

BEWARE of Cross Bores!

New NASSCO Guidelines for Prevention and Detection

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Presented by:

Laurie Perkins, PE

Created by:

NASSCO's

**Infrastructure Assessment Committee,
Cross Bore Workgroup**



NASSCO

Agenda

Introduction to Cross Bores

- Background
- Issues
- NASSCO guidelines

Pre-Construction Process

- Planning
- Pre-construction CCTV
- Public outreach

Post-Construction Process

- Post-construction CCTV
- Leading practices
- QA/QC & retention
- Locate cards/maps, sewer tags
- Legacy cross bores
- Breach found



Introduction



What is a Cross Bore?

Intersection of an existing underground utility or structure by a second utility, resulting in a direct contact between the utilities that compromises the integrity of either utility or structure.



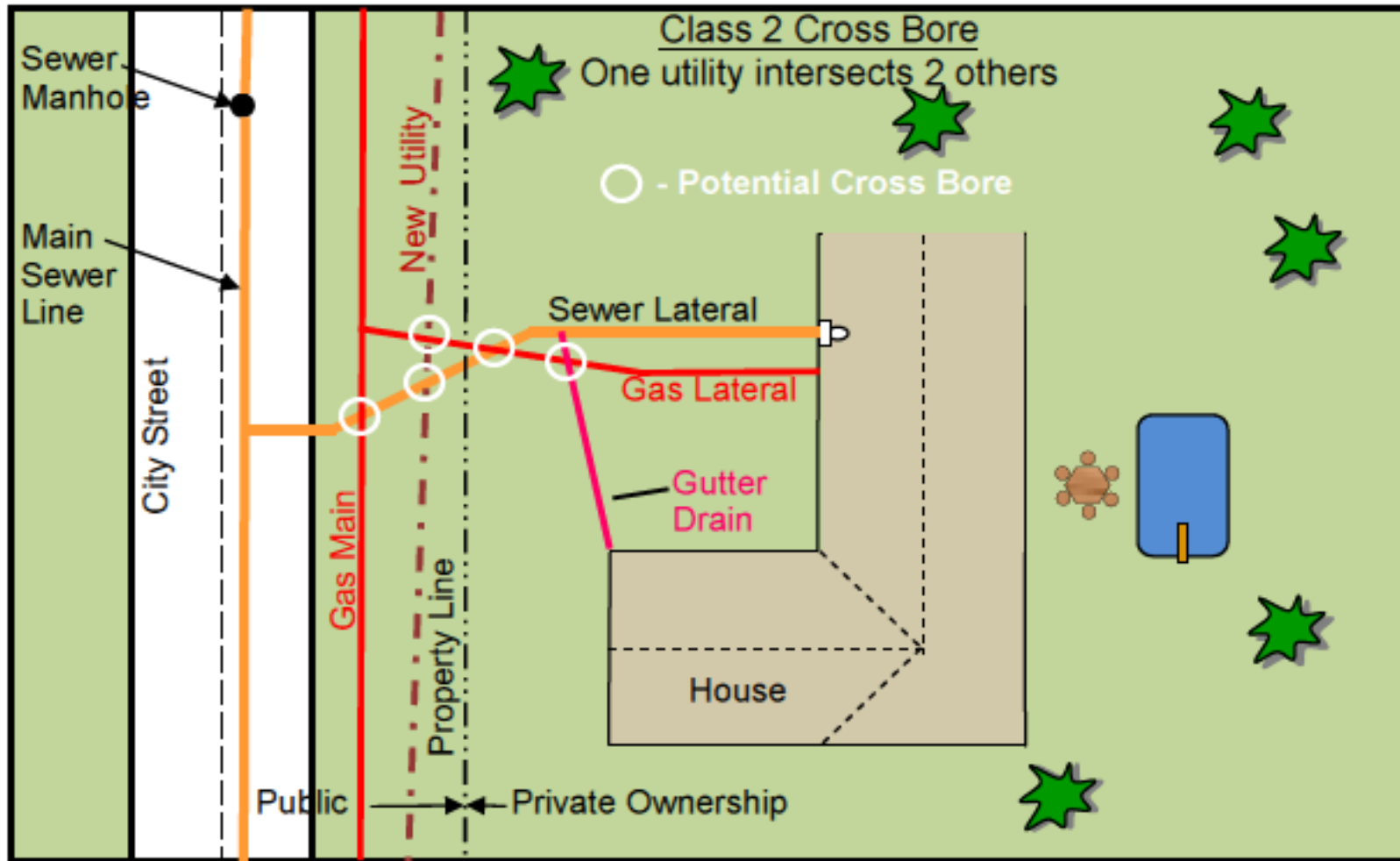
Introduction

How do they happen?

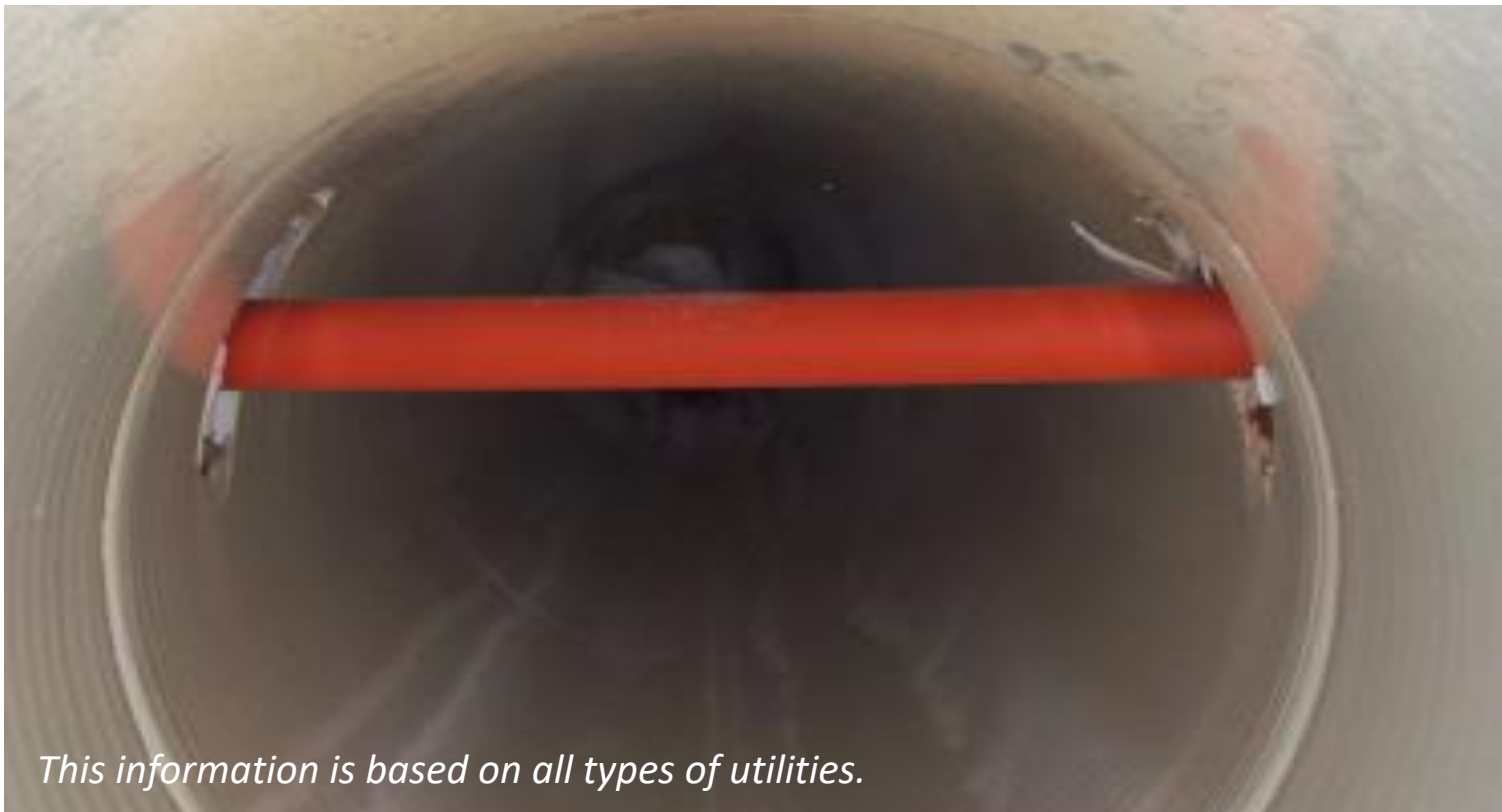
- More utilities installed/updated underground (trenchless)
- HDD through sewer mains and private service laterals
- Limited work space due to easement size



Sewer Lateral Cross Bore



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 in to a house on Villard Avenue in the Highland Park district, sparking an explosion.”

Meehan Property, St. Paul, MN



Gas Explosion

(Trenchless Technology Magazine 05-18-15)



The Issue

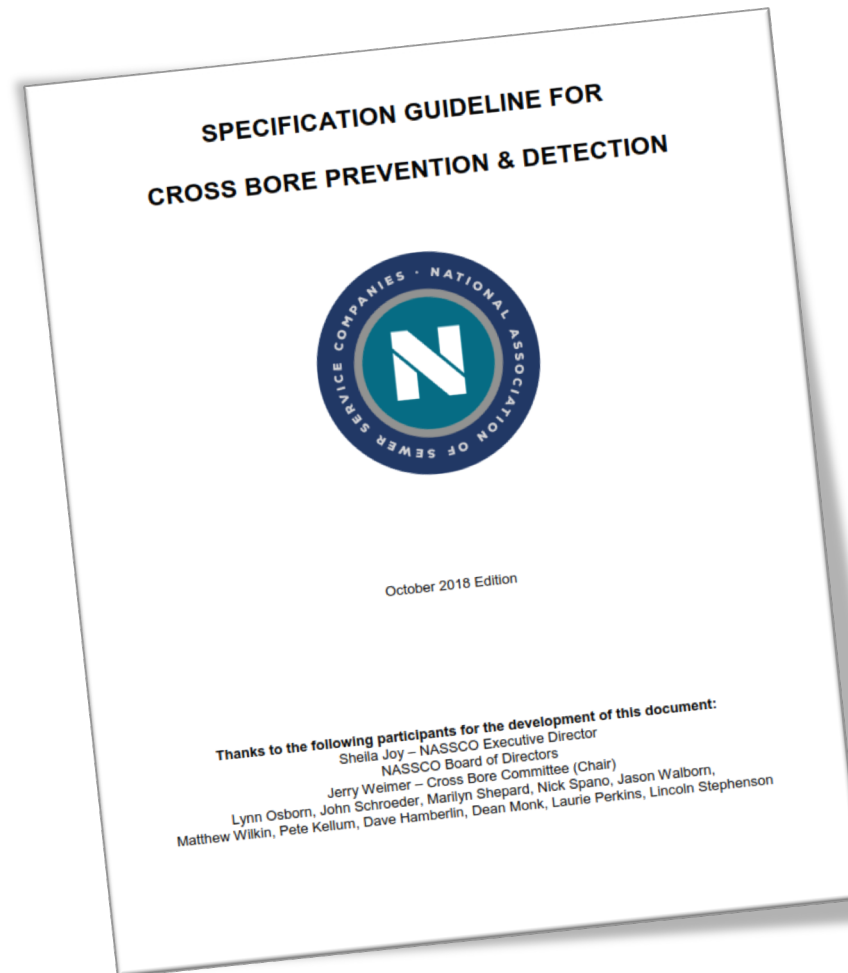
- Trenchless construction more common
- Sewer lines often unmarked or marked incorrectly
- Cross bores can go undetected for months/years
- Use of mechanical rotary devices to remove blockages
- Prompts the need for:
 - Program of “*Best Practices*”
 - QA/QC



Where does NASSCO come in?

The NASSCO Cross Bore Workgroup created a specification guideline to:

- Support the prevention of cross bore damage to existing gravity-pipeline infrastructure during trenchless construction
- To locate pre-existing cross bores which are a hazard to public safety.

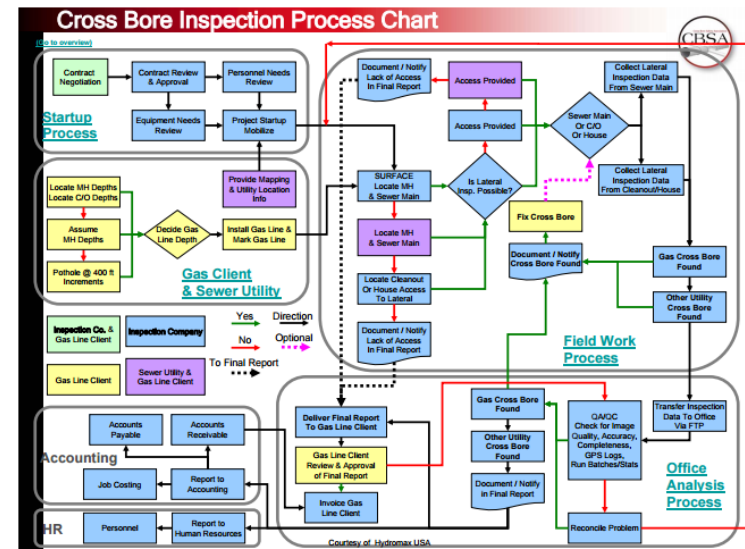


What's Covered?

1. Use/importance of a prevention program
2. Pre-construction process
3. Post-construction process
4. Handling legacy cross bores
5. What to do if a breach is found

Prevention Program

- Program to physically locate underground infrastructure
- New and replacement utility
- Robotic camera with **locating transmitters** to identify location and depth
- Allows for alignment changes
- Includes pre-inspections
- Includes post-inspections
- Includes QA/QC

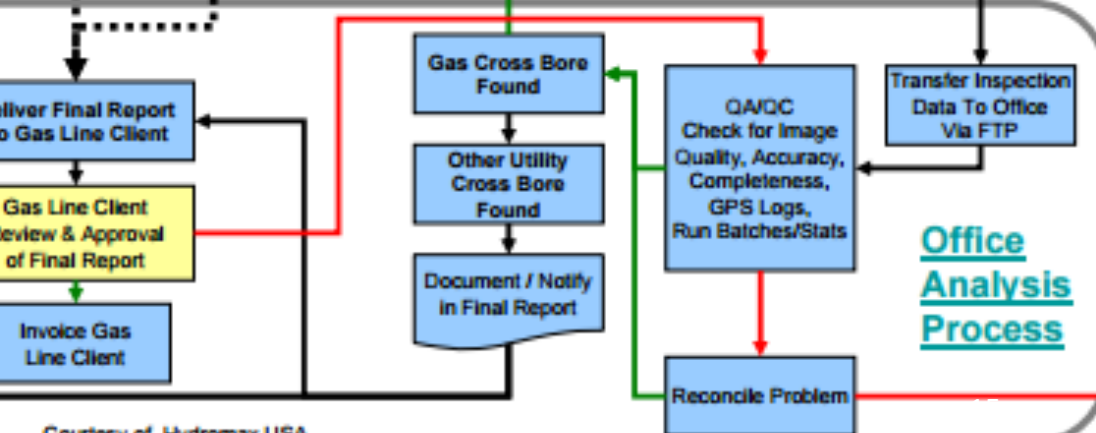
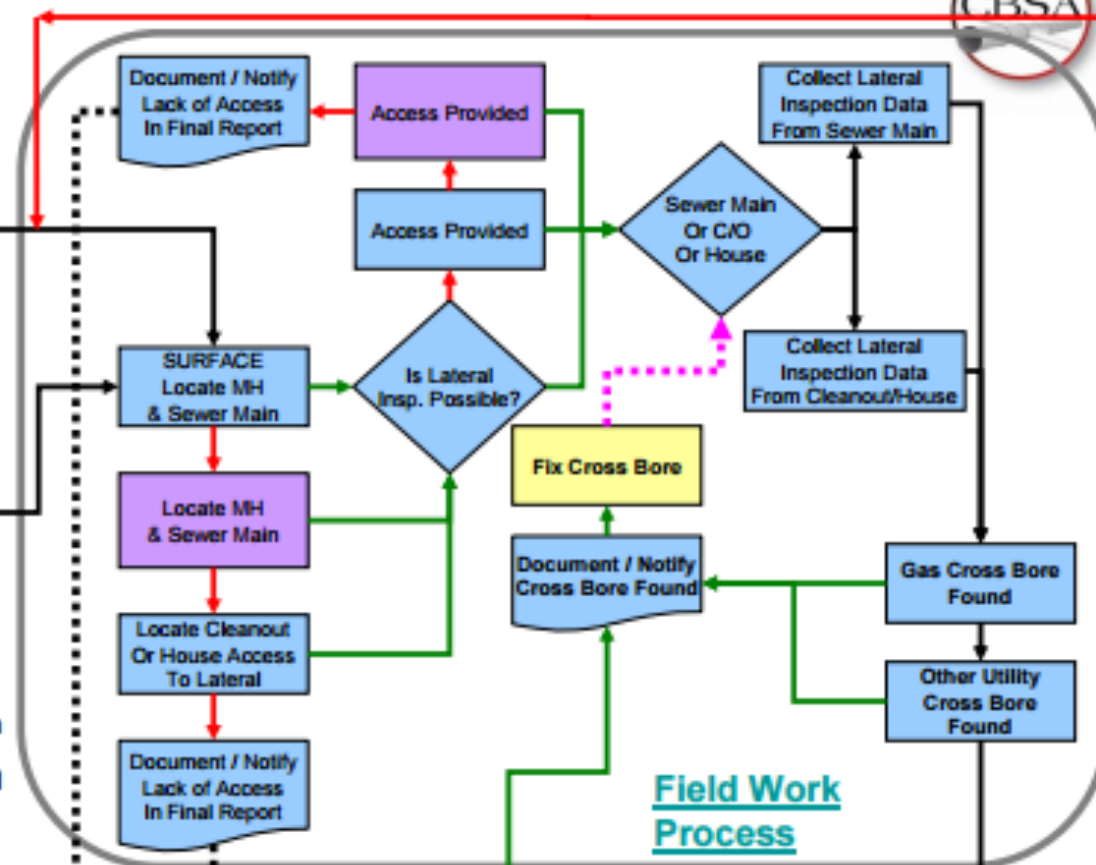
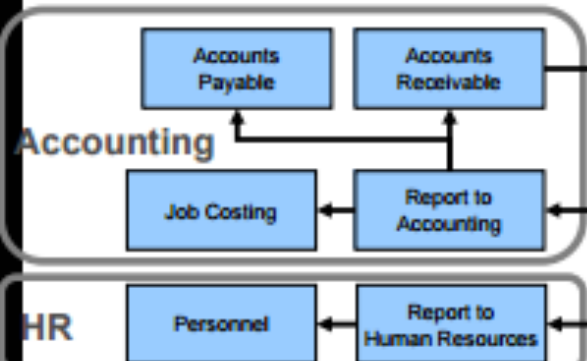
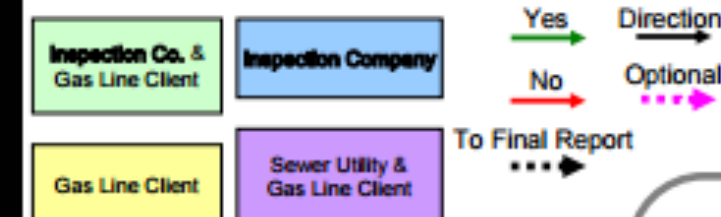
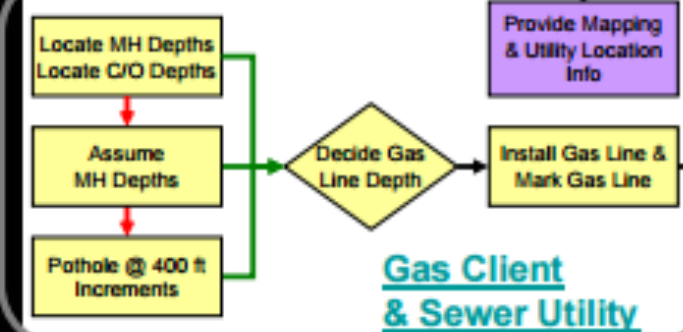


Cross Bore Inspection Process Chart



[Go to overview](#)

Startup Process





Planning – Collect all utility maps and drawings

- ✓ Review for potential cross bores, lateral locations
- ✓ **Beware – may not be accurate!**
- ✓ Perform *more* test pits, vacuum excavation
- ✓ Obtain necessary permits
- ✓ Utilization of CCTV for visual inspection

Pre-Construction Process

CCTV Inspection

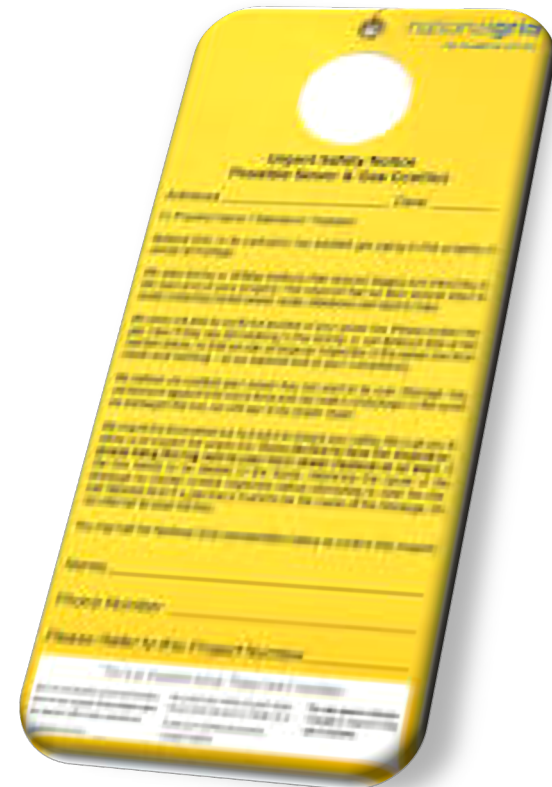
- ✓ PACP/LACP compliant
- ✓ Lateral launcher with **electronic locating technology**
- ✓ Push camera (house-out)
- ✓ Blockages
 - Clean (within 10 feet of drilling line) – see the walls of the pipe (near miss)
 - Reversal
- ✓ QA/QC – Compare with test pits, tie cards, drawings!



Pre-Construction Process

Public Outreach

- ✓ Door hangers to explain the work
- ✓ Obtain permission
- ✓ Confirm lateral ownership



Post-Construction Process

CCTV Inspection

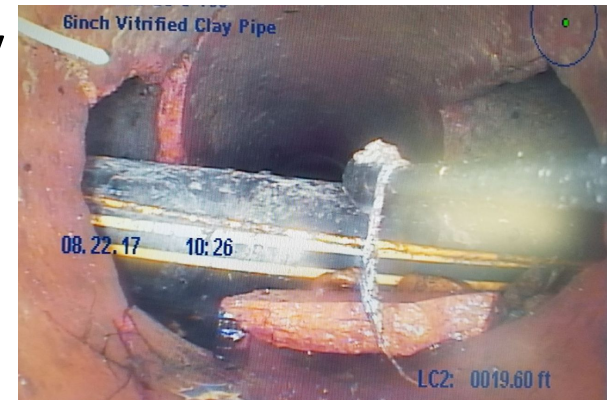
- ✓ Pre-inspection/installation records must be provided/reviewed before post-construction CCTV
- ✓ Follow pre-construction practices
- ✓ Confirm no pipes damaged
- ✓ Continuation of documentation following pre-construction video
- ✓ Acts as final evidence/record



Post-Construction Process

Leading Practices

- ✓ Update locate card/maps with utility installation method and placement
- ✓ Document post-construction CCTV locations
 - Exceptions based on proximity to construction zone
 - Use a waiver form to document
- ✓ Compare pre/post inspections for change in pipe condition (mud, crack)
- ✓ Clean/remove blockages as necessary
- ✓ Mark damage on locate cards/maps!



Post-Construction Process



QA/QC and Retention

Contractors – use disciplined approach

- Watch all videos
- Collect all locate cards
- Review for updates/accuracy
- Retain videos and copies of locate cards
- Maintain PACP/LACP compliance

Locate Cards/GIS Maps

- “Communication” between contractors (HDD/CCTV)
- Document what was inspected/installed
 - Include “all-clears” (no inspection needed)
 - Future inquiries
- Sketch: include locate measurements, length, size, type, depths
- Every residence/business along entire route
- Steps
 - CCTV contractor draws sewers and laterals from pre-inspection
 - Trenchless contractor draws utility installation locations
 - CCTV contractor documents post-inspection activities

Sewer Tags

- Safety reminder for trenchless work performed
- All sewer access points
- All residences and businesses
- Utility contact information
- Placed by contractor
- NOT affirmatively determined that cross bores don't exist (*BEWARE*)



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.

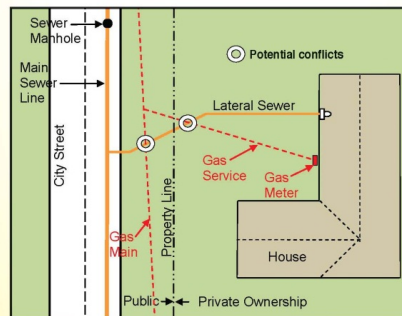


Illustration courtesy of Cross Bore Safety Association

Este informe contiene información muy importante. Tradúzcalo ó 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**



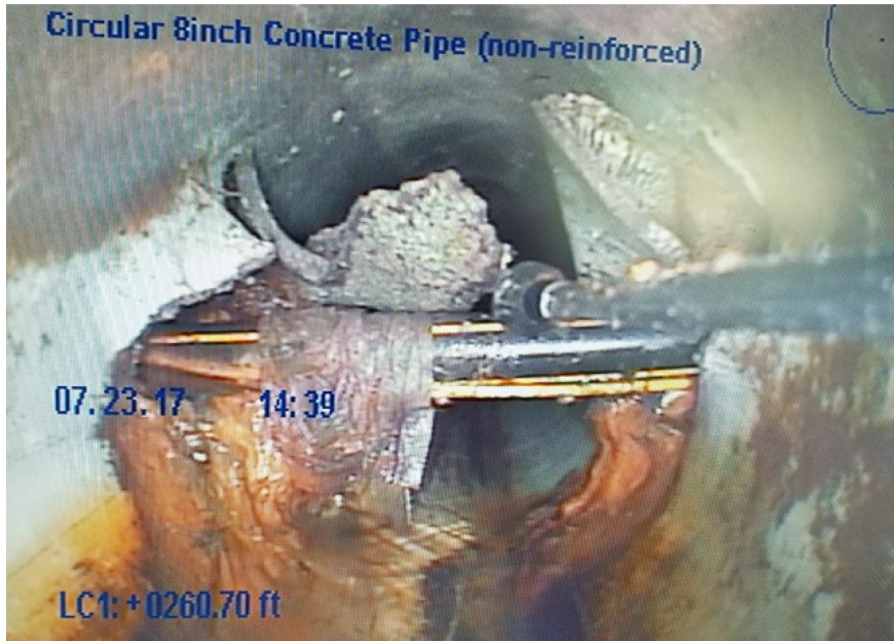
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Legacy Cross Bores



- Utility previously installed
- No cleaning/pre-construction video
- Post-construction inspection
 - ✓ No cutters for cleaning
 - ✓ Pot hole to complete inspection, add clean-outs
 - ✓ Push camera house out
 - ✓ Open cut

Breach Found



- Notify utility, contractor and sewer agency immediately
- Red "X" on locate card, note type of utility
- Breach confirmed and removed
- Section re-inspected

Thank You



Laurie Perkins, PE

laurie.perkins@wright-pierce.com

NASSCO

info@nassco.org