

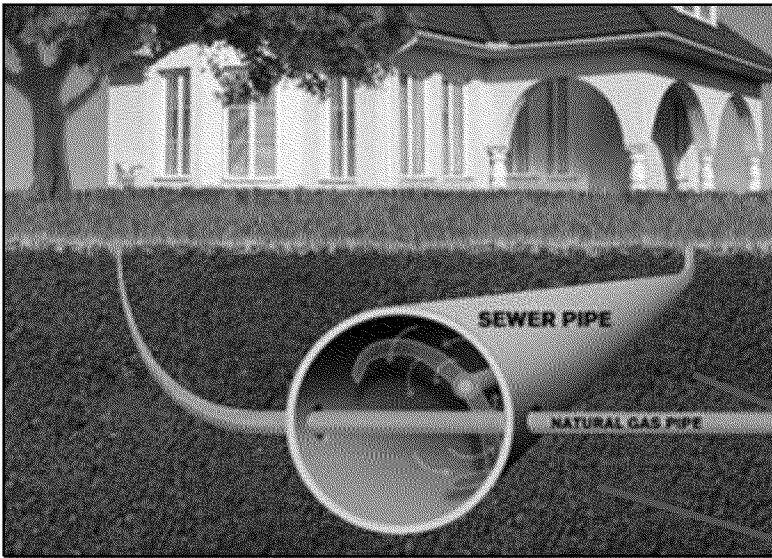
# Cross Bores Inspections

## Distribution Integrity Management

May, 2014

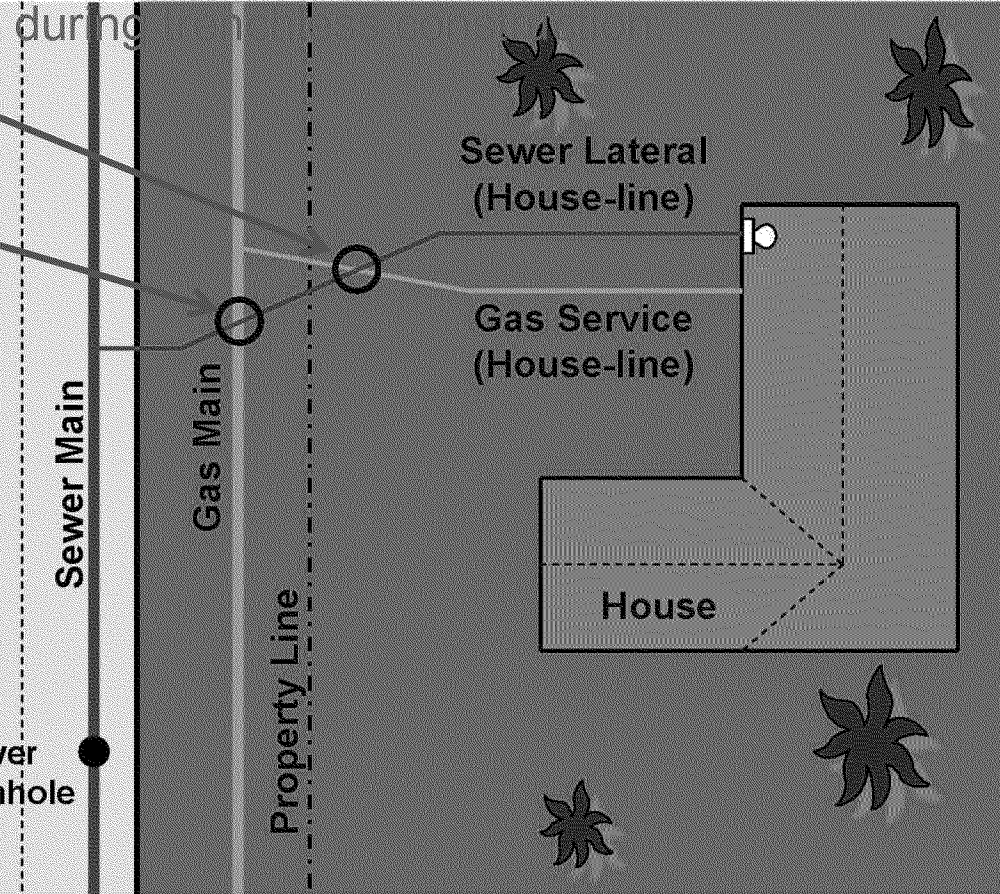


# What is a Cross Bore?



## 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 result of a cross bore?

The sewer line may become blocked and need to be cleaned by a plumber or the building owner with mechanical cleaning tools. This may cause the gas line to be cut which could cause 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

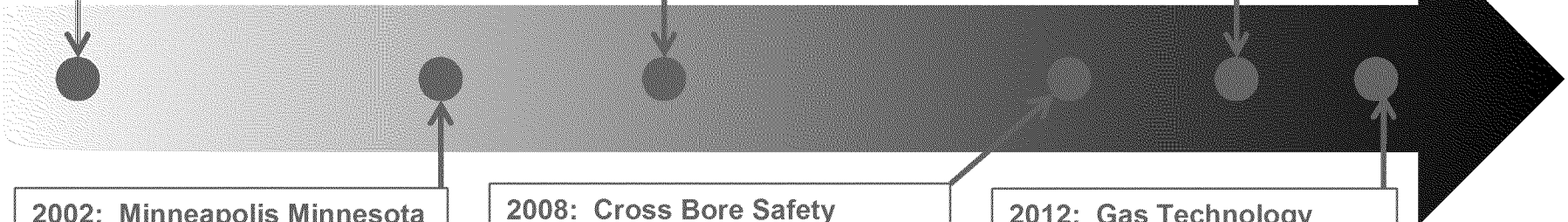
**New York State**

- 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

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

Best practices focus on:

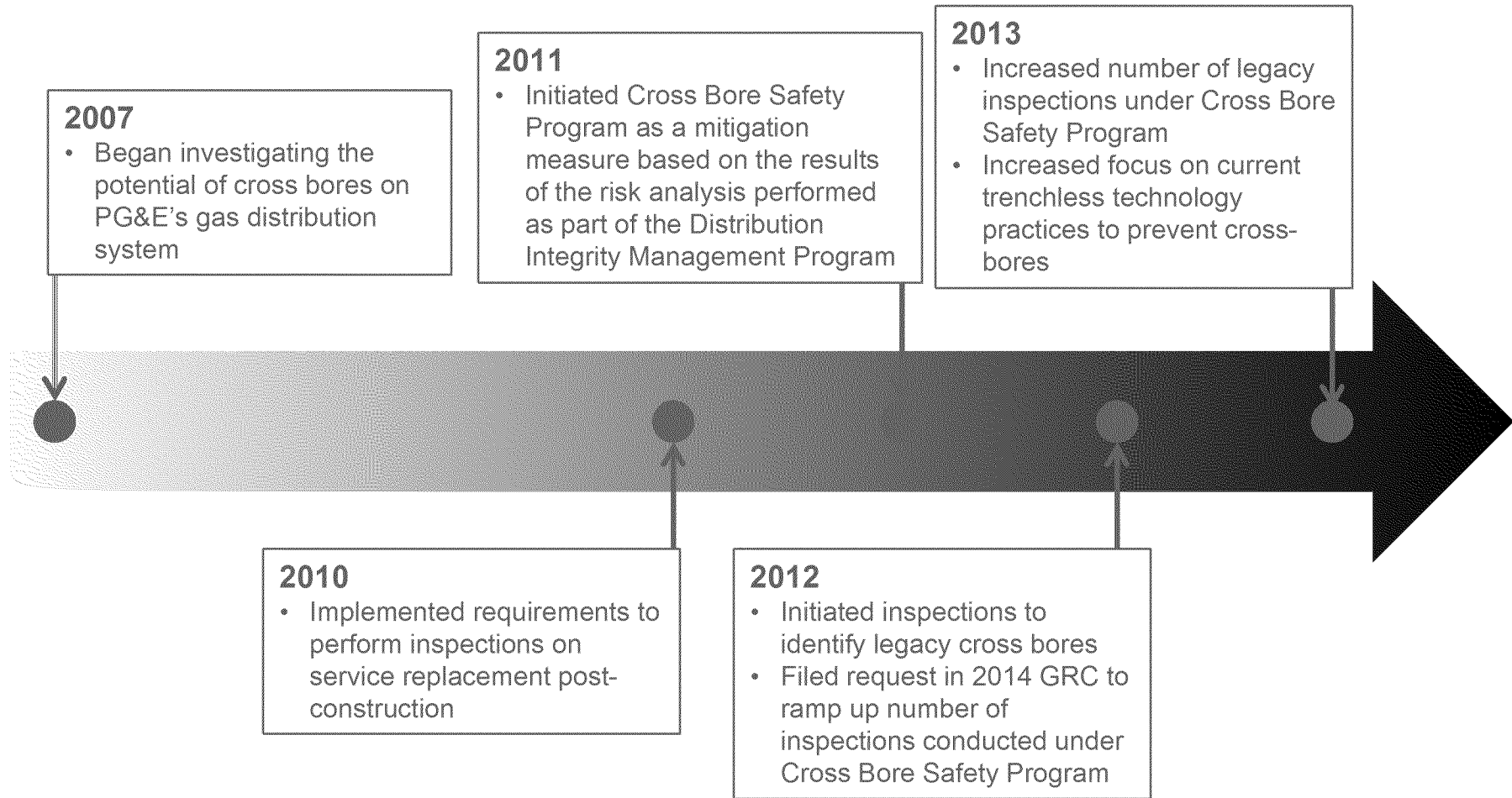
- Compliance, resources, awareness, records and risk assessment and mitigation

- Eighteen known cross bore incidents in U.S. since 2002<sup>1</sup>
- 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 depth<sup>2</sup>
- Incident in Minnesota resulted in a state mandated program to address cross bores<sup>3</sup>

<sup>1</sup> GTI "Mitigating the Risk of Cross-Bores", presentation to Northeast Gas Association, October 4, 2012  
<sup>2</sup> Cross Bore Safety Association (CBSA), Legacy Cross Bores  
<sup>3</sup> Minnesota Department of Public Safety, State Fire Marshal and Pipeline Safety, Alert Notice, May 10, 2010



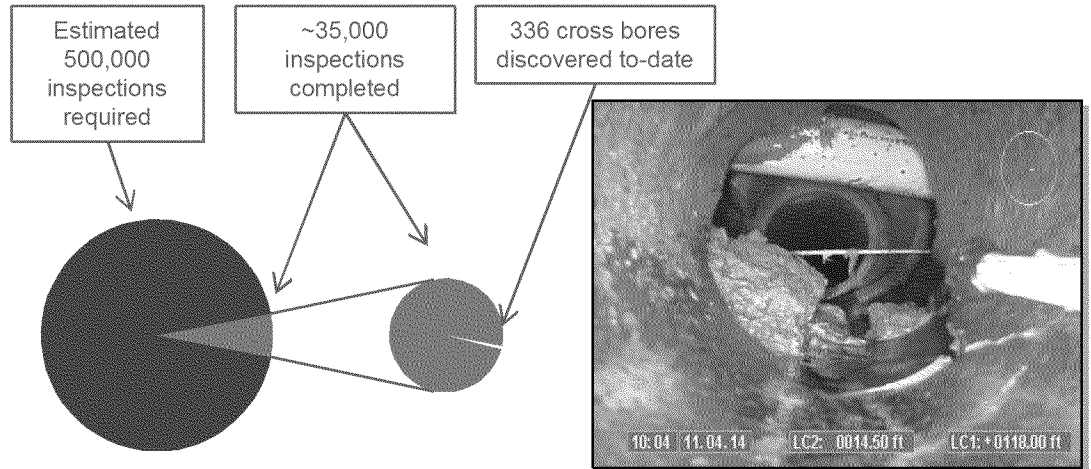
# PG&E's History with Cross Bores<sup>4</sup>



# 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

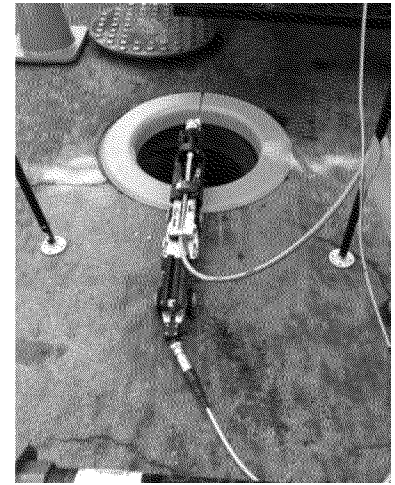




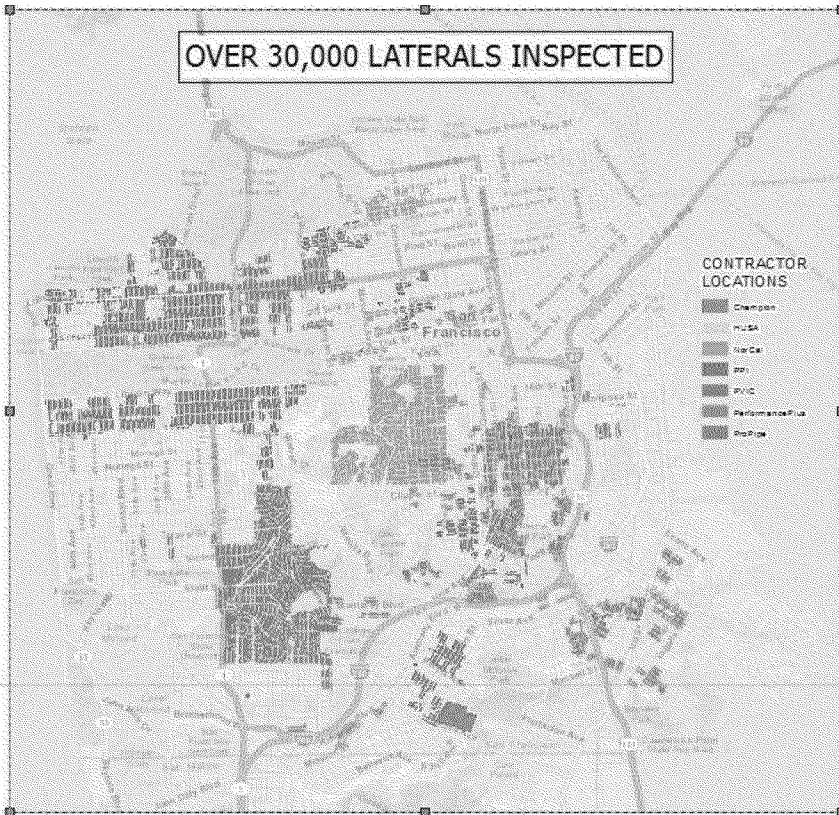
# Inspection Methods

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

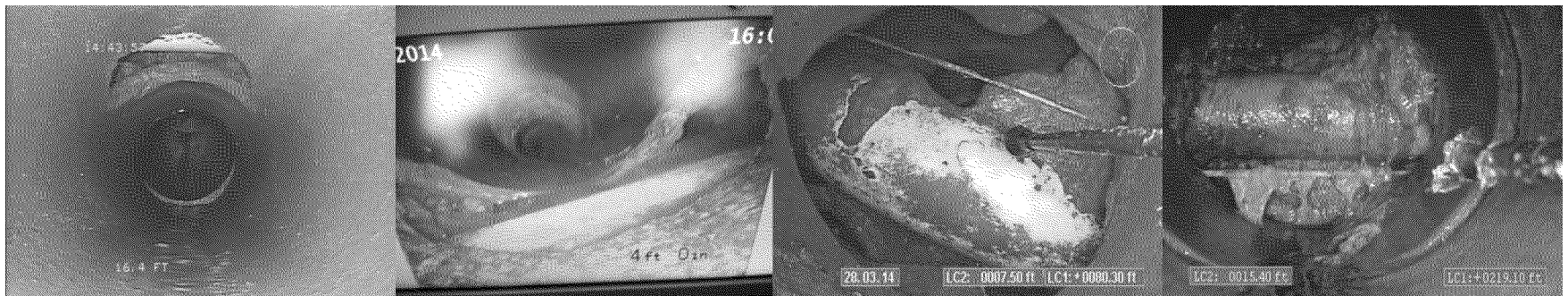


# Tracking, Notification and Repair Process



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





- 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.

**When Natural Gas Lines Intersect Sewer Lines**  
Safety Tips for Drain Cleaners, Sewer Cleaners, and Plumbers

**CAUTION**

**Quando las tuberías de gas natural se intersectan con las tuberías de drenaje**  
Consejos de seguridad para plomeros, limpiadores de drenajes y limpiadores de alcantarillados

In a natural gas emergency call 911 and PG&E at 1-800-743-5000 immediately.  
En una emergencia de gas natural, llame al 911 y a PG&E al 1-800-743-5000 de inmediato.

**Safety Tips for Clearing Out a Sewer Lateral**

The current practice involves access to residential areas via utility lines (gas, electric, telephone, and cable). This access, combined with the presence of sewer lines, creates a high-risk environment for cross bores. Cross bores occur when a sewer line is inadvertently connected to a gas line during clearing operations.

**Before Clearing:** Look for signs of landscaping that could be causing the obstruction. If there are none, call the owner of the area to be cleared. If you are unable to identify the utility lines, for natural gas lines, the use of camera may not be immediately apparent and gas can migrate through the lateral and concentrate in sewer lines and nearby structures.

**During Clearing:** Use the least invasive equipment (hand first, air or jet, or jet) for removal of the obstruction. After clearing, return gas utility lines to their original position. Watch for bubbles escaping from the vent pipes of the existing equipment or from any other gas connection gas indicator (CO or other gas detection equipment), if available.

If you suspect a gas leak, immediately evacuate the area and evacuate the area. Do not use a flame or anything electrical, or a spark create until you go. From a safe location call 911 and PG&E immediately at 1-800-743-5000.

**Safety Tips for Drain Cleaners, Sewer Cleaners, & Plumbers**

Check here for advice on many topics as you head into the field.

**From natural gas leaks, call 911 and PG&E at 1-800-743-5000 immediately.**

**The Breaker is in the Field, not the Office**

- Know the location of the breaker for the gas service to your site.
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**How to Use This Brochure**

- Refer to this brochure for information on safety, health, and environmental issues.
- Use this brochure as a reference for safety and health information.
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**Safety Tips for Clearing Out a Sewer Lateral**

**Check for Gas Before Clearing:**

- Before clearing, check for gas leaks in the area.
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**Clearing Operations:**

- Use the least invasive equipment (hand first, air or jet, or jet) for removal of the obstruction.
- After clearing, return gas utility lines to their original position.
- Watch for bubbles escaping from the vent pipes of the existing equipment or from any other gas connection gas indicator (CO or other gas detection equipment), if available.

**What to do if you suspect a gas leak:**

- Evacuate the area immediately.
- Do not use a flame or anything electrical, or a spark create until you go.
- From a safe location call 911 and PG&E immediately at 1-800-743-5000.

**Protecting Your Community**

PG&E is committed to protecting your community from the risks of natural gas leaks. We provide safety information to our customers and the public to help prevent accidents and ensure the safe use of natural gas.

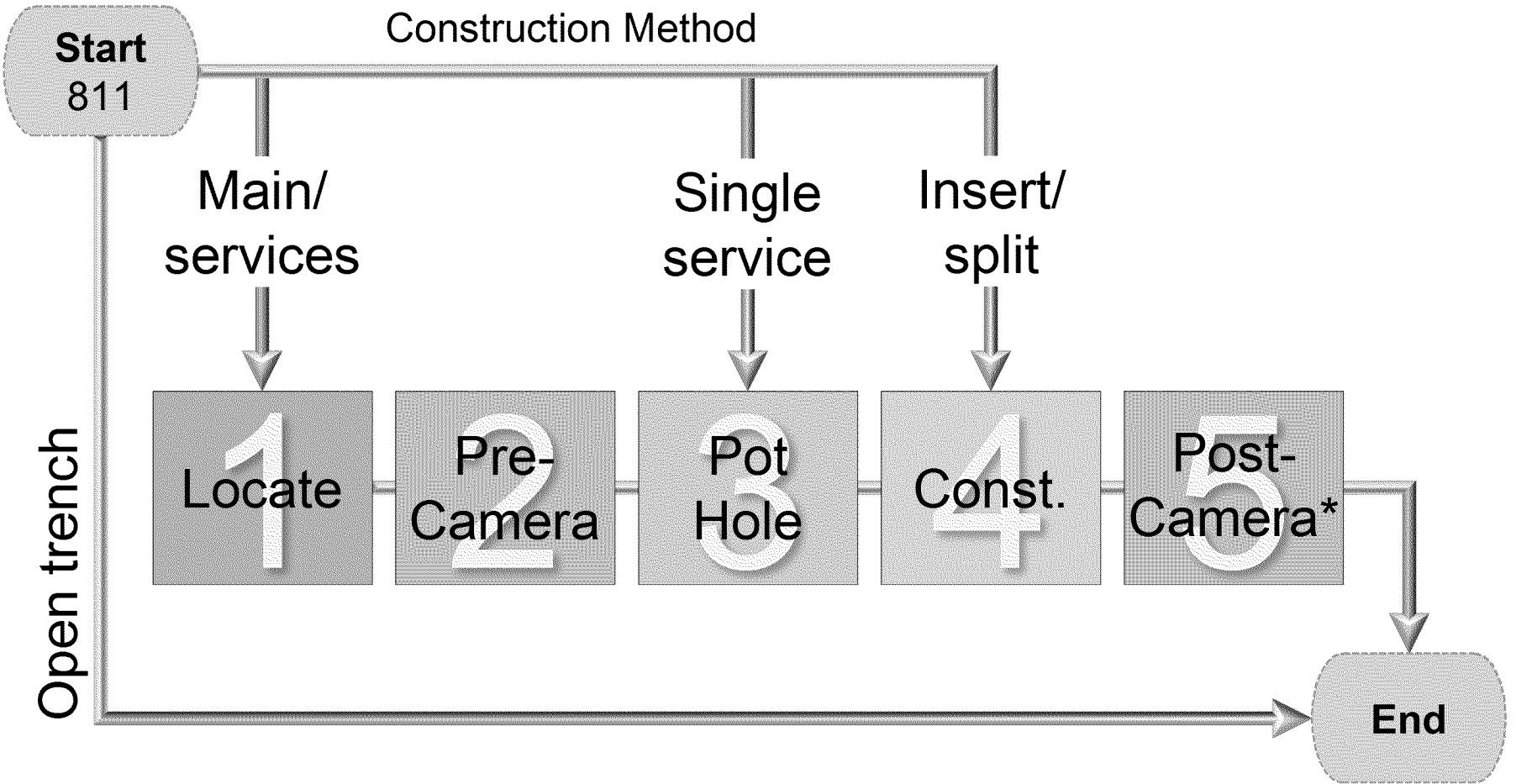
**What to do if you suspect a gas leak:**

- Evacuate the area immediately.
- Do not use a flame or anything electrical, or a spark create until you go.
- From a safe location call 911 and PG&E immediately at 1-800-743-5000.





# Cross Bore Prevention Process



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



# Benchmark Results

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.
Prevention	American Gas Association Survey Gas Technology Institute (GTI) Local and National Contractors	PG&E's new procedures implements best practices to ensure crossbores are not created given the combination of the pre-camera, pothole and post-camera inspections.
	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".