



Fortezza da Basso • FLORENCE (Italy)



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30th September • 2nd October 2019

Safety Measures for Reducing Asset Strikes

Scott Landes



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18,903,492



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Cross Bores - 1976



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Cross Bore Frequency



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- Large projects have had up to 3 per mile
- Small project 12 cross bores of 147 inspections
- Found at a hospitals and at schools
- 2010 in Minnesota 155 gas cross bores
- Most expensive cross bore explosion = \$30 million, **2 girls extensively burned**



Risks Factors



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- Sewer utilities are unknown or unmarked
- Depths of utilities are unknown
- Trenchless does not “see” the pipe
- Trenchless installers need information that is not always available through locates
- Trenchless construction methods used without verification



Leading Practices for Cross Bore Risk Reduction



- Regulators should encourage high confidence results.
- 100% separate video review inspections
- Daylighting, should include a photo/video to validate the crossing
- Risk evaluations should include the relative impacts of the potential results, i.e. explosions.

Cross Bore Safety Association



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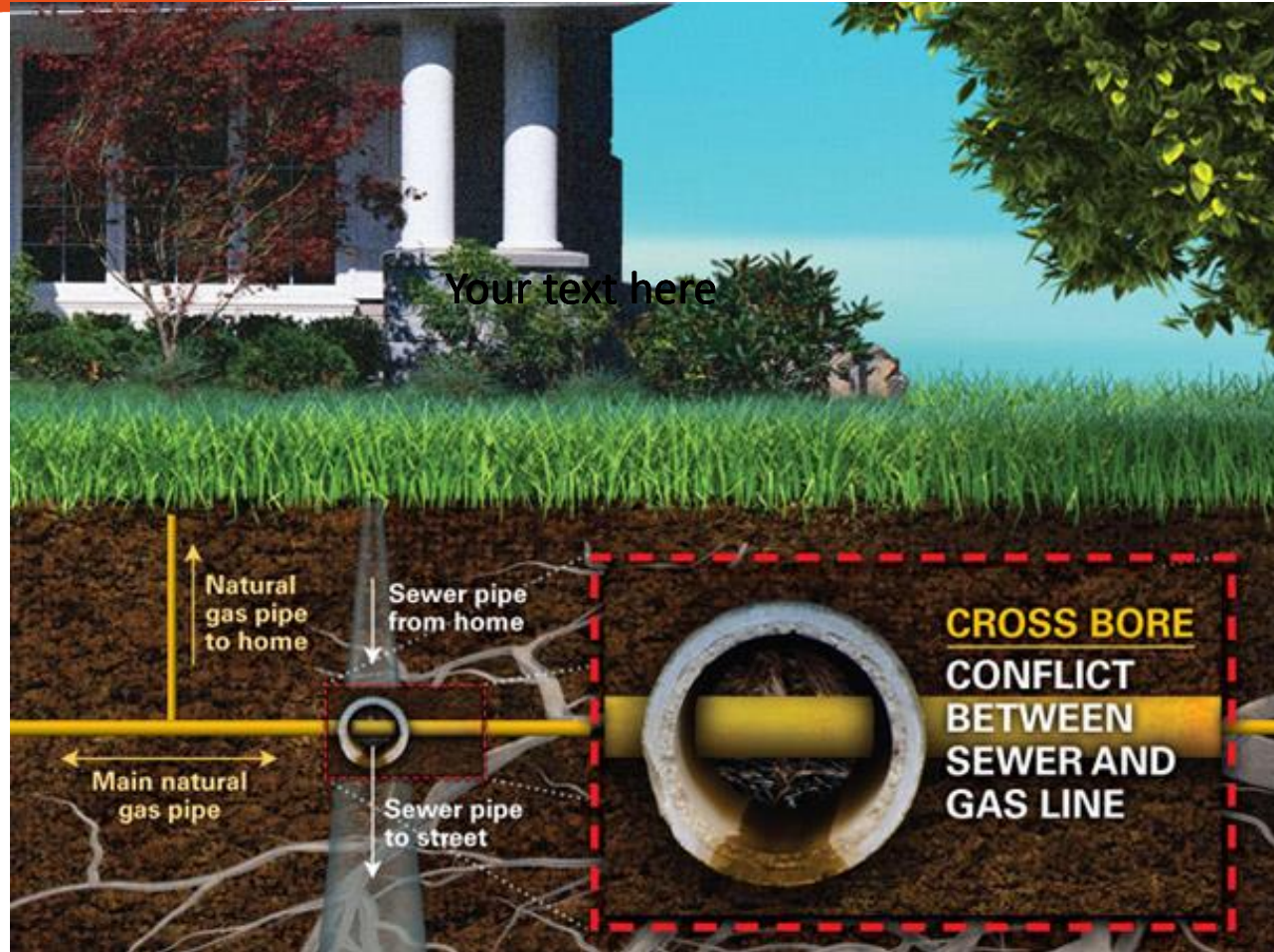


CrossBoreSafety.org

Call Before you Clear



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CallBeforeYouClear.com

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\$69 Million



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- HDD gas explosion
- **Contractor failed to expose line prior to crossing it.**
- \$15 million in criminal penalties
- \$5 million in civil penalties
- \$69 million to settle civil lawsuits
- \$500,000 in state fines
- \$140,000 OSHA fine
- Several injuries

1 Killed, 6 Injured



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- Contractor exposed what they thought was the gas line and bored under it, striking the actual live gas main.
- Contractor failed to dig down to the depth of his excavation and safely observe the bore head and back-reamer pass by the exposed lines
- \$7.1 million in findings against the project owner by jury
- \$15.5 million in lawyer's fees (approximate)
- \$27 million in settlements
- 11 total lawsuits filed

1 Killed, 4 Injured



- **Contractor failed to call in a locate request and ignored existing marks which were accurate**
- \$12.7 million jury award
- \$23 million in lawyer's fees (approximate)
- \$40 million in settlements
- 6 lawsuits filed that took 5 years to complete
- City suffered an estimate of \$80 million in economic loss

Charges Filed

- 2 workers drown
- Involuntary manslaughter
- **Read maps upside down**



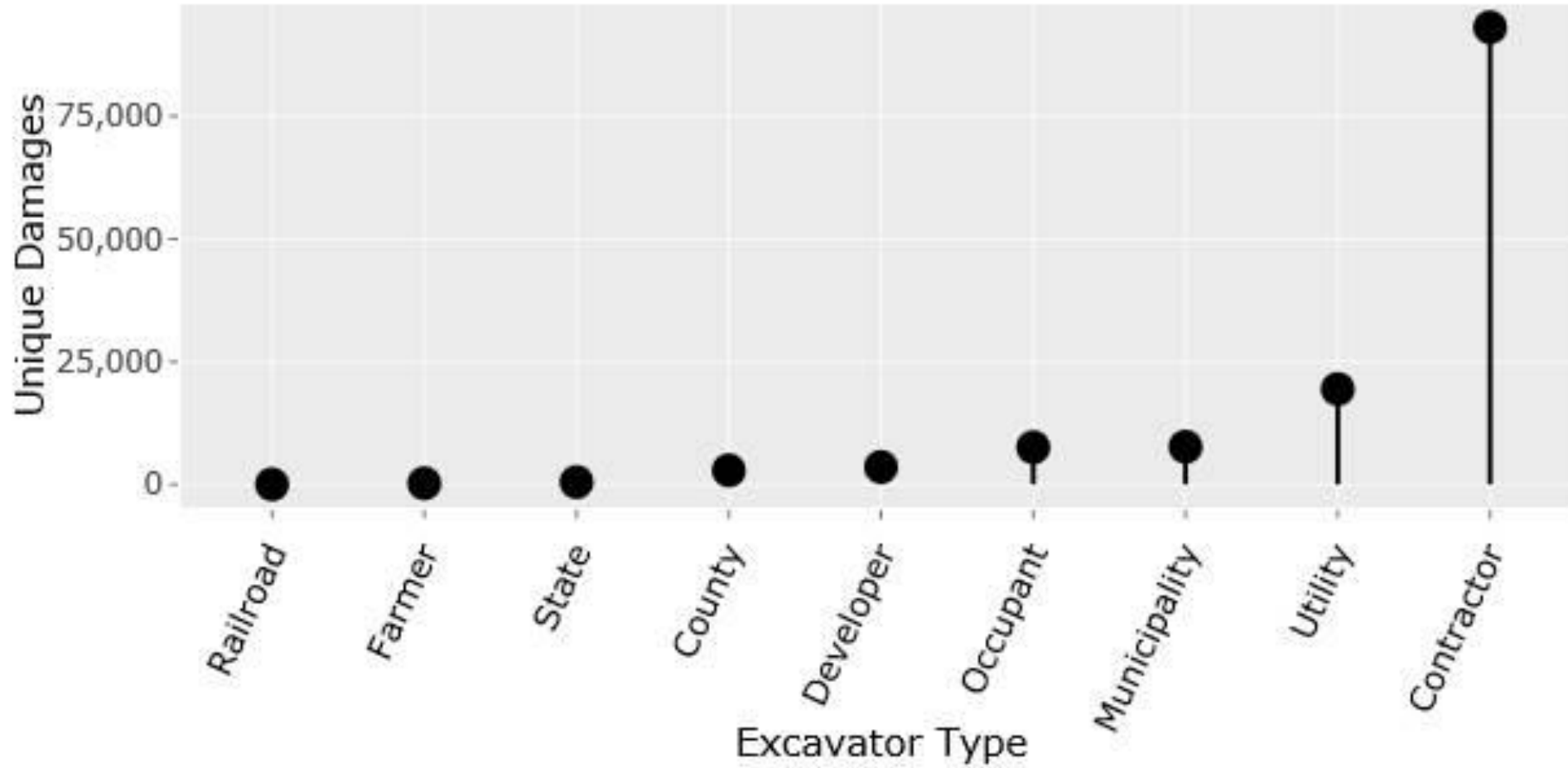
Carmel Stops MetroNet from Working in City

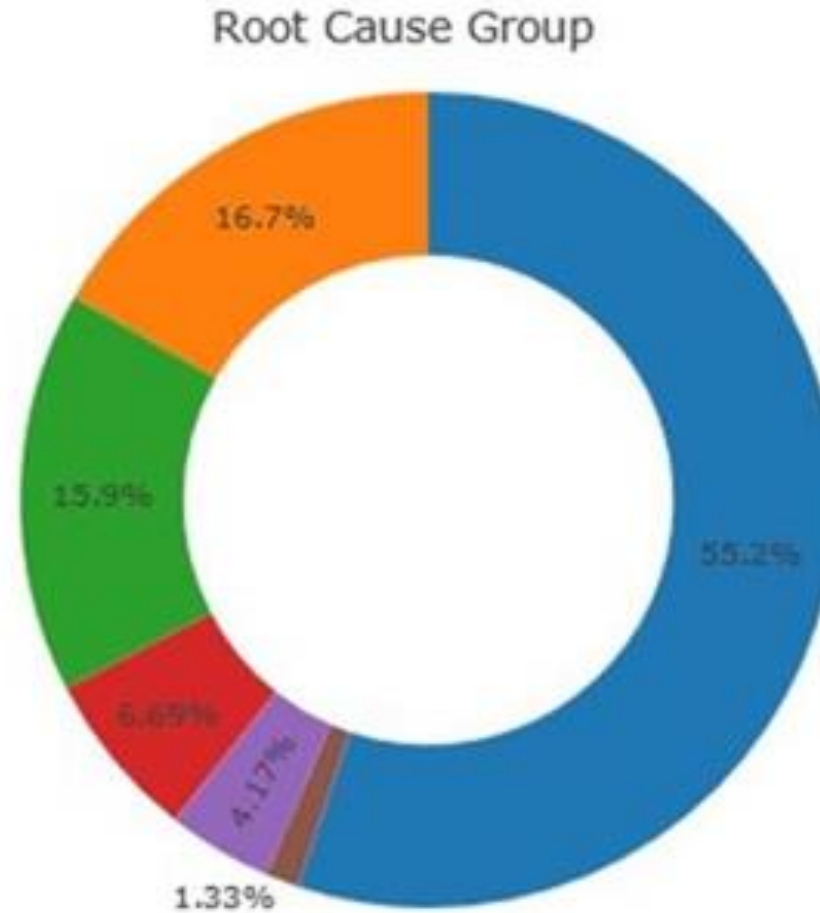


Unique Damages by Excavator Type



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> 1%

What can we do?



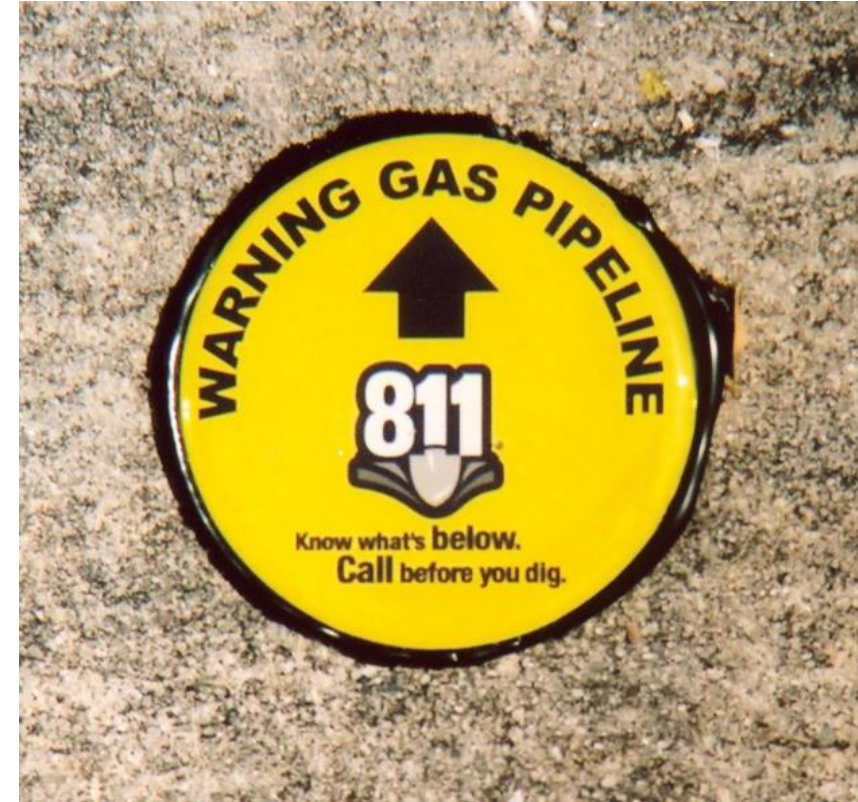
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Permanent Markers

- Request a locate or plans
- Help the Locator
- Last Defense



Curbs and Lawns



Streets and Sidewalks



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The Last Chance



Pipeline Markers Not Maintained

- 1 dead, 5 injured
- Nearest pipeline marker
 - ¼ mile away
 - Covered in vegetation



Markers that are not maintained



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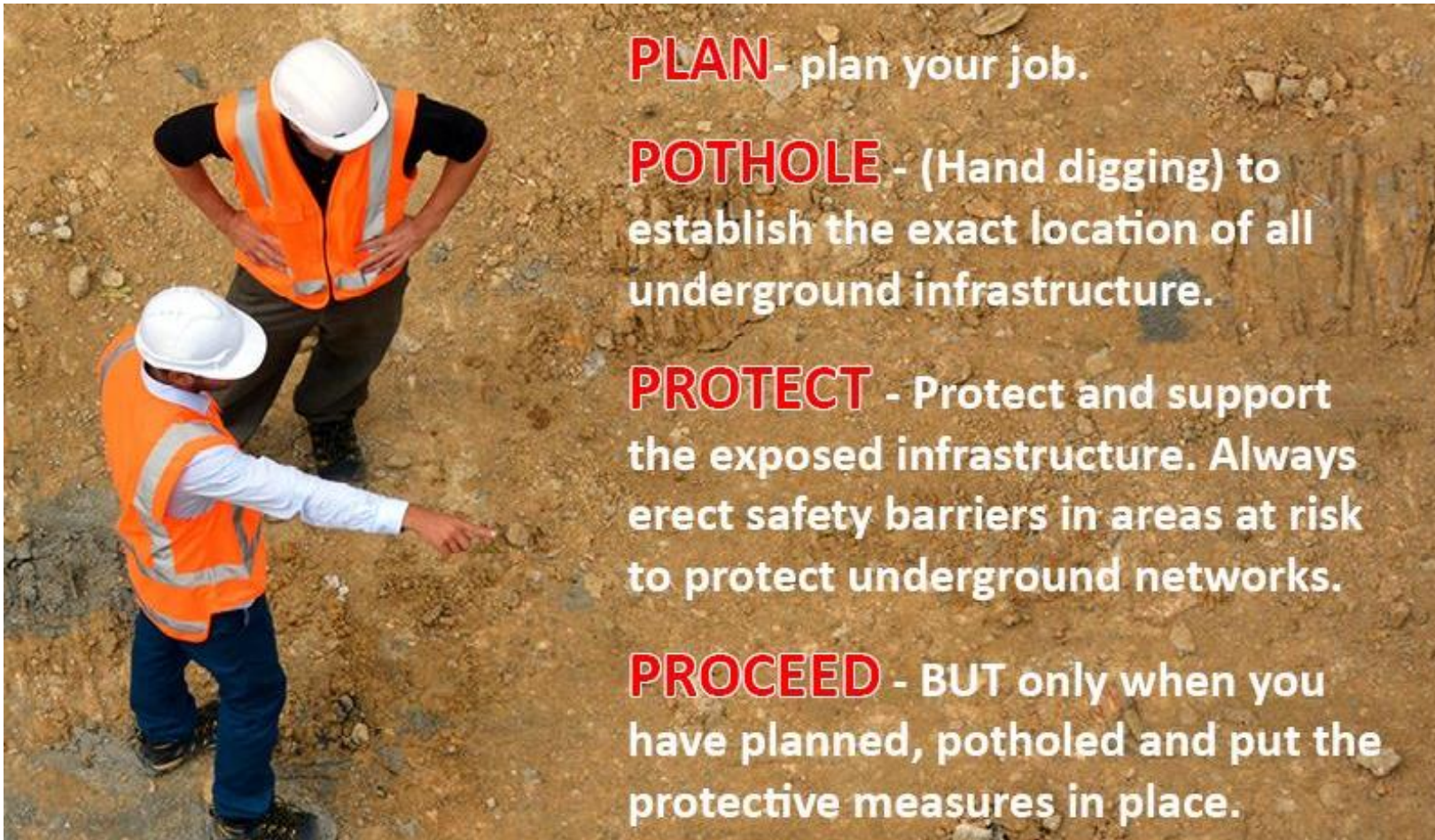
OSHA: Avoiding Underground Utility Lines



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1. **Visually inspect** the **entire** planned digging path for structures that indicate potential underground utilities
2. Review drawings & **verify underground utility locations**
3. Compare findings with **surface markings**
4. **Pothole** to expose **all** utilities in the path

Remember the 4P's of safe excavation



The Essential First Step

5 Steps to Safe Digging



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1. Call or click before you dig
2. Wait the required time
3. Confirm Utility Response
4. Respect the marks
5. Dig with care

Resources



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....to minimize the risk for
injury, loss of life and
property damage from
utility cross bores



CrossBoreSafety.org

Digging Dangers Videos

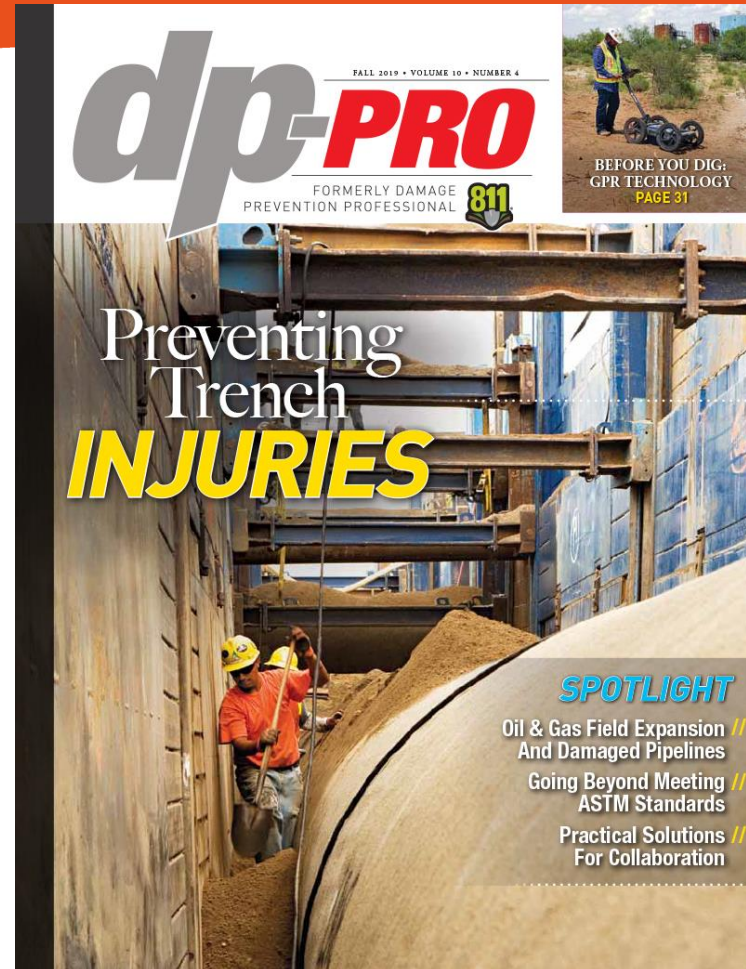


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**Digging DD Dangers
Videos**

DiggingDangersVideos.com

Dp-PRO Magazine



dp-PRO.com

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Excavation Safety Guide



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Oceania Damage Prevention Conference



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August, 2020
OceaniaDPC.com

Global Excavation Safety Conference



March 3-25, 2021 * Tampa, Florida

GlobalExcavationSafetyConference.com



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Thank You

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