
# Enhancing Damage Prevention thru the Development of Intrinsically Locatable Pipe

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# GTI Overview

***Serving the Industry Since 1941***

- Independent, not-for-profit established by the natural gas industry
- GTI tackles tough energy challenges turning raw technology into practical solutions
- Downhole to the burner tip including energy conversion technologies
- Working for the industry to help advance the industry


# Excavation Damage

- Excavation damage is a serious threat to public safety and pipeline integrity and the leading cause of gas distribution incidents.
- **Natural Gas Distribution Pipelines:**
  - Over 2,000,000 miles of natural gas distribution pipes in the U.S.
  - Because gas distribution pipelines are located in densely populated communities, there is a higher risk of a pipeline failure resulting in a serious incident (injury, life, and damage to property).

# Excavation Damage and Un-locatable PE Pipe


**Unlocatable plastic pipe is a great risk for natural gas operators. Tracer wire that is broken or missing, never installed, inaccessible, and distorted signals from nearby utility lines are all causes for un-locatable PE pipe.**

# Intrinsically Locatable Plastic Pipe (ILPP)

- **Collaborative effort between OTD, 3M & GTI**
- **Co-funded by DOT PHMSA and OTD**

***The goal of this effort is to develop and test a viable solution for intrinsically locatable PE materials with an integral electronic marking system.***

## Key Success Factors

- ✓ *Meets industry's damage prevention initiatives*
- ✓ *Is consistent with 3M's Flex Pipe & Super Tag technology*
- ✓ *Brings all stakeholders to the table*

# Intrinsically Locatable Plastic Pipe (ILPP)

## LOCATABLE PLASTIC PIPE

**Addresses a critical pain point for gas industry**

- Significant improvement to worker & area safety
- Higher life expectancy
- Higher productivity in installation

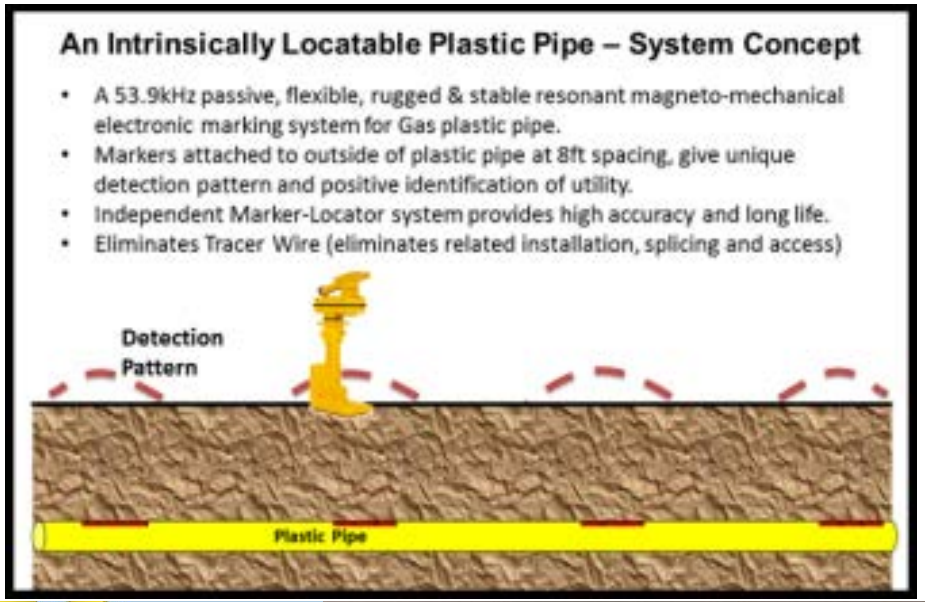
**Robust**

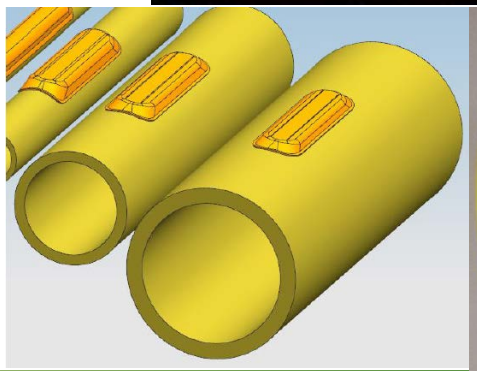
- Continuity not required, if a cluster of tags is removed, the other sections continue to function uninterrupted.
- Does not provide a path for lightning
- Corrosion resistant, maintenance free

**Simple**

- Replaces tracer wire, access points and connections
- Reduced complexity of locate – No transmitter connection needed
- Utility identification by frequency

## ON PIPE ATTACHMENT

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# Locating Platform Integration

***This program builds on the technology currently used for Path Marking, which consists of Material Resonators and leverages the existing EMS ball marker locator technology.***

The primary goal is to apply path marking technology directly to the plastic pipe for better accuracy, ease of use and system integrity.

**EMS Caution Tape**

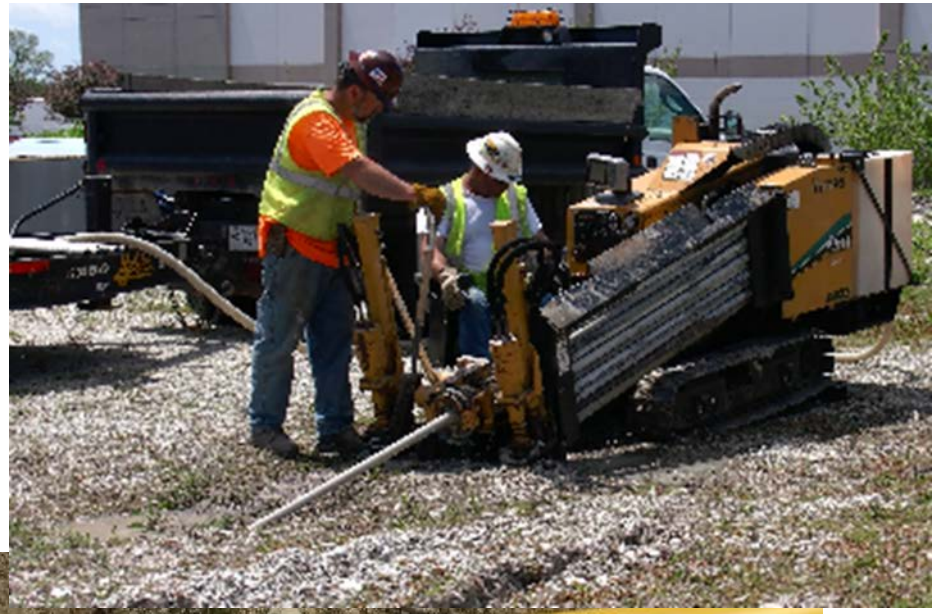

**EMS Rope**

**EMS Locator**

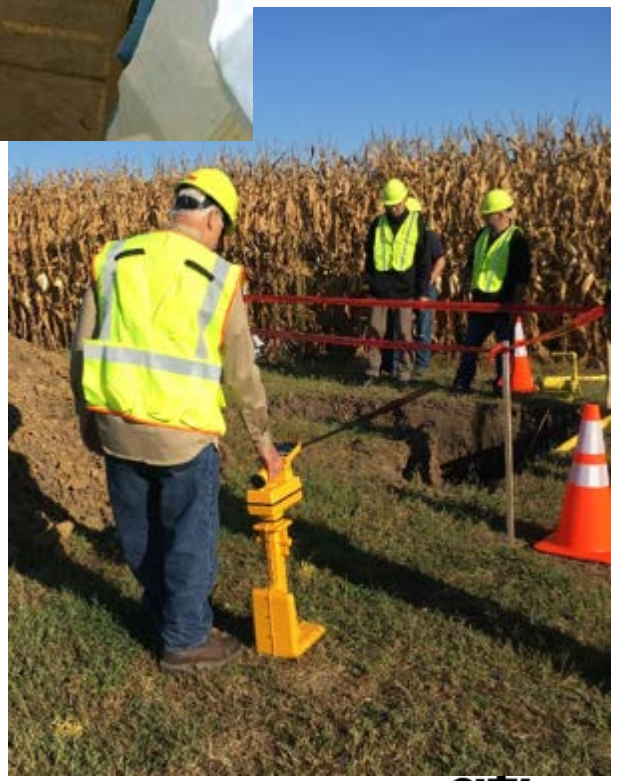
**EMS Marker Balls**

Telephone Gas CATV Power Water Wastewater GP/Rec Wtr

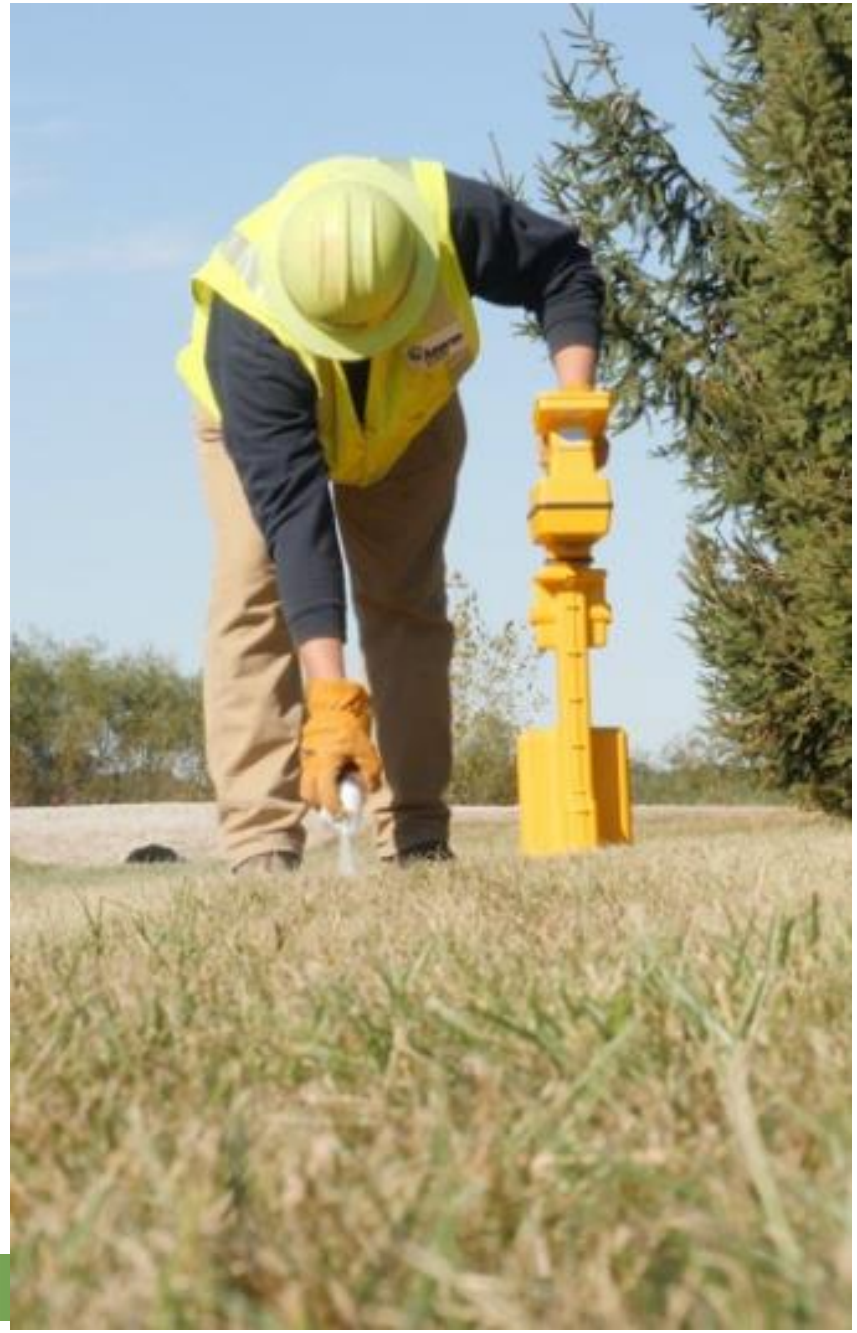
# Intrinsically Locatable PE Pipe (ILPP) – Field Testing



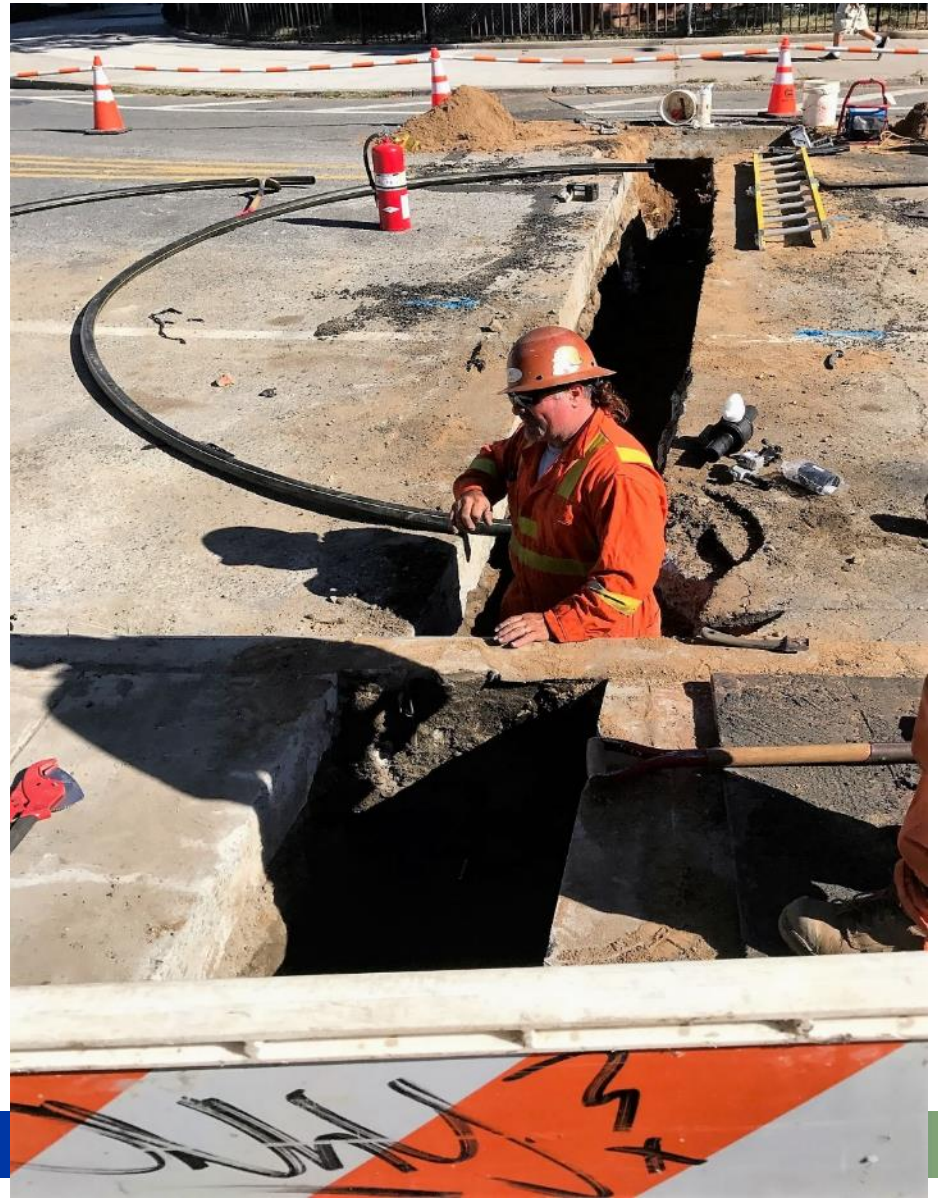
# Intrinsically Locatable PE Pipe (ILPP) – Utility Installations

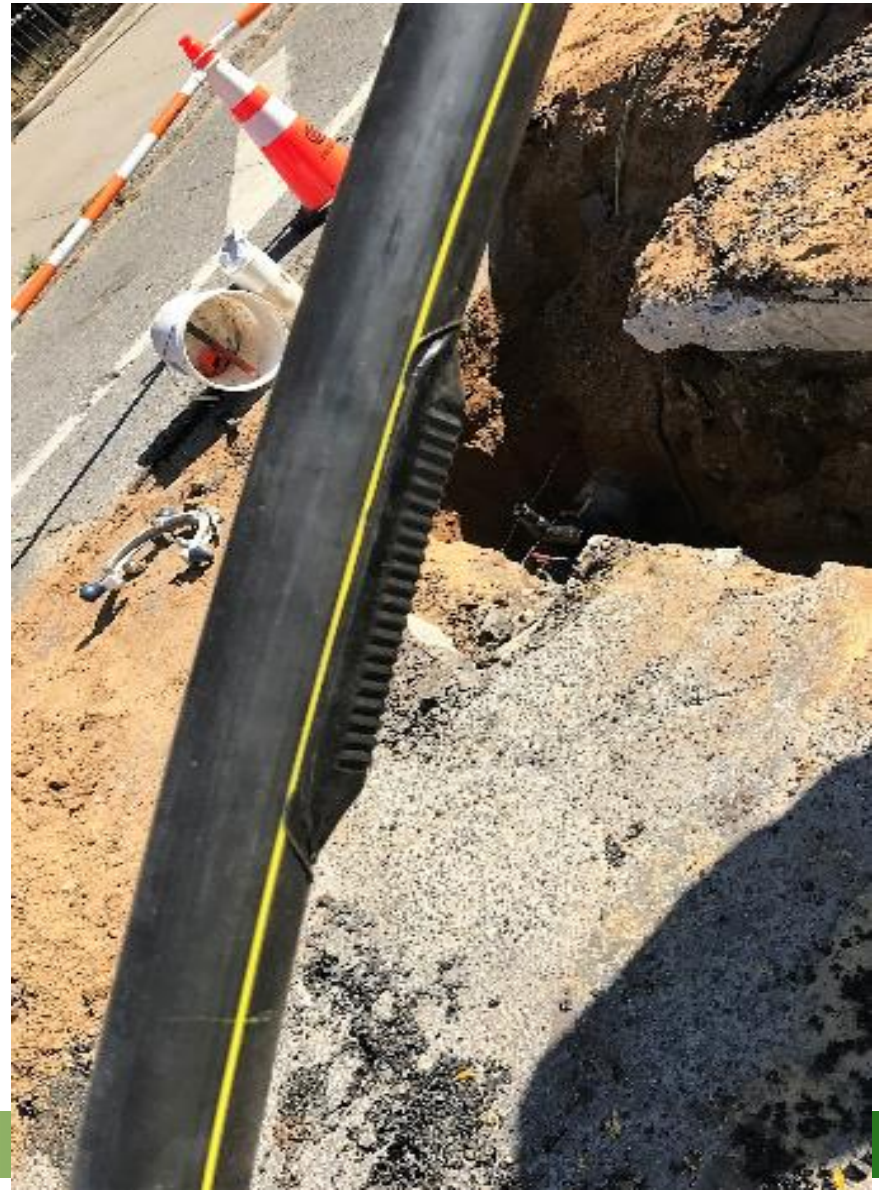


# Utility Installations (continued)

# Utility Installations (continued)





# Next Steps ILPP Technology Development

***Key areas to advance technology, development, and adoption.***

- Working with pipe manuf. to optimize the attachment of the tags
- Process understanding to ensure manufacturability
- Additional demonstration pilots to critical gas utilities and stakeholders
- Deployment projects nationally to build understanding and adoption to enhance pipeline safety for our communities and utility workers

# Research Gaps and Industry Needs

- Next generational programs and investments should be around the ability to hold and write data on pipes and piping components.
- Modular sensing for environmental threats (i.e., methane sensing).
- Effective excavation best practices (i.e., trenchless installation best practices) and outreach programs to disseminate knowledge/practices – consider national excavation practices for all stakeholders.
- Broad awareness and education programs (pilot programs) to promote pipeline safety and new technology adaptation for gas utilities.
- Require all newly installed underground facilities to be locatable

# Turning Raw Technology into Practical Solutions

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