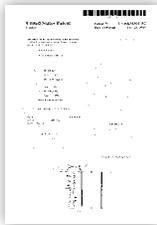
Nationwide affiliates are selected to serve Industrial, Commercial, and Residential markets.



URETEK introduced the Deep Injection Process™, the proprietary system for increasing the load-bearing capacity of foundation soils for pavements, slabs, and structures. This process utilizes specially selected polymer formulations to void fill, expand, and densify carefully identified low load-bearing compressible soil strata which may require attention.

# 2003

The Deep Injection Patent was issued in the United States and Canada. As a key development and process patent for URETEK, operators continued to perfect the process of densifying and compacting loose soil strata at depths of 30 feet and beyond.



# 2004

URETEK continued to grow by adding new affiliates across the United States. Uretek ICR companies included service from Florida to Hawaii -- from Alaska to Texas.



# 2006

URETEK achieved affiliate representation in all 50 states. URETEK ICR Northern US opened for business in 26 states across northern United States.

# 2009



URETEK's group of affiliated companies surpasses 85,000 successful projects worldwide.

URETEK's flagship patented expanding polymers, URETEK 486 Star and URETEK 684 EXP, become the preferred polymer for concrete stabilization projects in the United States.

URETEK's zero excavation Inflow and Infiltration solution continues to rapidly expand as a leading, eco-friendly restoration method for cities and municipalities faced with aging infrastructure concerns. Man-holes, tunnels, pipes, and lateral infrastructure now have a quick, cost-effective, ZERO EXCAVATION rehabilitation solution with URETEK's advanced expanding polymers.

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# URETEK

## Zero Excavation Infrastructure Repair

- Manhole/Lateral Line Rehabilitation
- Storm/Waste Water System Restoration
- Culvert Stabilization and Realignment
  - Catch Basin Sub-Base Repair
  - Tunnel and Pipe Stabilization
  - Dam and Spillway Restoration
  - Emergency Infrastructure Repair

TECHNOLOGY CHEMISTRY EXPERIENCE



**URETEK ICR CONTACT INFORMATION:**

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**[www.URETEKICR.com](http://www.URETEKICR.com)**

