Cross Bores Inspections

Distribution Integrity Management

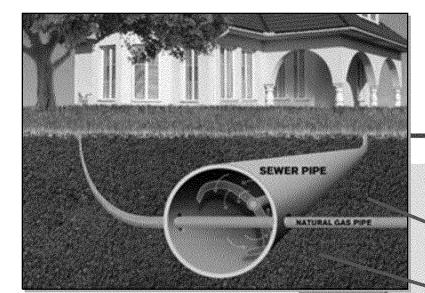
May, 2014





What is a Cross Bore?

City Street



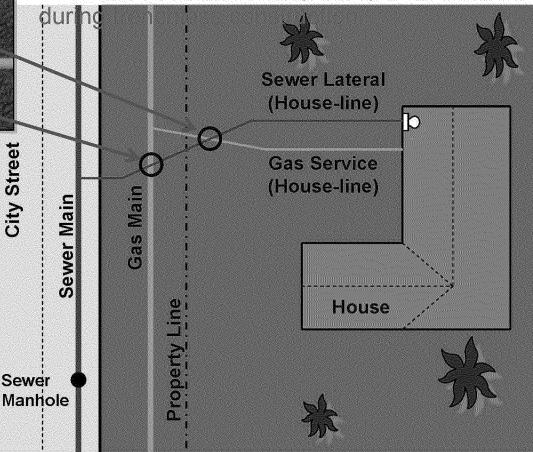
What is a cross bore?

A cross bore is the inadvertent placement of a gas main or service through a sewer

line. Sewer cross bores typically occur

What can happen as a resu a cross bore?

The sewer line may become blocked and need to be clea by a plumber or the building owner with mechanical clear tools. This may cause the ga line to be cut which could cal a release of gas.





Cross Bores – An Industry Issue

1976: First recorded instance of a Cross Bore

- Kenosha Wisconsin
- Fire, explosion, four injuries, one home destroyed and two adjacent homes damaged
- Investigated by NTSB

2004: Phoenix Arizona

 Fire, explosion, four injuries one home destroyed

New York State

 Fire, explosion, one fatality, one home destroyed

2010: St. Paul Minnesota

Fire, explosion, one injury, one home destroyed

AGA publishes report on Gas Pipelines and Unmarked Sewer Lines.

2002: Minneapolis Minnesota

Fire, explosion and two homes destroyed

2008: Cross Bore Safety
Association formed, a non-profit
organization of construction, pipe
manufacturer, inspectors and
utility professionals

- Eighteen known cross bore incidents in U.S. since 2002¹
- Industry average cross bores estimated at 2-3 per mile of gas pipe and can be higher regionally, especially if sewer and gas lines are installed at the same depth²
- Incident in Minnesota resulted in a state mandated program to address cross bores³

I LO

- ¹ GTI "Mitigating the Risk of Cross-Bores", presentation to Northeast Gas Association, October 4, 2012
- ² Cross Bore Safety Association (CBSA), Legacy Cross Bores
- Minnesota Department of Public Safety, State Fire Marshal and Pipeline Safety, Alert Notice, May 10, 2010

2012: Gas Technology Institute (GTI) publishes report on Cross-Bores Best Practice and Outreach Program

Best practices focus on:

 Compliance, resources, awareness, records and risk assessment and mitigation

2007

 Began investigating the potential of cross bores on PG&E's gas distribution system

2011

Initiated Cross Bore Safety
 Program as a mitigation
 measure based on the results
 of the risk analysis performed
 as part of the Distribution
 Integrity Management Program

2013

- Increased number of legacy inspections under Cross Bore Safety Program
- Increased focus on current trenchless technology practices to prevent crossbores

2010

 Implemented requirements to perform inspections on service replacement postconstruction

2012

- Initiated inspections to identify legacy cross bores
- Filed request in 2014 GRC to ramp up number of inspections conducted under Cross Bore Safety Program

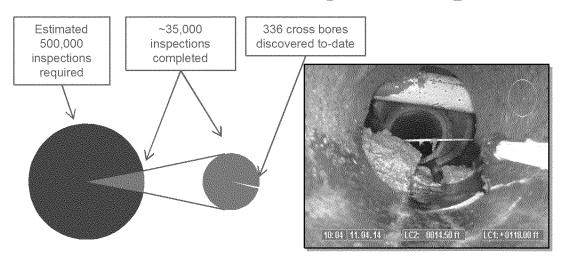
There have been 5 near hits since 2012 where cross bores were damaged and gas was released; however, the leak was mitigated before any property damage occurred.

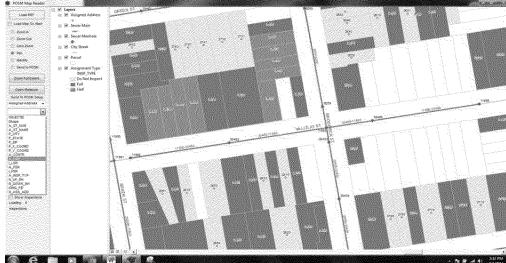


PFSF PG&E's Cross Bore Safety Program

Legacy Inspections

- Camera inspections of sewer mains and laterals to locate potential legacy cross bores
- Risk-based prioritization of inspections based on public assembly locations and population density (e.g., schools, hospitals)
- Inspections focused on known locations of boring technology use
- · Rigorous tracking of inspected parcels

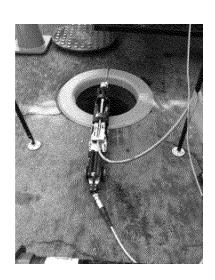




Inspection Methods

Camera equipment is either

- Inserted into a sewer manhole and launched up each individual sewer lateral
- Inserted through a toilet, trap, or cleanout at the house and pushed to the street

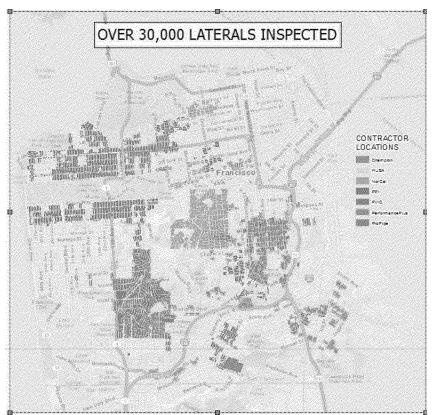






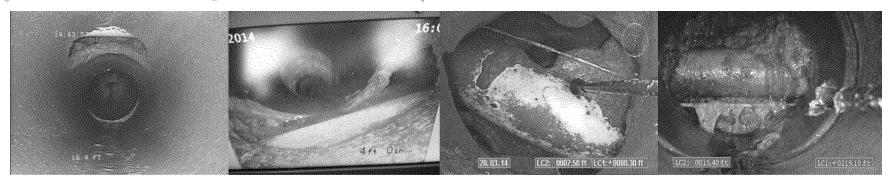


Tracking, Notification and Repair Process



When a cross bore is identified:

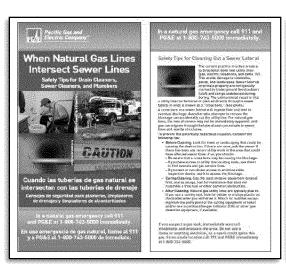
- Owner of sewer notified
- PG&E crews dispatched if blockage condition exists
- Gas line relocated out of sewer lateral
- Sewer repaired by licensed plumber
- Find rate is approximately 1 per 1,000 inspections or roughly 2 per mile of main, consistent with industry experience

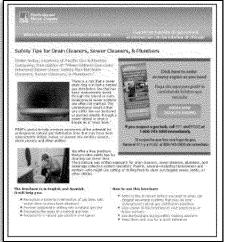


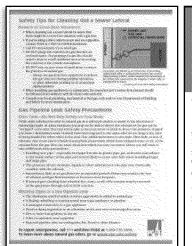


Outreach and Education

- Materials distributed to key stakeholders explaining cross bores and requesting appropriate action when a cross bore is suspected.
- In 2012, PG&E sent safety brochures on Cross Bores to 12,500 sewer districts, public works agencies, plumbers, and equipment rental stores.
- In 2013, we completed two notifications totaling 25,000 brochures with an additional 283 mailings to sewer agencies and plumber unions.
- In 2014, in addition to our stakeholder mailings, we included cross bore information in March as a bill insert.

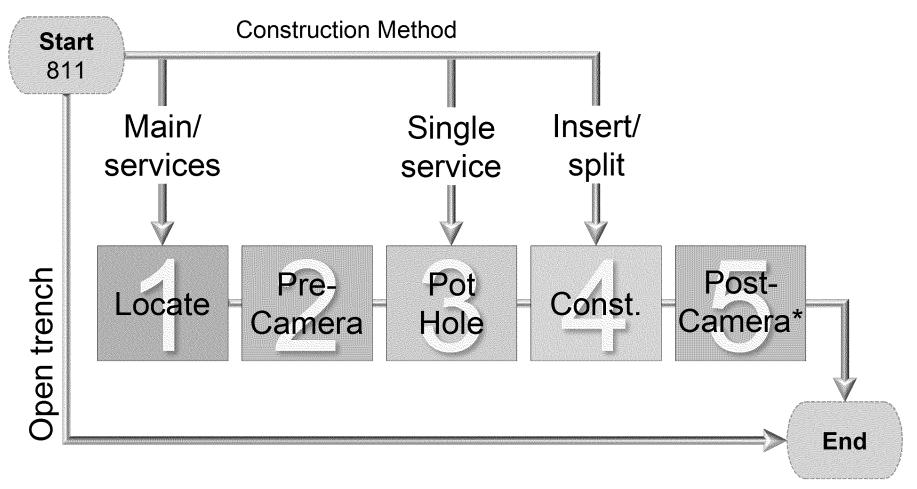








(Currently being piloted in San Francisco and Peninsula regions)



^{*}Perform before job closeout if pre-locate was completed. Perform within 24 hours if NO pre-locate was completed.

Program	Benchmark Source	Comments
Legacy	American Gas Association Survey	PG&E provides public outreach consistent with the industry best practices.
		Not all utilities have legacy inspection programs.
	American Gas Association Survey	PG&E's new procedures implements best practices to ensure crossbores are not created as we require
	Gas Technology Institute (GTI)	100% post-construction inspection.
	Local and National Contractors	
Prevention		
	Other Major US Utilities	PG&E is not only consistent with practices followed by other major US utilities but also meets best practices outlined in GTI's "Cross Bore Best Practices – Best Practices Guide".