



# Keyhole Construction and Pavement Restoration Techniques



By:

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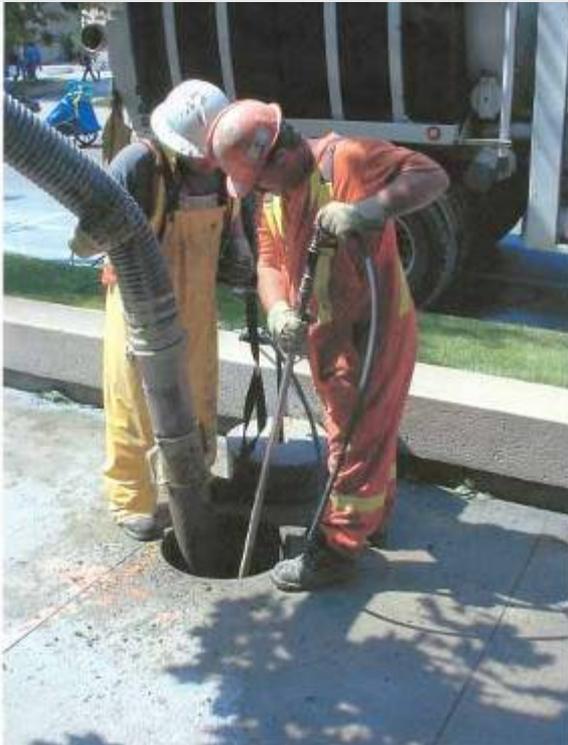
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# What is Keyhole Technology?

- Method of accessing or viewing underground utilities through small holes or “keyholes”
- Vacuum excavated through soft surfaces or through holes cut or cored through pavement.



# Why Keyhole?

- > \$2 billion per year on excavation and restoration
- > Conventional repair practices up to 80% of cost



# Keyhole Technology

## **Vacuum/Keyhole technology methods can:**

- Cut excavation and repair costs by more than 50%-60%
- Improves Safety
- Reduce delays and public inconvenience, and
- Minimize damage to road and underground infrastructure
- Improve relationships with jurisdictions and rate payers

# Coring Options – Truck Mounted



# Coring Options – Portable



# Remove the core



# Vacuum Excavation Equipment



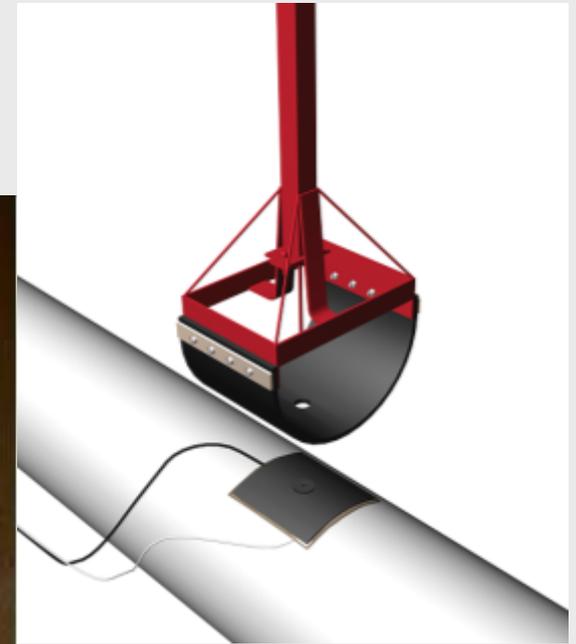
# CI Joint Sealing - Encapsulation



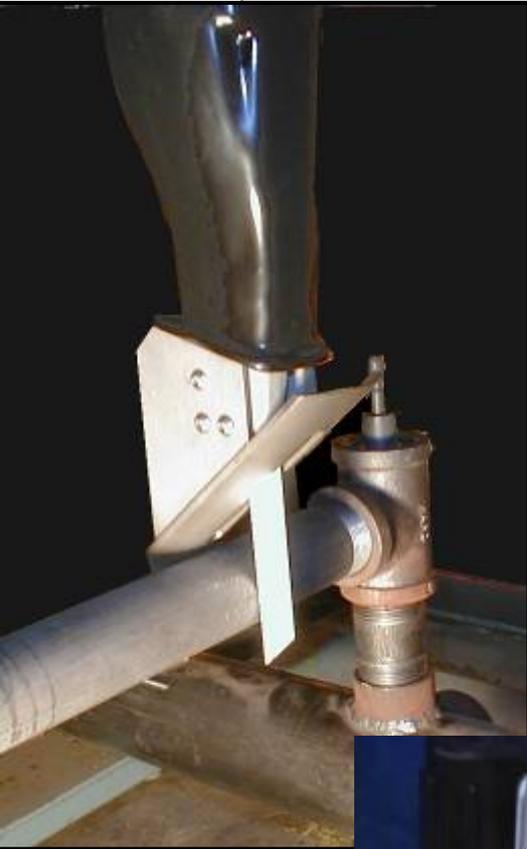
# CI Joint Sealing - Anaerobics



# Cathodic Protection



# Service Abandonment



Steel and PE  
service  
abandonments

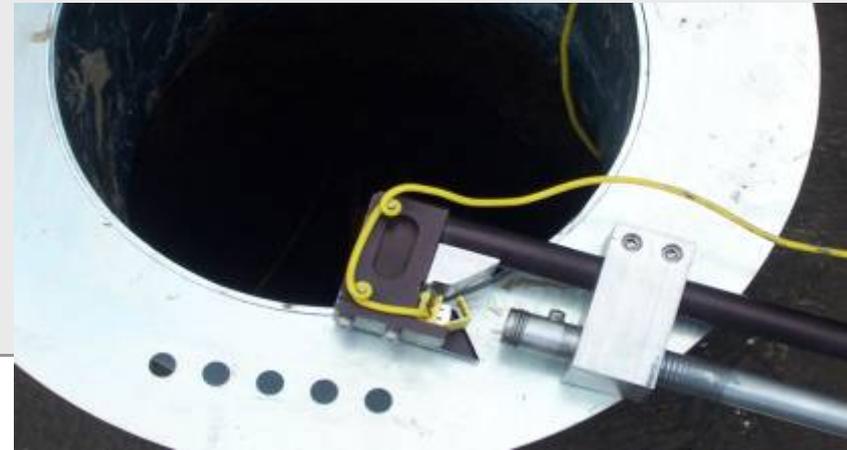
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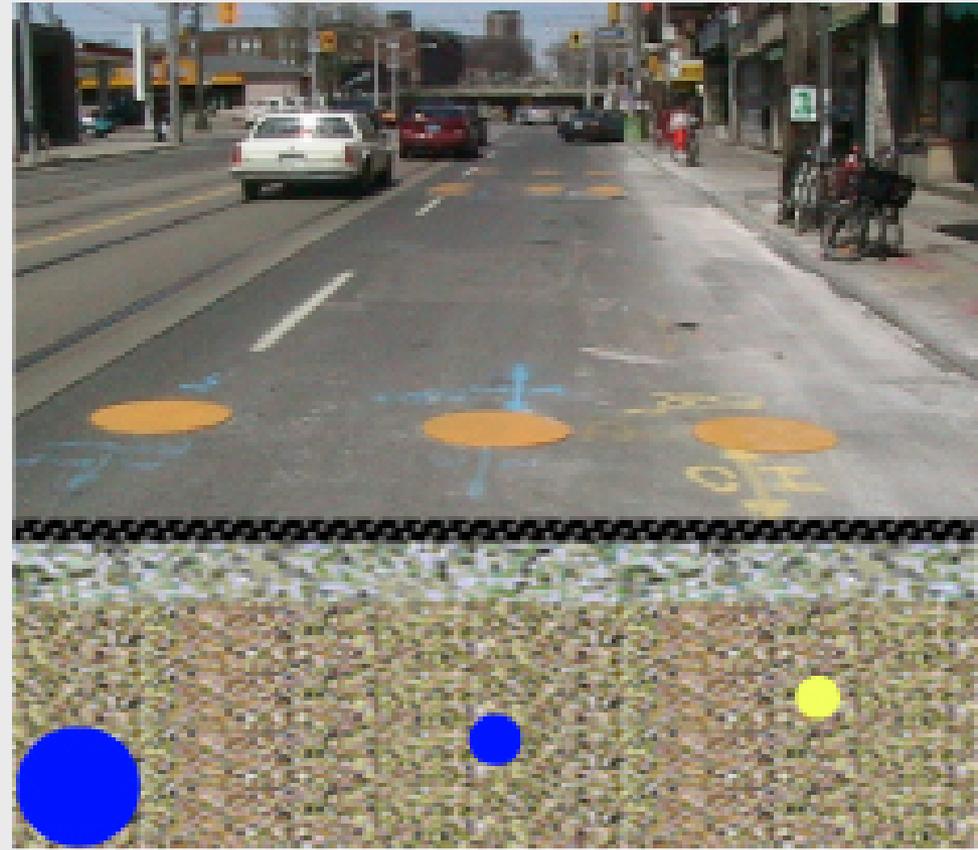
# Valve Maintenance



# New and Replacement Services



# Day-Lighting for HDD



# Keyhole Activities

- > Installation of band clamps
- > Pothole/depth check
- > Valve casing clean-out
- > Meter guard installation
- > Plastic pipe repairs
- > Misc. leak repairs
- > And more...

# Core Reinstatement

**Backfill & Compact**



**Grout Mixture**



**Core Placement**



**Finished Repair**

# Quality Product



# Finished Repair Almost Invisible



# GTI's Keyhole Program

- > **Utilities and Manufactures**
- > **Addressing needs of the industry and advancing keyhole activities**
- > **Communications**
  - **Newsletters**
  - **Meetings and demo's**
- > **Current developments include:**
  - **Aldyl A scraper for service tee repairs**
  - **Long-handled adjustable pipe wrench**
  - **PE pipe scraper for installing EF service tees**
  - **Bag stopper thru keyholes**
  - **Other long-handled tooling (vice grips, grabbers, specialty tooling, cutters, etc)**

# Questions and Comments?

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