



THE **UNDERGROUND** UTILITIES EVENT

Underground Construction Technology | Jan. 29-31, 2019 | Fort Worth, TX

SPECIFICATION GUIDELINE for **Cross Bore Prevention and Detection**

November 2018

Presented by:

Jerry Weimer

Created by:

NASSCO's

***Infrastructure Assessment Committee's
Cross Bore Workshop***



NASSCO



Jerry Weimer

- PACP/LACP/MACP Trainer – 13 years.
- Participated in PACP/MACP/LACP UPDATE IN 2015
- Code Manholes, Pipelines and Laterals using MACP,PACP,LACP
- Updating NASSCO Jetter Manual
- Worked for City of Cincinnati, Metropolitan Sewer District (MSDGC), for 30 years in Condition Assessment and Cleaning.
- Member of WEF and NASSCO.
- Head of Large Diameter Cleaning Work Group for NASSCO O&M Committee.
- Lead Cross Bore Prevention Work Group for NASSCO Infrastructure Assessment Committee.
- Consult and Train on Wastewater Collection Maintenance and Inspection, and Cross Bore Prevention and Detection.
- Class 2 State of Ohio Wastewater Collection License



Agenda

1 GENERAL

- Introduction
- Definition of cross bore
- Prevention program
- Legacy program
- Pre-Inspection
- Post-Inspection

2 PRE-CONSTRUCTION INSPECTION PROCESS

- Overview
- HDD Pre-install considerations
- Utilization of CCTV
- Pipeline Cleaning/Blockages
- Pot holing

3 POST-CONSTRUCTION INSPECTION PROCESS

- Overview
- Leading Practices
- QC / Retention
- Locate cards
- Sewer tags
- Breach found





Introduction

The NASSCO Cross Bore Workshop has created this specification guideline to support the prevention of cross bore damage to existing gravity-pipeline infrastructure and to locate pre-existing cross bores which are a hazard to public safety



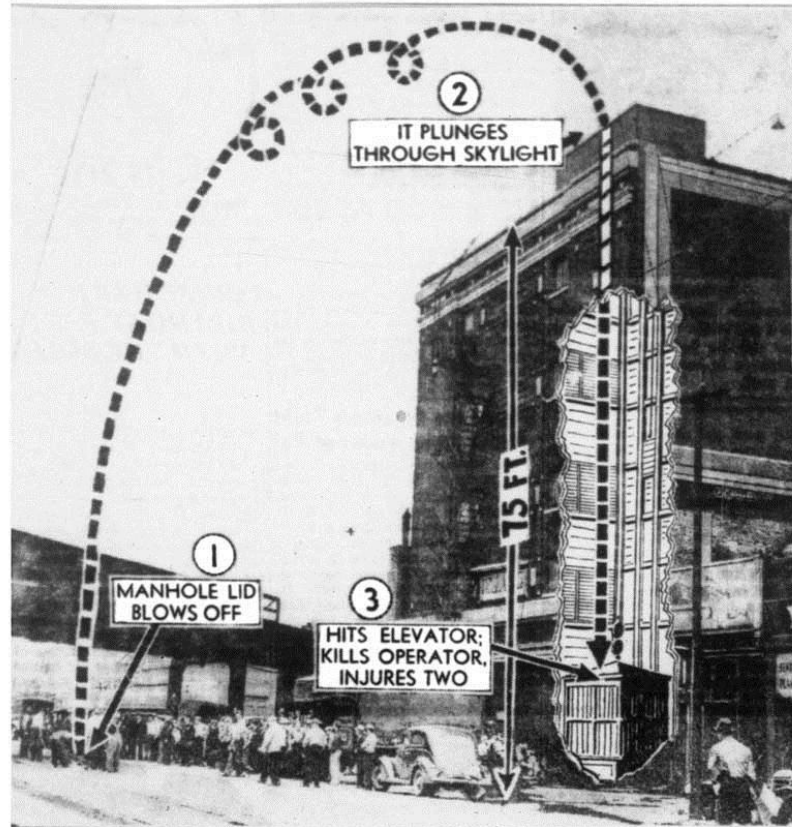


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CHICAGO SUNDAY TRIBUNE: MAY 30, 1937

ONE KILLED WHEN BLAST FLIPS MANHOLE COVER



When a subterranean explosion tossed many manhole covers on Fullerton avenue into the air yesterday, one of the lids was blown high and crashed down the elevator shaft of the Hollander Storage and Moving company at 2418 Milwaukee avenue, killing the elevator operator, A. C. Day, 57 years old, of 5642 Melrose street. Two others on the freight elevator were slightly injured. Dotted line shows missile's path.



Methods for Utility Installation

Open Cut

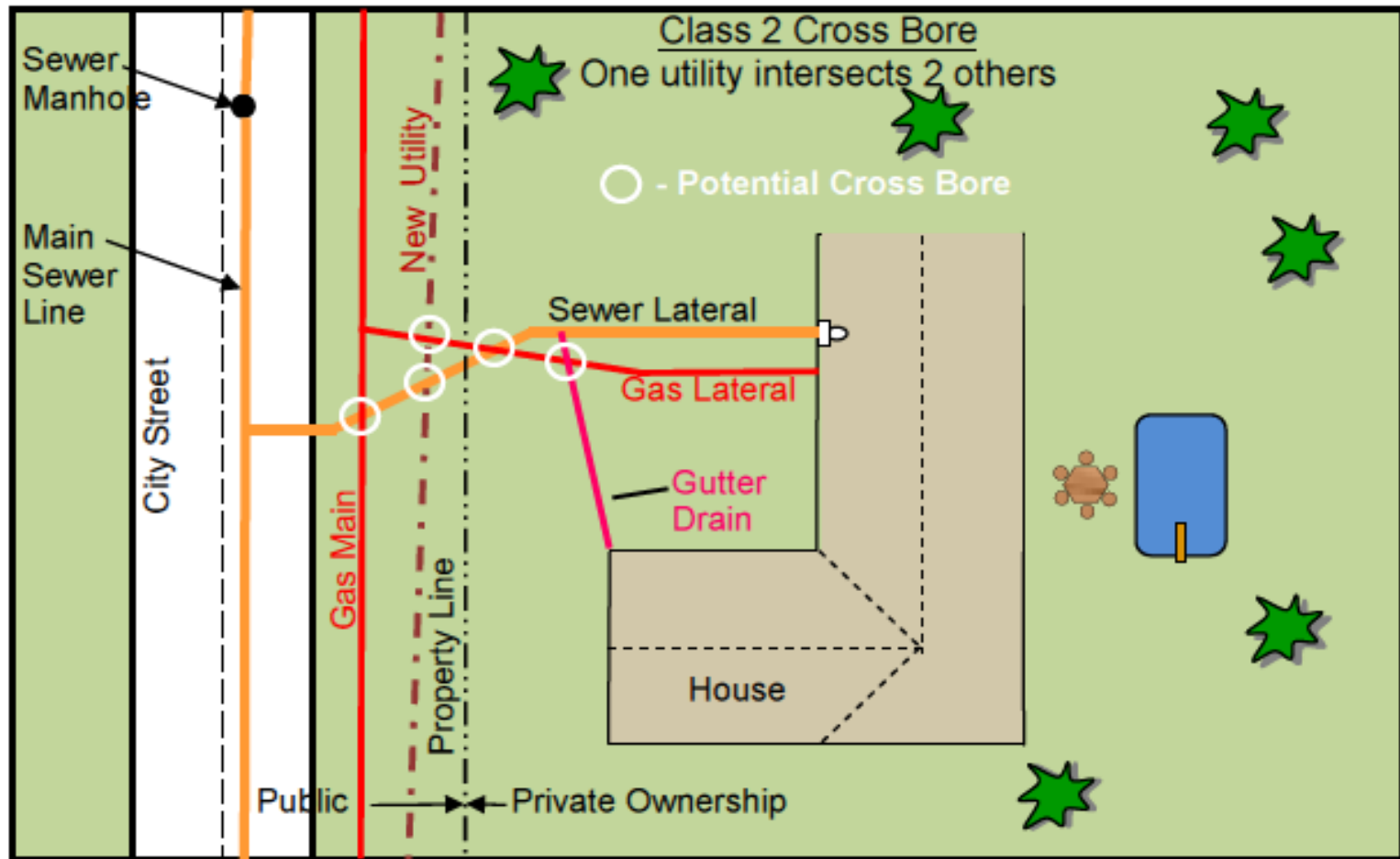
Horizontal
Directional
Drilling

Moles

Plowing



Cross Bore Types





Based on information from the *North American Society of Trenchless Technology*, field experience suggests that there are 2 to 3 cross bores per running mile of installed pipe

This information is based on all types of utilities.





“In the St. Paul explosion, a sewer contractor punctured a natural gas line that he didn’t know had been inserted through a sewer pipe, a procedure called a cross bore. The line break caused gas to leak into a house on Villard Avenue in the Highland Park district, sparking an explosion. “



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Meehan Property, St. Paul, MN





Gas Explosion *(Trenchless Technology Magazine 05-18-15)*





What is a Cross Bore?





How Cross Bores Happen

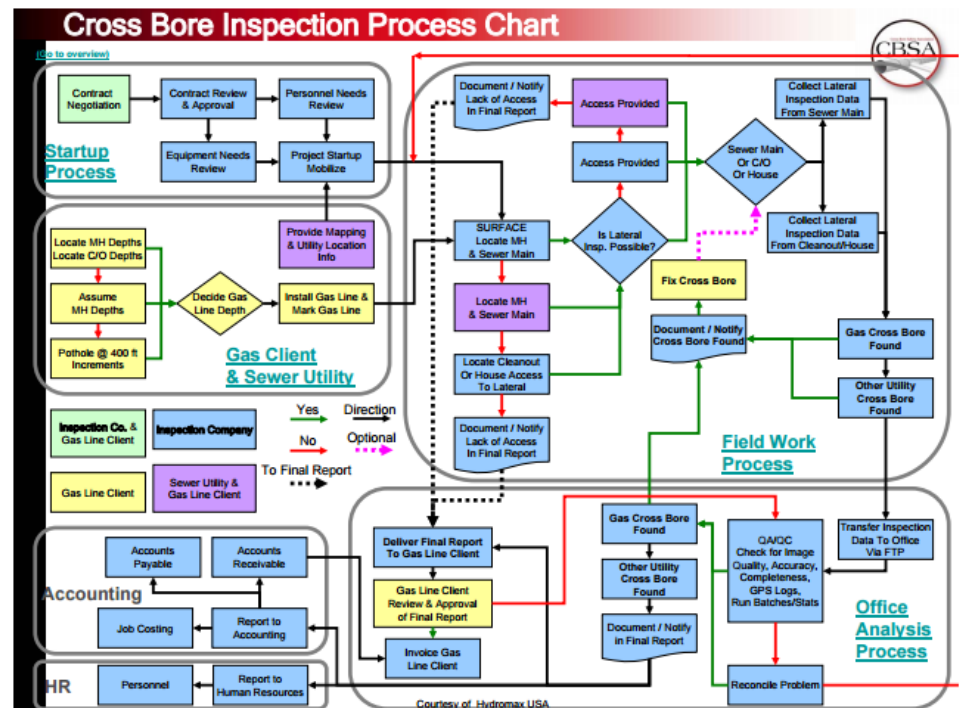
- More utilities are being installed or updated underground
- Limited width to work, due to utility easement size
- Only choice is to dig deeper, resulting in HDD through sewer mains and private service laterals





Prevention Program

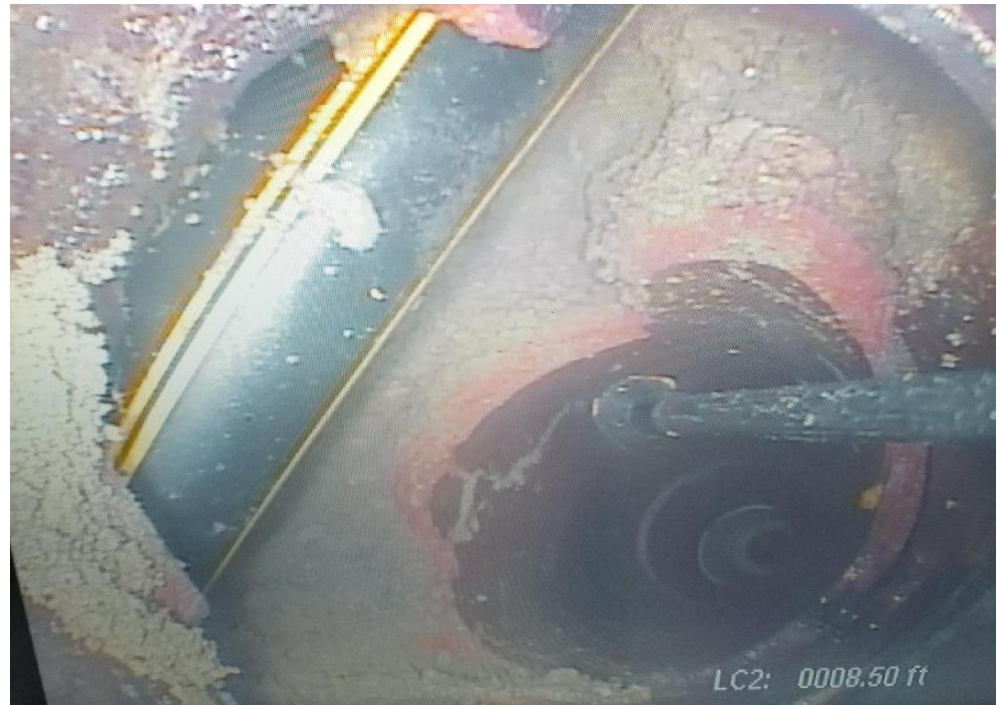
- Physically locating subsurface gravity-pipeline infrastructure
- Robotic inspection camera
- New and replacement utility
- Locating transmitters to identify the location and depth
- Allowing for alignment to be adjusted
- Pre-inspection
- Post-inspection
- QA/QC





Pre-Construction Inspection

- Overview
- HDD pre-install considerations
- Utilization of CCTV
- Pipeline cleaning/Blockages
- Pot holing





HDD Pre-Install Considerations

- Project management/Permits
- Approval of contract/Agreement
- Acquiring utility prints on where utility will be/was installed
- Utility maps (sanitary, storm and combination sewers) from municipality/city
- Obtaining all permits/GIS mapping (sewer owner) to aid the CCTV contractor in identifying sewer locations, sizes, material types
- CCTV contractor will need to obtain permission
- An area to dispose of material that is cleaned from the sewers (approved by sewer owner)

Customer Awareness

- What are we doing and why we are doing it?
- Placing door hangers (provided by drilling contractor or energy company)



Utilization of CCTV

- All CCTV should be conducted in NASSCO PACP/LACP
- Lateral launching inspection camera with electronic locating
- Laterals that do not currently attach to a building, and buildings with multiple laterals, because these types of laterals cannot be detected from the surface
- The Pre-inspection
- House-out with building/homeowner
- Pre-existing structural defects
- Compare the pre- and post-video inspections to make sure no damages have occurred
- All pre and post video work should include all structures and pipe leads, from property line to property line, and include 10 feet past construction zone
- Cross Bores are coded as OBI (Obstruction through wall of pipe) in PACP



Pipeline Cleaning/Blockages

- Cleaning sewers and laterals if location is near (within 10 feet) of the drilling line
- Cleaning truck with appropriate nozzles, cutters, chains, etc.
- CCTV operator to be able to see the walls of the pipe





Pot Holing-Pre-Construction

- If CCTV can not be completed
- Area of possible intersection
- For safety





Post-Construction Inspection

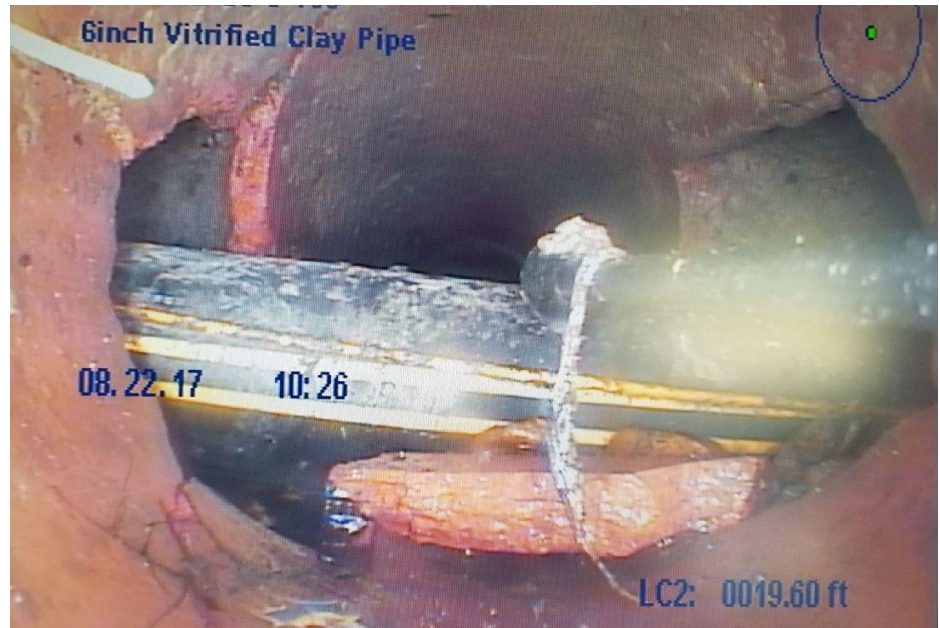
- Overview
- Leading practices
- QC / Retention
- Locate cards
- Sewer tags
- Breach found





Overview

- Vital
- Final evidence
- Compare pre- and post- inspections



Records of pre-inspection, gas installation area, and installation process should be provided to the crew before starting the post-construction CCTV



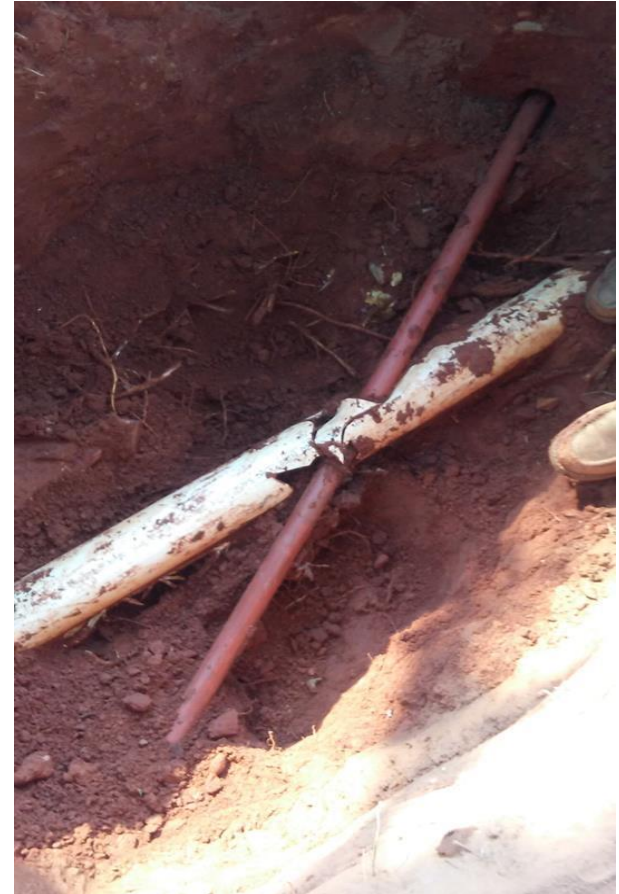
Leading Practices

- Utility installation method and placements should be either drawn on the locate card or map
- All pipes should be inspected post-HDD, unless otherwise stated
- Post-construction inspections should be highlighted on the locate card
- Exceptions could include:
 - Proximity zone
 - Sewers in the back
- Waiver form
- Changes in pipe condition (mud, cracks, etc.)



QA/QC and Retention

- Check for accuracy
- Compare pre- and post-inspections
- Cross bores
- Near misses
- Update locate cards
- Retain videos and copies of locate cards
- PACP/LACP certified
- HDD trained





Locate Cards

- Communication
- Documentation
- Sketch
- Every residence and business
- Entire length of project
- Steps
 - Sewer inspector draws sewers and laterals (from pre-inspection)
 - TT installer draws utility location
 - Sewer inspector documents post-inspection



Sewer Tags

- Reminder
- All sewer access points
- All residences and businesses
- Utility contact information
- Placed by contractor





Sewer Tags

Safety Alert

from the metropolitan utilities district

Natural gas utilities across the country have discovered situations where natural gas pipes (mains and services) inadvertently were installed through sewer pipes (laterals).

As long as a natural gas pipe intersecting a sewer pipe is not damaged, it poses no safety hazard. However, the equipment used to unclog sewer pipes can damage the natural gas pipe and lead to the dangerous release of natural gas.

Who owns the sewer pipe (lateral)?

The property owner owns the pipe from the house/building to the pipe in the street. Your city owns the sewer pipe in the street.

I have a sewer obstruction. What should I do?

Call a reputable contractor or licensed plumber who uses procedures to safely clean a sewer.

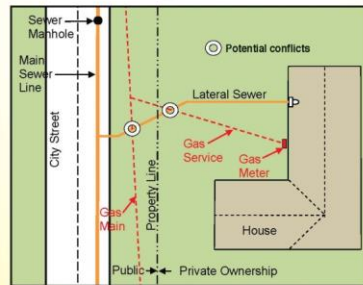


Illustration courtesy of Cross Bore Safety Association

Este informe contiene información muy importante. Tradúzcalo o hable con alguien que lo entienda bien.

What should I do if I smell gas?

We add mercaptan to natural gas to make it smell like rotten eggs. If you smell gas, whether it's sewer gas or natural gas, call M.U.D.'s emergency number 402.554.7777. There is no charge to check a gas leak.

What if I decide to rent or use equipment to clean my sewer pipe?

You risk cutting a pipe. If there is an obstruction (like a natural gas pipe) in the sewer pipe and you hit the natural gas pipe, natural gas may leak into your home and cause a serious safety issue such as an explosion.

Call a reputable contractor or a licensed plumber who uses procedures to safely clean sewer pipes.

What is M.U.D. doing to correct the problem?

We are reviewing maps and records to identify and correct conflicts between our natural gas mains and your sewer pipes. We hired Roto Rooter to help with the initial investigation. If our review shows a conflict, either Roto Rooter or M.U.D. will contact you and/or the property owner.

If it is determined that M.U.D.'s natural gas main or service is in your sewer pipe, the District will pay to make the correction.

What if a contractor contacts me about a potential problem?

If you don't have a problem with your sewer or have not been contacted by M.U.D. or Roto Rooter, do not let anyone into your home without calling M.U.D., 402.554.7777, to verify whether a potential problem has been identified on your property.

If you have any other questions, call 402.554.6666.

**No charge to check gas leaks. Call
402.554.7777 — 24/7**

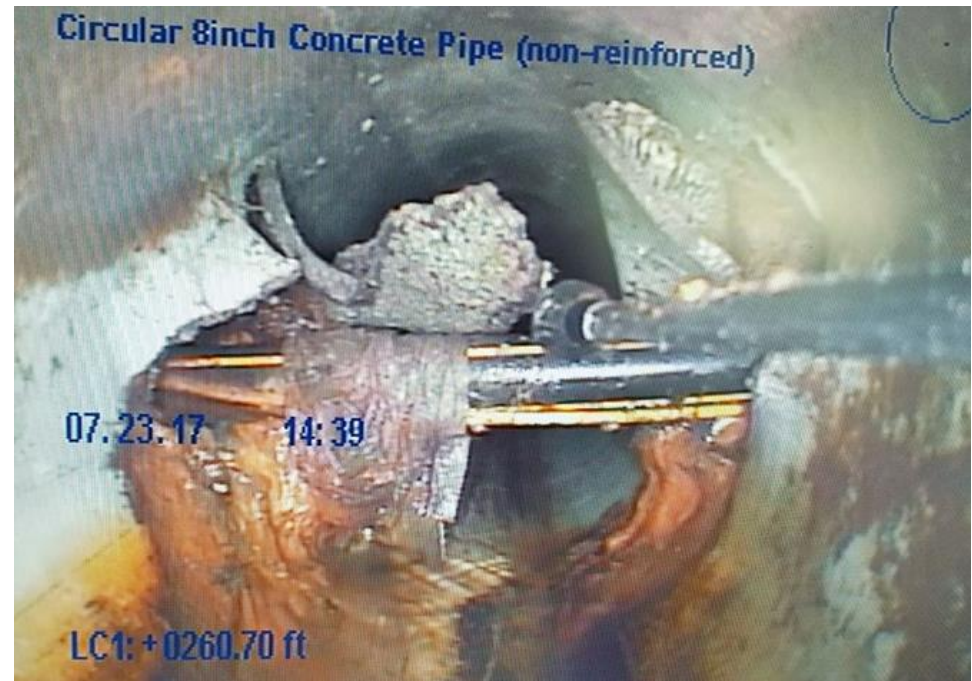


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Breach Found

- Utility, contractor and sewer agency notified
- Red “X” on locate card
- Breach removed
- Section re-inspected





Legacy

- Post-inspection
- No cutters
- Pot hole to complete inspection
- Push camera house out
- Open cut





Questions



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