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Excavation SAFETY

GUIDE & DIRECTORY™

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FROM INDUSTRY LEADERS!

2024

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The Excavation Safety Guide is designed to be a reference for readers to use all year long. The articles are concise, to the point and focus on current industry trends and technologies. The resources include the CGA Excavation Best Practices, a complete Notification Center listing along with the state laws and provisions, a pull-out Emergency Response poster plus much more. Protecting the buried infrastructure is becoming more of a challenge every day and this guide will help you navigate through these challenges.

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This manual is an informational and educational guide, but it is not intended to provide you with any definitive information regarding legal issues. You need to follow your specific state laws and OSHA rules. If you have any questions on issues raised in this guide, please consult with legal counsel and/or your state Notification Center.

FREE

Excavation Emergencies Poster

LOOK ON PAGE 29 TO FIND YOUR COMPLIMENTARY PULL-OUT POSTER with complete information on how to recognize and respond to the hazards inherent in utility excavation.

Provided by Pipeline Association for Public Awareness

Photos courtesy of Eric Wilke, Owner, Elevated Locating Services

BE A GOOD NEIGHBOR & WHITE

BY TODD GRIFFETH, MANAGER OF DAMAGE PREVENTION, COLORADO 811

> To be a good neighbor is to wonder how your words and actions will impact others rather than to wonder how you will be impacted. This is not to say that we should abandon personal safety or exhaust ourselves in unhealthy ways. Instead, we should build the faith to understand that when we are unselfish, our needs will also be taken care of."
>
> ***-Megan Sanborn Jones on "Won't You Be My Neighbor?" (BYU Professor and Chair of the Theatre and Media Arts Department)***

When you think of being a good neighbor, what person comes to mind? For some it might be Jake from State Farm, or for us more seasoned Damage Prevention professionals, it just might be Mr. Rodgers or Wilson from Home Improvement. Regardless, I think both of their messages are somewhat the same. Good neighbors take care of each other!

So how do we apply being a good neighbor when it comes to white lining, either electronically or in the field?

As a good neighbor, the importance of white lining in excavation activities cannot be overstated. It's a practice that transcends the boundaries of construction sites, reaching out to neighboring properties and the community at large. By taking proactive measures like white lining before locator services, excavators not only enhance safety and efficiency but also demonstrate a conscientious attitude towards being a responsible member of the community.

White lining simply means using white paint, flags, stakes (or any combination of these) to mark the outer edges of your dig site. It is a valuable form of non-verbal communication between you and the locate technician who marks the approximate location of buried utilities within your dig site. When you take the time to white line, it makes it much easier for the technician to focus work on the exact area of excavation and complete the job quickly so you can start your project.

Each type of buried utility is designated by a different color (using the APWA color code). The color reserved for proposed excavation is white, hence the term "white lining." Do not use other colors to indicate your dig area. Marks made should be made in dashes 1" wide, and 6"-12" in length. Each mark should be 4'-50' apart, depending on the scope of the dig area. Line-of-site is important when determining how far apart you make the marks. For smaller dig areas, you may choose to use dots of paint or place a white stake in the center of the dig area with a radius indicated from that stake.

Additional methods of white lining (where available through the 811 center) include electronic white lining. Electronic white

lining provides a method where excavators may indicate their defined dig area visually by electronic data entry (lines or polygons) without the need for a physical site visit. Pre-marking, on-site and/or electronically, allows excavators to accurately communicate to the 811 center, facility owners/operators, or their locator where excavation is to occur.

The fundamental tenet of being a good neighbor involves looking out for the well-being of those in the vicinity. Effective white lining significantly contributes to safety. By outlining the intended excavation area clearly, excavators assist locators in precisely identifying underground utilities, reducing the risk of accidental utility damages. This proactive approach ensures a safer environment not just for workers but also for neighboring residents, minimizing the potential hazards associated with excavation work.

One of the cornerstones of being a good neighbor is respecting property boundaries. White lining demonstrates a respectful approach by clearly indicating the confines of the excavation area. This action prevents accidental encroachment onto neighboring properties, minimizing disruptions, and upholding the boundaries of shared spaces. It showcases an understanding of the importance of respecting the properties and spaces of others, fostering positive relationships within the community.

White lining aids locators by providing a clear demarcation of the intended dig site. This precision allows locators to focus efforts on the specific areas identified, allowing for increased productivity with an emphasis on accuracy. The result? Expedited processes that minimize disruptions and inconveniences caused to the neighborhood. By streamlining these activities, white lining contributes to a smoother and more efficient workflow, benefiting the entire Damage Prevention community.

The practice of white lining signifies a willingness to communicate and collaborate effectively. Excavators engaging in white lining procedures ensure that excavation boundaries are clearly communicated, fostering open lines of communication between contractors and locators. This transparent approach encourages understanding and cooperation among stakeholders involved, promoting a harmonious relationship within the community.

Underground utilities are shared resources serving multiple properties within aneighborhood. White lining plays a pivotal role in protecting these vital resources. By accurately outlining the excavation area, excavators assist in safeguarding underground utilities, minimizing the risk of service disruptions for neighboring properties. Preserving these resources ensures the integrity of essential services, benefiting the entire neighborhood.

The practice of white lining in excavation activities exemplifies the qualities of being a good neighbor. It prioritizes safety, respects boundaries, enhances efficiency, fosters open communication and collaboration, and preserves vital shared resources. By implementing white lining procedures, excavators not only optimize their work processes but also contribute to creating a safer, more harmonious neighborhood for everyone.

So how do we tie this all together?

The industry has been tasked with and accepted the challenge, "50 in 5" campaign to cut damages to buried utilities in half by 2028. There is no doubt this is an uphill battle, especially with the increase and complexity of today's locate requests. With the 2021 passage of the Infrastructure Investment and Jobs Act (IIJA) and slowdown in new home construction, regular lot type tickets have been replaced with extensive linear R.O.W. locate requests. With the industry still trying to manage the staffing shortage, now more than ever it's time to have a call to action to be a good neighbor. Whether white lining is mandated by your local or state laws, consider the benefit if we all contribute and do our part. It is with true collaboration we will move the needle closer to our "50 in 5" goal.

What does being a good neighbor look like to you? ESG

> "Meeting a deadline is crucial in utility locating. Mandatory white lining helps us meet those deadlines by giving us precise instruction on what area needs to be located so we can allocate the appropriate time and resources to that job."
>
> ***-Eric Wilke – Owner of Elevated Locating Services***

20 YEARS LATER:

The Impact of Online Ticket Entry

BY ADAM FRANCO, DIRECTOR OF OPERATIONS, ONE CALL CONCEPTS (OCC)

When the first "call before you dig" centers were created, the idea of a user submitting their own tickets over the internet was nothing more than science fiction. Much like hoverboards and laser blasters, it was just a dream of what could be. While flying cars are still in development, internet-based ticket entry systems have become the standard for how excavators interact with today's notification centers.

When ITIC was rolled out (One Call Concept's first ever online ticket entry system) in 2003, it forever changed the way we look at ticket entry. When asked what it means for excavators in particular, David Butler, OCC's national ITIC coordinator, shared:

From the excavator perspective, it provides a better user experience and the increased accuracy needed for today's projects. The system makes it quick and easy to process multiple tickets at once and features a variety of innovative mapping tools that streamline what has previously been a time-intensive task. It automatically populates much of the required location information – this not only saves time, but also greatly reduces the chance of human error.

Today, just 20 years later, we have seen many states go from 100% of tickets being called in to less than 20%. Having an online ticket entry system is no longer an option for notification centers – instead, it's now the cornerstone on which our systems are built and an expectation from many excavators. Online ticket entry opened doors to new and exciting ways to improve the excavator's experience. In the beginning, only text was collected. The excavator would provide a text-based description of the work area, basic information, and the locate request was then passed to the notification center where the ticket was completed by center staff.

Mapping soon followed. In addition to filling out an online form, excavators could identify their worksite visually. No one knows where the work is taking place better than the excavator. Providing them with the power to identify the site has resulted in the smallest, most precise notification polygons possible.

Today, the excavator has nearly the same level of access as a customer service representative (CSR) in the notification

center. They have the power to create an entire ticket from start to finish, map the area with the highest possible accuracy, and send the ticket directly to affected facility operators.

Even more importantly, the excavator is no longer limited to drawing a polygon – they can now identify the site with such precision that some are describing it as "electronic white lining." Excavators can identify their worksite by drawing a complex route, just like they would with white paint, flags, or stakes in the field. With the ITIC online ticket entry system, for example, they can draw a radius around a fixed object like a pole, hydrant, or meter. They can select a single parcel, or better yet – one quadrant of a parcel. And, as always, they can draw a freeform polygon to perfectly fit around their site.

Excavators around the country have found great value in these changes over time, and their feedback says it best. The following comments were shared by real online ticket entry users:

"I can do all of my jobs, then the system automatically knows how many tickets to file! Makes the process quicker and more efficient." *Chester Jones, Intren Electric*

"I love how quickly I can put in multiple locations." *Mark Enright, JBE Trenching*

It's not just excavators who have benefited from the evolution of online ticket entry – locators and facility operators have experienced a significant impact through the reduction in over-notification. Online ticket entry's more precise excavation site mapping has led to facility operators being sent fewer tickets that do not require locating to be completed in the field (tickets outside of a facility operator's coverage area). This has resulted in dramatic locating cost savings for facility operators, as the cost of receiving a ticket is negligible compared to the costs associated with physically responding to a locate request. More importantly, resources – including locators – can be better utilized where they are actually needed. Decreasing the number of distracting, unnecessary tickets to facility operators and locators not only allows for a faster response, it allows for more energy to be focused on damage prevention and excavation safety.

The introduction of user mapping through online ticket entry quickly revealed that work areas drawn by the excavator are far more valuable than any text-based description can ever be. User-drawn maps allow facility operators to see exactly where the work is taking place, eliminating any room for misinterpretation. Every time OCC sends a ticket to a facility operator, the user-drawn map is delivered with the ticket. Locators can access a fully interactive map – with street and satellite views of the site – that shows the excavation polygon overlayed with incredible accuracy. Locators can use this to guide their response in the field, review and screen tickets from anywhere, and ensure they know exactly where the work is taking place throughout the entire process.

So while we still may be waiting on flying cars, we can rest assured that the Notification Center world has changed for the better with the introduction of online ticket entry. We have only just scratched the surface of what we can accomplish with these new tools over the past 20 years. As our technology continues to develop, all of our existing systems will continue to be enhanced – providing increased accuracy, faster ticket processing, and a better user experience across the board. ESG

Pre-Excavation Checklist

Before EVERY Excavation

Click Before You Dig 811

In the Office

- ○ Review all drawings, plans, engineering blueprints for existing buried facilities
- ○ Proposed excavation area has been marked in white paint and/or flags
- ○ Call 811 at least 2-3 business days before excavation (check your state One Call laws)
- ○ Locate ticket number is posted at the work location
- ○ Onsite meeting scheduled with all high profile facilities in locate area (gas/oil pipelines, high-voltage cables, fiber optic)

Onsite

Complete a pre-excavation walkthrough of the entire jobsite and adjacent areas

Visually Inspect the Jobsite

- ○ Signs or marking posts
  - Pavement markers (stamped nails, pavement decals, A-tags)
  - Surface markers
- ○ Other surface signage for landscaped areas
- ○ Locate marks
- ○ Consult any maps or field sketches of the location
- ○ Identify all services to buildings such as:
  - Gas meters
  - Farm taps
  - Pipeline valves
  - Cable pedestals
  - Electric cables
  - Water valves
  - Telephone closures
- ○ Look for the evidence of trench lines from the previous exavation
- ○ Look for the cleared pipeline ROWs
- ○ Talk with the property owner or general contractor to identify potential private facilities that may not be marked:
  - Lighting
  - Outbuildings
  - Pools/Spas
  - Irrigation
  - Sewer laterals
  - Propane tanks
  - Communications lines

Document the Jobsite

- ○ Compare actual jobsite to One Call ticket
  - One Call ticket covers the scope of the work
  - One Call ticket "Work to Begin" date is valid
  - All utilities have responded
  - All facilities are marked within the excavation area
- ○ Photograph the jobsite
  - Locate marks and flags from 360°
  - Permanent signage and location relative to the dig area:
    - Note location, height, and operator of overhead lines
    - Note all required safety signage
  - Video and/or sketches where pertinent

Before You Dig

- ○ Review safety information with anyone working the job
- ○ Confirm with facility owner vacuum or hydro excavation is scheduled for all pipelines impacted
- ○ Locations for hand digging within the tolerance zone are noted
- ○ Emergency equipment available when hazardous atmospheres are potentially present
- ○ List of all emergency contact numbers for assets in and adjacent to the dig zone is readily available
- ○ The location and route to the nearest hospital is known by onsite supervisors
- ○ When possible before any excavation, do a sweep with a locator to identify any foreign lines that are not marked
- ○ Representatives for all critical facilities are present

The "Great Debate"– is Ditch Maintenance Considered Excavation?

BY CLINT KALFELL, PROGRAM ADMINISTRATOR, MONTANA811

THE MAINTENANCE and creation of ditches, whether for drainage or irrigation are critical tasks in both road construction and agriculture. These activities, which always involve some form of excavation, raise significant concerns about the safety and legal implications associated with damage to underground utilities, especially pipelines transporting hazardous materials such as gasoline, diesel, or natural gas to your local community.

Understanding Ditch Categories

Ditches are categorized into two types: road and agricultural. Agricultural ditches require frequent maintenance due to the accumulated silt and vegetation, necessitating periodic removal to maintain the functionality.

Excavation and Legal Limitations

A key question typically arises regarding the removal of accumulated material in ditches. Does the process count as excavation, thereby necessitating a One Call notification for the identification of underground utilities that could be impacted by the removal of dirt and vegetation? State laws vary across the U.S. drastically. Some state laws say no, ditch cleaning or road grading is not considered excavation if you are not "changing the grade". This is where the devil is in the details.

What about determining the original grade?

One challenge is determining the original bottom of a ditch, especially when using mechanical equipment. In cases where the ditch is not clearly marked or lined from the past, establishing the original grade becomes impossible to prove at times, and is a weak link for the excavator when it comes to liability. Some state laws offer exemptions for certain types of agriculture excavations, but the ambiguity remains, such as when cleaning irrigation ditches.

Incidents and Responsibilities

There have been incidents where ditch cleaning, conducted without locating underground utilities, resulted in utility damage. These situations lead to hardships for the individual doing the digging (without a locate) when it comes to paying for the repairs. The real conflict is often who bears the cost of repair and implementing preventative measures, leading to the question - did you have a locate or not?

Opinion: Arguing over what constitutes excavation in the context of ditches seems fruitless. The use of mechanical equipment near ditches should always be accompanied by a locate request to ensure safety. The approach is not only a form of preplanning but also a free service acting as an insurance policy for the safety of all involved.

In conclusion, while state laws and definitions vary, the emphasis should be on safety and precaution. A simple, proactive approach involving a locate request can prevent potential hazards and disputes, ensuring the safety of individuals and the integrity of the underground utilities and the services your community and neighbors count on. ESG

DON'T BE THAT NEIGHBOR - ALWAYS GET A LOCATE WHEN DOING ANY EARTH-MOVING ACTIVITY, ESPECIALLY DITCH CLEANING!

The Value of a Rigorous Utility Investigation for Project Construction

BY STEVEN M. RIENKS, P.E., PMP, DIRECTOR OF ENGINEERING, AMERICAN SURVEYING & ENGINEERING, LTD.

When it comes to underground utility construction, one of the most critical aspects that often doesn't receive the attention it deserves is the value of a rigorous utility investigation. This aspect plays a pivotal role in reducing damage to underground utilities and preventing injuries to construction personnel. Let's delve into why a rigorous utility investigation is essential and how it benefits excavators, Notification Centers, and facility operators who are dedicated to minimizing utility damages.

Understanding the Basics. What exactly is a rigorous utility investigation, and why is it crucial in project construction?

Defining Rigorous Utility Investigation. ASCE/CI/UESI 38-22 Standard Guideline for Investigating and Documenting Existing Utilities is an update to the 38-02 standard reflecting the updated changes in practice, technologies, and research for detecting/documenting the uncertainties of locations of underground utilities and other infrastructure. A rigorous utility investigation includes Quality Level B

(contains Quality Level C and Quality Level D), and Quality Level A test holes, if needed. This work is to be performed as part of the engineering plans and can be shared with the utility owners. Utility identification at this stage of planning and design development helps to prevent utility damages and service disruptions for utility companies and their customers.

A rigorous utility investigation involves a thorough and comprehensive assessment of existing underground utilities within a construction project's area. It goes beyond the standard utility locates and involves in-depth inspections to identify the precise locations, depths, and conditions of these utilities. This investigation aims to provide excavators and construction teams with accurate information to prevent utility damages during the project.

The Value for Excavators. Excavators are at the forefront of any construction project, and they bear a significant responsibility for preventing utility damages. Here's how a rigorous utility investigation adds value to their work:

a.) **Enhanced Safety.** Safety is paramount in construction, and accurate utility information obtained through a rigorous investigation significantly reduces the risk of accidents and injuries. Excavators can plan their activities with confidence, knowing the exact location of underground utilities.

b.) **Cost Savings.** Utility damages can be costly, both in terms of repairs and potential legal consequences. A rigorous utility investigation helps excavators avoid these expenses by preventing damages in the first place. It's a proactive approach that saves money in the long run.

c.) **Improved Efficiency.** Knowing the precise location of utilities streamlines construction operations. Excavators can work efficiently, reducing downtime caused by unexpected utility encounters. This leads to faster project completion and client satisfaction.

Benefits for Notification Centers. Notification, or 811 Centers play a vital role in coordinating utility locates and promoting damage prevention. They, too, can benefit from a rigorous utility investigation:

a.) **Streamlined Requests.** When construction teams provide detailed information from a rigorous investigation, Notification Centers can process locate requests more efficiently. This ensures utility locates are accurate and timely.

b.) **Data Verification.** A rigorous investigation can serve as a valuable source of data for Notification Centers. They can cross-check the information provided by construction teams with their records, ensuring accuracy and reducing the chance of errors.

c.) **Education and Outreach.** Armed with accurate utility data, Notification Centers can develop targeted education and outreach programs. They can work with construction stakeholders to promote best practices and raise awareness about the importance of damage prevention.

Overcoming Challenges. Implementing a rigorous utility investigation may face resistance due to perceived costs and delays. However, the long-term benefits far outweigh these concerns. By emphasizing the value that it brings to safety, cost savings, and efficiency, the construction industry can encourage its adoption.

Incorporating Industry Insights. Utility Scoop highlights the following industry insights:

a.) **Risk Mitigation:** Rigorous utility investigations reduce the risk of costly utility damages, ensuring a smoother construction process.

b.) **Efficiency Gains:** Access to accurate utility data from the investigation leads to increased efficiency and fewer delays.

c.) **Legal Compliance:** Many areas require a thorough utility investigation to comply with regulations, making it a necessary step in project development.

The value of a rigorous utility investigation for project construction cannot be overstated. It is a proactive and essential step in preventing utility damages and ensuring the safety of construction personnel. Excavators, Notification Centers, and utility operators should recognize the importance of this process and work together to make it a standard practice in the industry.

By embracing rigorous utility investigations, the utility construction industry can move towards a safer, more efficient, and cost-effective future. It's time to prioritize this aspect of construction, for the benefit of all involved. ESG

SUE AND VACUUM EXCAVATION HELP INCREASE SAFETY AND SAVE TIME

BY DUSTIN RHODES, PRODUCT MANAGER, TRUVAC

When it comes to underground utilities, safety is paramount. As municipalities grow and various areas undergo advancement and development, the number of buried utilities grows. Likewise, the number of potential problem points grows, including more live and abandoned utilities interfering with new projects.

Subsurface Utility Engineering, or SUE, looks to counteract these pain points or at least decrease them through civil engineering, surveying and vacuum excavation. Greg Jeffries is the Chair of the Subsurface Utility Engineering & Investigative Committee at the American Society of Civil Engineers Utility Engineering and Surveying Institute (ASCE/UESI).

"SUE, to me, is the proper characterization of existing utilities and avoidance of utility conflicts," said Jeffries. "Primarily SUE should be integrated in the early design process to give the design people the best foot forward. The idea is to give them very valid, precise information."

In years past, SUE happened far into the process. It was a matter of finding out how bad an underground obstacle was rather than being used early in the design phase to help avoid surprises. SUE now considers not only utilities but also underground vaults and manholes to give a full-picture look at what is occurring in that underground space and show existing structures.

For example, in Tampa, Florida, when a 72" drainage trunk line was going to be put into an old cobblestone street, the underground structures in addition to the utilities caused issues. SUE showed the pipe wouldn't work there, and the project would have been better served had SUE been utilized in the design stage.

"SUE as a whole isn't about eliminating risk such as encountering utility issues, but rather it's about drastically lowering the risk profile," said Jeffries. "There's a precision design when SUE is used, and it's a buildable design."

The vast majority of contracts put responsibility on the contractor to confirm all utilities. That puts every construction dollar at risk because there isn't good subsurface information.

"All construction projects cost roughly 14% more than they should cost because of these unmitigated risk profiles that are being dealt with on the contractor side of the equation," said Jeffries.

It's not only a matter of cost and dealing with problems in the build phase rather than the design phase. It's also a matter of safety. Digging into a utility creates a large safety risk. This is especially the case when working around natural gas lines.

"Safety is definitely the big consideration in SUE. It's no question," said Jeffries. "The more information we know about the utility installations that are out there, the more we can avoid an unnecessary or unwanted interaction with that utility."

That is one major reason why vacuum excavation is helpful when it comes to SUE. Rather using a shovel or backhoe to find out what lays beneath the surface, vacuum excavators use compressed air or pressurized water to uncover underground utilities. That loose soil is then vacuumed out of the way into a debris tank. This helps avoid any contact with utilities. The potholing technique also helps confirm the location, depth, and type of buried lines before construction begins.

Safety and risk avoidance are not the only benefits, though. Vacuum excavation also helps increase the speed of jobs because it identifies precise locations of utilities. Likewise, when SUE is incorporated in the design phase rather than the build phase, time is saved.

"SUE goes beyond safety in the idea of having a more functional design and buildable project," said Jeffries. "We call it concept to concrete time. If I have a more complete design without unforeseen conflicts, that's a much shorter window for building. That's time and money and less traffic interruptions. There's a number of factors that SUE provides answers to." ESG

Excerpts taken from the Underground Infrastructure article titled, "Damage Prevention and Safety: SUE, Vac Excavation Increase Safety and Save Time"

COLOR CODE IDENTIFIERS

WHITE	Proposed Excavation
PINK	Temporary Survey Markings
RED	Electric Power Lines, Cables, Conduit, and Lighting Cables
YELLOW	Gas, Oil, Steam, Petroleum, or Gaseous Materials
ORANGE	Communication, Alarm or Signal Lines, Cables, or Conduit
BLUE	Potable Water
PURPLE	Reclaimed Water, Irrigation, and Slurry Lines
GREEN	Sewers and Drain Lines

FACILITY IDENTIFIER			
CH	Chemical	E	Electric
FO	Fiber Optic	G	Gas
LPG	Liquefied Petroleum Gas	PP	Petroleum Products
RR	Railroad Signal	S	Sewer
SD	Storm Drain	SL	Street Lightning
STM	Steam	SP	Slurry System
SS	Storm Sewer	TEL	Telephone
TS	Traffic Signal	TV	Television
W	Reclaimed Water "Purple"	W	Water
UNDERGROUND CONSTRUCTION DESCRIPTIONS			
C	Conduit	CDR	Corridor
D	Distribution Facility	DB	Direct Buried
DE	Dead End	JT	Joint Trench
HP	High Pressure	HH	Hand Hole
MH	Manhole	PB	Pull Box
R	Radius	STR	Structure (vaults, junction boxes, inlets, lift stations)
T	Transmission Facility		
INFRASTRUCTURE MATERIAL			
ABS	Acrylonitrile - Butadiene - Styrene	ACP	Asbestos Cement Pipe
CI	Cast Iron	CMC	Cement Mortar Coated
CML	Cement Mortar Lined	CPP	Corrugated Plastic Pipe
CMP	Corrugated Metal Pipe	CU	Copper
CWD	Cresote Wood Duct	HDPE	High Density Polyethylene
MTD	Multiple Tile Duct	PLA	Plastic (conduit or pipe)
RCB	Reinforced Concrete Box	RCP	Reinforced Concrete Pipe
RF	Reinforced Fiberglass	SCCP	Steel Cylinder Concrete Pipe
STL	Steel	VCP	Vertrified Clay Pipe

Understanding the Marks: Locating and Marking Practices

Chapters from CGA Best Practices 19.0
For the complete Understanding the Marks: Locating and Marking Best Practices, See CGA Best Practices 19.0 at
BestPractices.CommonGroundAlliance.com

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LOCATE REQUESTS: COVERING THE BASICS

*Originally published in the 2019 Excavation Safety Guide

Excavation Site Accuracy

Clearly defining the excavation site is critical when requesting a locate. The precision of this information improves the locator's ability to provide accurate marks in the appropriate space. Describing the dig site eliminates confusion. Driving directions and GPS coordinates can save time for the locator - especially in rural, newly-developed or difficult-to-find areas. Pre-marking the area with white paint or flags ensures an onsite visual for areas that are difficult to describe on the ticket.

Non-Members/ Private Utilities

Even if you call your Notification Center for every ground disturbance you undertake, you may still have unmarked facilities in your dig site. Laws vary between states and even municipalities on who is required to be a Notification Center member; and the ownership of many utilities transfer to the property owner at a specific demarcation point. For these facilities, a private utility locator is necessary to indicate their location. A few visual signs of private utilities on a dig site include utility meters, signs, markers, pedestals, hydrants, valve boxes, farm taps, regulators, lighting, or irrigation taps; especially if there is no paint or flags leading to them.

Locate Longevity

Each state has different laws governing when the ticket request should be submitted, how long the locate ticket is valid, how soon the work must begin, and what to do if the marks become illegible. It is important to know the law for the state you are working in. Review the Notification Center Directory beginning on page 51 for the law in your state.

Second Requests: Remark/Refresh Requests, Incomplete Marks, No-Shows

Requests for locates to remark the same location may be required for a variety of reasons. Normally these requests occur because the ticket expired before the project was completed, the initial marks were illegible or incomplete, one or more facility owners did not complete their marking within the required time or the marks were made but need to be refreshed due to activity at the dig site.

Emergency Locates

The exact definition of an emergency locate may vary, but this type of ticket is typically only allowed if there is a situation constituting an imminent danger to life, health, property, or a utility service outage, which requires immediate repair or action. It is a good idea to have a clear understanding of what qualifies in your state as an emergency locate before an emergency occurs.

Onsite or Joint Meeting Requests

An onsite meeting is scheduled when the scope of the work may be confusing or extends over a large geographic area. It is also useful when maps, plans, and schedules need to be shared. This type of meeting also allows excavators to discuss the project and any special circumstances with all concerned parties.

Held at the excavation site, or as close as practical, these meetings normally require more advance notice than a standard locate request. For jobs covering a large area, it is normally best to segment your request into reasonable sections. Identifying these sections on a map will facilitate communication between you and the locators, facility owners, and Notification Center. Notification Centers often need very specific information about your excavation site to request joint meets, so be prepared before you ca11 or click.

Design Notifications

Design notifications are done as a part of the development and preconstruction planning process to accommodate existing utilities and reduce problems during construction. Each state and/or facility owner will likely have specific polices on how these notifications are handled.

Tolerance Zone

The tolerance zone is a defined horizontal distance extending from either side of the outer edge of a buried utility. The exact distance of this tolerance zone varies from state to state, ranging from 18 inches to 24 inches on either side of the line or pipe, and is defined within the state's One Call law. To determine the tolerance zone for a given facility, you must know the state's law and the size of the utility. For example, in a state where the defined tolerance zone is 18 inches, the total size of the tolerance zone would be 38 inches for a two-inch pipe: 18 inches on either side of the pipe plus the two-inch diameter of the pipe itself.

CGA Best Practices call for the size of the pipe to be included in the locate marks on the ground, but caution should always be used when excavating within the tolerance zone as these indicators may be missing or incorrect.

Since locating equipment detects the electromagnetic field surrounding a pipe, and not the pipe itself, the science of locating underground facilities is not exact. The tolerance zone, therefore, serves as a warning to an excavator to proceed with care and caution while working in the area. Hand (or sometimes soft) digging is required within the tolerance zone. ESG

TOWN ESA EXCAVATION SAFETY ALLIANCE HALL

Excavator Insights from ESA Town Hall:

WHAT ARE THE TOP ISSUES AFFECTING THE UTILITY LOCATING INDUSTRY AND HOW DO WE RESOLVE THEM?

The excavation industry thrives on collaboration and adaptability, and this ethos was underscored in the ESA Town Hall that occurred on March 9, 2023. Moderated by Mark Drew, President of Vivax-Metrotech Corp, the discussion brought together industry leaders to address the paramount issues impacting utility locating and to explore potential resolutions. Here's a closer look at the insights shared by the panelists and engaged audience members:

Moderator: Mark Drew, President, Vivax-Metrotech Corp

Panelists:

- Shawn Hailey, CEO/Co-Founder, LineQuest, LLC
- Tracy Pursell, State Director (MN), VP – Tier 1, Blood Hound, LLC
- Dee Terry, Director of Operations, Benchmark – Subsurface Utility Services

A recurring theme in the discussions highlighted the importance of commencing projects with open communication channels. Proactively sharing project timelines, scopes, and potential challenges with utility locators, utility operators, and Notification Centers establishes a foundation for collaborative success. This aligns with the overarching sentiment expressed by Tracey Bryant of CenterPoint Energy: "It is not excavator vs. utility vs. locator, and I truly think we can move into a space where we work together and help each stakeholder be successful."

To address load management challenges, excavators can contribute by only calling in tickets for projects they are imminently working on. Considering historical planned resources, as exemplified by Gerald Johnson of USIC, becomes crucial to prevent backlogs among utility locators. Johnson highlighted an example where the southern and central portions of Illinois saw a staggering 249% increase in the work area scope, emphasizing the need for coordinated planning. Strategic ticket management can efficiently alleviate the workload for utility locators and enhance project planning accuracy.

The topic of emergency tickets also garnered attention, shedding light on the significance of excavators collaboratively assessing the urgency of situations when designating them as emergencies. This collaborative approach ensures a swift response to genuine critical scenarios, preventing unnecessary disruptions and fostering a responsive and efficient workflow. Frequent misuse of "emergency" tickets can strain the utility locating process, exacerbating existing backlogs in the industry.

The professionalization of the excavation industry was also touched on. There is a broad industry-wide discussion about elevating the positions of utility locators and excavators to that of a skilled trade. This involves a commitment to continuous education and potentially certification, fostering a culture of expertise, competence, and mutual respect among stakeholders.

Utility Coordination Councils were highlighted as essential forums for collaboration. Active participation in these councils enables excavators to engage in discussions, share insights, and collectively address potential challenges, ensuring a cohesive industry approach.

In conclusion, the excavation journey is a collaborative one. By embracing proactive planning, strategic ticket management, clear emergency ticket protocols, investment in skills, and active participation in industry forums, excavators can lead the way toward a more efficient and harmonious digging process for all.

View the Town Hall for more helpful insights!

- ☑ Foster communication at project start
- ☑ Manage tickets strategically
- ☑ Collaboratively evaluate emergencies
- ☑ Promote industry professionalism
- ☑ Engage in Utility Coordination Councils

WHO'S RESPONSIBLE FOR GETTING UTILITIES MARKED, AND WHEN?

BY STEVE GIAMBRONE, PIPELINE DIVISION DIRECTOR, LOUISIANA OFFICE OF CONSERVATION

I am writing this from the great State of Louisiana, where I work as the Pipeline Division Director for the Louisiana Office of Conservation. In addition to overseeing our Pipeline Safety Programs, I also am responsible for the implementation of the State's Damage Prevention Program (as it relates to pipelines). In 2022, I joined the CGA Best Practices Committee as one of the two NAPSR representatives and have been working with dredging and marine construction companies for years to improve marine safety when working around pipelines.

Since taking over damage prevention enforcement in 2018, we've made progress in Louisiana in both strengthening and enforcing our laws to bring down pipeline damages. In 2022, Louisiana's damage rate for pipelines was 2.7 damages/1000 tickets, which is down from 3.9 damages/1000 tickets in 2017. Additionally, Louisiana has passed laws requiring white lining, positive response, and potholing along with other minor changes to help clarify the law's intent.

But are you aware of the differences in laws from state to state when it comes to the damage prevention of underground utilities? Excavators (and utility operators) need to know and understand the laws in the state where they are working. Excavation laws are established at the state level and therefore, are not always consistent across state lines. Many excavation laws follow the Common Ground Alliances' Best Practices Guide, but even the guide may allow for deviations or provide a range for a Best Practice. As such, you will find differences in ticket life, tolerance zones, potholing (or daylighting) requirements, mark-by times and other standards commonly found in state "dig laws". Hopefully this article will help those who work across state lines to operate more safely, efficiently, and in compliance with state laws. Please understand that some of this information could be dated as states update their laws regularly, you must check the laws of the state you are working in.

MARK-BY TIMES

Let's start with "Mark-By" times. You've generally heard of the "48-hour rule" for a mark-by-time requirement, but not every state adopted the 48-hour requirement or if

"EXCAVATORS (AND UTILITY OPERATORS) NEED TO KNOW AND UNDERSTAND THE LAWS IN THE STATE WHERE THEY ARE WORKING. EXCAVATION LAWS ARE ESTABLISHED AT THE STATE LEVEL AND THEREFORE, ARE NOT ALWAYS CONSISTENT ACROSS STATE LINES."

they have, implements it in the same way. For instance, in Louisiana, the 48-hours granted to a utility operator to mark their facilities does not include weekends or holidays and the period doesn't start until 7:00 AM of the next working day. States such as Maine, North Carolina, and Wisconsin along with others have a waiting period of 3 days while Hawaii has a straight 5-day wait period (weekends and holidays included). Some states now allow excavators to choose their mark-by date and the Common Ground Alliance would like to see more states adopt this provision to provide for more efficient ticket management by utility operators.

TOLERANCE ZONES

How about Tolerance Zones? First, what is a tolerance zone? A tolerance zone does not mean I can't excavate within the area. Tolerance zones are generally a distance on either side of a mark where a utility may actually be located and the mark is still considered "accurate". In almost all states 18"-24" is the established tolerance zone. If I dig within that distance from either side of a utility marking, I should find the utility in question, right? Not always, as the distance is measured from the outside of the diameter of the utility. For a 20" pipeline, this means I have to add 10" on either side of the marking and then add the tolerance zone where the pipeline could be located. If the pipeline is located anywhere within that range, the mark is still "accurate". Now most states require "soft excavation" or non-mechanical excavation within the tolerance zone. Michigan has a 48" "Caution Zone". Before excavation activities can commence within this zone, pipelines must be exposed using soft excavation methods. More than 80% of states require soft excavation within the lawful tolerance zone.

TICKET LIFE

How long is my ticket good for? Did you know some states allow for your ticket to be valid for as long as the marks are visible and your work is continuous (MA, MO, PA)? The CGA Best Practices Guide lists 10 days with a maximum of 20 days on a ticket life. The ticket life in most states ranges from 14 days to as much as 60 days, with 14-30 days being the most prevalent. Some states allow for deviations in the established mark by time, generally this can occur if the parties agree to extend the time for a utility to be marked; however, check the state's laws for whether or not the ticket life has been extended by extending the mark-by time. Just because you agreed to allow for a week to mark, does not necessarily mean the ticket life has been extended the same amount of time.

SECOND REQUESTS?

So, what's this all about? We don't have this requirement in Louisiana, but it's an interesting one. 16 states require an excavator to make a 2nd request if no response is received from an operator and there are signs of utilities but no markings. For instance, in Connecticut the excavator shall immediately request assistance from the public utility if the excavator has reason to believe there are underground utilities in the designated area, but no markings (16-345-4(c)(8)). While in Tennessee, the excavator shall not proceed until an additional notice is made to the Notification Center (65-31-108(d)). In Georgia, a second request must be made and the operator(s) has until noon of that business day. The excavator may start AFTER that time, provided there is no visible and obvious evidence of the presence of an unmarked facility. I'd say that's an important law for excavators to be aware of when working in Georgia (25-9-7(e)).

DOES EACH EXCAVATOR NEED A TICKET?

It is a fairly universal requirement that each excavator at a job site has their own ticket, but four states do not require a separate request (Alaska, Georgia, Maine, and New Hampshire). In Louisiana, the person entering the ticket is allowed to add one excavator to the ticket.

ABANDONED FACILITIES

What do I need to do if I find what I suspect to be an abandoned facility? In many states, nothing at all. But some states have requirements for abandoned facilities, some for the operator and some for the excavator. In Alabama, for instance, if an excavator encounters an unmarked underground facility and attempts a follow-up (or second notice), all operators notified have four hours to contact the excavator with known active and abandoned facilities at the site (37-15-6(a)(40)). In Massachusetts, any facility that has been abandoned or is not in service shall also be marked if it falls within the safety zone of an active facility and shall further be marked to indicate its status as abandoned or not in service (220 CMR 99.606(F)).

There are other provisions in state dig laws to consider:

- **What do I do if I damage a utility?**
- **What about preserving marks?**
- **Does the state allow for exemptions from the law?**

We need to remember that these laws are there to ensure the reliability of critical services and for the protection of those working around utilities. Observing all aspects of the law will result in safe and efficient excavation and reduce delays and expenses. Taking shortcuts may seem tempting, but in the long run, they lead to damages, work stoppages, citations, and have negative impacts on worker safety. Let's all do our part in protecting our underground infrastructure. ESG

TRENCHING AND EXCAVATING PROCEDURES WITH SAFETY CONSIDERATIONS

BY ANKIT SEHGAL, CHIEF EXECUTIVE OFFICER, SWIFTDRAIN

Trenching and excavating are often at the core of a robust construction site and require proper planning and adherence to best practices to ensure a safe and successful project. It can be among the most hazardous sitework operations. However, disciplined attention to safety standards and procedures can increase job site safety and minimize risk.

Over the years, the Occupational Safety and Health Administration (OSHA) has increased efforts to define threats and identify safe practices. The good thing is there are safety measures and systems that people in the field can implement to reduce these incidents altogether.

We define excavation as any human-made trench, depression, cut, or cavity involving earth removal. As for a trench? It's defined more specifically as a narrow underground excavation, deeper than wide. Trenches are, by definition, no wider than 15 feet. What kinds of safety considerations can they pose? Like excavation, they include everything from maintaining structural integrity to watching out for utility lines. Fortunately, a little knowledge can go a long way in supporting safe excavations and earth removal.

Trenching and Excavating 101: What to Watch Out For

When trenching and excavating, you must thoroughly understand the most significant risks these operations pose - whether you're working on installing a trench drain system, digging for utilities, or any other sitework project.

What is the most significant consideration in excavations?

Cave-ins are among the primary risks associated with trenching and excavating. Cave-ins account for the majority of incidents. Trench collapses, in particular, account for a significant amount. Besides cave-ins during excavation and trenching, you'll also need to pay attention to other potential issues, such as:

- **Hazardous atmospheres**
- **Falls**
- **Falling loads**
- **Incidents involving mobile equipment**

What's the best way to guard against these potential hazards?

For starters, never enter a construction site without the proper protective gear, which includes a helmet, glasses, and vest. As for trenches, don't enter any that fail to have suitable protective systems in place.

Trenching and Excavation Safety Systems

A protective system should always be in place for commercial trenches five feet (1.5 meters) or deeper. You can only bypass this requirement when an excavated trench comprises stable rock. When trenches reach a depth of 20 feet (6.1 meters) or deeper, a professional must design their safety systems. This professional must be a registered engineer. You may also rely on tabulated data prepared or approved by such an expert.

What do these protective systems look like?

Different types of systems exist. They include:

- **Shoring**
- **Sloping**
- **Shielding**
- **Benching**

Shoring necessitates installing supports such as aluminum hydraulic or other types to prevent cave-ins and soil shifting. Sloping refers to the technique of cutting back the trench wall at an angle inclined away from the excavation.

What about shielding?

It relies on trench boxes or other support types to avoid sediment cave-ins.

Benching refers to protecting employees from cave-ins by removing earth from the excavation sides to form one or more horizontal steps or levels. This technique usually involves vertical or near-vertical surfaces between levels. There's a caveat to benching, though. It cannot be used in Type C soils.

How to Select the Best Safety System

How do you know which safety system is right for your needs? This decision-making process can be a complicated one, involving considerations such as:

- **Depth of cut**
- **Soil classification**
- **Water content of the soil**
- **Changes due to weather or climate**
- **Other operations in the vicinity**
- **Surcharge loads (surcharge loads may include materials used in the trench or spoil)**

Soil Types Demystified

Soil types fall into one of two categories: granular or cohesive. Granular soils contain coarse particles like gravel or sand. As a result, the dirt doesn't stick together and will require more extraordinary measures to prevent a cave-in. Cohesive soil types include enough clay or fine particles so the individual particles stick together. As the name suggests,

cohesive soil remains less likely to cave in. Besides these essential characteristics, OSHA relies on a "unconfined compressive strength" measurement to categorize each soil type. Unconfined compressive strength refers to the amount of pressure it requires to collapse a specific soil type. Soils are classified as follows:

• Stable rock • Type A • Type B • Type C

Let's explore each soil type in greater detail. That way, you'll develop a better sense of safe and dangerous working conditions.

Daily Inspections by a "Competent Individual"

Inspections must occur before workers enter the excavation area or trench. This step eliminates the risk of excavation hazards listed above. Who does OSHA define as a competent individual? An individual capable of identifying predictable and existing hazards or working conditions that are considered unsanitary, dangerous, or hazardous to workers. Tasks performed by a competent person include:

- **Testing and classifying soil**
- **Inspecting protective systems**
- **Monitoring water removal equipment**
- **Designing structural ramps**
- **Conducting site inspections**

This individual should be authorized to take speedy action and corrective measures to mitigate potential conditions and hazards.

Understanding Access and Egress Points

Your designated "competent individual" will also regularly inspect excavations and trenches to ensure safe access and egress to all excavations. These access and egress points may include:

- **Steps**
- **Ladders**
- **Ramps**
- **Other secure means of exit**

Access and egress safety guidelines apply to all trenches four feet (1.22 meters) or deeper. Means of entry and escape must lie within 25 feet (7.6 meters) of employees.

OSHA Trench Safety Rules

What else does OSHA recommend to keep employees safe while working in excavations and trenches? OSHA Trench Safety Rules include:

- **Maintaining surcharge loads a minimum of two feet (0.6 meters) away from trench edges**
- **Keeping heavy equipment away from trench edges**
- **Knowing where all underground utilities are located**
- **Testing for low oxygen, toxic gases, and hazardous fumes**
- **Inspecting trenches at the beginning of each shift**
- **Never working under raised loads**
- **Inspecting earthworks after rainstorms and other precipitous weather**
- **Inspecting the trench after any occurrence impacting conditions in the excavation or trench**
- **Ensuring that all personnel wear high visibility or suitable clothing when exposed to vehicular traffic**

By following the guidelines above, you'll ensure the safest working conditions for all employees on the jobsite. Besides following these rules, you must also incorporate pre-planning into all potential jobs.

What Is Pre-Planning?

Whether your construction company has one year of experience or two decades in trenching, backfilling jobs, and shoring, approach each new job with meticulous preparation and care. What's the root of most on-the-job accidents? A lack of initial planning. In other words, don't wait until stepping into the dirt to figure out the best safety system for an excavation or trench. After all, making adjustments to fix sloping and shoring issues will hinder operations, slow progress, and increase labor costs. Putting a band-aid on potential safety issues increases the likelihood of an excavation failure or cave-in over time. With that in mind, let's review the safety factors you must consider before bidding on a job.

Safety Factors to Consider Before Bidding

Before you even start preparing a bid, you must understand safety issues at the jobsite. You'll also need to know about the materials and equipment your employees need on hand to comply with OSHA safety standards. The following safety checklist will help you evaluate each job site and then draw up a plan accordingly. Factors you must consider include the following:

- **Proximity and physical condition of nearby structures**
- **Traffic**
- **Soil classification**
- **Ground and surface water**
- **Location of the water table**
- **Underground and overhead utilities**
- **Quantity of protective systems or shoring that may be required**
- **Weather**
- **Fall protection needs**
- **Number of ladders needed**
- **Other equipment needs**

Which processes can help you collect the information you need? They include taking test borings for soil conditions and types, observations, jobsite studies, consultations with utility companies, and meetings with local officials. This research will help you determine the kind, amount, and cost of safety equipment needed for your workers to do their jobs properly, safely, and more cost-effectively.

Promoting Excavation at Your Workplace

Trenching and excavation are among the two most dangerous activities at construction sites. For this reason, you must plan for both with a detail-oriented approach. OSHA lays out a comprehensive system of regulations to help you ensure the safety of your workers. From employing a competent person at your jobsite to understanding soil types and safety system implementation, these precautions translate into a safer workplace. Besides following these guidelines, you must consistently monitor for changing conditions. After all, exposure to vibrations or precipitation can lead to changing soil conditions and the need for different safety systems. Fortunately, with the proper skill set and approach, one can significantly prevent incidents, minimize risk, and effectuate site operational safety. ESG

Ankit Sehgal is the Chief Executive Officer at Swiftdrain, an American trench drain manufacturing company. He has worked on infrastructure improvement projects for the United States Air Force, the U.S. Department of Energy, and the Department of Transportation. For more information, visit swiftdrain.com.

Considerations for Your HEAT STRESS Management Plan

BY MARGARET C. MORRISSEY-BASLER, PHD, PROVIDENCE COLLEGE

Summer of 2023 was reported to have the hottest months ever recorded on earth. Unfortunately, these conditions will continue to get worse as the frequency, intensity, and duration of heat waves increase[1]. Climate change is a major public health priority that places many at risk for life-threatening heat injuries and illnesses. Workers are particularly vulnerable to heat-related injuries as they often engage in heavy physical exertion for prolonged hours[2–5]. Moreover, occupational heat stress is a combination of environmental heat, physical activity, and personal protective clothing, which taken together, exacerbates the level of heat strain placed on the body[3,6].

Unfortunately, there are no federal standards to protect the health and safety of workers. The Occupational Safety and Health Administration (OSHA) has created a National Emphasis Program on Outdoor and Indoor Heat Hazards, which is a nationwide enforcement mechanism to inspect workplaces for heat-related hazards. In other words, OSHA can perform heat-related inspections on high-risk worksites to make sure workers are not susceptible to preventable heat-related injuries, illnesses, and fatalities. Therefore, it is your responsibility as an occupational and environmental health and safety professional to ensure heat safety practices are in place and workers are protected during times of high heat exposure.

So, where do you start?

Here are some considerations and strategies to implement within your heat stress management plan.

Written Heat Safety Policies and Procedures

Like any hazard, it is important to have clear and written heat safety policies and procedures. During an inspection, this may be the first item OSHA personnel will ask to see. Successful heat safety policies and procedures include the following elements (but not limited to):

- **Heat Safety Education** (onboarding and annual training)
- **Prevention Strategies** (heat acclimatization, work to rest ratios, environmental monitoring, etc.)
- **Emergency procedures for heat-related medical emergencies** (i.e., exertional heat stroke)

Your plan must include what you will do to prevent heat-related injuries and illnesses from happening in the first place (i.e., prevention strategies). But it must also consider what happens when all systems fail and someone suffers an exertional heat-related illness. As no health and safety plan is 100% failproof, there needs to be clear guidance that outlines what workers should do in the event of a heat-related emergency. An exertional heat illness that is life-threatening is exertional heat stroke. The signs and symptoms of exertional heat stroke include extreme hyperthermia (greater than 105°F), altered consciousness, disorientation, confusion, vomiting, staggering, decreased performance, profuse sweating, dizziness,

and irritability/combativeness. Extreme hyperthermia, altered consciousness, disorientation, and confusion are characterized as diagnostic criteria for exertional heat stroke[7]. If you suspect that someone is succumbing to exertional heat stroke, you must act quickly to reduce their core temperature as quickly as possible. This requires aggressive body cooling within 30 mins of collapse[7]. The gold standard method to reduce core temperature and to treat exertional heat stroke is aggressive, whole-body cold-water immersion[8].

Heat Safety Prevention Strategies

To reduce the risk of exertional heat illnesses, it is key to have evidenced-based prevention strategies in place. Here are a few key prevention strategies to include in your heat stress management plan.

Hydration

Dehydration has been reported to increase a rise in core temperature (i..e, increase risk of heat-related illness), negatively affect performance, productivity, and mood[9]. Maintaining a hydrated state during work can improve your workers' health and safety while preserving or improving productivity. It is important to recognize that hydration is only part of the puzzle regarding risk of heat-related illness --- it is not characterized as the primary factor. Staying hydrated means paying attention to your body and using simple, hydration assessment tools to track your own hydration.

Urine Color

Workers should be encouraged to pay attention to their urine color before, during, and after work. A pale yellow or "straw-colored" urine color would be an indicator that the worker is adequately hydrated. The darker the urine, the more at risk an individual is to dehydration[10].

Urine Output

More urine is typically produced when adequately hydrated and less urine is produced when dehydrated. Therefore, a reduction in daily urine frequency (how often you urinate) may be an indicator of dehydration.

Thirst

When in a dehydrated state and body water content is low, fluid regulatory mechanisms in the body will initiate sensation of thirst as a signal to consume more fluids. It is important to note that the absence of thirst does not indicate the absence of dehydration[10].

Heat Acclimatization

Heat acclimatization is one of the most underutilized heat stress prevention strategies, but arguably, one of the most important. Most heat-related illnesses occur within the first three days of work, when workers are not accustomed to performing the level of physical exertion, sometimes in personal protective gear, in the heat[11]. Heat acclimatization is the gradual and progressive exposure to your physical work environment in the heat to achieve heat adaptations that allow workers to perform better in the heat[12]. Although there is limited research on industry-specific heat acclimatization protocols, NIOSH recommendations increase work by 10-20% over a 5-7 day period[13].

Environmental Monitoring for Activity Modification

As exertional heat illness is primarily driven by the metabolic heat generated by the individual, modifying the work to rest ratios is very effective to reduce risk. The industry standard for activity modification is the use of environmental monitoring, specifically Wet Bulb Globe Temperature (WBGT). WBGT uses four main meteorological components: air temperature, relative humidity, air velocity and radiant heat[14]. The National Institute for Occupational Safety and Health (NIOSH) and American Conference of Governmental Industrial Hygienists (ACGIH) provide WBGT-based activity modifications to protect workers during times of heat stress[13,15].

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TOWN HALL

ESA EXCAVATION SAFETY ALLIANCE

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How Can We Improve Excavation Safety with Fair Enforcement?

Moderator: Scott Landes, Excavation Safety Alliance
Panelists:

- Stephen Allen, Energy Worldnet
- Shane Ayers, Stake Center Locating
- Kemp Garcia, LineScape of WA & NUCA of Washington
- Steven Giambrone, State of Louisiana
- John Hass, VEIT
- Chad Mathiowetz, Mathiowetz Construction Company

On August 10th, nearly 90 industry stakeholders converged for an insightful discussion centered around the existing challenges and promising avenues for improvement in enforcement.

Kicking off the Town Hall, Scott Landes posed a fundamental question that captured the essence of the Town Hall: How is enforcement structured across states, and does it offer equitable treatment for all stakeholders involved?

Shane Ayers offered an insightful perspective. He shared that for an enforcement process to be deemed fair and effective, it's imperative to create a holistic system. In his words, *"all stakeholders that participate in damage prevention have to be involved in the enforcement recommendations."* His call for unity laid emphasis on the indispensable role of excavators, utility locators, One Call centers, DOTs, and PUCs. Such inclusivity would not only foster fairness but also significantly ramp up efficacy in addressing excavation-related concerns.

Delving deeper, it was highlighted that some enforcement programs operate primarily on a complaint-based system. The potential consequences of such a system can include delayed problem resolution and potential safety risks due to reactive rather than proactive issue management. John Hass also shed light on a crucial underlying issue – the inaccuracies rampant in mapping data. He underscored this by stating that *"poor mapping is often the root cause of many excavation damages."*

The conversation transitioned to a vital question: why is there a strong emphasis on enforcing gas utilities over others? Stephen Allen pointed out that while proactive measures have significantly reduced damages to gas lines over the years, there's a noticeable disparity when it comes to other utilities. The heightened risks associated with damaging gas utilities certainly warrant attention, but a comprehensive approach is needed to ensure the protection of all utilities.

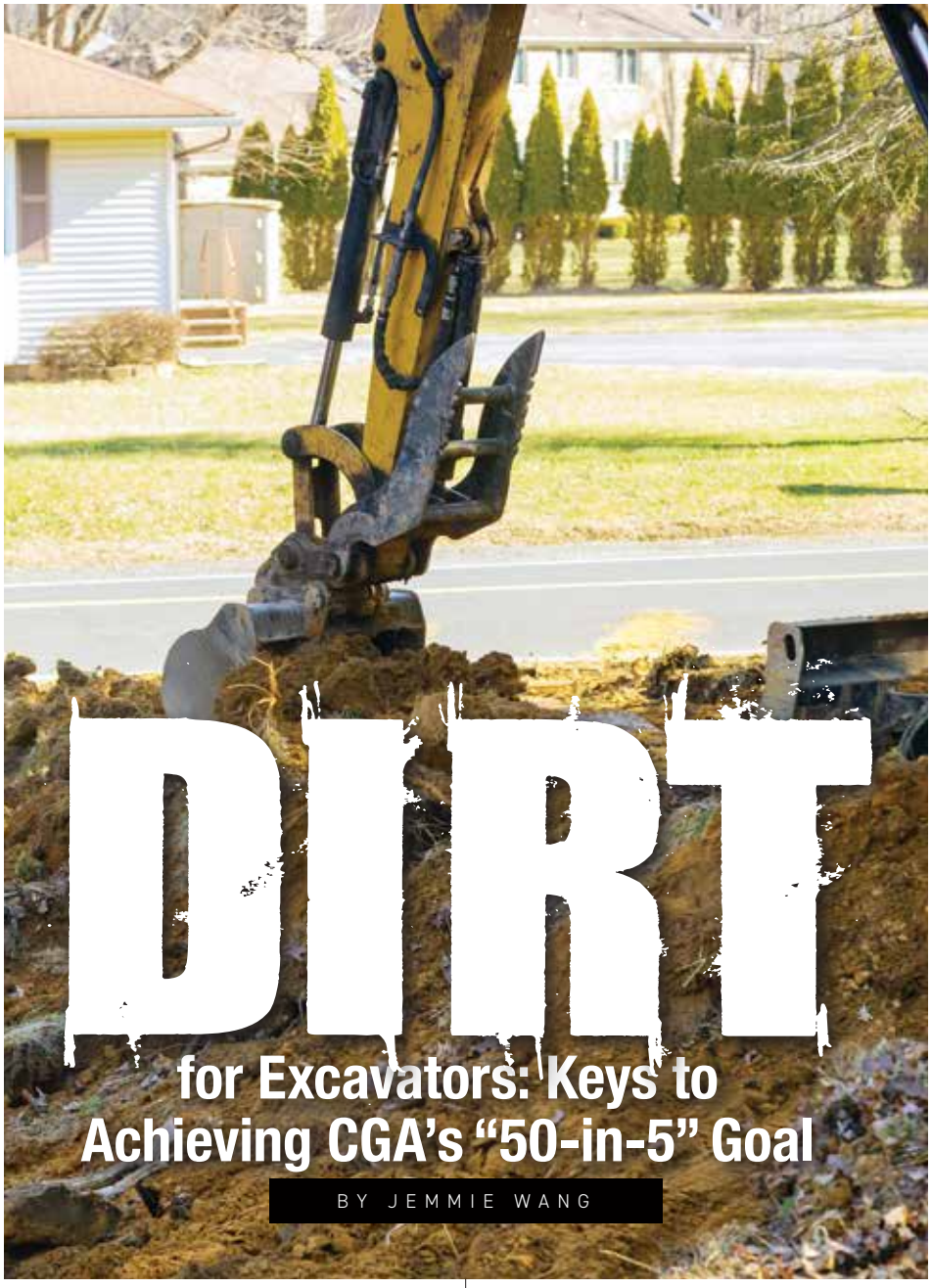
Kemp Garcia shared success stories, emphasizing that collective team initiatives can gain legislative backing. By joining forces, presenting cohesive strategies, and supporting proposals with solid data, they managed to capture the attention of policymakers.

Steven Giambrone highlighted a significant disparity in the current system, pointing out that while excavators face a myriad of regulations, utilities often have an easier path. Such an imbalance emphasizes the need for a regulatory overhaul to ensure fairness for all parties involved.

Chad Mathiowetz spotlighted Subsurface Utility Engineering (SUE) as a pivotal tool. By advocating for its use, he stressed that SUE could help ensure utilities are installed correctly, thus potentially reducing excavation-related issues in the future.

In essence, this Town Hall was a melting pot of ideas, experiences, and visions. It underscored the pressing need for collaborative efforts, innovative solutions, and revisited regulatory frameworks. For every professional involved in excavation, this discussion offers valuable insights, presenting both challenges to ponder and solutions to explore. ESM

If you missed the live discussion or wish to soak it in once more, the full Town Hall can be found by scanning the QR code or at the YouTube channel @excavationsafetyalliance.



DIRT for Excavators: Keys to Achieving CGA's "50-in-5" Goal

BY JEMMIE WANG

If the Common Ground Alliance's (CGA) goal of reducing damages by 50% over the next five years is to be achieved, unprecedented collaboration across the industry is required, with each stakeholder group taking ownership and committing to necessary improvements.

Excavators play a critical role in this effort. Doubling down on safe work practices and proper use of 811, expanded enforcement, and education programs are essential.

Failure to notify continues to be the most persistent singular root cause of damages year-over-year, with 77% of no-call damages attributed to professional excavators in 2022. Landscaping/fencing, water/sewer and construction are the top types of work performed when professionals cause no-notification damages.

An analysis of data from seven states revealed that as often as 56% of the time, an excavator cannot legally begin work on their planned start date. Telecom and water/sewer operators are the largest contributors to instances in which excavators cannot legally begin work. With an influx of additional excavation forthcoming because of state and federal infrastructure spending, it is imperative that we address the timeliness and accuracy of locating.

How Can We Improve?

Here are a few key takeaways from the CGA report:

1. Focus on behavior change. 811 outreach to excavators should focus on behavior change – particularly consistent and effective use of 811 – and tailor messages to professional vs. private property excavators, focusing on the types of contractors and digging activities driving the majority of non-notification damages.
2. Restore confidence in the 811 system. Consider out-of-the-box ideas for meeting locating demand while reducing unnecessary locate requests; invest in locating process efficiencies and technologies.
3. Prioritize tolerance zone safety. Prioritize tolerance zone safety on the jobsite (pothole, maintain marks, use observers to help maintain clearance (see CGA Best Practices 5-17 through 5-20), in trainings, via technology investments (e.g., vacuum excavators) and through contract structures.
4. Provide excavators with access to additional information. Provide excavators with access to additional information such as map visualizations of the jobsite through processes like Enhanced Positive Response (see CGA Best Practice 3-31).

Conclusion

Excavators play a critical role in the damage prevention process. By doubling down on safe work practices, proper use of 811, and tolerance zone safety, excavators can help the industry achieve CGA's "50-in-5" goal. In addition to the above recommendations, excavators can also work closely with other stakeholders, such as facility owners/operators and locators. By communicating effectively and collaborating on best practices, we can all create a safer and more efficient work environment for everyone. ESG

Jemmie Wang was former Co-Chair of CGA's Damage Reporting and Evaluation Committee. Mr. Wang is a partner with BizMetrix, LLC and has over 20 years' experience in the damage prevention industry as an executive, consultant, and entrepreneur.

SAFETY

BY KEN HILL, COMMITTEE MEMBER, NATE AND DAN MARKS, COMMITTEE MEMBER, NATE

WHEN TRENCHING- BEFORE YOU DIG!

You've called 811, now what? Just waiting the necessary 3 days (depending on your state law) and then proceeding to excavate or directional drill doesn't mean you will not strike buried utilities. Reading the ticket responses is an important step in following any state 811 laws. Prior to starting the excavation, review the One Call ticket, paying careful attention to the responses provided by the utility owners. The notes may indicate the area is clear, or an on-site meeting is necessary to complete the locates. As part of your notification process you should have white lined your proposed excavation area. This helps ensure the mark out company knows exactly where you plan to excavate.

When you arrive at the work location, examine the area prior to starting your excavation. Walk the area and verify the locate markings have been completed. It is important to review the 811 ticket response and ensure you have all of the facilities marked. Many times there may be multiple telecommunications providers, and they all need to be marked out. If the trenching is outside the Public Right of Way, the facilities may not be marked and it is the excavator's responsibility to have the facilities located. Also, privately owned utilities will not be marked out and it will be up to the excavator and/or property owner to identify those underground facilities. Remember the uniform facility color coding markings.

Next, examine your route, looking for potential conflicts where your route crosses another utilities path, or where your proposed route runs closely parallel. All these are areas where potholing may need to be done to ensure your excavation or drilling operating does not damage the adjacent utilities. During this site walk, also look for clues that there may be an unmarked utility. Look at utility poles to see if there are risers for telephone, fiber optic, CATV or electric that haven't been located. There may be signage on a pole or a field marker to indicate a buried utility. Look for water meter vaults, valve boxes or utility manholes or handholes (all are indicators of buried utilities). As you are conducting your walk around, ensure you are taking video or photos of the route. This helps following a utility strike to prove your path was marked out and you did your due diligence.

When it comes to communications systems, often ILEC's and CLEC's install their systems in a duct bank, but they also routinely install them in a single duct, a pack of inner ducts, directly buried, and installed in a micro trench. Nearly every building or facility is going to have a communication system of some sort. If you do not see an aerial connection, chances are the communication system is buried. Remember there may be multiple ILEC and CLEC telecommunications cables buried at your worksite.

The depths of communications cables can vary greatly. In a micro trench, the line may only be a few inches deep. In other areas the communication system may be much deeper, even exceeding 6 feet. A common "excuse" heard for a deep utility strike is that they went deep to avoid all the other utilities. Chances are, though, that someone else had the same idea. Many times direct buried telecommunications and electric cables do not run in straight lines and may vary in their path. Trenching parallel to these facilities may require additional potholing to verify their exact location from the tolerance zone.

If you are unsure if the locates are accurate or if you think there may be an unmarked utility on private property, Electromagnetic (EM) locators and Ground Penetrating Radar (GPR) are tools that can help you verify locates. Read that again, EM and GPR are tools that can help you verify locates (it does not replace the 811 mark out).

Once you begin digging, take care while working around utilities. Pothole by using hand dig or soft dig techniques, starting at the outside edge of the tolerance zone and work your way in. Once the utility is exposed, leave it uncovered until you have completed your telecommunication installation. Often times the utility is verified, but then the hole is filled in and the utility is struck. Also, pothole where your pathway will cross the marked utility. The depth of marked utilities may change from where you pothole to where you are actually crossing the utility. If your pothole is in a location other than the crossing point, this could lead to damage.

In the event of a utility strike, alert the proper authorities or utility owners. With regard to telecommunications lines, fiber in particular, handle the system with care to prevent further damage and never look into the ends of a fiber optic cable. The light being transmitted may be beyond what human eyes can see, and that light can damage your eyes.

Underground construction can be done safely. Contractors should understand the situation (811 locates and ticket response), do their own verification (walk the site and document), and utilize proper digging techniques (hand or soft digging and proper potholing). ESG

Ken Hill and Dan Marks are both members of NATE: The Communications Infrastructure Contractors Association, with the Safety and Education Committee and Small Cell Committee. Dan Marks has over 20 years of telecom experience and is a Certified Safety Professional (CSP) and Construction Health and Safety Technician (CHST), and OSHA 500 instructor. Ken Hill has over 40 years' experience in the electric, gas, and telecom utility industry and is an OSHA 500 instructor.

The TRUE Cost of Telco Damages

The cost of cut or damaged communications cables can easily be underestimated when only repair costs are tracked and documented.

Improve your understanding of the real costs of a damage with this checklist based on insight from experienced professionals who have spent years working for communications companies.

What percent of hard and soft costs does your company collect? How do damages affect your brand?

Trackable Costs:

May or May Not Be Collected or Recoverable

- ○ External Collection Costs/Agency Commissions
- ○ Barricades / Traffic Control
- ○ Permits (city/county/state/provincial) to install replacement cables
- ○ Legal fees and litigation costs
- ○ Exposing the damage for repair
- ○ Materials used in repair
- ○ Restoration of the area
- ○ Actual cost of internal labor
- ○ Heavy Equipment used
- ○ Generator/Power Equipment
- ○ Food, lodging, travel expense
- ○ Emergency mobilization (Contractor/ Locator)

Overlooked/Difficult to Track

- ○ Lost Customers
- ○ Customer loss of use (refunds/credits)
- ○ Resolution of customer complaints
- ○ Engineering / reengineering due to the cut
- ○ Establishing outage bridge to coordinate service interruption
- ○ Support staff (3-20) for outage bridge
- ○ Work load delays
- ○ Future failure points (Damage may weaken system and lead to future failure)
- ○ Damage data capture and submission (software and /or manual)
- ○ Emergency One Call ticket notifications
- ○ Facility owner records updates
- ○ Reporting requirements (FAA, 911, PHMSA)

Soft Costs

- ○ Loss of brand confidence
- ○ Negative public feedback
- ○ Difficulty maintaining customer relationships, especially large businesses, with inconsistent services

Societal Costs

- ○ Loss of 911/emergency services
- ○ Businesses closing
- ○ Employee down time
- ○ Road closures/traffic delays

Time

- ○ Damage site investigator
- ○ Collection efforts
- ○ Out of service complaints
- ○ Insurance resolution discussions
- ○ Overtime for unexpected increases in workloads
- ○ Employee time/travel for deposition and trial

Investing in damage prevention improves your bottom-line and keeps your work force continuously focused on proactive work.

ESA EXCAVATION SAFETY ALLIANCE

DIRECTRICES PARA REACCIONAR EN EMERGENCIAS

811

Click Before You Dig

PÓSTER DE SEGURIDAD PROVEIDO POR PIPELINE ASSOCIATION FOR PUBLIC AWARENESS

CONOZCA LOS PELIGROS

- El gas natural y otros productos de petróleo son inflamables y queman. Si la piel está expuesta, serias irritaciones pueden ocurrir. Los gases escapados pueden desplazar el oxígeno.
- La electricidad hará descargas o cortocircuito a tierra produciendo temperaturas que son cuatro veces más intensas que la temperatura del sol. Como mínimo quemaría la piel y dañaría los organos internos. Los altos voltajes de electricidad pueden hacer arco a distancias considerables a través del aire. Usted debe estar consiente de cables aéros de alto voltaje y aleje cualquier parte del equipo por lo menos a 10 pies de distancia de los cables aéreos.
- El agua a alta presión pueden causar heridas graves. Las aguas residuales contienen bacterias que puede ser de alto riesgo para la salud. Los gases del alcantarillado son inflamables y queman.

RECONOZCA LAS CONDICIONES PELIGROSAS

- Los charcos de liquido, la tierra soplando, los sonidos siseantes, las nubes de vapor, los olores a gas, las burbujas en agua estancada, la vegetación completamente seca, y la tierra congelada o hielo alrededor de gasoductos/ oleoductos son todas señales de escapes de gas natural o petróleo y deben de ser tratadas como una emergencia.
- Trate el contacto con cualquier cable eléctrico como una emergencia sin tener en cuenta si aparece dañado o no o si está cortado. Ésto incluye el contacto con cables aéreos de alto voltaje.
- Con frecuencia los servicios usan zanjas conjuntamente poniéndolo a usted en un mayor riesgo en las zanjas que támbien tienen electricidad.
- La tierra mojada o descolorida es un indicio de un escape de agua/alcantarillado y debe ser tratada como una condición de emergencia potencial.

EXCAVATION EMERGENCIES

SAFETY POSTER

811 Click Before You Dig

PROVIDED BY PIPELINE ASSOCIATION FOR PUBLIC AWARENESS

KNOW THE HAZARDS

- Natural gas and other petroleum products will ignite and burn. If exposed to the skin, serious irritations may occur. Escaping gases can displace oxygen.
- Electricity will arc or short to ground producing heat that is up to four times greater than the heat of the sun. At a minimum, it will burn skin and damage internal organs. High voltage electricity can arc significant distances through the air. Be aware of all aboveground high voltage lines and keep any part of the equipment at least 10 feet away from overhead lines.
- Water under high pressure can cause serious injury. Wastewater contains bacteria that can be a significant health risk. Sewer gas will ignite and burn.

RECOGNIZE UNSAFE CONDITIONS

- Pools of liquid, blowing dirt, hissing sounds, vapor clouds, gaseous odors, bubbles in standing water, dead vegetation, and frozen soil or ice next to pipelines are all signs of a natural gas or petroleum pipeline leak and should be treated as an emergency.
- Treat contact with any electric line as an emergency regardless of whether it appears undamaged, damaged or severed. This includes contact with aboveground high voltage lines.
- Utilities often jointly use trenches placing you at greater risk in trenches that also have electricity.
- Wet or discolored soil is an indication of a water/sewer leak and should be treated as a potential emergency condition.

EMERGENCY CONDITIONS INVOLVING UNDERGROUND FACILITIES INCLUDE:

Leaks, ruptures, explosions, fires, severe settling or soil movement, weakened or damaged facilities and similar instances where immediate action is necessary to prevent loss of life, injury to persons, or damage to property and the environment. Every situation is different and must be evaluated on the individual circumstances. Below are general emergency response guidelines for various emergency/damage situations involving underground facilities.

RESPOND IMMEDIATELY

NATURAL GAS & PETROLEUM LIQUIDS

1. Turn off equipment, if it can be done safely.
2. Abandon all equipment and get a safe distance away.
3. Avoid open flames or anything that might start a fire. Do not start motor vehicles or electrical equipment. Remove all ignition sources (cigarettes, cell phones, or anything that could create a spark or static electricity).
4. Evacuate the area and keep people out.
5. Do not make contact with escaping liquids.
6. Do not operate any pipeline valves.
7. Call 911 or your local fire, police, or sheriff's office.
8. Do not try to put out a fire. If it's burning, let it burn; ask local firefighters to observe and protect adjacent property.
9. Contact the facility operator immediately to report the condition.

ELECTRICITY

1. Only move equipment in contact with overhead or underground electric lines if you can move it away safely.
2. If excavator equipment remains in contact with electric equipment, it's safest to stay on equipment (unless on fire) until rescue workers arrive; keep others away. If you must abandon equipment, jump clear of it, landing with both feet on the ground at the same time, and then only shuffle or hop away.
3. If a buried electrical line is struck in wet soil/conditions, the ground may become energized for a large area around the strike. *(Hopping or shuffling away will help reduce your risk to step potential.)*
4. Contact the facility operator immediately to report the condition.
5. If appropriate, call 911 for local emergency response.

WATER/SEWER

1. Evacuate the area immediately and keep people out. Leaking water can fill a trench quickly making escape extremely difficult.
2. Do not close valves in order to stop flooding. Closing the wrong valve may affect fire flows and/or possible containment of potable systems.
3. Be careful of damaged high-pressure water lines because even the slightest scratch or vibration can cause pipelines to break.
4. Move carefully around trenches with wet walls. Wet soil can easily cause suffocation.
5. Avoid contact with wastewater. Do not wade in or work around wastewater.
6. Sewer gas is flammable; avoid open flames or anything that might start a fire.
7. Contact the facility operator immediately to report the condition.

FIBER/COMMUNICATION

1. If a fiber optic cable is cut, do not look into the end of it. Serious eye damage may occur.
2. Contact the facility operator and report the condition.

NEVER BURY A DAMAGED FACILITY!

Even a minor scrape, nick, cut, tear, break, or dent should be reported to the facility owner immediately. If not promptly repaired, it could result in a future leak, service outage, explosion, accident, injury, or death.

CONDICIONES DE EMERGENCIA que afectan las instalaciones subterráneas incluyen: escapes, rupturas, explosiones, incendios, hundimiento severo o movimiento de tierra, debilitamiento y daño de gasoductos/oleoductos/acueductos, y casos similares donde es necesaria la acción inmediata para impedir pérdida de vidas, heridas a personas, o daños a propiedad y el medio ambiente. Cada situación es diferente y debe ser evaluada individualmente según las circunstancias. A continuación se dan directrices generales de emergencia para reaccionar ante varias emergencias/situaciones donde hay daños que afectan las instalaciones subterráneas.

REACCIONE INMEDIATAMENTE

GAS NATURAL Y LÍQUIDOS DERIVADOS DEL PETROLEO

1. Apague el equipo, si lo puede hacer con seguridad.
2. Abandone todo el equipo y aléjese a una distancia segura.
3. Evite llamas abiertas o cualquier cosa que pueda prender fuego. No arranque vehículos de motor o equipo eléctrico. Retire todas las fuentes de ignición (cigarrillos, teléfonos celulares, o cualquier cosa que pueda crear una chispa o electricidad estática).
4. Evacúe el área y no deje pasar a la gente.
5. No haga contacto con escapes de líquidos.
6. No maneje las válvulas de gasoductos/oleoductos.
7. Llame al número de emergencia 911 o llame a las oficinas locales del cuerpo de bomberos, policía, o sheriff.
8. No trate de apagar el fuego. Si está ardiendo déjelo quemar; pídale a los bomberos que observen y protejan la propiedad adyacente.
9. Inmediatamente póngase en contacto con a la compañía que opera los gasoductos/oleoductos para reportar las condiciones.

ELECTRICIDAD

1. Sólo mueva equipo que esté en contacto con cables eléctricos aéreos o subterráneos si usted lo puede mover con seguridad.
2. Si el equipo excavador continúa en contacto con equipo eléctrico, es más seguro quedarse en el equipo (a no ser que esté en llamas) hasta que lleguen los trabajadores de rescate: no deje que otros se acerquen. Si tiene que abandonar el equipo, salte lejos del equipo, cayendo con ambos pies a la misma vez, y luego sólo aléjese arrastrando los pies o saltando
3. Si hay impacto con un cable enterrado y la tierra está mojada, la tierra en el área alrededor del impacto puede estar energizada. (Reduzca el riesgo de electrocutarse alejándose saltando o arrastrando los pies.)
4. Inmediatamente póngase en contacto con la compañía que opera las instalaciones para reportar la emergencia
5. Si es apropiado llame al número de emegencia 911 para ayuda local.

ACUEDUCTO/ALCANTARILLADO

1. Evacúe el área de inmediato y no deje que la gente se acerque. Un escape de agua puede llenar una zanja rápidamente haciendo su escape sumamente difícil.
2. No cierre las válvulas para impedir inundaciones. Cerrar la válvula equivocada puede impedir que el agua pase por los ductos de agua que usan los bomberos para apagar fuegos y/o posiblemente contaminar el sistema de agua potable.
3. Tenga cuidado con los ductos de agua de alta presión debido a que cualquier leve rasguño o vibración puede causar una ruptura.
4. Muévase con cuidado alrededor de zanjas que tienen las paredes mojadas. Tierra mojada puede derrumbarse fácilmente y causar asfixia.
5. Evite contacto con aguas residuales. No camine o trabaje alrededor de aguas residuales.
6. Los gases del alcantarillado son inflamables; evite llamas abiertas o cualquier cosa que pueda iniciar un incendio.
7. Inmediatamente póngase en contacto con la compañía que opera los acueductos y alcantarillados para reportar la emergencia.

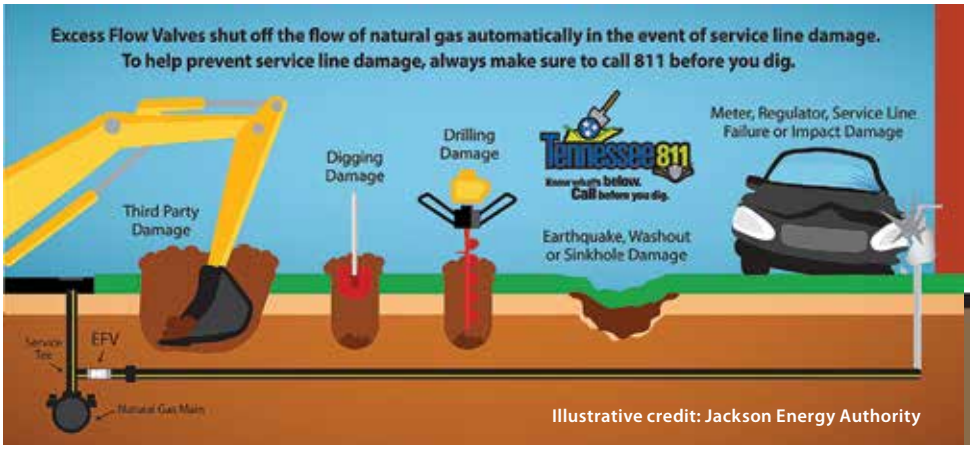
FIBRA ÓPTICA/COMUNICACIÓN

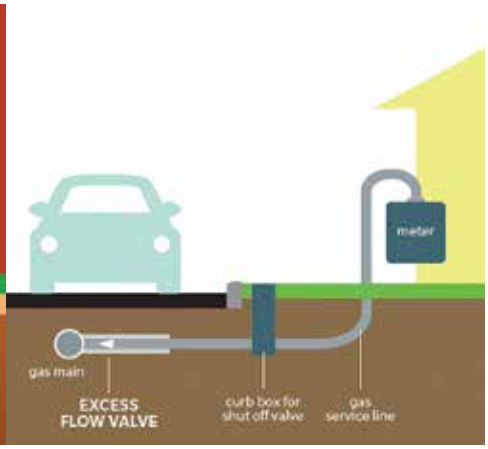
1. Si el cable de fibra óptica está cortado, no mire adentro de la punta del cable. Graves daños a los ojos pueden ocurrir.
2. Inmediatamente póngase en contacto con la compañía que opera la fibra óptica para reportar la situación.

NUNCA ENTIERRE EQUIPO DAÑADO

Nunca entierre equipo dañado como cables eléctricos, gasoductos, oleoductos, o ductos de cualquier tipo. Informe de inmediato a la compañía afectada cualquier leve rasguño, corte, rotura, o abolladura. Si la reparación no es hecha rápidamente en el futuro pueden resultar escapes, interrupción de servicios, explosiones, accidentes, heridas, o muerte.

The Crucial Role of Excess Flow Valves and Curb Valves:





A Reminder for Excavators

Excavation professionals encounter various challenges, particularly when working near utility lines. Within the realm of underground utilities, the significance of Excess Flow Valves and Curb Valves cannot be overstated in mitigating risks associated with gas service line damage. This article serves as a reminder to excavators, emphasizing the importance of refraining from independent valve operations and highlighting the necessity for collaboration with utility operators and emergency responders in the event of a utility hit.

Excess Flow Valves:

An excess flow valve, or EFV, is a mechanical safety device installed on the underground gas service line between the gas main and gas meter. It is designed to minimize the flow of natural gas in the event of a service line break.

- **Automatic Restriction:** Excess Flow Valves act as fail-safes, promptly limiting the flow of gas when faced with a service line break – comparable to an electric circuit breaker responding to design limits.
- **Bleed-by Safety Awareness:** It is important to note that an EFV's do not shut off the flow of gas completely when they are tripped. A very small, predetermined amount of gas will bleed by per code requirements and by manufacturers specified closure flow rates. The gas may not be escaping under full pressure, but there will typically be enough gas to provide a gas odor, indicating there is a problem. Also, the end user will be alerted as there will be no gas service. Because an EFV restricts the flow of gas, it reduces the potential for explosions, fires, and personal injury. To report a damaged service line, no gas service, or if you smell gas in or outside your home call the utility operator or 911.
- **Curb Valves:** In the domain of larger residential, commercial and industrial users, gas distribution companies where applicable may install Curb Valves in new or replaced service lines, for meter capacities exceeding 1,000 standard cubic feet per hour. These manually operated shutoff valves, situated near the service main, serve a parallel purpose to Excess Flow Valves in restricting gas flow during emergencies.
- **Manual Operation:** In contrast to Excess Flow Valves, Curb Valves require manual operation. The establishment of clear policies for emergency situations, in coordination with local gas companies, is essential.
- **Collaborative Approach:** Excavators are encouraged to work closely with utility operators and emergency responders in the event of a utility hit. Independent attempts to operate curb valves pose risks and can impede effective response measures.

In conclusion, this reminder underscores the critical role of Excess Flow Valves and Curb Valves in ensuring safety during excavation work. By refraining from independent valve operations, prioritizing collaboration with relevant authorities, and adhering to established safety protocols, excavators can play a critical part in preventing gas-related accidents, safeguarding their fellow professionals and the greater community. ESG

MarineSafe811–

In March 2009, a group of companies met with a mission to identify, trend, and explore common industry issues in preventing coastal and marine pipeline facility damage, releases, and spills. That day, the CAMO (Coastal and Marine Operators) pipeline industry group was born.

In 2023, CAMO included a consortium roughly 35 companies strong and growing. CAMO's current focus among other initiatives is to extend the same "On Land" damage prevention emphases and awareness into coastal and marine areas.

One of CAMO's 2024 initiatives is to rollout the new MarineSafe811 program that will enhance and drive "Goal of Zero Incidents, Near Misses and to Save Lives" through the Safety, Education, Integrity, Protection, and Damage Prevention of underwater infrastructure - resulting in a reduction or elimination of safety and/or environmental related accidents.

Your job may involve decisions that may directly or indirectly impact miles of underwater oil, gas, or chemical pipelines. With inland waterways such as rivers, bays, lakes, coastal areas and offshore areas, pipelines coexist with vessel and boat activity of all kinds. With more pipelines being installed every day, compounded with increased dredging and marine construction activity in the same waters, the chance of a marine vessel contacting an underwater pipeline continues to grow.

How to Stay Safe Around Pipelines

Making an 811 notification, even in marine areas, is the foundation for the safety of personnel. Additionally, pipelines need to be respected for their potential hazardous impacts to human life and the environment when ruptured. Understanding the roles pipeline and marine construction companies play in safety and damage prevention will help create a successful project. Precautions by all parties need to be understood, agreed upon, and in place before the project begins.

Avoidance procedures should be followed for marine construction projects of all sizes. Pipeline companies and marine construction companies generally have in-house tolerance or "no-go" zones where work may be unsafe or have special conditions. Marine Exclusion Zones, on-land known as Tolerance Zones, are areas near the pipelines where no activity or work should occur. Before work begins all parties should be in mutual agreement on the Tolerance Zones. Although Exclusion Zones vary among dredging and marine construction companies, 75 feet minimum is generally the no-go working distance.

Obtaining Pipeline Information

Due diligence is necessary when gathering pipeline coordinates, ownership, and contact information. Multiple sources must be checked and inconsistencies may exist across those sources. In many cases, other types of lines may exist in your project area, such as electric, water, fiber optic, phone, and sewer, to which the same general precautions apply. It is beneficial to familiarize yourself with the different pipeline resources available. Each data source has a different layout and provides different information. Question the pipeline companies. It is their responsibility to provide you with the facts. Prior to kicking off a project all parties involved must agree on project plans, crossing agreements, avoidance and safety measures, and work together to stay informed through project duration.

How to Work Safely Near Underwater Pipelines and Utilities

BY ED LANDGRAF, DIRECTOR OF MARINE OPERATIONS AND SAFETY, TEXAS811, AND CHAIRMAN, COASTAL AND MARINE OPERATORS (CAMO)

Once your marine construction project scope is known, outline your total project footprint in your execution plan and voyage plan. Identify all waterways, wetlands, and marine areas that will be traversed by project vessels including dredged material placement areas, heavy equipment transit ways across placement areas, equipment mooring areas, staging areas, off-loading areas, site access areas, anchoring and spud down areas, and any other areas of operational impact.

Safety, Environment, and Emergency Response

Saving lives, protecting the environment, and effectively responding to emergencies are the focus. Always consult with the pipeline company to learn if there are any specific safety, environmental, or emergency concerns and capture them in your safety plan. Cover the plan with all project and vessel personnel. Re-evaluate the plan as new hazards emerge. Include the following recommendations in your plans:

How to Identify a Pipeline Leak

The main signs of a pipeline leak are:

- A continuous bubbling, blowing, or hissing sound from the water
- A rainbow sheen or unusual colored water
- Hydrocarbon smell

Note: Natural gas may be odorless. Always have an active gas detector activated during operations.

Actions After a Pipeline Leak

- Shutdown or minimize the use of all possible ignition sources, motors, lights, etc.
- If possible, drift out of the area before starting a motor or ignition source.
- Evacuate the vessel, if needed.
- Evaluate the situation; record your exact location and time; and move upwind at least ¼ mile or away from the affected area. When safe, call 911.
- Prevent and warn other vessels from entering the area.
- Boom-off or secure the area, if possible.
- If you see a pipeline sign nearby, call the emergency number listed.

Emergency Response and Notification

- Do not extinguish a pipeline fire.
- Immediately contact the pipeline company 24/7 emergency number in your plan to shut down the line and provide any pipeline information and location data. This will help the pipeline company identify the impacted line.
  - Wind and water flow direction are helpful.
  - Include the location of the nearest boat launch, if known.
- Notify the Coast Guard and the National Response Center (NRC) at (800-424-8802).
- Call 911 to notify the local emergency response agencies.
- Check your state's laws for other entities you must notify when an incident occurs.

Safety and Emergency Plans

All project plans should have the following basic pipeline information stored in multiple readily available locations:

- List of all pipelines in the project scope and the local company contact
- List of the products in each pipeline
  - This will help evaluate the risk and response level in the event of a release.
- Profile of the line X, Y, Z or as close as possible
- 24/7 emergency contact number

If you think a pipeline was struck but no leak occurs, call both the emergency and local contacts. In many states, reporting a strike is required by law. ESG

An Open Letter to Horizontal Directional Drillers (HDD)

Dear Operator,

As a former fire officer, I watched recent television coverage of several first responders injured in a western city explosion. I recognized that their quick decisions and heroic actions likely saved many lives. I know you're busy and don't want to hear about firefighters or how they risk their lives, but I must share that I am very worried for their safety. They put themselves in harms way to protect the public, rationalizing the risk by saying, "It's what we do." It's also what the public expects of fire and police in cities and towns all over the United States. Sadly, many incidents that harm people are absolutely avoidable. After many of these explosions, like the one in the Northwest, responders risk their lives while the public is endangered. Many times, these events are preventable.

As a fire service officer and an emergency trainer I have been educating responders in all 50 states on their response to natural gas and pipeline emergencies. Over the last few years I have been following the increased use of a tool you refer to as an HDD (horizontal directional drill). The Fire Service is not generally familiar with the types of construction equipment used by excavators to install underground facilities, such as directional drilling. In fact, responders use words like "small tanks," or a "strange" backhoe to describe the vehicle or operations due to the unrecognizable tracks or excavating nature of the work. Since most of these installations are completed without consequence to underground facilities many responders don't even understand what you do or how it works. In fact, it's not how it works, but what the drill can do when it is not operated safely that truly affects responders. It's not the call to 8-1-1, but it's the subsequent 9-1-1 call after a damage occurs that impacts us.

We are very public-safety oriented when we know the regulations. For example, if you were to block an exit door in a restaurant, chain the exits in a high school gym on game night, or smoke while pumping gas, if there is a conscientious firefighter near you, you'll hear about it! However, responders are not as aware of the safety recommendations of directional drilling. Educating responders about HDD is a great first step towards prevention. I am excited that some proactive states like Missouri, Pennsylvania, and others have been drafting legislation that allows local law enforcement or emergency responders to stop an excavator who is causing or risking a catastrophe.

In natural gas safety programs for emergency responders, I have seen the following problems:

- **Responders are not familiar with the need to locate the path of the bore (or that the path has to be marked).**
- **Responders are not familiar with the observation holes or why they are needed.**
- **Responders do not know excavators are required to hand dig within the defined tolerance zone when working in proximity to underground utilities such as electric or gas lines.**

They are, however, aware of and recognize the correlation between construction jobs using these trenchless technologies and their "runs" (response calls) increasing. They are also becoming uncomfortable with the length of time it sometimes takes the gas company to get there, often because the gas company is already at the site making repairs to similar damages.

It is guaranteed that emergency services will always respond to an "odor of gas," a "hit gas line," or any other accident if called. Let me help you understand the responders just a bit better. First, they look at accidents differently than the general public or contractors. Many of you might not know when we respond we focus on three priorities or strategic goals:

1. **Life Safety (preventing loss of life or injury)**
2. **Incident Stabilization (trying to keep the problem from spreading)**
3. **Environmental and/or Property Preservation (protecting property and the environment)**

If you use directional drills while disregarding safe operational procedures then you are jeopardizing the lives of many, including responders. The proliferation of these hits/accidents based on 45 years of emergency response and the increasing number of these emergencies tells me we are headed toward a severe incident of national significance with multiple deaths, injuries, and damage.

In fire service it has often been said, "There is no honor in fighting a fire that could have been prevented." The industry also has a safety motto, "All accidents are preventable." In both cases, prevention is the key.

Obviously doing anything more efficient is desirable. Using HDD is certainly faster than using a backhoe or a shovel with less inconvenience to the public, and efficiency is not in direct conflict with safety. Speed leads to unsafe conditions. Even in the Fire Service there are concerns with speed and safety. I learned a cardinal safety practice as a recruit 45 years ago, "There is no running on the fire ground." Rushing, disregarding procedures, or using a casual approach ("done this a thousand times") not only puts your personnel in jeopardy, but may place emergency services at the scene with disastrous results.

Directional underground drilling benefits the public, but progress should not be blind to the hazards and potential risks of a hit gas line that could have been avoided by simply taking the time to follow all safety procedures, such as:

- **Calling 8-1-1 or submitting an online locate ticket before digging**
- **Locating and waiting for services that mark the hazards**
- **Respecting the marks**
- **Digging holes for observation, and more...**

Preventing a tragedy makes your whole operation safer. The moment you think "safety," it also makes you safer. If not, the entire industry is headed toward an incident of disastrous proportions. My fear is that the emergency services will also be there and suffer injuries. In 45 years of my public safety experience many severe incidents of significance have had wide-ranging impact on an entire industry. Some are easily recognized because they are named after the "city" or the "company" involved.

Every day you have a choice to make - speed versus safety. Sadly, in many cases a clear disregard for safety procedures, whatever the reason, may lead to a tragedy that could have been prevented.

So, think safety – all day – every day!

Sincerely,
Michael Callan
Retired Captain, Wallingford FD
Responding to Utility Emergencies

Originally published in the 2018 Excavation Safety Guide

I am often asked how to better investigate a damage in order to beat paying for it. While I get the point of the question, the real purpose behind the damage investigation is to get to the truth of what happened. If the excavator is wrong, no amount of manipulation is going to change this fact. A good investigation, however, can tell what went wrong and how to change or improve things to prevent damage in the future. If the excavator did everything right, but has little or no documentation, they again find themselves involved in a claim. Excavators continue to find themselves in claims disputes because, in general, they don't do an adequate job of documenting a damage. To be fair, utilities don't do a good job either which leads to disputes and, in many cases, litigation.

A quality investigation can defend an excavator against unfair claims and literally save thousands of dollars. With just a few key processes in place, excavators can set themselves up for success in the event of an unforeseen incident. One of the most overlooked tasks necessary for a quality investigation occurs long before the incident ever happens. Taking photographs or video after locates are complete and before excavation begins can be critical in telling the story of a utility damage. Once excavation begins, the site changes forever; marks are destroyed making it impossible to know what the area looked like before the damage without the aid of pictures. Many court cases have been lost because the contractor could not prove their claim that a line had not been marked or was mismarked prior to the damage.

It is necessary to capture an overview of the area that provides a geographic reference to place the photograph at the location. Date

and time are important and many cameras have this information built into the metadata even though it may not show in the picture. Photographs should follow the path of the proposed excavation along with potential crossings of other utility lines. Even if there is no paint, pictures should be taken. If a line is struck, those photos will clearly show the absence of paint or flags. You can't take too many pictures. Pictures cost nearly nothing with today's technology, so take plenty.

Video can be an excellent addition to the documentation process. The concept is the same as with photography, except the videographer has the ability to narrate as the scene is captured. Talking about the marks (or lack of marks) as well as what will take place can be a powerful piece of evidence should things go wrong. Background noise and opinions should be kept out of the video. I've seen numerous videos produced that had great content, but the narration was filled with opinions and conclusions that were later proved wrong or with an obvious bias against the other party which hurt the contractor's case. Stick to the facts.

Potholing activities should be documented with pictures and video when possible. In many cases, open excavation will destroy any sign of potholing and if an incident occurs there will be questions as to whether potholing took place. Unfortunately, if it isn't documented, it might as well have not happened. This documentation will show the utility in question was safely exposed without damage, which can be helpful if something goes wrong several months or years down the road.

Once all utility responses have been verified and the potholing has been completed and documented, excavation can begin. It is a good idea to periodically take pictures and video throughout the excavation process.

All this documentation will certainly help to reduce damages, however, despite doing everything right incidents still happen. When they do, a quality investigation will get to the truth of what happened. Several steps are necessary to ensure a proper investigation.

First, do not leave the scene. If you are not on site, arrive as quickly as possible. It is necessary to preserve evidence and make sure that nothing occurs that may corrupt the scene. The first priority is to ensure the area is safe for workers and the general public.

Once it is safe to do so, pictures and, if possible, video should be taken of the scene. In the event of a natural gas release, always seek permission before using a camera as it could be an ignition source. Many efforts to document an incident result in four to eight pictures of a damage in a hole and not much more. While it is important to capture the actual point of damage, those pictures by themselves do little to help the case.

Damage investigators should remember they are telling the story of the damage through photos or video to someone who will likely never go to the site - an internal risk manager, insurance adjuster, utility claims representative or even a utility expert hired to review the case. Companies should develop a standardized process for photographing a scene that is easily repeatable.

One easy solution is called the "clock method". Using the center of the clock as the point of damage, the investigator starts at 12 at a distance away from it; potentially 50 feet or more depending on the size of damage and scope of work. A picture is taken looking toward the damage. The investigator moves halfway toward the damage and takes another picture. Moving close to the damage, the investigator takes one more. This process is repeated at the clock position 1:30, 3:00, 4:30, 6:00, 7:30, 9:00 and 10:30. This generates 24 pictures from varying perspectives. Designed for use with a disposable camera where there was no opportunity to review the photos prior to developing them, even with today's advanced digital cameras and cell phones, it is a good way to standardize the process of photography.

Additionally, photos following the path of the excavation and the path of the marks should be a point of emphasis. One key component of these pictures is a measuring device. Photos without these devices are fairly worthless when the dispute is whether marks put down were within the tolerance zone of the damaged utility line.

While a tape measure is fine, there are several products on the market which are very easy to see in photographs.

It is important to capture individuals involved in the incident in the pictures, including construction staff, locators, utility representatives and witnesses. If the case should go to litigation, this places them at the scene at the time of the incident. Vehicle photos including license plates may be helpful in determining the identity of an uncooperative representative. Video should follow the same basics process.

The next step of the investigation is to draw a diagram. This should be done on site during the investigation, not later at the office where details may be forgotten. This diagram should contain landmarks, directions, marks (if present), the path of excavation and all other important information. It doesn't matter if the investigator is not an artist. The drawing can be cleaned up or reproduced in a software program later. Pictures can be added, and comments, directions, names and other details can be overlaid on top of the photos to tell the story of the damage.

It may be possible to utilize a Google Earth image and redraw the diagram on it. The purpose is to help tell the story of the damage. Photographic locations can be added to the diagram to help provide perspective.

Interviews can be another important part of the investigation, including the excavator's staff, the locators and the utility representatives. In many cases, the locators and utility representatives may refuse to give a statement but an attempt should still be made. If litigation occurs, the investigator may find him/herself in a deposition in which the question is asked about whether he/she talked to the other sides. If the answer is no, it will be easy to spin the testimony to sound like the investigation was one-sided and didn't consider other parties. If other parties refuse, it should be documented on the investigation report. With this, the answer becomes, "I tried, but they refused to talk to me", which changes the dynamic and should diffuse that line of questioning. If they do talk, it should be documented and if possible, signed.

Along with interviewing internal staff, statements should be collected from those on site at the time of the incident. Each employee should write a personal statement about what they were doing when the damage happened and what was observed. The employee should sign and date this statement. Never write a group statement and have employees sign it. This can be made to imply the company is telling the employee what to say. After personal statements have been gathered, it is fine to gather everyone together to talk about what they saw as a group. One prominent attorney uses this technique to tap into what he calls their collective conscience. By getting them together, one employee may remember one thing that spurs the rest to build on the point and additional facts may be revealed.

It is important that, regardless of the investigation form used, it is completed entirely. "N/A" is better than a blank field. Blank spaces can lead to the perception of an incomplete report. Forms should be completed on site; waiting to get back to the office can lead to errors and loss of needed facts. One error could lead others to question the accuracy of the entire report.

Once all information has been collected, it is important to store it in a location where it can be easily retrieved at a later date. Because invoices for damages can come months or years after the incident, storage and retrieval are necessary requirements of any damage investigation process. This is one of the main reasons it is critical to thoroughly document a damage. After the incident, life goes on. Other jobs continue and the memory of the incident can fade away. Employees may leave, taking with them valuable information. A thorough damage investigation helps remind everyone of what actually happened and fills in the gaps caused by memory loss and employee turnover.

Simply put, a quality damage investigation puts your company in the driver's seat. ESG

Ron Peterson is dedicated to damage prevention and improving safety within the industry. In addition to providing damage prevention and investigation services as owner of Ron Peterson Consulting, Ron has held the position of Executive Director of Nulca since 2009. Ron can be reached at ron@ronpetersonconsulting.com.

OVERPIPE®

Setting the global standard for protecting pipelines, communities, and the environment.

OVERPIPE® plates are trusted globally to provide the highest level of protection for buried pipe systems without requiring the labor, equipment, or cost-intensive installation procedures of traditional pipe barrier systems.

Made from durable HDPE, **OVERPIPE®** plates can withstand 32-ton excavator impacts and resist degradation and embrittlement in any soil or climate. The plates do not interfere with cathodic protection systems and provide an unmissable barrier with custom coloring, messaging, and coverage dimensions.

Plates can be installed by hand and feature beveled edges and non-slip surfaces to ensure installer safety. Easy and quick installation procedures translate to reductions in project timelines, GHG emissions, and costs when compared to steel plates or concrete slabs.

CASE STUDY

Coastal GasLink - BC, Canada

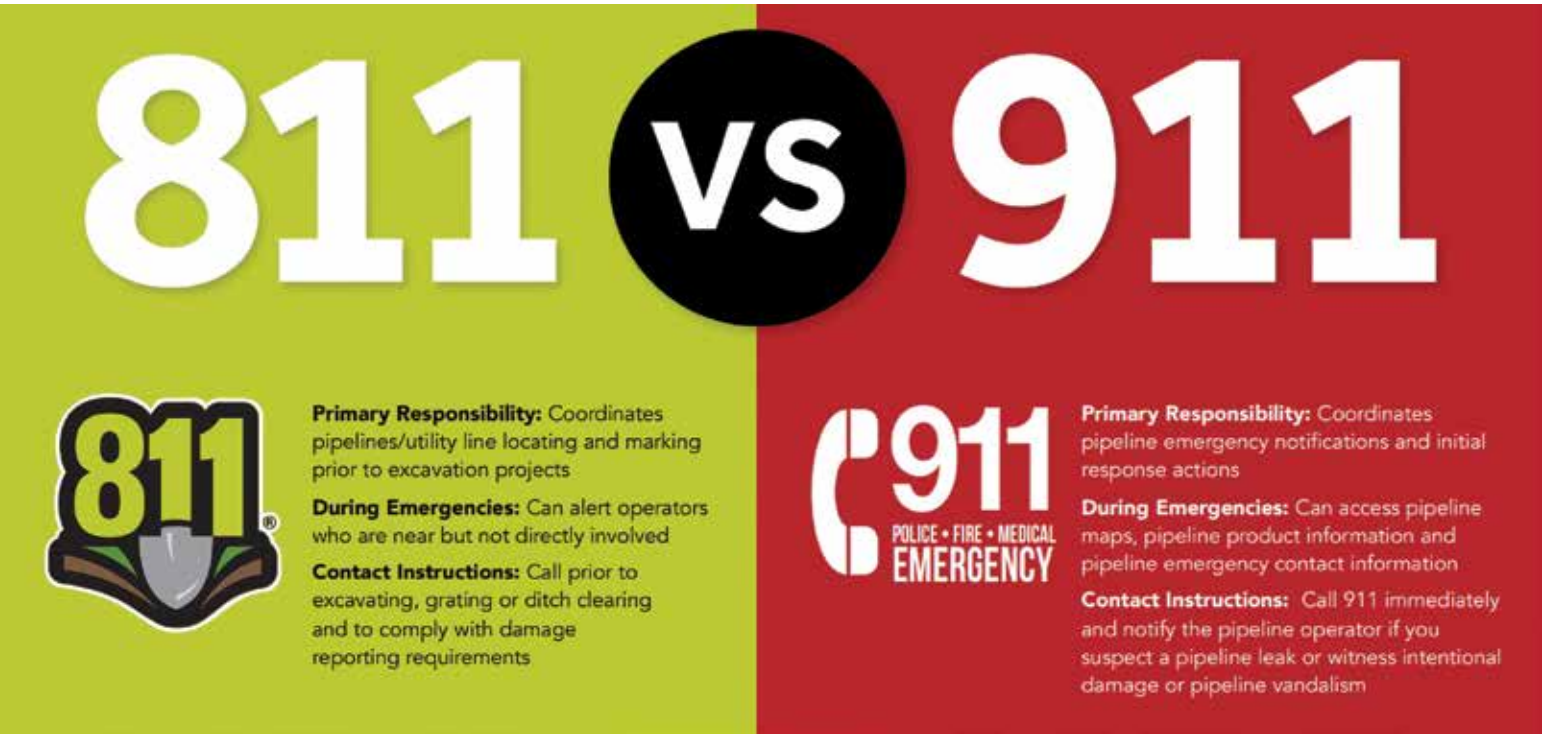
The Coastal GasLink project faced high levels of public scrutiny regarding the environmental impacts of the construction and use of the pipeline, necessitating the implementation of uncompromising safety and hazard control measures. **OVERPIPE®** was selected to protect the pipe against 3rd party damage without adding risks, costs, or delays to the construction of the line.

OV4 plates were assembled to create a 2.2 m wide barrier over a 1.1 km section of the 42" pipe. **OVERPIPE®** offered a resilient and easy-to-install system for protecting the pipeline, local communities, and the pristine mountain environment.

For more info, contact:
info@sealforlife.com

CANUSA-CPS
Corrosion Protection & Sealing

SEALFORLIFE Industries



Community Liaison Services

Formerly known as the Community Assistance and Technical Services (CATS) Program

PHMSA has renamed its CATS program to "Community Liaison Services" to more appropriately align with current roles and responsibilities and better interface with various stakeholders.

Mission:
To advance PHMSA's pipeline safety mission by proactively engaging with pipeline stakeholders, providing technical expertise, and leveraging technology, data, and information to reduce pipeline risks and influence change through program and policy development.

Vision:
To serve as "trusted" and "credible" stewards of public safety and environmental protection by raising awareness and influencing change to continuously improve pipeline safety.

If you need assistance with any of the following pipeline safety related matters, please contact a PHMSA Community Liaison today:
- Pipeline safety policy/programs (damage prevention, public awareness, emergency response, PIPA, etc.)
- Pipeline stakeholder engagement and outreach
- Pipeline technical services and support (public inquiries, whistleblowers, post incident/accident communications, siting and permit initiatives)
- Questions about pipeline safety in your community

Community Liaisons are located within each PHMSA region.

Community Liaison Services Program Manager
Karen Lynch: karen.lynch@dot.gov • Phone: (202) 366-6855

OPS Central Region:
Illinois; Indiana; Iowa; Kansas; Michigan; Minnesota; Missouri; Nebraska; North Dakota; South Dakota; Wisconsin.
Angela Pickett: angela.pickett@dot.gov • Phone: (816) 329-3823
Sean Quinlan: sean.quinlan@dot.gov • Phone: (816) 329-3800

OPS Southern Region:
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James Kelly: james.kelly@dot.gov • Phone: (404) 990-1848
Arthur Buff: arthur.buff@dot.gov • Phone: (404) 226-6153

OPS Eastern Region:
Connecticut; Delaware; Maine; Maryland; Massachusetts; New Hampshire; New Jersey; New York; Ohio, Pennsylvania; Rhode Island; Vermont; Virginia; Washington, D.C.; West Virginia.
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OPS Southwest Region:
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OPS Western Region:
Alaska; Arizona; California; Colorado; Hawaii; Idaho; Montana; Nevada; Oregon; Utah; Washington; Wyoming.
Tom Finch: thomas.finch@dot.gov • Phone: (720) 963-3175
Dave Mulligan: david.mulligan@dot.gov • Phone: (720) 963-3193 ESG

SAFETY TRAINING VIDEOS

A valuable collection of educational videos for excavators in the underground utility industry, the videos below have been curated from industry stakeholders around the country. Delve into the content contributed by these experts to fortify your knowledge and to further promote a culture of safety in your daily work activities.

#1 – Pipeline Safety for Excavators

- Discover essential information on preventing third-party pipeline damage. Explore the methods employed by operators to locate underground pipelines, guidelines for safe digging near pipelines, recognizing signs of a pipeline leak, and the appropriate response protocols in the event of a pipeline damage.

#3 – Excavations in Construction/Trenching

- Learn how to prevent construction worker fatalities. This video showcases the dangers of trenching and emphasizes OSHA rules such as sloping, shoring, and shielding to ensure worker safety.

#2 – Excavation Emergencies

- Explore the significant topic of excavation emergencies, delving into real-world examples that underscore the importance of actively preventing these critical situations. Gain practical insights on how to address and navigate challenges effectively.

#4 – 5 Steps to Safer Digging Toolbox

- This resource highlights five essential steps for safely excavating around underground utilities, emphasizing pre-marking, contacting 8-1-1, accurate information submission, careful digging within tolerance zones, and prompt reporting of any damage.

API Releases CONTRACTOR SAFETY TOOL

BY
LAURIE KNAPE,
CSP, ASP, CLCS, QMS

Originally published in the 2023 Winter Excavation Safety Magazine

The American Petroleum Institute (API) and the Pipeline Safety Management Systems (SMS) Industry Team have long been committed to pipeline safety. In 2022, they released the *Pipeline SMS: A Contractor's Guide*, which provides pipeline contractors and service providers a clear roadmap for integrating their safety programs with an operator's Pipeline SMS.

Although the *Contractor's Guide* provides general guidance to API Recommended Practice 1173 (RP 1173), the sheer number of overall requirements can still make compliance a bit challenging. To provide clarity and address the industry's dynamic nature, API and the Pipeline SMS Industry Team have launched a proprietary tool on www.PipelineSMS.org. This free, cutting-edge tool complements the *Contractor's Guide*, providing users with real-time insights, benchmarks, and feedback mechanisms that further assist them in gauging their implementation of the *Guide's* numerous requirements.

History of the Guide

The release of the first edition of the *Guide* marked a significant milestone for industry progress towards full adoption of RP 1173. As a free complement to that 2015 document, the *Guide* distills RP 1173 and its 234 requirements down to 56 key requirements where, depending on a contractor or service provider's scope of work, operators can focus their collaboration efforts to ensure appropriate alignment with their pipeline SMS.

The *Guide* aims to align contractors, operators, and service providers in protecting workers, communities, and the environment. Both API and the Pipeline SMS Industry Team encourage contractors, service providers, and operators to use the *Guide* and begin discussions on the appropriate integration of safety programs relevant to pipeline SMS.

Tooling With Success

While the *Guide* streamlines RP 1173's requirements, navigating them can still be challenging. Recognizing this, the Pipeline SMS Evaluation Tool not only complements the *74* but also offers a hands-on approach to its implementation.

This tool represents a significant shift towards a more dynamic and collaborative approach to pipeline safety. While the Guide provides helpful explanations and details, the tool emphasizes real-time application and ongoing improvement, helping contractors effectively and efficiently manage the complexities of achieving pipeline safety.

As the pipeline industry continues to evolve, the new Pipeline SMS tool is an important resource for helping contractors consistently align with safety standards. It is yet another milestone in the organizations' efforts to promote pipeline safety. ESG

Laurie Knape is the Program Manager of Pipeline SMS with the American Petroleum Institute (API) in Houston, Texas. In this role, Laurie manages the Pipeline SMS Third-Party Assessment Program. Prior to this role, Laurie worked as EHS Manager for both operators and contractors. Laurie holds the CSP, ASP, CLSC and QMS designations.

RESOURCES:

Additional Aid as part of industry commitment to Pipeline SMS, the Industry Team, which includes contractors who build, maintain, and repair natural gas and oil pipelines continues to collaborate to provide education, training, and assistance to all industry stakeholders. Provided here are several additional resources contractors can use as they work to implement or improve their current Pipeline SMS.

Pipeline SMS website

This Pipeline SMS website at PipelineSMS.org provides a myriad of support tools ranging from handouts to tools which assist stakeholders in their Pipeline SMS assessments.

Third Party Assessment Program

API's Pipeline SMS Third-Party Assessment Program provides a team of independent, third-party safety management system experts ("assessors") to assist in evaluating the conformity, effectiveness and maturity of a stakeholder's Pipeline SMS.

American Petroleum Institute

On API's website at www.api.org, recommended practices, literature and the latest Pipeline SMS related news and events can be found.

Pipeline SMS Industry Team

The Industry Team serves to facilitate implementation of API RP 1173, Pipeline Safety Management Systems, among the energy pipeline industry and contractor community.

Pipeline Location Information

Reproduced with permission from Pipeline Association for Public Awareness

PIPELINE MARKERS

Pipelines are buried in areas called rights-of-way. Pipeline markers are used to designate the general route of the pipeline. Markers can also be found where a pipeline crosses a street or railroad, emerges from the ground, or in waterways.

BE AWARE: Pipeline markers will not designate the exact location, depth or number of pipelines in the area. Markers come in different shapes and sizes, but will always:

- **Include the word WARNING, DANGER OR CAUTION**
- **Identify the material being transported**
- **Provide a number to reach the company in event of an emergency**
- **Provide the name of the pipeline company**

Gathering pipelines are normally located in rural areas and transport crude oil or natural gas from wellheads and production facilities to processing facilities where the oil, gas and water are separated and processed.

Transmission pipelines move refined liquid products and natural gas from refineries to marketing and distribution terminals typically using larger diameter, high-pressure lines. The general location of all transmission pipelines can be viewed in the National Pipeline Mapping System at www.npms.phmsa.dot.gov

Distribution pipelines are normally located in populated areas and carry natural gas or propane from a transmission pipeline or storage facility directly to residential and industrial customers. Some companies have included the location of their pipelines in a mobile friendly web application called Pipelines Nearby, which can be accessed at www.pipelinesnearby.org

MARCADORES DE TUBERÍA

Las tuberías son enterradas en áreas llamadas derecho de paso (ROW por sus siglas en ingles). Los marcadores de tubería se usan para designar la ruta general de la tubería. Los marcadores también pueden ser encontrados donde una tubería cruza una calle o riel de tren, donde sale del suelo, o en vías navegables.

ESTÉ CONSCIENTE: Los marcadores no dan la ubicación exacta, profundidad ni número de tuberías en el área. Los marcadores vienen en diferentes formas y tamaños, pero siempre incluyen:

- **Incluye la palabra WARNING, DANGER OR CAUTION (aviso, peligro o precaución)**
- **Identifica el material siendo transportado**
- **Da el número de la compañía en case de emergencia**
- **Da el nombre de la compañía de tubería**

Tuberías **Recolectoras** están situadas en zonas rurales y transportan normalmente petróleo crudo o el gas natural de manantiales y de instalaciones de producción a centros de procesamiento donde se separan y se procesan aceite, gas y agua.

Las tuberías de **Transmisión** mueven productos y gas natural líquidos refinados desde refinerías a terminales comerciales y de distribución típicamente usando líneas de alta presión con diámetro más grande. La ubicación general de todas las tuberías de transmisión se puede ver en el sistema de trazado nacional de tubería en www.npms.phmsa.dot.gov

Las tuberías de **Distribución** están situadas en áreas pobladas y llevan normalmente el gas natural o propano de una tubería de transmisión o instalación de almacenamiento directamente a clientes residenciales e industriales. Algunas compañías han incluido la ubicación de sus tuberías en una aplicación web móvil llamada Pipelines Nearby, que puede ser accedida en www.pipelinesnearby.org ESG

Thank You, ESA Company Members!

ESA EXCAVATION SAFETY ALLIANCE MEMBER

ESA Company Members make the ESA mission possible by supporting impactful initiatives and the continued growth of this incredible community, over 1,500 individual members and growing.

Become an ESA Company Member

Your annual $2,000 membership will help make all the individual membership benefits possible and make it clear to the industry that you support damage prevention and excavation safety. In addition, your company will receive:

- **A 10% discount on attending the Global Excavation Safety Conference, excluding the early bird $811 offer (unlimited use)**
- **Company logo and link on the ESA member page**
- **Company logo on the ESA member section in the annual Excavation Safety Guide (Print circulation of 500,000+)**
- **Company logo on the ESA member section in the annual Excavation Safety Magazine (Print circulation of 15,000)**

Industry Publications

811 Magazines
Now published in 9 states and growing. It is not just printing the dig safely message that gets the job done. It's about connecting with the right people. Working with the One Call systems in each state, we reach the people you're looking to reach. Ask us how we do it!

American Gas Magazine
provides natural gas industry professionals with the information they need to enhance their effectiveness and that of their companies by publishing leading-edge reports on the industry and on American Gas Association activities that offer value to its members.

Broadband Communities
aims to accelerate the deployment of FTTH and FTTP while keeping readers informed on the available solutions for serving their practical needs. BC offers in-depth news, expert insights, and practical know-how on the technical, business, financial, and legal aspects of outfitting properties and communities with broadband solutions. For your free subscription, visit www.bbcmag.com.

CoatingsPro
Magazine takes a real-world look at coatings projects from the contractors' viewpoint. The magazine includes coatings on concrete and steel pipelines, foundations, and utilities. Featuring industry news and case studies to provide practical and cost-effective solutions to its 27,000+ readers, the magazine reaches contractors, applicators, specifiers, engineers, and facility managers in 16 unique market segments of the commercial and industrial coatings industry.

Compact Equipment
Compact Equipment is the ultimate resource for construction and landscape professionals who purchase, maintain and operate compact equipment. Learn more at https://compactequip.com/.

Construction Equipment Guide
Founded in 1958, it is a national publication and website that provides industry news; articles on construction equipment, projects and legislation; auction coverage; business profiles and events and more. CEG also has more than 100,000 new and used equipment listings from dealers and auction companies across the country, plus a full auction calendar to keep you up to date with the industry, and a historical database of equipment specs at your fingertips.

Dig Different
print magazine, along with its website and E-newsletters serve professionals involved in traditional excavation, vacuum excavation, trenching, directional drilling and boring, and bursting and tunneling, using the most innovative technology.

Excavation Safety Magazine
In 2010, Infrastructure Resources, LLC launched dp-PRO. In 2023, dp-PRO has become Excavation Safety Magazine reaching 15,000+ decision-makers through print and digital each year. Dedicated to protecting buried infrastructure and expanding the industry's knowledge on damage prevention and public awareness, Excavation Safety Magazine offers relevant and thought-provoking articles and features written by industry professionals.

Industry Publications

GoGeomatics
Founded in 2011, GoGeomatics is a Canadian-based social enterprise that focuses on geospatial information and technology. With a focus on professional development, career opportunities, knowledge sharing and community building, we attract the largest audience of professionals looking for all things geo. Each year, GoGeomatics hosts two major national events - GeoIgnite in Ottawa and the GoGeomatics Expo in Calgary. We are also home to popular webinars, numerous student-driven networking events and GeoIgnite Career Fairs.

ISE (ICT Solutions & Education)
connects network evolution professionals with innovative solutions and concise education across the rapidly changing ICT landscape. As the lines separating telephone, Internet and television companies continue to blur, ISE is the resource telecom providers have trusted for over 30 years. www.isemag.com

LECTURA
LECTURA has been the leading provider of machinery intelligence on the market since 1984. Our database contains information and data on more than 170,000 heavy machinery models and provides evaluation of used machines through our online tools and digital solutions. This extensive database of equipment information attracts over 1.2 million professional visitors every month, when researching machinery before their purchase decision. Our buyer's guide represents a perfect platform to reach buyers and decision makers.

Materials Performance
(MP) is the world's largest circulation magazine dedicated exclusively to corrosion prevention and control. MP covers the latest technologies used in industries and infrastructure worldwide including protective coatings, cathodic protection, chemical treatment, and materials selection and design.

Trenchless Today
focuses on the utility and application of trenchless methods in gas distribution pipeline repair and new construction programs.

The Locator
is an annual publication geared toward line locating and ground disturbance. It is focused on CAPULC initiatives, best practices, and damage prevention topics. 2023 Highlights: Locator Stories From the Trenches, and Working Toward the Underground Facility Locating and Marking Standard!

Trenchless North America
is the flagship publication of the North American Society for Trenchless Technology (NASTT). Published three times per year, Trenchless North America is a publication about the industry featuring project and equipment news, trenchless innovations, industry personnel profiles and NASTT training and conference information.

Utility Contractor
The official publication of the National Utility Contractor's Association, Utility Contractor keeps members up-to-speed on association news and practices affecting the industry. Learn more at https://utilitycontractormagazine.com/.

Trenchless Technology
Launched in 1992, Trenchless Technology is the most widely-recognized magazine serving the underground construction market. Learn more at https://trenchlesstechnology.com/.

Excavation Best Practices

Chapters from CGA Best Practices 19.0
For the complete Excavation Best Practices, see CGA Best Practices 19.0 at BestPractices.CommonGroundAlliance.com

5 Excavation
5.01 811 Facility Locate Request
5.02 Delineate Area of Proposed Excavation
5.03 Locate Reference Number
5.04 Pre-Excavation Meeting
5.05 Facility Relocations
5.06 Separate Locate Requests
5.07 811 Center Access (24/7)
5.08 Positive Response
5.09 Facility Owner/Operator Failure to Respond
5.10 Locate Verification
5.11 Documentation of Marks
5.12 Work Site Review with Company Personnel
5.13 811 Center Reference at Site
5.14 Contact Names and Numbers
5.15 Facility Avoidance
5.16 Federal and State Regulations
5.17 Marking Preservation
5.18 Excavation Observer
5.19 Excavation Tolerance Zone
5.20 Excavation within Tolerance Zone
5.21 Mismarked Facilities
5.22 Exposed Facility Protection
5.23 Locate Request Updates
5.24 Facility Damage Notification
5.25 Notification of Emergency Personnel
5.26 Emergency Excavation
5.27 Backfilling
5.28 As-Built Documentation
5.29 Trenchless Excavation
5.30 Emergency Coordination with Adjacent Facilities
5.31 No Charge for Providing Underground Facility Locations
5.32 Vacuum Excavation
5.33 Facility Owner Provides a Monitor During Excavation ESG

Notification Center and State Law Directory

Informational purposes only. Information and laws are subject to change. Consult your local Notification Center website for updated information. Excavation Safety Alliance, LLC attempted to verify all information as of publication date, and accepts no responsibility for missing or incorrect information.

You can reach your local Notification Center in the U.S. by dialing 811.

811 Know what's below. Call before you dig.

	TICKETS			STATE LAWS & PROVISIONS									NOTIFICATION EXEMPTIONS					NOTIFICATIONS ACCEPTED					Tolerance Zone (either side of the utility plus the width of the utility)
	FAX	Online	Mobile	Statewide Coverage	Civil Penalties	Emergency Clause	Mandatory Membership	Excavator Permits Issued	Mandatory Premarks	Positive Response	Hand Dig Clause	Damage Reporting	DOT	Homeowner	Railroad	Agriculture	Depth	Damage	Design	Emergency	Overhead	Large Projects	
ALABAMA / Alabama 811 / 800-292-8525																							
Website: al811.com **Hours:** 24 hours, 7 days **Advance Notice:** 2 full working days (not including day of notification) **Marks Valid:** 20 working days **Law Link:** al811.com/law	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	12" *	Y	Y	Y	N	N	18"
	*Agricultural purposes only																						
ALASKA / Alaska Dig Line, Inc. / 800-478-3121 or 907-278-3121																							
Website: 811ak.com **Hours:** 8:00 AM - 5:00 PM, M-F/Emergency 24/7 **Advance Notice:** 2-10 business days based on location **Marks Valid:** 15-20 business days based on location **Law Link:** 811ak.com/faq	N	Y	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	Y	N	Y	Y	Y	N	Y	24"*
	*24-30" based on proposed depth of dig																						
ARIZONA / Arizona 811 / 800-782-5348																							
Website: arizona811.com **Hours:** 6:00 AM - 5:00 PM, M-F **Advance Notice:** 2 full working days(excludes weekends and holidays) **Marks Valid:** 15 working days **Law Link:** arizona811.com/resources/	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N	N	N	Y	N	N	Y	Y	N	N	24"
ARKANSAS / Arkansas 811 / 800-482-8998																							
Website: arkansas811.com **Hours:** 24 hours, 7 days **Advance Notice:** 2 to 10 working days **Marks Valid:** 20 working days **Law Link:** arkonecall.com/statelaw/statelaw.aspx	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	N	N	Y	Y	N	Y	18"
CALIFORNIA																							
Underground Service Alert of Northern CA & NV **USA North 811 / 800-642-2444** **Website:** usanorth811.org **Hours:** 24 x 7 **Advance Notice:** 2 working days, not including the day of notification **Marks Valid:** 28 days **Law Link:** usanorth811.org (Quick Links / Law & Excavation Manual)	N	Y	Y	N	Y	Y	Y*	Y	Y	Y	Y	Y	N	Y	N	N	N	Y	N	Y	N	Y	24"
Underground Service Alert of Southern California / 800-422-4133 **Website:** digalert.org **Hours:** 6:00 AM - 7:00 PM, M-F **Advance Notice:** 2 working days to 14 calendar days not including date of notice **Marks Valid:** 28 days **Law Link:** https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=GOV&division=5.&title=1.&part=&chapter=3.1.&article=2	N	Y	Y	N	Y	Y	Y*	Y	Y	Y	Y	Y	N	Y	N	N	N	Y	N	Y	N	Y	24"
	*DOT and non-pressurized sewer lines, storm drains and drain lines exempt																						
COLORADO / Colorado 811 / 800-922-1987																							
Website: co811.org • **Hours:** 24 hours **Advance Notice:** 2 days, not to include the day of notice **Marks Valid:** 30 days **Law Link:** colorado811.org/one-call-legislation/	N	Y	Y	Y	Y	Y	Y*	N	N	Y	N	Y	N	N	N	Y	Y	Y	Y	Y	N	Y	18"
	* DOT exempt																						
CONNECTICUT / Call Before You Dig / 800-922-4455																							
Website: www.cbyd.com **Hours:** 7:00 AM - 5:00 PM, M-F; Emergencies 24 Hours **Advance Notice:** 2 full working days up to 30 calendar days (excludes weekends, holidays and the day of notification) **Marks Valid:** 30 days **Law Link:** www.cbyd.com/resources/ct-cbyd-state-law-regulations#	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	Y	N	Y	Y	Y	N	Y	18"
DELAWARE / Miss Utility of Delmarva / 800-282-8555																							
Website: missutility.net/delaware **Hours:** 24 hours, 7 days **Advance Notice:** 2 full business days **Marks Valid:** must start within 10 calendar days, no expiration as long as marks still visible and scope does not change. **Law Link:** delcode.delaware.gov/title26/c008/index.shtml	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N	Y	N	N	N	N	Y	Y	N	N	24"
FLORIDA / Sunshine 811 / 800-432-4770																							
Website: sunshine811.com **Hours:** 7:00 AM - 6:00 PM **Advance Notice:** 2 full business days (10 if dig site is underwater) **Marks Valid:** 30 days **Law Link:** sunshine811.com/law	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	24"

Notification Center and State Law Directory

HELP US STAY UP TO DATE.
Directory information is also available online at ExcavationSafetyGuide.com. Report any updates to this directory by calling 866-279-7755.

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	TICKETS			STATE LAWS & PROVISIONS									NOTIFICATION EXEMPTIONS					NOTIFICATIONS ACCEPTED					
	FAX	Online	Mobile	Statewide Coverage	Civil Penalties	Emergency Clause	Mandatory Membership	Excavator Permits Issued	Mandatory Premarks	Positive Response	Hand Dig Clause	Damage Reporting	DOT	Homeowner	Railroad	Agriculture	Depth	Damage	Design	Emergency	Overhead	Large Projects	Tolerance Zone (either side of the utility plus the width of the utility)
GEORGIA / Georgia 811 / 800-282-7411																							
Website: Georgia811.com **Hours:** 7:00 AM - 6:00 PM, M-F • (24/7 emergency) **Advance Notice:** 2 business days (excluding day of call) **Marks Valid:** 30 calendar days **Law Link:** georgia811.com/index.php/laws-policies/	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N*	N	N	N**	N	Y	Y	Y	Y	Y	18"
	** Routine road maintenance* *** Farming activities*																						
HAWAII / Hawaii One Call Center / 866-423-7287 / Tickets Fax: 877-695-2466																							
Website: callbeforeyoudig.org **Hours:** 24 hours, 7 days **Advance Notice:** 5 workings days, not to exceed 28 calendar days **Marks Valid:** 28 calendar days **Law Link:** callbeforeyoudig.org/law.htm	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	N	N	Y	N	N	N	Y	Y	Y	N	N	30"
IDAHO																							
DIG LINE / 800-342-1585 **Website:** digline.com **Hours:** 24 hours **Advance Notice:** 2 business days **Marks Valid:** 21 Days **Law Link:** https://legislature.idaho.gov/statutesrules/idstat/title55/T55CH22/	N	Y	N	N	Y	Y	Y	N	Y	N	Y	Y	N	15"	N	Y	15"	Y	Y	Y	Y	Y	24"
BONNER/BOUNDRY One Call / 800-626-4950 **Website:** passwordinc.com **Hours:** 24 hours, 7 days **Advance Notice:** 2 business days **Marks Valid:** 21 days **Law Link:** legislature.idaho.gov/statutesrules/idstat/Title55/T55CH22/	N	Y	N	N	Y	Y	Y	N	Y	N	Y	Y	N	15"	N	Y	15"	Y	Y	Y	Y	N	24"
SHOSHONE/BENEWAH One Call / 800-398-3285 **Website:** passwordinc.com **Hours:** 24 hours, 7 days **Advance Notice:** 2 business days **Marks Valid:** 21 days **Law Link:** legislature.idaho.gov/statutesrules/idstat/Title55/T55CH22/	N	Y	N	N	Y	Y	Y	N	Y	N	Y	Y	N	15"	N	Y	15"	Y	Y	Y	Y	N	24"
KOOTENAI COUNTY One Call / 800-428-4950 **Website:** kootenaicounty811.com **Hours:** 24 hours, 7 days **Advance Notice:** 2 business days **Marks Valid:** 21 days **Law Link:** legislature.idaho.gov/statutesrules/idstat/Title55/T55CH22/	N	Y	Y	N	Y	Y	Y	N	Y	N	Y	Y	N	15"	N	Y	15"	Y	Y	Y	N	Y	24"
ILLINOIS																							
JULIE, INC. / 800-892-0123 **Website:** illinois1call.com • **Hours:** 24 hours, 7 days **Advance Notice:** 48 hours notice (two business days), but no more than a 14 calendar day advance notice prior to the start of excavation. **Marks Valid:** 28 calendar days **Law Link:** illinois1call.com/lawandenforcement/	N	Y	N	N	Y	Y	Y	N	Y*	Y	Y	Y	N	N	Y	Y	N	Y	Y	Y	N	N	18"
811 CHICAGO / 312-744-7000 **Website:** ipi.cityofchicago.org/Digger **Hours:** 24 hours a day, 7 days a week **Advance Notice:** 48 hours • **Marks Valid:** 28 days **Law Link:** https://codelibrary.amlegal.com/codes/chicago/latest/chicago_il/0-0-0-2651040	N	Y	N	N	Y	Y	Y	Y	Y*	Y	Y	Y	N	N	Y	Y	N	Y	N	Y	N	N	18"
	**When possible*																						
INDIANA / Indiana 811 / 800-382-5544																							
Website: indiana811.org • **Hours:** 24 hours, 365 days **Advance Notice:** 48 hours notice (two working days), but no more than a 20-calendar day advance notice prior to the start of excavation. **Marks Valid:** 20 calendar days **Law Link:** indiana811.org/wp-content/uploads/2019/06/IC-8-1-26-1.pdf	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N	N	Y	Y	N	Y	Y	Y	N	N	24"
IOWA / Iowa One Call / 800-292-8989																							
Website: iowaonecall.com • **Hours:** 24 hours, 7 days **Advance Notice:** 48 hours, excluding Saturdays, Sundays, and legal holidays **Marks Valid:** 20 calendar days **Law Link:** iowaonecall.com/Default.aspx?tabid=404#iowa	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	Y*	N	Y	Y	Y	N	Y	18"
	**Normal farm operations less than fifteen inches*																						

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Expand public awareness by visiting call811.com. You will find a variety of downloadable elements available for use free in your company/organization's existing campaigns.

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	FAX	Online	Mobile	Statewide Coverage	Civil Penalties	Emergency Clause	Mandatory Membership	Excavator Permits Issued	Mandatory Premarks	Positive Response	Hand Dig Clause	Damage Reporting	DOT	Homeowner	Railroad	Agriculture	Depth	Damage	Design	Emergency	Overhead	Large Projects	Tolerance Zone (either side of the utility plus the width of the utility)
KANSAS / Kansas 811 / 800-344-7233																							
Website: kansas811.com **Hours:** 24 hours, 7 days **Advance Notice:** 2 full working days(not including day of notice) **Marks Valid:** 15 calendar days **Law Link:** kansasonecall.com/static/pdf/KUUDPA_04.03.2010.pdf	N	Y	Y	Y	Y	Y	Y	N	N	Y	N	N	N	Y*	Y	Y	N	N	Y	Y	N	N	24"
	*Homeowner retains responsibility for any damages due to digging																						
KENTUCKY / Kentucky 811 / 800-752-6007																							
Website: kentucky811.org **Hours:** 24 hours/7 days **Advance Notice:** 2 working days **Marks Valid:** 21 calendar days **Law Link:** kentucky811.org/the-dig-law	N	Y	N	Y	Y	Y	N	N	N	Y	Y	Y	N	N	Y	Y	N	Y	Y	Y	N	Y	24"
LOUISIANA / Louisiana 811 / 800-272-3020																							
Website: louisiana811.com **Hours:** 7:00 AM - 6:00 PM, Emergency Locates 24/7 **Advance Notice:** 2 Business Days **Marks Valid:** 20 Days/30 Days for Forestry **Law Link:** louisiana811.com/index.php/dig-law	N	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	N	Y	N	Y	N	Y	Y	Y	N	N	18"
MAINE / Dig Safe System, Inc. / 888-344-7233																							
Website: digsafe.com **Hours:** 24 hours, 7 days **Advance Notice:** 72 hours(excluding weekends and holidays) **Marks Valid:** 60 days; must start within 30 days **Law Link:** http://www.digsafe.com/laws_rules.php	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	N	Y	N	Y	N	Y	18"
MARYLAND / Miss Utility (Western Shore) / 800-257-7777																							
Website: www.missutility.net **Hours:** 24 hours, 7 days **Advance Notice:** 2 full business days **Marks Valid:** 12 business days **Law Link:** www.missutility.net/maryland/	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	Y*	N	N	N	N	Y	Y	N	N	18"
	*Hand dig only up to a depth of 6". Mechanized equipment must call.																						
Miss Utility of Delmarva (Eastern Shore) / 800-441-8355 **Website:** missutilitydelmarva.com **Hours:** 24 hours, 7 days **Advance Notice:** 2 full business days **Marks Valid:** 12 business days **Law Link:** www.missutility.net/maryland/	N	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	N	Y	N	N	N	N	Y	Y	N	N	18"
MASSACHUSETTS / Dig Safe System, Inc. / 888-344-7233																							
Website: digsafe.com **Hours:** 24 hours, 7 days **Advance Notice:** 72 hours(excluding weekends and holidays) **Marks Valid:** 30 days **Law Link:** digsafe.com/laws_rules.php	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	N	Y	N	Y	N	Y	18"
MICHIGAN / Miss Dig System, Inc. / 800-482-7171																							
Website: missdig811.org **Hours:** 24 hours **Advance Notice:** 3 business days(excluding weekends and holidays) **Marks Valid:** 3 weeks to 6 months **Law Link:** missdig811.org/education/public-act-174.html	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	N	N	N	N	N	Y	Y	N	Y	18"
MINNESOTA / Gopher State One Call / 800-252-1166 or 651-454-0002																							
Website: gopherstateonecall.org **Hours:** 24 hours **Advance Notice:** 48 hours(excluding weekends and holidays) **Marks Valid:** 14 days **Law Link:** revisor.leg.state.mn.us/statutes/?id=216D	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	N	Y	24"
MISSISSIPPI / Mississippi 811, Inc. / 800-227-6477 / Tickets Fax: 601-362-7533																							
Website: ms811.org **Hours:** 24 hours, 7 days **Advance Notice:** 3 working days **Marks Valid:** 14 working days **Law Link:** ms1call.org/One Call-law	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N	Y	Y	24"	12"	Y	Y	Y	N	Y	18"
	*Less than 16"																						
MISSOURI / Missouri One Call System / 800-344-7483 / Tickets Fax: 573-635-8402																							
Website: mo1call.com **Hours:** 24 hours, 7 days **Advance Notice:** 2 working days, not counting day of request **Marks Valid:** As long as visible **Law Link:** mo1call.com/manual_law.php	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N	N	Y	Y*	N	Y	Y	Y	N	N	24"

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MONTANA																							
MONTANA 811 / 800-424-5555 **Website:** montana811.org **Hours:** 24 hours, 365 days **Advance Notice:** 2 business days **Marks Valid:** 30 days **Law Link:** montana811.org/montana-dig-law.html	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N	Y*	N	Y	Y	Y	Y	Y	N	N	18"
*Only under certain circumstances																							
NEBRASKA / Nebraska811 / 800-331-5666																							
Website: ne1call.com **Hours:** 24 hours, 365 days **Advance Notice:** 2 to 10 business days excluding holidays and weekends **Marks Valid:** 17 Days **Law Link:** ne1call.com/ne-law-enforcement/nebraska-statutes/	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N	N	Y	Y	N	Y	Y	Y	N	N	18"
NEVADA / USA North 811 / 800-642-2444																							
Underground Service Alert of Northern CA & NV **Website:** www.usanorth811.org **Hours:** 24/7 **Advance Notice:** 2 working days, not including the date of notification **Marks Valid:** 28 days **Law Link:** usanorth811.org (Quick Links/Law & Excavation Manual)	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	Y	N	N	24"
NEW HAMPSHIRE / Dig Safe System, Inc. / 888-344-7233																							
Website: digsafe.com **Hours:** 24 hours, 7 days **Advance Notice:** 72 hours(exluding weekends and holidays) **Marks Valid:** 30 days **Law Link:** digsafe.com/laws_rules.php	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	N	Y	N	Y	N	Y	18"
NEW JERSEY / New Jersey One Call / 800-272-1000 / Tickets Fax: 800-705-4559																							
Website: nj1-call.org **Hours:** 24 hours **Advance Notice:** 3 full business days **Marks Valid:** 45 business days **Law Link:** nj1-call.org/nj-law/	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N	Y	N	Y	Y	Y	N	Y	N	N	24"
NEW MEXICO / New Mexico One Call, Inc. dba NM811 / 800-321-2537 / Tickets Fax: 800-727-8809																							
Website: nm811.org **Hours:** 7:00 AM - 5:00 PM, M-F / Emergencies & Damages: 24 hours **Advance Notice:** 2 working days, not including the day of the notification **Marks Valid:** 15 Days **Law Link:** nm811.org/new-mexico-811-law/	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	N	N	Y	Y	Y	N	Y	18"
NEW YORK																							
DIG SAFELY NEW YORK / 800-962-7962 **Website:** digsafelynewyork.com **Hours:** 24 hours, 365 days **Advance Notice:** 2 to 10 working days(Excluding day of call) **Marks Valid:** 10 working days **Law Link:** digsafelynewyork.com/resources/nys-code-rule-753	N	Y	N	N	Y	Y	Y	N	N	Y	Y	N	N	N	N	N	N	Y	Y	Y	N	N	24"
NEW YORK 811 / 800-272-4480 **Website:** newyork-811.com **Hours:** 24 hours, 7 days **Advance Notice:** 2 to 10 business days **Marks Valid:** 10 working days **Law Link:** newyork-811.com/excavators/code-753-at-a-glance	N	Y	Y	N	Y	Y	Y	N	N	Y	Y	N	N	N	N	N	N	Y	Y	Y	N	N	24"
NORTH CAROLINA / North Carolina One Call Center, Inc. / 800-632-4949																							
Website: nc811.org **Hours:** 24 hours, 365 days **Advance Notice:** 3 full working days **Marks Valid:** 15 working days **Law Link:** nc811.org/north-carolina-law.html	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	N	N	24"

Know what's below. Call before you dig.

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	FAX	Online	Mobile	Statewide Coverage	Civil Penalties	Emergency Clause	Mandatory Membership	Excavator Permits Issued	Mandatory Premarks	Positive Response	Hand Dig Clause	Damage Reporting	DOT	Homeowner	Railroad	Agriculture	Depth	Damage	Design	Emergency	Overhead	Large Projects	
NORTH DAKOTA / North Dakota One Call / 800-795-0555 **Website:** ndonecall.com **Hours:** 24 hours **Advance Notice:** 2 Full Business Days **Marks Valid:** 21 calendar days **Law Link:** legis.nd.gov/cencode/t49c23.pdf?20130530105605	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	Y	N	N	Y	Y	N	N	24"
OHIO **OHIO811 / 800-362-2764** **Website:** OHIO811.org **Hours:** 24 hours, 7 days **Advance Notice** 48 hours but not more than 10 working days **Marks Valid:** As long as visible and work begins within 10 days of original ticket **Law Link:** oups.org/law	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	N	N	Y	N	Y	Y	Y	N	Y	18"
OKLAHOMA / Okie811 / 800-522-6543 **Website:** okie811.org **Hours:** 24 hours, 7 days **Advance Notice:** 48 hours excluding date of notification, weekends and legal holidays **Marks Valid:** 14 calendar days **Law Link:** okie811.org/thelaw	N	Y	Y	Y	N	Y	Y	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	N	Y	24"
OREGON / Oregon Utility Notification Center / 800-332-2344 / Tickets Fax: 503-293-0826 **Website:** digsafelyoregon.com **Hours:** 24 hours, 7 days **Advance Notice:** 2 Full Business Days **Marks Valid:** Marks Valid; 45 days **Law Link:** digsafelyoregon.com/faqs/ounc_ors_oar.htm	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	N	12"	N	Y	N	N	Y	Y	N	N	24"
PENNSYLVANIA / Pennsylvania One Call System, Inc. / 800-242-1776 **Website:** pa1call.org **Hours:** 24 hours, 7 days **Advance Notice:** 3 to 10 business days (construction), 10-90 days (design), at least 10 days (large projects) **Marks Valid:** as long as equipment is on site **Law Link:** pa1call.org/palaw	N	Y	Y	Y	Y	Y	Y**	N	Y	Y	Y	Y	N*	N	N	Y	N	Y	Y	Y	N	Y***	18"
** PennDot minor routine maintenance exempt if without 24" depth from highest spot in ROW* ** Municipal Roads - minor routine maintenance if within 18" depth from highest point in ROW* *** Exemptions include PennDOT within state road DOT, Stripper Well Lines in Class 1 areas* **** Large projects accepted online only*																							
RHODE ISLAND / Dig Safe System, Inc. / 888-344-7233 **Website:** digsafe.com **Hours:** 24 hours, 7 days **Advance Notice:** 72 hours(exluding weekends and holidays) **Marks Valid:** Must start within 30 days, as long as marks maintained **Law Link:** digsafe.com/laws_rules.php	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	N	Y	N	Y	N	Y	N	Y	18"
SOUTH CAROLINA / South Carolina 811 / 888-721-7877 **Website:** sc811.com **Hours:** 7:30 AM - 5:30 PM, M-F **Advance Notice:** 3 to 12 full working days notice(10-20 full working days notice subaqueous) **Marks Valid:** 15 working days **Law Link:** sc811.com/state-law/	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y	N	N	24"
SOUTH DAKOTA / South Dakota 811 Center / 800-781-7474 **Website:** sc811.com/state-law/ **Hours:** 24 hours **Advance Notice:** 48 hours(excluding weekends and holidays) **Marks Valid:** 21 working days from start date and time on ticket **Law Link:** sdonecall.com/law.asp	N	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y*	N	N	N	N	N**	Y	Y	Y	N	Y	18"
** Damage reporting required. All damage must be reported to the facility operator, or if the operator is unknown, to South Dakota 811 Center.* *** For agricultural tilling and road and ditch maintenance to a depth of 18" only; homeowners have a 12" depth exception for tilling of soil and gardening*																							
TENNESSEE / Tennessee 811 / 800-351-1111 **Website:** tn811.com • **Hours:** 24 hours **Advance Notice:** Not less than 3 working days, not more than 10 working days **Marks Valid:** 15 calendar days **Law Link:** https://www.tn.gov/content/dam/tn/publicutility/documents/uudeb/65-31-101etseq.pdf	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	N	N	Y	Y	Y	N	N	24"

Notification Center and State Law Directory

HELP US STAY UP TO DATE.
Directory information is also available online at ExcavationSafetyGuide.com. Report any updates to this directory by calling 866-279-7755.

You can reach your local Notification Center in the U.S. by dialing 811.

811 Know what's below. Call before you dig.

	TICKETS			STATE LAWS & PROVISIONS									NOTIFICATION EXEMPTIONS					NOTIFICATIONS ACCEPTED					
	FAX	Online	Mobile	Statewide Coverage	Civil Penalties	Emergency Clause	Mandatory Membership	Excavator Permits Issued	Mandatory Premarks	Positive Response	Hand Dig Clause	Damage Reporting	DOT	Homeowner	Railroad	Agriculture	Depth	Damage	Design	Emergency	Overhead	Large Projects	Tolerance Zone (either side of the utility plus the width of the utility)
TEXAS / Texas811 / 800-344-8377																							
Website: texas811.org **Hours:** 24 hours **Advance Notice:** 48 hours (excluding weekends and holidays) **Marks Valid:** 14 working days **Law Links:** statutes.capitol.texas.gov/Docs/UT/htm/UT.251.htm	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	N	Y	Y	16"	Y	Y	Y	N	N	18"
UTAH / Blue Stakes of Utah 811 / 800-662-4111																							
Website: bluestakes.org **Hours:** 8:00 AM - 4:00 PM, M-F **Advance Notice:** 2 business days, 48 hours notice **Marks Valid:** 14 calendar day **Law Link:** le.utah.gov/xcode/Title54/Chapter8A/54-8a.html	N	Y	Y	Y	Y	N	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	Y	N	N	24"
VERMONT / Dig Safe System, Inc. / 888-344-7233																							
Website: digsafe.com **Hours:** 24 hours, 7 days **Advance Notice:** 48 hours(excluding weekends and holidays) **Marks Valid:** 30 days **Law Link:** digsafe.com/laws_rules.php	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	N	Y	N	Y	N	Y	N	Y	18"
VIRGINIA / Virginia 811 / 800-552-7001																							
Website: va811.com **Hours:** 24 hours, 7 days **Advance Notice:** 2 working days(excluding day of call) **Marks Valid:** 15 working days **Law Link:** va811.com/laws-and-regulation	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N	Y	Y	Y	N	N	Y	Y	N	Y	24"
WASHINGTON / Washington 811 / 811 / 800-424-5500																							
Washington 811 **Website:** digsafewa.com **Northwest Utility Notification Center (NUNC)** **Website:** digsafewa.com **Inland Empire Utility Coordinating Council (IEUCC)** **Website:** digsafewa.com **Hours:** 24 hours, 7 days **Advance Notice:** 2 business days **Marks Valid:** 45 days **Law Link:** washington811.com/wa-dig-law-rcw-19-122/	N	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y	N	Y	N	Y	Y	Y	Y	Y	N	Y	24"
WASHINGTON D.C. / District One Call / 800-257-7777																							
Website: missutility.net **Hours:** 24 hours, 7 days **Advance Notice:** 96-business hours **Marks Valid:** 15 business days **Law Link:** https://code.dccouncil.gov/us/dc/council/code/titles/34/chapters/27/	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	N	N	N	N	N	N	Y	N	N	18"
WEST VIRGINIA / West Virginia 811 / 800-245-4848																							
Website: wv811.com **Hours:** 24 hours **Advance Notice:** 2 days but not more than 10 **Marks Valid:** 10 days **Law Link:** wv811.com/one-call-law	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N	N	N	Y	N	Y	Y	Y	N	N	24"
WISCONSIN / Diggers Hotline / 800-242-8511																							
Website: diggershotline.com **Hours:** 24 hours, 7 days **Advance Notice:** 3 working days **Marks Valid:** For duration of work if marks remain visible and work is continuous **Law Link:** docs.legis.wisconsin.gov/statutes/statutes/182/0175	N	Y	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	N	Y	Y	Y	Y	Y	18"

Know what's below. Call before you dig.

Expand public awareness by visiting call811.com. You will find a variety of downloadable elements available for use free in your company/organization's existing campaigns.

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	TICKETS			STATE LAWS & PROVISIONS									NOTIFICATION EXEMPTIONS					NOTIFICATIONS ACCEPTED					
	FAX	Online	Mobile	Statewide Coverage	Civil Penalties	Emergency Clause	Mandatory Membership	Excavator Permits Issued	Mandatory Premarks	Positive Response	Hand Dig Clause	Damage Reporting	DOT	Homeowner	Railroad	Agriculture	Depth	Damage	Design	Emergency	Overhead	Large Projects	Tolerance Zone (either side of the utility plus the width of the utility)
WYOMING / One-Call of Wyoming, Inc. / 811 or 1-800-849-2476 (if out of state)																							
Website: onecallofwyoming.com **Hours:** 24 hours **Advance Notice:** 2 full business days **Marks Valid:** 14 business days **Law Link:** https://www.onecallofwyoming.com/wp-content/uploads/2022/10/WY-State-Statute.pdf	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N	N	Y	N	Y	Y	Y	N	N	24"

Canadian One Call and Provincial Law Directory

Click Before You Dig / Cliquez Avant de Creuser

Canadian One Call Centres Committee

	TICKETS			PROVINCIAL LAWS & PROVISIONS									NOTIFICATION EXEMPTIONS					NOTIFICATIONS ACCEPTED					
	FAX	Online	Mobile	Statewide Coverage	Civil Penalties	Emergency Clause	Mandatory Membership	Excavator Permits Issued	Mandatory Premarks	Positive Response	Hand Dig Clause	Damage Reporting	DOT	Homeowner	Railroad	Agriculture	Depth	Damage	Design	Emergency	Overhead	Large Projects	Tolerance Zone (either side of the utility plus the width of the utility)
ALBERTA / Utility Safety Partners / 800-242-3447																							
Website: utilitysafety.ca **Hours:** 8:00 AM - 4:30 PM, M-F (Emergency or Online: 24/7) **Advance Notice:** 3 full working days **Marks Valid:** up to 30 days, determined by member	N	Y	Y	Y	N	N	N	N	N	Y	Y	Y	N	N	N	N	*	Y	Y	Y	Y	Y	1m (39")
	** 300 mm (12") hand tools only*																						
BRITISH COLUMBIA / BC 1 Call / 800-474-6886																							
Website: bc1c.ca **Hours:** 24 hours / 7 days **Advance Notice:** Regular & Project - 3 working days excluding weekends and holidays Large Project – 5 working days excluding weekends and holidays Planning & Design – 10 working days excluding weekends and holidays **Marks Valid:** 60 calendar days	N	Y	Y	Y	N	Y	N	N	N	Y	N	Y	N	N	N	N	N	Y	Y	Y	N	Y	VARIES
MANITOBA / Click Before You Dig Manitoba / 800-940-3447																							
Website: ClickBeforeYouDigMB.com **Hours:** 8:00 AM - 5:00 PM **Advance Notice:** 3 full working days excluding weekends and holidays **Marks Valid:** Determined by member	N	Y	Y	Y	N	N	N	N	N	Y	Y	N	N	N	N	N	N	Y	N	Y	N	Y	VARIES
ONTARIO / Ontario One Call / 800-400-2255																							
Website: OntarioOneCall.ca **Hours:** 24 hours, 365 days **Advance Notice:** 5 working days **Marks Valid:** Minimum 60 days **Law Link:** www.ontario.ca/laws/statute/12o04	N	Y	N	Y	Y	Y	Y	N	N	Y	Y	Y	N	N	N	N	N	Y	Y	Y	N	Y	VARIES
QUEBEC AND ATLANTIC PROVINCES / Info-Excavation / 800-663-9228																							
Website: info-ex.com **Hours:** 24 hours/7 days **Advance Notice:** 72 hours (3 working days) **Marks Valid:** Maximum 180 days	N	Y	Y	Y	N	Y	N	N	N	Y	N	Y	N	N	N	N	N	Y	Y	Y	Y	Y	1m (39")
SASKATCHEWAN / Sask 1st Call / 866-828-4888																							
Website: sask1stcall.com **Hours:** 8:00 AM - 4:30 PM, M-F (Emergency 24/7) **Advance Notice:** 3 full working days **Marks Valid:** 30 days	N	Y	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	Y	Y	Y	N	Y	VARIES

Pipeline Products & Facilities

NATURAL GAS is a naturally occurring resource formed millions of years ago because of heat and pressure acting on decayed organic material. It is extracted from wells and transported through gathering pipelines to processing facilities. From these facilities, it is transported through transmission pipelines to distribution pipeline systems. The main ingredient in natural gas is methane (approximately 94 percent). Natural gas is odorless, colorless, tasteless and nontoxic in its natural state. An odorant (called mercaptan) is normally added when it is delivered to a distribution system. At ambient temperatures, natural gas remains lighter than air. However, it can be compressed (CNG) under high pressure to make it convenient for use in other applications or liquefied (LNG) under extremely cold temperatures (-260° F) to facilitate transportation.

PETROLEUM GAS is a mixture of gaseous hydrocarbons, primarily propane, butane and ethane. These products are commonly used for cooking, heating and other industrial applications. They are easily liquefied under pressure and are often stored and transported in portable containers labeled as Liquified Petroleum Gas (LPG). When transported in transmission pipelines they may also be identified as Highly Volatile Liquids (HVLs) or Natural Gas Liquids (NGLs). Vaporized LPG may also be found in smaller gas distribution systems. Typically, LPG is a tasteless, colorless and odorless gas. When transported via transmission pipelines it normally will not have odorant added. Odorant is added when LPG is offloaded to a distribution pipeline system or transport tanks to facilitate leak detection. Ethylene and propylene do have a faint natural odor like petroleum.

PETROLEUM LIQUIDS is a broad term covering many products, including: crude oil, gasoline, diesel fuel, aviation gasoline, jet fuel, fuel oil, kerosene, naphtha, xylene and other refined products. Crude oil is unrefined petroleum that is extracted from beneath the Earth's surface through wells. As it comes from the well, crude oil contains a mixture of oil, gas, water and other impurities, such as metallic compounds and sulfur. Refinement of crude oil produces petroleum products that we use every day, such as motor oils and gasoline. Crude oil is transported from wells to refineries through gathering or transmission pipelines. Refined petroleum products are transported in transmission pipelines to rail or truck terminals for distribution to consumers. Odorant is not added to these products because they have a natural odor.

ANHYDROUS AMMONIA is the liquefied form of pure ammonia gas. It is a colorless gas or liquid with an extremely pungent odor. It is normally transported through transmission pipelines and is used primarily as an agricultural fertilizer or industrial refrigerant.

CARBON DIOXIDE is a heavy gas that is normally transported in transmission pipelines as a compressed fluid. It is a naturally occurring, colorless, odorless and tasteless gas used in the petroleum industry. Under normal conditions, carbon dioxide is stable, inert and nontoxic. However, it can act as an asphyxiant.

ETHANOL (also called ethyl alcohol) is a colorless liquid that is widely used as an additive to automotive gasoline. It may be transported in buried transmission pipelines. Ethanol has a natural odor like gasoline and will easily mix with water.

HYDROGEN GAS is commonly produced from the steam reformation of natural gas. It is frequently used near its production site, with the two main uses being petrochemical processing and ammonia production. Hydrogen is a flammable gas that is colorless, odorless and lighter than air. It is nontoxic, but can act as an asphyxiant.

"SOUR" CRUDE OIL AND "SOUR" GAS refer to products containing high concentrations of sulfur and hydrogen sulfide. Products containing little or no sulfur are often referred to as "sweet". Hydrogen sulfide (H2S) is a toxic, corrosive contaminant found in natural gas and crude oil. It has an odor like the smell of rotten eggs or a burnt match. Exposure to relatively low levels of hydrogen sulfide (500 ppm) can be fatal. ESG

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