



AGC
THE CONSTRUCTION
ASSOCIATION

AGC Webinar

Two-Part Webinar Series: Call Before You Dig

April 30, 2024

Webinar One: Best Safety Practices for Contractors Engaged in Utility Excavation

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United Rentals

United Rentals Trench Safety



- 118 Locations in US and Canada
 - Rental Locations
 - Engineered Equipment Hubs
- Engineering Services
- On-Site Consultation
- Trench Safety
- Confined Space
- Composite Matting
- Road Plate
- OSHA and OHS Training
 - Excavation
 - Confined Space



Facility Integrity and Worker Safety



- Improve worker safety
- Protect underground infrastructure
- Ensure public safety

consensus of 16 industry stakeholder groups and are designed to improve worker safety, protect vital underground infrastructure, and ensure public safety during excavation activities conducted in the vicinity of existing underground facilities.

CHAPTER 1
Introduction

Best Practices Guide

The Best Practices Guide is the preeminent and trusted resource for underground damage prevention with more than 162 practices that cover all phases of the safe digging process. The practices included within this guide are agreed to by consensus of 16 industry stakeholder groups and are designed to improve worker safety, protect vital underground infrastructure, and ensure public safety during excavation activities conducted in the vicinity of existing underground facilities.

During the past year, the CGA added and amended practices that appear in Version 20.0. The following new practices and modifications were approved by the Best Practices Committee and CGA Board:

- Modification of Practice 2-3, *Identifying Existing Facilities in Planning and Design*

Chapter 1: Introduction

Two Die When Trench Collapse Causes Water Line Failure



OSHA News Release - Region 1

U.S. Department of Labor

Please note: As of January 20, 2021, information in some news releases may be out of date or not reflect current policies.

April 12, 2017

BOS 2017-028

Employer in fatal Boston trench collapse did not provide safety training and basic safeguards for employees, OSHA finds

Atlantic Drain Service Co. Inc. cited for 18 violations

BOSTON - Robert Higgins and Kelvin Mattocks died on Oct. 21, 2016, in Boston, when the approximately 12-foot deep trench in which they were working collapsed, breaking an adjacent fire hydrant supply line and filling the trench with water in a matter of seconds.

An investigation by the U.S. Department of Labor's [Occupational Safety and Health Administration](#) found that their employer, Atlantic Drain Service Co. Inc., failed to provide basic safeguards against collapse and did not train its employees - including Higgins and Mattocks - to recognize and avoid cave-in and other hazards.

"The deaths of these two men could have and should have been prevented. Their employer, which previously had been cited by OSHA for the same hazardous conditions, knew what safeguards were needed to protect its employees but chose to ignore that responsibility," said Galen Blanton, OSHA's New England regional administrator.

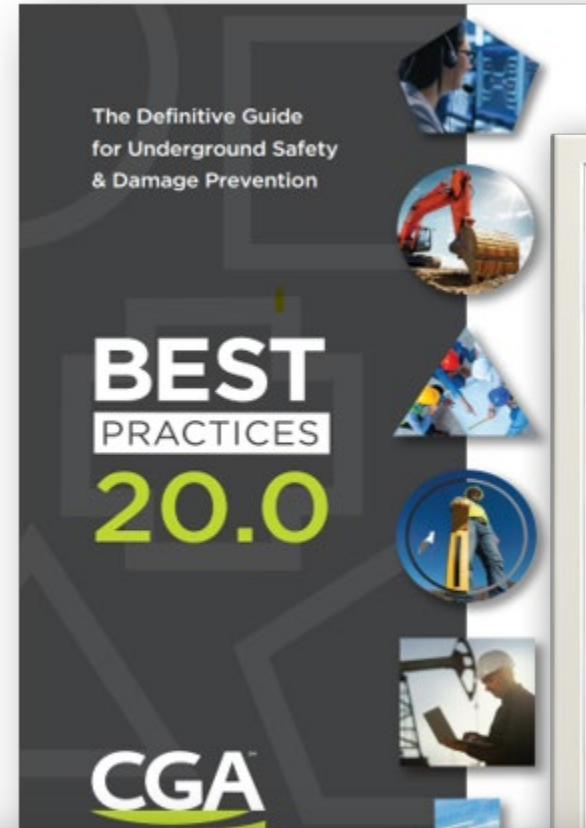
OSHA's inspection determined that Atlantic Drain and owner Kevin Otto, who oversaw the work on the day of the fatalities, did not:

- Install a support system to protect employees in an approximately 12-foot deep trench from a cave-in and prevent the adjacent fire hydrant from collapsing.
- Remove employees from the hazardous conditions in the trench.
- Train the workers in how to identify and address hazards associated with trenching and excavation work.
- Provide a ladder at all times so employees could exit the trench.
- Support structures next to the trench that posed overhead hazards.
- Provide employees with hardhats and eye protection.

Damage

- Strikes
 - Punctures/Piercing
- Deflection
 - Horizontal
 - Vertical

Damage: Any impact or exposure that results in the need to repair an underground facility due to a weakening or the partial or complete destruction of the facility, including, but not limited to, the protective coating, lateral support, cathodic protection, or housing for the line, device or facility.



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Facility

- Underground structures, to include
 - Pipelines
 - Telecom
 - Water/Sewer Lines
 - Duct Banks

Facility: An underground or submerged conductor, pipe or structure used to provide electric or communications service (including, but not limited to, traffic control loops and similar underground or submerged devices); or an underground or submerged pipe used in carrying, providing or gathering (typically between the wellhead and transmission line) gas, oil or oil product, sewage, storm drainage, water, or other liquid service (including, but not limited to, irrigation systems) and apputenances thereto.^{56/}

Terms and Definitions

CGA Best Practices 20.0

Downtime: Lost time reported by a stakeholder on the Damage Information Reporting Tool (DIRT) field form for an excavation project due to failure of one or more stakeholders to comply with applicable damage prevention regulations.⁵⁷

Electronic Positive Response: Communication by telephone, fax, email or internet from a facility owner/operator to an excavator providing the status of an owner/operator's statutorily required response to a notice of intent to excavate.⁴²

Electronic White Lining (EWL): The process in which an excavator identifies where proposed excavation will occur by drawing a polygon shape on a GIS map; that shape is delivered electronically by the 811 center to its member facility operators.⁴³

Emergency: A sudden or unforeseen occurrence involving a clear and imminent danger to life, health or property; the interruption of essential utility services; or the blockage of transportation facilities that requires immediate action.

Emergency Notice: A communication to the 811 center to alert the involved underground facility owners/operators of the need to excavate as a result of a sudden or unforeseen occurrence or national emergency involving a clear and imminent danger to life, health, environment or property (including the interruption of essential utility services or the blockage of transportation facilities) that requires immediate excavation.

Emergency Response: A facility owner/operator's response to an emergency notice.

Event: The occurrence of facility damage, near miss or downtime.

Excavate or Excavation: Any operation using non-mechanized or mechanized equipment, demolition or explosives in the movement of earth, rock or other material below existing grade.⁵⁹

Excavator: Any person proposing to or engaging in excavation or demolition work for himself or for another person.

Facility: An underground or submerged conductor, pipe or structure used to provide electric or communications service (including, but not limited to, traffic control loops and similar underground or submerged devices); or an underground or submerged pipe used in carrying, providing or gathering (typically between the wellhead and transmission line) gas, oil or oil product, sewage, storm drainage, water, or other liquid service (including, but not limited to, irrigation systems) and apputenances thereto.⁶⁰

unicipality, authority, political
perates or controls the

nized collection of computer
capture, store, update,
hically referenced information.

hic location and characteristics
on the earth.

nsisting of 25 satellites used
mation to users anywhere on
a GPS receiver. The GPS
surface by collecting signals
illed triangulation. Simple and
acy of ±100 meters of a true
ditional technologies or that
ub-meter accuracy.

) upon which a structure is built

Grounding Systems: A system of one or more ground conductors or ground rods providing a low-resistance path-to-earth ground potential through a mechanical connection to structures, conductors and equipment.

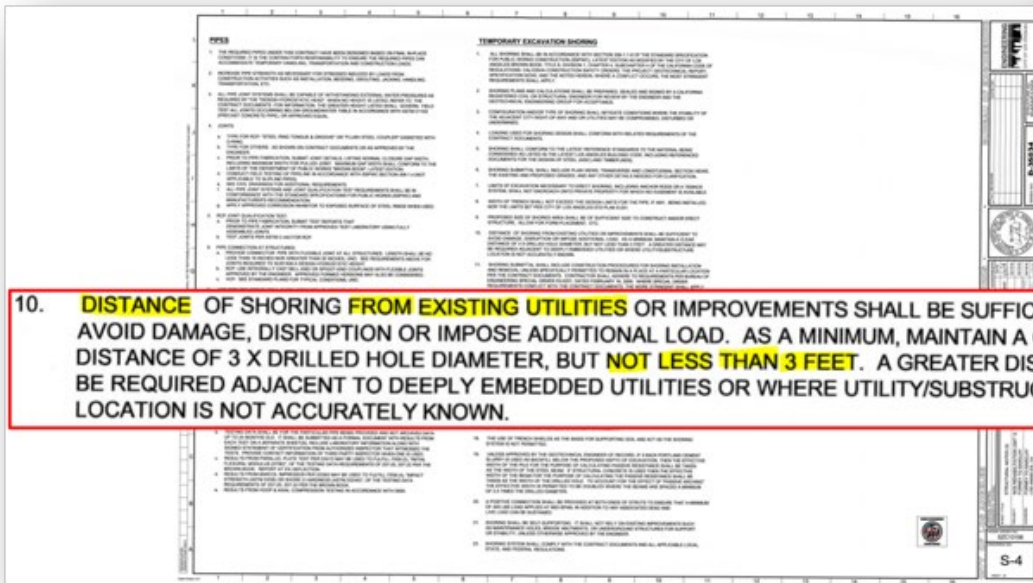
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Tolerance Zone

- Follow federal, state/provincial, and local guidelines, codes, statutes and other facility owner/operator standards



Tolerance Zone

...F 24 INCHES

...e zone is safety


...facility, at 24

...h side of

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...the minimum tolerance zone, please see government Code 4216(u).

...must determine the exact location of the facility using hand tools before using any power-driven excavation or boring equipment within the tolerance zone.



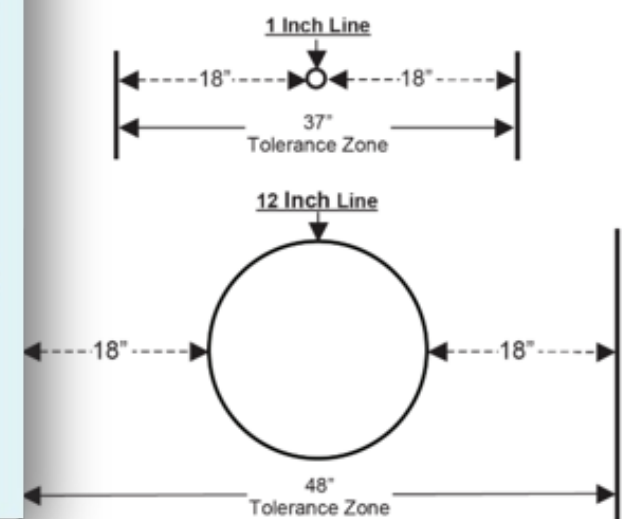
CGA Best Practices 20.0

BEST PRACTICES CHAPTER 5—EXCAVATION

Practice Statement 5-19: Excavation Tolerance Zone: The excavator observes a tolerance zone that is comprised of the width of the facility plus 18 in. on either side outside edge of the underground facility on a horizontal plane. This practice intended to preempt any existing state/provincial requirements that currently a tolerance zone of more than 18 in.

...e Zone^{40/}

...g examples are of tolerance zones for a 1 in. and 12 in. line:



Soft Digging

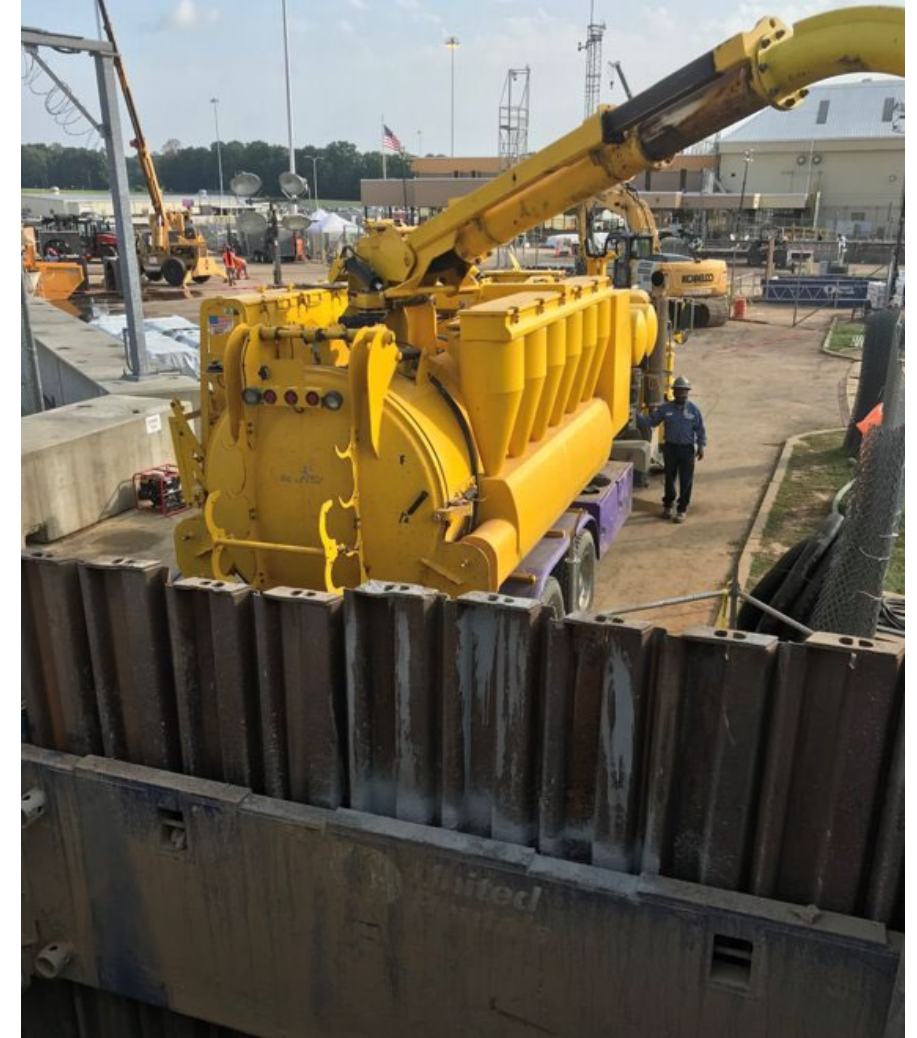
- Soft digging is NOT careful mechanical digging
 - Vacuum excavation
 - Hand digging
- Vacuum truck surcharge
 - Even when empty exceed allowable surcharge in adjacent area

5-20: Excavation within Tolerance Zone^{90/}



Practice Statement: When excavation is to take place within the specified tolerance zone, the excavator exercises such reasonable care as may be necessary for the protection of any underground facility in or near the excavation area. Methods to consider, based on certain climate or geographical conditions, include pot holing, hand digging when practical, soft digging, vacuum excavation methods, pneumatic hand tools, other

- QL-A involves physical exposure via “non-destructive soft digging” (vacuum excavation or hand digging) and provides precise horizontal and vertical positional data.



Soft Digging

- EE Entry into excavation prior to installation of protective system is never allowed
- If hand digging, employee must be protected

5-20: Excavation within Tolerance Zone^{90/}



Practice Statement: When excavation is to take place within the specified tolerance zone, the excavator exercises such reasonable care as may be necessary for the protection of any underground facility in or near the excavation area. Methods to consider, based on certain climate or geographical conditions, include pot holing, hand digging when practical,

geographical conditions, include pot holing, hand digging when practical,

Other technical methods that may be developed. Hand digging and non-invasive methods are not required for pavement removal.



Exposed Facility Protection



- Exposed facilities can shift and separate
- Excavators are required to brace for support
- Hangers shoring cylinders or spreaders is never allowed
- Consult manufacturer's tabulated data

in the vicinity of the exposed facility. Exposed facilities can shift, separate, or be damaged when they are no longer supported or protected by the soil around them. Excavators support or brace exposed facilities and protect them from moving or shifting, which could result in damage to the facility. This can be accomplished in different ways; for example, by shoring the facility from below or by providing a timber support with hangers across the top of an excavation to ensure that the facility does not move or bend. In

5-22: Exposed Facility Protection



Practice Statement: Excavators support and protect exposed underground facilities from damage.

Practice Description: Protecting exposed underground facilities is as important as preventing damage to the facility when digging around the utility. Protecting exposed underground facilities helps ensure that the utility is not damaged and, at the same time, protects employees working in the vicinity of the exposed facility. Exposed facilities can shift, separate, or be damaged when they are no longer supported or protected by the soil around them. Excavators support or brace exposed facilities and protect them from moving or shifting, which could result in damage to the facility. This can be accomplished in different ways; for example, by shoring the facility from below or by providing a timber support with hangers across the top of an excavation to ensure that the facility does not move or bend. In addition, workers are instructed to not climb on, strike or attempt to move exposed facilities that could damage protective coatings, bend conduit, separate pipe joints, damage cable insulation, damage fiber optics or in any way affect the integrity of the facility. The Occupational Safety and Health Administration (OSHA) also has addressed this issue in Subpart L of the Occupational Safety and Health Administration Standard 29 CFR 1926.651(b)(4), which states "While the excavation is open, underground installations shall be protected, supported or removed as necessary to safeguard employees." For example, an unsupported sewer main could shift, causing the pipe joints to separate,

Exposed Facility Protection



- Designs by a qualified person, e.g., a registered professional engineer



Exposed Facility Protection



- Simple or complex, support of exposed utilities cannot be ignored



Exposed Facility Protection



- Unsupported horizontal failure
- Facilities require 360° support
- Uneven soil support
- More critical on hillside environment



Potential Civil and Criminal Liabilities

- Applicable to private and public employers
- \$371,000 Violation proposed last week

San Francisco Contractor Faces \$371K in Penalties After Fatal Trench Collapse

Don McCloud
Apr 24, 2024



The fatal collapse occurred less than three weeks after the company had been cited for trenching violations on another

Judgment issued in Perry trench collapse lawsuit
By BRENT ENGEL, Herald-Examiner Staff
Perry, 300 — The family of a Perry city worker who was killed in a trench collapse two years ago has been awarded more than \$4 million in a wrongful death lawsuit. Twenty-nine-year-old Timothy C. Spensman and another Perry city worker, 49-year-old Tony Painter, were fixing a sewer line a block north of the downtown area when the side of the trench collapsed about 7 p.m. Feb. 19, 2022.

Harco Construction found guilty of manslaughter, criminally negligent homicide in fatal Meatpacking District collapse

Construction company foreman convicted in worker's death
Despite Repeated Warnings on Day of Fatal Collapse
Foreman Declined to Remove his Workers from Illegal Trench

Judge sentences drain company owner to 2 years for South End trench collapse deaths

Baltimore suspends work with contractor after death of man in trench, citing 'life safety concerns'

Construction Workers Sentenced In 2018 Workplace Death
SFGATE
The contractor and three employees of a Livermore-based construction company have each received a jail sentence for charges related to the death of another employee at a Daly City work site in 2018, San Mateo County prosecutors said Monday.

Boston firefighters and emergency personnel worked to rescue construction workers that were trapped in a trench
By Nestor Ramos, Kay Lazare and Tony Amberson

Takeaways

- Hoping for no accident is not a plan
- Encourage stop work authority
- Train employees on the facts of the law
- Use trainers that are SMEs





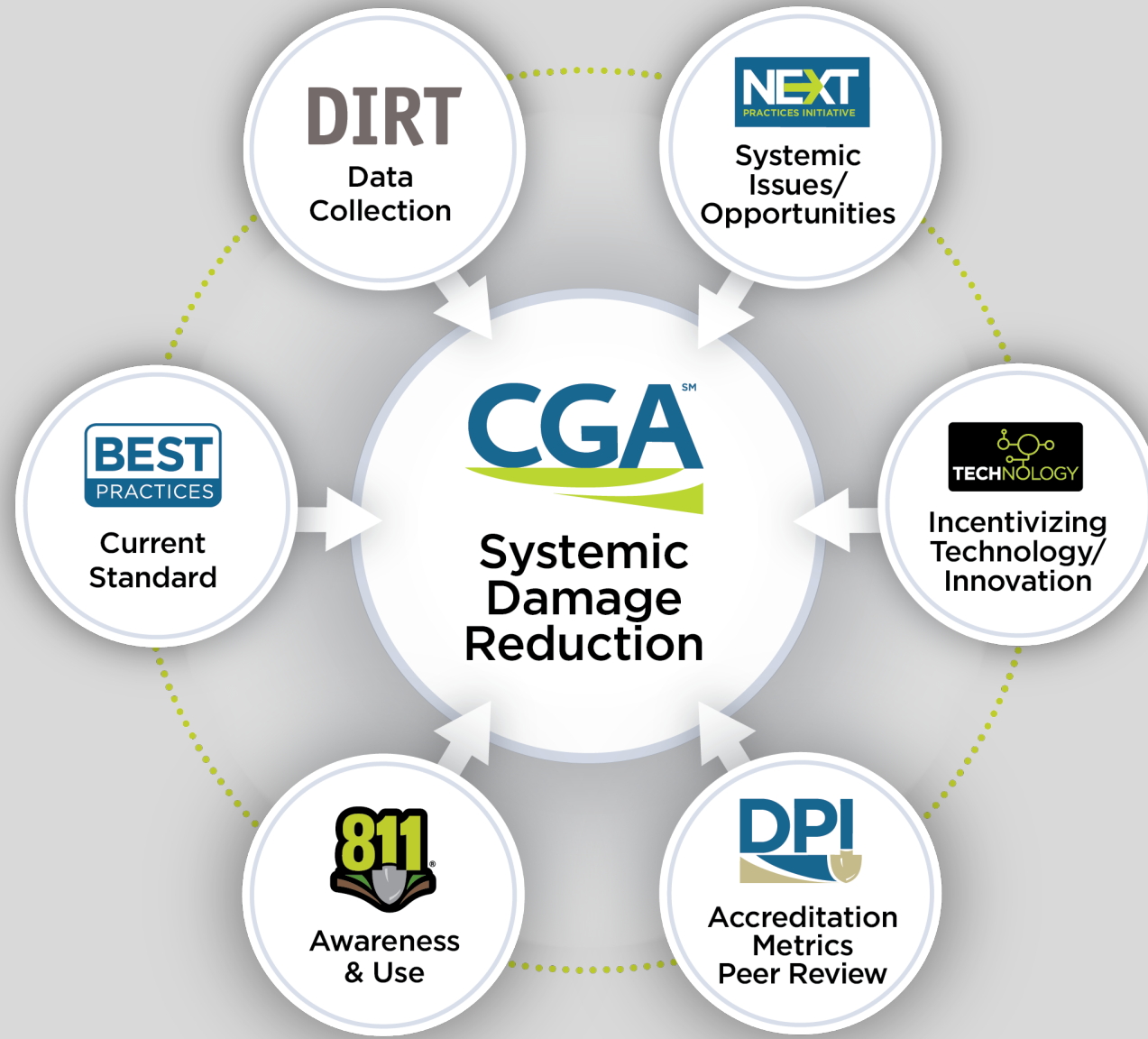
Common Ground Alliance



Mission

The Common Ground Alliance is dedicated to preventing damage to underground utility infrastructure and protecting those who live and work near these important assets through the shared responsibility of our stakeholders.













Best Practices

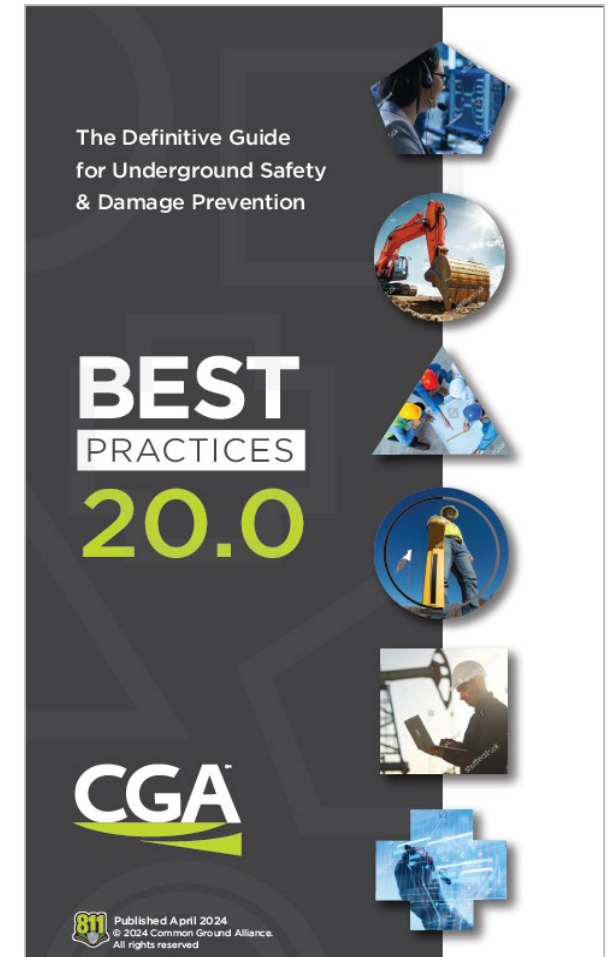
Best Practices



- Version 20.0 published April 2024
- Available online at bestpractices.commongroundalliance.com

Filter by Industry Icons

 One Call Center  Facility Owner  Excavator  Locator  Project Owner  Designer



Best Practices Process



- Approximately 165 practices developed through **consensus**
- Primary committee members represent stakeholder group on Best Practices Committee
- Task teams review potential new Best Practices of modifications



Data & Analysis

- DIRT Report
- Telecom White Paper
- Industry Damage Prevention Survey

DIRT Report – How are we doing?



- **Top 6 damage root causes are persistent year-over-year** (no locate request, not marked/marked inaccurately, failure to maintain clearance, failure to pothole, improper excavation)
- Telecom and natural gas remain the **most damaged facilities**
- **Telecom work caused most damages**
- **Damages are flat or increasing** based on statistical analysis
- Reversing the upward damage trend is critical to **reach 50% reduction in 5 years**



Root Cause Analysis



76%
of all damages
are due to just
SIX root causes



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The top 6 root causes remain consistent.

ROOT CAUSE	Reports	2022 % of Total
 No notification made to 811 Center	35,860	24.81%
 Facility not marked due to locator error	21,951	15.19%
 Excavator failed to maintain clearance after verifying marks	19,448	13.46%
 Marked inaccurately due to locator error	12,048	8.34%
 Improper excavation practice not listed elsewhere	11,835	8.19%
 Excavator dug prior to verifying marks by potholing	7,965	5.51%

***Unknowns excluded**

Late Locates: A Current and Emerging Crisis



- **Data from 7 states** with mandatory positive response
- As many as 56% of tickets receive late or no positive response, **meaning work cannot legally start**
- **Telecommunications and water/sewer operators have higher late response rates**
- Telecommunications work is most impacted by late responses
- Some operators/locators mark sites on time but **delay updating positive response systems**. Excavators report inaccurate status codes, including those **indicating sites are marked when they are not**

AS OFTEN AS
56% **OF THE**
TIME,
excavators cannot
legally begin work
on their planned
start date

Telecom White Paper: Telecom's Critical Role in Reversing Utility Damage Trends



Telecom has the highest late locate response rate – and is also the work type most likely to be impacted by late locates. *

*According to an analysis in the 2022 DIRT Report.

“Not my company, but ... the telecommunications industry views damages as a cost of doing business. And they also view that as a revenue stream to bill excessively for repairs when that may not be justified.”

Telecommunications executive

More than 50% of telecom survey respondents reported their industry was not prepared to meet the damage prevention challenges in the coming year.

Damage Prevention Industry Survey – Oct. 2023

A blue-tinted photograph of a construction site. A worker in a white protective suit and helmet is visible in a trench, working near large pipes. The background shows various construction equipment and structures.

TOP 3
MOST CRITICAL CHALLENGES
TO DAMAGE PREVENTION INDUSTRY

- **Facilities not marked**
- **Facilities marked inaccurately**
- **Inaccurate/outdated facility maps**

CGA Common Ground Alliance | Industry Survey, October 2023

Education and Outreach

- Safe Digging Outreach
- Online Excavator Education Damage Prevention Curriculum

Online Education for Excavators



- Increase awareness of 811.
- Drive homeowners/excavators to notify the one call center prior to digging.
- Educate industry and the public about the importance of the damage prevention best practices



Online Education for Excavators



- Learning strategy and audience analysis completed
- Learning Management System (LMS) selected
- Pilot module completed and tested
- **In-Progress:** Developing micro-learning modules with 12 modules launching in Sept. 2024





Damage Prevention Institute

Damage Prevention Institute



- **Launched:** January 3, 2023
- **Goal:** Address systemic issues through **comprehensive:**
 - Participant accreditation
 - Monthly data submission and benchmarking
 - Peer review
- **Benchmarked performance data for all participants**
 - Performance measurement in DPI focused on the “circle of accountability”
- **Peer reviews**
 - What can we learn from each other that can improve performance
 - Address systemic challenges in damage prevention



Stakeholder Participation & Engagement

CGA Committees



- Program Committees

- Best Practices
- Technology
- Data Reporting & Evaluation



Committee participation open to *all* members

- Engagement Committees

- One Call Systems International
- Regional Partners



Committee participation open to all members who meet committee criteria

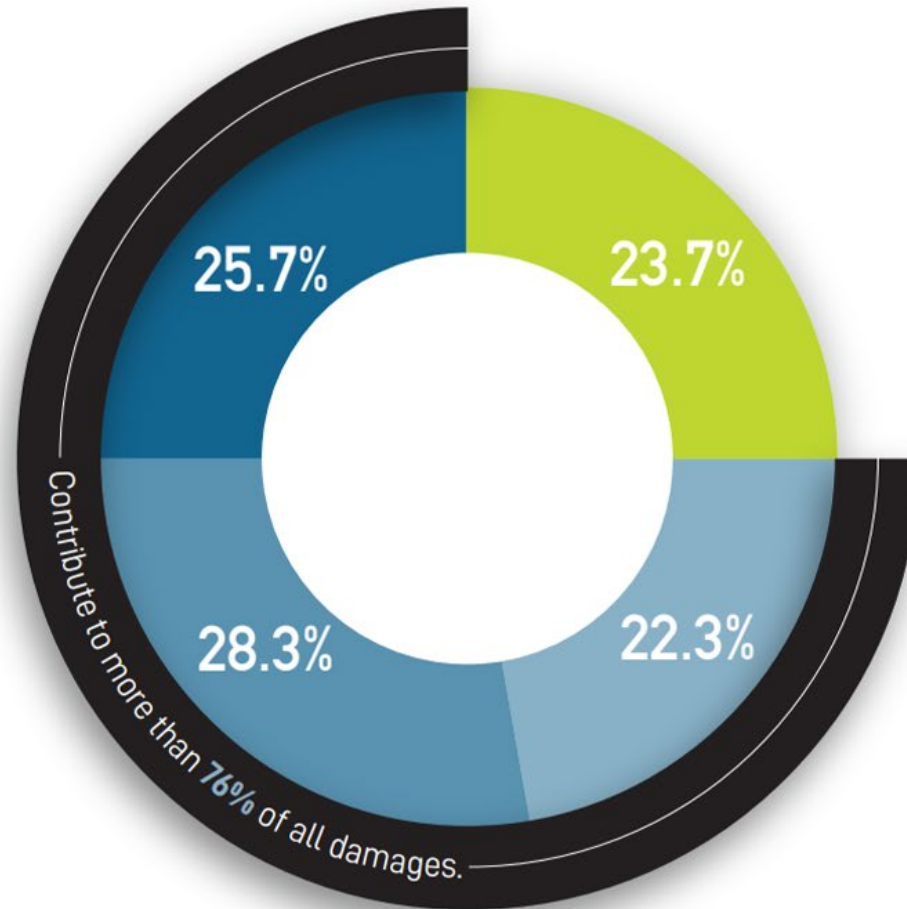
- Advisory Committees

- Damage Prevention Institute
- Next Practices



Board appointed participation

50-in-5 Industry Challenge



**3 Areas
Contribute to More Than
76% of all Damages**

Legend

- Failure to notify 811
- Failure to pothole, maintain clearance, etc.
- Failure by locator to mark accurately or on-time
- Other 19 damage root causes
- Contribute to more than 76% of all damages

Achieving “50 in 5”



- **Prioritize Damage Prevention**
 - Champion the damage prevention conversation – be vocal and be visible
- **Dedicate resources to addressing top root causes**
 - Pursue increased accuracy and accessibility of maps
 - Incentivize adherence to Best Practices through contacts
 - Invest in technology to improve efficiency
- **Demonstrate company commitment**
 - Measure and be transparent about your own performance – participate in the **Damage Prevention Institute**
 - Increase engagement and dedication – **join a CGA committee** – participate locally with a **CGA Regional Partner** organization

Additional Information



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Questions?