



PSC
of WISCONSIN

2026 Wisconsin Pipeline Safety Seminar

Wed, Feb 4, 2026 - Fri, Feb 6, 2026

Best Practices for Cross Bore Prevention and Mitigation

And Proposed Associated Best Practices and Regulations

Agenda

- Purpose
- What is a Cross Bore – a Brief History
- Cross Bore Prevention = Damage Prevention
- Best Practices – Worth the Cost?



Purpose



- To educate on the dangers of sewer cross bores
- To advocate for the use of Best Practices to prevent creating new cross bores and mitigate existing cross bores

What is a Cross Bore?

An intersection of an existing underground utility/structure by another utility resulting in direct contact that compromises the integrity of both



What Construction types cause them?

- Directional drilling
- Pneumatic piercing (hole hogs)
- Straight line hydraulic or pneumatic horizontal boring (jack and bore)
- Large cable plows
- Vibratory plows

Dangers of Cross Bores is not a New Issue



- ❑ Identified as far back as 1976
- ❑ Nearly 50 years later. The number of instances has increased at the same pace as the increase in the use of trenchless construction.
- ❑ One last event just happened in Sept 2023, in suburban Chicago



NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

FOR RELEASE: 6:30 A.M., E.S.T., NOVEMBER 12, 1976
(202) 426-8787

ISSUED: November 12, 1976

Forwarded to:
Mr. C. S. McNeer
President
Wisconsin Natural Gas Company
233 Lake Avenue
Racine, Wisconsin 53401

SAFETY RECOMMENDATION(S)
P-76-83 through P-76-86

At 8:53 a.m., on August 29, 1976, an explosion and fire destroyed a house at 6521 20th Avenue in Kenosha, Wisconsin. Two persons were killed, four persons were injured, and two adjacent houses were damaged. The destroyed house was not served by natural gas. However, natural gas, which was escaping at 58 psig pressure from a punctured 2-inch plastic main located 39 feet away, had entered the house through a 6-inch sewer lateral. The gas was ignited by an unknown source. After the accident, the National Transportation Safety Board's investigation disclosed that the gas main had been installed by boring through the bottom of the sewer tile; the gas main was perpendicular to the sewer tile. 1/

PHMSA/NAPSR: Cross Bore Prevention Practices Survey

(July 2014)

- Camera use in sewer laterals before gas line placement.
- Camera use in sewer lateral after gas line placement.
- Maps of sewer mains to be on site as part of excavation process.
- Daylighting of each sewer lateral at point of intersection with bore path.
- Listening device placed in nearest sewer manhole operated by excavator during the crossing of lateral and/or mains.
- Excavator establishes location and depth of lateral by locating a steel tape inserted through a sewer cleanout.
- Tracer wire required on new/replaced sewer laterals to make them locatable.

What Utilities Create Them?

Fiber optic fibers: Men say work for AT&T led to sewage spread



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08:00:46 AM / 2018-06-14

[22° 7"]



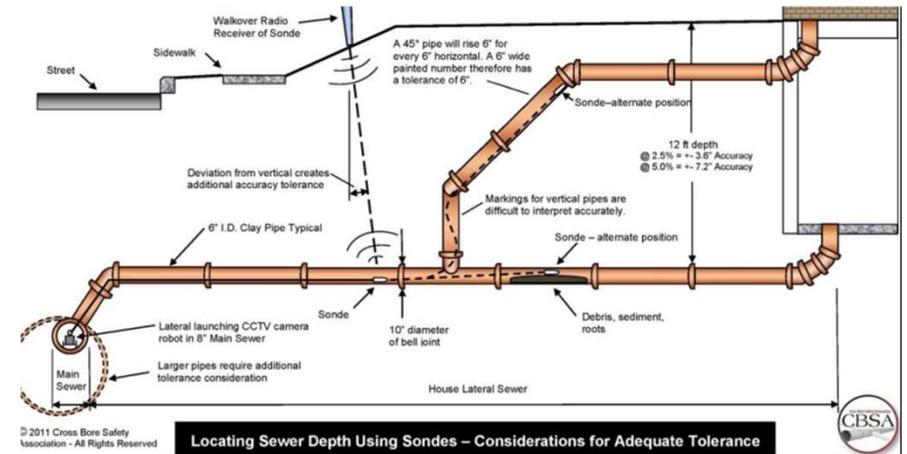
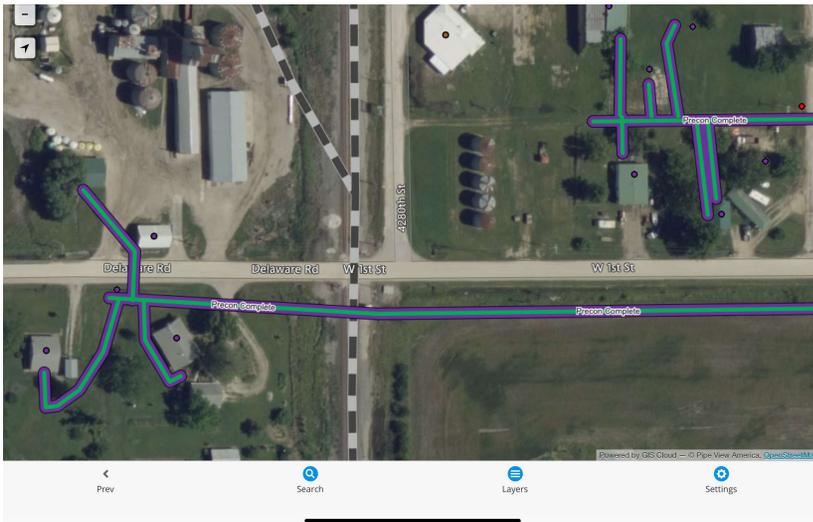
So, What is the Gas Utility Industry Doing?

- ❑ New construction
 - ❑ Pre-construction sewer inspection and locating programs
 - ❑ Post-construction QC verification programs
 - ❑ Governmental entities starting to require pre-construction sewer inspection and locating prior to the use of trenchless excavation (Chicago, States of Virginia, Washington, Minnesota, etc.)
- ❑ Existing facilities
 - ❑ Legacy sewer inspection programs inspect facilities that were installed with trenchless construction methods
 - ❑ Have public awareness programs to educate plumbers and DYU'ers when renting sewer clearing tools
 - ❑ "Call before you Clear" programs link to some state 811's to request utility to perform a record review/sewer inspection prior to sewer cleaning.



Importance of Clearing Full Length of a Sewer Lateral

- ❑ Assuming sewer laterals are deep enough or at same depth as sewer main is flawed thinking



- ❑ Multiple sewer laterals – the older the home the more likely to have new and abandoned laterals.
- ❑ Combined sanitary and storm sewer systems.
- ❑ Gutters illegally connected to sanitary sewer.
- ❑ Multiple sewer laterals at varying depths.
- ❑ Homes with shallow or no basements.
- ❑ Laterals from main floor and basement
- ❑ Terraced properties.

Tools of the Trade 1

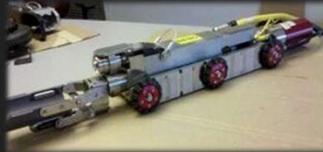


▶ Mainline Inspection Tractors



Tools of the Trade 2

▶ Lateral Evaluation Tractor System (LETS)



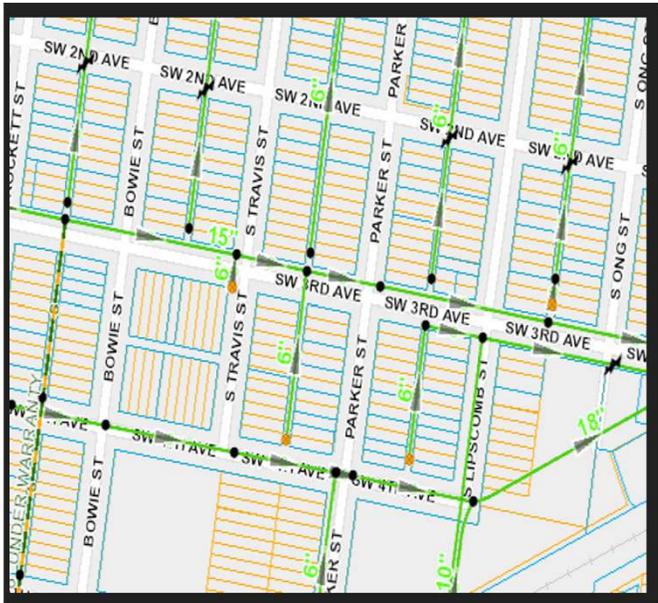
RIGID SR-24
Locator



▶ Push Camera



Tools of the Trade 3



Field Marking with
Flags and Paint



Electronic Forms

PIPE VIEW
PipeViewAmerica.com
Locate Inspect

Sewer Cross-bore Report

Date: 06/09/2017 Time Found: 1200 Crew Initials: MJGZ
Address: [REDACTED] City: [REDACTED] State: [REDACTED]
Inspector Name: [REDACTED] Onsite: Yes
Crossbore Type: Natural Gas Main Sewer Type: Storm Lateral
Sewer Pipe Size: 04 Sewer Pipe Material: PVC
Depth: 3.25 Distance: 52.5 From: Manhole
Location on Property: Apron of driveway approximately 4' behind curb
Notes: Top of pipe broken with gas main visible above. Depth of gas is 2.25'. Driveway is brick.
Pavers:
Completed by: [REDACTED]

(844) 4-PIPEVIEW www.PipeViewAmerica.com

GIS (ESRI or ArcGIS FORMAT)

SURVEY GRADE GPS

BP - Prevention: Pre-Construction Sewer Locating

- ❑ Pre-construction sewer inspection and locating performed as direct contract for a utility, or as sub for a distribution contractor.
- ❑ Provides design and planning data for utility and contractor if done ahead of planning process, with refreshing of marks prior to construction

Master ATMOS KS 2023
Feature ID: 61065
[Navigate to Feature](#)

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PRECON COMPLETE

date_of_last_status_update
02/02/24

district
Kansas

project_num
06053424

phase
0401

cost_center
3146

Inspector_name
Bradley.Edlin@atmosenergy.com

address
503

to_bldg
A

street_dir
No value

street_name

HAS C/O

9/24
LOCATED: No
FOOTAGE:
No

POST CONST DATE:
SANITARY MAIN CLEARED: No
SANITARY MAIN FOOTAGE:
LATERALS INSPECTED:

STORM MAIN CLEARED: No
STORM MAIN FOOTAGE:
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BP - Prevention: Post-Construction OQ Programs

- ❑ performed as QC/QC to ensure no new cross bores were created during construction.
- ❑ Typically, a direct contract with the utility to segregate duties from the installation contractor.
- ❑ Survey grade data collection
- ❑ Cloud GIS record linked to location, facility, field record, and video.
- ❑ Deliverables in a GIS shape file compatible with ESRI



BP - Mitigation: Legacy Cross-Bore Programs

- ❑ Inspect all sewers where trenchless work was used in periods prior to the use of sewer inspection/locating practices (typically in decades starting in 1990's to 2010's)
- ❑ Typically a multi-year program of 10 to 15 years. Non regulated O&M activity subject to budgeting priorities.
- ❑ Risk-based priority inspection: principal business districts, business of public assembly, hospitals and first responder facilities.



Locate utility conflict



Repair per local codes



Restore

2026 Cross Bore Proposed Best Practices and Regulations

- ❑ **CGA** - Proposed Best Practices for Pre, Post, and Legacy to be presented at 2026 CGA Conference.

- ❑ **PIPES act of 2025 (2026?)**
 - ❑ Key relevant provision “Excavation damage prevention”
 - ❑ The bill updates federal damage prevention grant law (49 U.S.C. § 6106) to push “leading practices” for state one-call programs. (source Congress.gov)
 - ❑ Those “leading practices” include language that is directly relevant to cross bore prevention, such as requiring:
 - ❑ Marking of lines and laterals, including sewer lines and laterals
 - ❑ Requiring all newly installed underground facilities to be locatable (including sewer lines, IL requires this as of start of 2026)
 - ❑ PIPES Act of 2025 (H.R. 5301) is still in the “Introduced” stage (has not passed the full House)

Are Cross Bore BP's Worth the Effort and Cost?

- ❑ A legacy program for a major city gas utility has uncovered 1 gas cross-bore/100 sewer laterals inspected. The Program is its 14th year.
- ❑ In a typical week we find up to 4 cross bores for our national client base.
- ❑ The total cost of a cross-bore related home explosion exceeds \$30+ million.
- ❑ Not withstanding the economic loss, loss of life and major injuries can happen.
- ❑ Additionally, there is a reputational loss for all involved: utility, contractor, and municipality.
- ❑ When an incident happens, regulators can increase oversight, and mandate new programs and changes in procedures.

Conclusion: There is no question that cross-bore mitigation and prevention should be a major concern of all utilities building or operating underground infrastructure.

QUESTIONS?

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www.PipeViewAmerica.com



(244) 423-4661

THANK YOU!

Credits and References

- ❑ Pictures and Illustrations Credits (if not from Pipe View America)
 - ❑ Slide 6 – Cross Bore Safety Association
 - ❑ Side 7 – Cross Bore Safety Association
 - ❑ Slide 10 – TV News coverage, Cross Bore Safety Association
 - ❑ Slide 12 – NICOR Gas Website, Call Before you Clear Association
 - ❑ Slide 13 – Cross Bore Safety Association
 - ❑ Slide 22 – San Antonio Water Service
- ❑ Resources
 - ❑ <https://commongroundalliance.com/Publications-Media/Best-Practices>
 - ❑ Guide: <https://www.crossboresafety.org/>
 - ❑ [AGA White Paper - Working with Other Stakeholders to Advance Pipeline Safety in Damage Prevention](#)
 - ❑ <https://www.crossboresafety.org/Leading%20Practices.htm>
 - ❑ <https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/technical-resources/pipeline/gas-distribution-integrity-management/66016/metaanalysiscrossborepractices07102014-final-r3.pdf>



Cross-Bores Impact All Underground Facilities

Gas explosions make the news; but cross-bores by all utilities are a latent safety risk



- ❑ All cross-bores, degrade the integrity of the municipal infrastructure.
- ❑ Utilities inside sewers will be damaged eventually - when the sewer main is cleaned or cleared, or as the pressure of the sewer pipe edge causes the pipe to rupture, or the cable insulation to wear out and cause a high voltage short.
- ❑ Mechanical damage to an electric or fiber line in a sewer means at minimum a lengthy outage; at worse an operator injury or death and damage to the sewer clearing equipment.

