



Miller Pipeline

**Miller Pipeline
Keyhole Technology**

**Great People Delivering
Customer-Focused, Quality-Driven Utility Solutions**

Miller Pipeline History



Miller Pipeline Corporation is recognized as a world leader in the development and installation of specialty pipeline products and services as well as the leader in confined-space safety. Founded in 1953 as a gas distribution pipeline construction contractor covering the state of Ohio, the company branched out to Indiana in 1961. Over the years, Miller has expanded to other locations across the country.



Vacuum Excavation History



The Miller VAC-HOE® vacuum excavator has been in use since **1978** performing a wide range of underground procedures such as gas main cast iron bell joint and fitting repair, anode installation, test wires, service terminations and replacements, and utility designation (Spot holes)

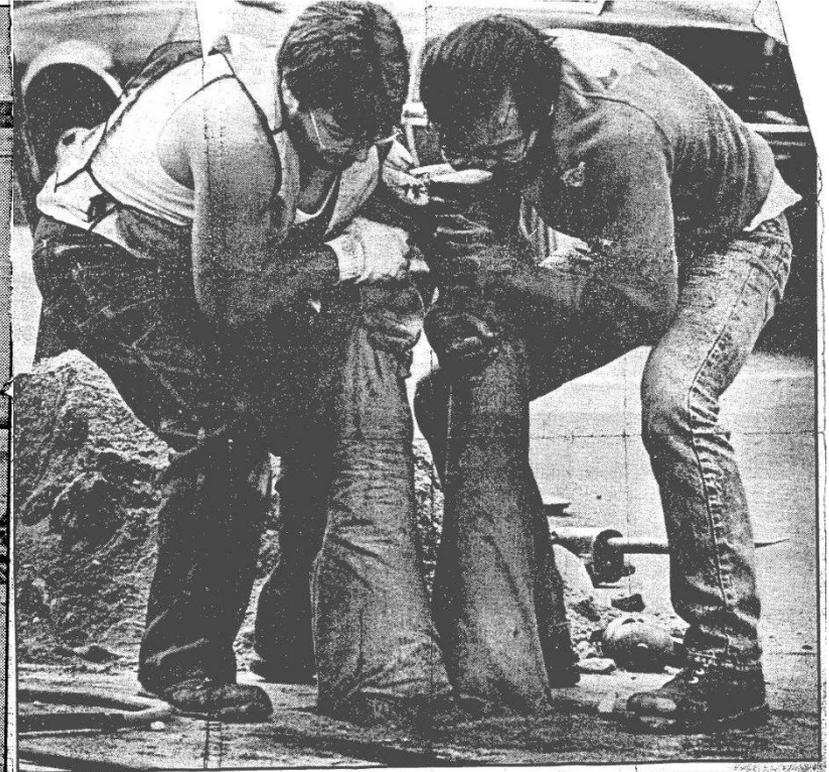
Early Version of Vacuum Excavator



Early Version of Extension Tools



A Leg Up on Things

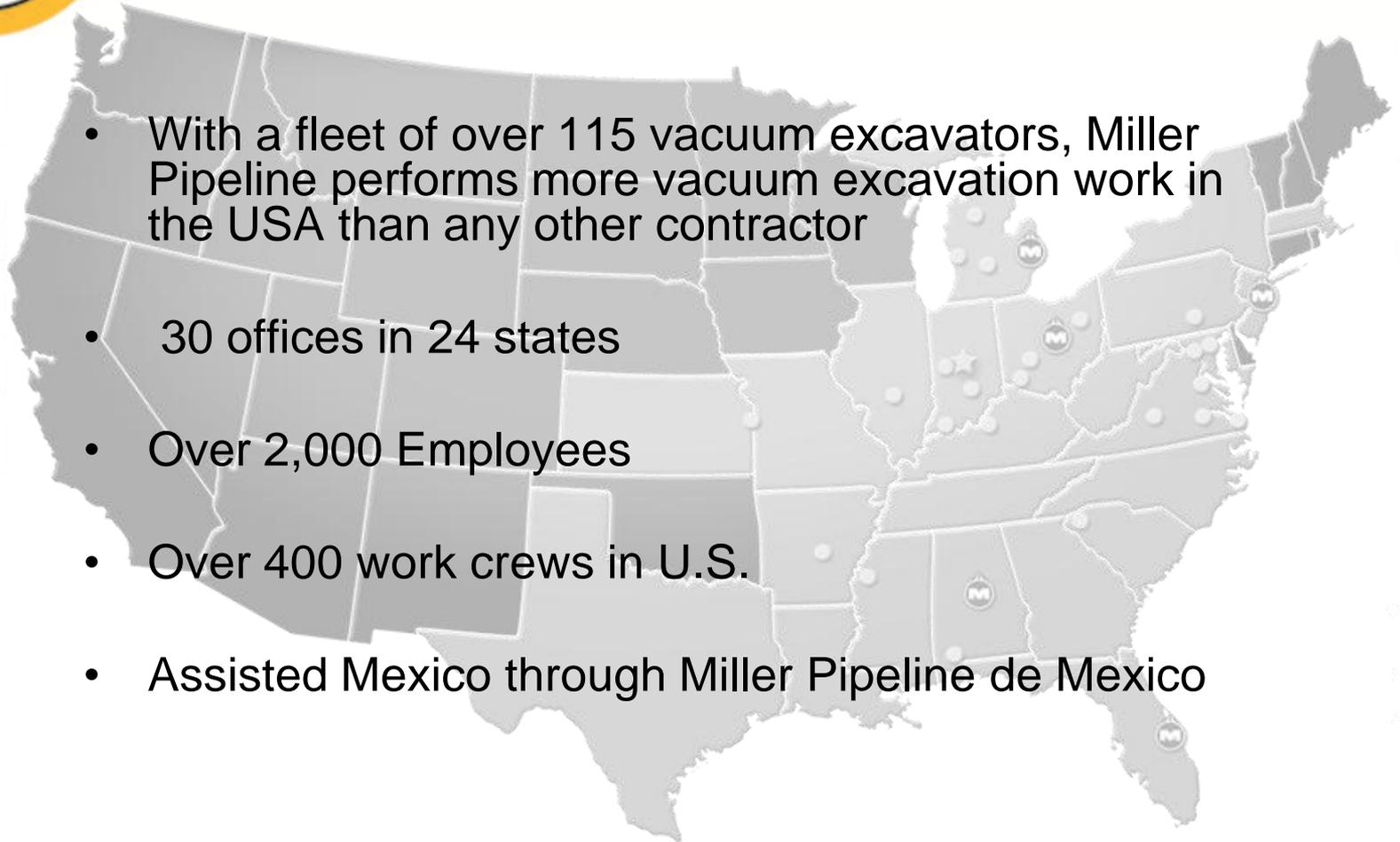


Manhandlers

CHRISTOPHER GARDNER/Montage Staff



- With a fleet of over 115 vacuum excavators, Miller Pipeline performs more vacuum excavation work in the USA than any other contractor
- 30 offices in 24 states
- Over 2,000 Employees
- Over 400 work crews in U.S.
- Assisted Mexico through Miller Pipeline de Mexico





Services Provided with Vacuum Excavation

- Cast Iron Bell Joint Repair
- Service Terminations
- Cathodic Protection—Anode Installation
- Exposing utilities and sewers in advance of directional drilling
- Service Renewals
- Main insertion/replacement



Bell Joint Encapsulation



Cast Iron Bell Joint Repair

Leaking Bell Joint is Pin-Pointed





Cast Iron Bell Joint Repair

Pavement is removed, and bell joint is vacuum excavated
This is also done using coring technology





Cast Iron Bell Joint Repair

Bell Joint is Sand-blasted using Miller Extension Sand-Blasting Wand



Cast Iron Bell Joint Repair



Sand-Blasted Bell Joint



Cast Iron Bell Joint Repair



Primer is Applied using Miller's Extension Brush Holder





Cast Iron Bell Joint Repair

Miller Slot Kit is Installed using Specialty Extension Tools



Cast Iron Bell Joint Repair



Installed Miller Slot Kit Ready for Encapsulate





Cast Iron Bell Joint Repair

Miller Encapseal is Installed in Slot Kit





Cast Iron Bell Joint Repair

Cap is Installed on Slot Kit Using Extension tool and is Ready for Backfill Immediately





Service Terminations



Service Terminations

Bare Steel Service in Cast Iron Main to be Terminated



Service Tap has been Cored and Vacuum Excavated



Service Terminations

Plug Removed from Tee and Expansion Plug Installed to Stop Flow of Gas





Service Terminations

Section of Service Line has Been Cut out Using Miller's Extension Air Saw



Service Terminations



Tee Has Been Extracted from Main Using Miller's Tee Extraction Tool. Plug in Main and Ready to Backfill



Service Terminations



Excavation has been backfilled and Core Restored
Ready for Traffic within 30 Minutes





Anode Installation

Anode Installation



Asphalt is Removed over Gas Main





Relatively Small Excavation



Anode Installation



Excavation is Completed Using Vac-Hoe in Tight Alley



Anode Installation



Anode is Installed in Excavation



Anode Installation



Coating is Removed from Main



Anode Installation



Anode is Installed Using Miller Anode Installation Tool



Anode Installation



Wire is Attached to Main using Thermo-Weld or Cad-Weld System



Anode Installation



Main is Re-Coated and ready to Backfill Within Minutes



Anode Installation



Excavation is Restored With Cold Patch Asphalt and Ready for Traffic Immediately





Utility Verification/Directional Drilling

Directional Drilling is the Installation choice of many—Miller Pipeline operates over 70 directional drilling machines





Utility Verification/Directional Drilling

Water Service Exposed by Vacuum Excavation 40" deep





Utility Verification/Pre-Design Engineering

Spotting Utilities in Advance of Public Improvement





Utility Verification/Pre-Design Engineering

Looking for Fiber Optic Line in Route of Proposed Storm Sewer



Utility Verification/Plant Work



Many Plants Will Not Allow Destructive Excavation—Only Vacuum Excavation





Utility Verification/Plant Work

Vacuum Excavation Used to Clear First 8' Before Drilling for Deep Well Anode Bed





Service Renewal/Cast Iron Main Replacement

Coring and Vacuum Excavation Used in Conjunction With Conventional Replacement Methods





Service Renewal/Cast Iron Main Replacement

Two Service Taps Cored, Vacuum Excavated, and Ready to be Inserted





Service Renewal/Cast Iron Main Replacement

Cored Service to be Renewed





Service Renewal/Cast Iron Main Replacement

Section of Main Being Removed With Miller Extension Saw





Service Renewal/Cast Iron Main Replacement

Main Inserted and Service Ready to be Tied-in





Service Renewal/Cast Iron Main Replacement

Preparing to Install Electrofusion Tee with Extension Tool





Service Renewal/Cast Iron Main Replacement

Service Line to be Air Tested





Service Renewal/Cast Iron Main Replacement

Extension Tool to Install Cap



Other Tasks for Vacuum Excavation



- Valve box Cleaning—replacement
- Plastic Cap on punch tee replacement—over 4,000 replaced in Austin, TX
- Regulator pit/vault cleaning
- Assist conventional excavation equipment in utility congested areas



- Coring is a specialized pavement-removal process allowing Miller Pipeline crews to cut and remove a clean, intact section of asphalt and/or concrete covering a utility
- Cored Section is set aside during excavation and re-instated after task in hole is complete
- Coring is minimally disruptive; it allows access to underground pipelines without damaging integrity of the road base in close proximity to the excavation
- Coring virtually eliminates plates, barricades and the need for another contractor to return to site to restore paving



Coring Can Eliminate Barricades and Plates as well as lower Cost of Restoration



Many U.S. Cities require/accept Coring Process



- Los Angeles, CA
- Chicago, IL
- Baltimore, MD
- Kansas City, MO
- St. Louis, MO
- New York, NY
- Dayton, OH
- Allentown, PA
- Harrisburg, PA
- Lancaster, PA
- Reading, PA
- Austin, TX
- Dallas, TX
- Fort Worth, TX
- San Antonio, TX
- Washington DC
- Many others



In addition to building our own fleet of vacuum excavators, many of our customers have been so impressed by our equipment that they have purchased some for themselves.

Some Customers Who Have Purchased our Equipment and Tools



- City of Dallas
- Philadelphia Gas Works
- Indianapolis Water Co.
- Boston Gas
- Peoples Gas (Chicago)
- Rochester Gas and Electric
- Public Service Electric & Gas (New Jersey)
- Hallen Construction (New York City)
- Pacific Gas & Electric (Los Angeles)

Vacuum Excavator Built for Customer



Vacuum Excavator Built for Customer



Vacuum Excavator Built for Customer





- Miller Pipeline has designed and used extension tools since the 1970's
- Tools are designed and improved by those who use them
- Tools are available for all processes shown
- We are constantly looking at new ideas for tooling for additional processes to perform through a keyhole
- While Miller Pipeline is a contractor first; we will continue to be at the cutting edge of tool development in the industry as we have been for the last 30 years
- We are not a tool manufacturer—we are a contractor who has chosen to make extension tools to keep up with our customer's needs—Most companies either build tools or perform services—we do both