

CHAPTER 5

Excavation Task Team Best Practices

5.1 CHAPTER SUMMARY

The United States is experiencing one of the largest economic expansions in history. New facilities must be put in place to meet the growing need of everyday services that industry and the general public rely on. New roads must be built to handle increased traffic. New cables, pipelines, sewers and other utility lines must be installed to handle increased volumes. Old facilities that are undersized, deteriorated or of old technology need to be upgraded. All of these require excavation, safe excavation.

There are hundreds of thousands of miles of underground facilities in the United States. Many of these are potentially dangerous or even deadly to the excavator that might hit them accidentally when excavating. This includes danger to professional excavators, homeowners, and others. The importance of safe excavation practices cannot be overstated. In addition to the safety hazards encountered when excavating around buried facilities, there are serious potential service outages that could occur if a facility is damaged or severed. Critical emergency services, general aviation, and transactions among financial institutions are just a few. The homeowner and many hundreds of others are affected by the loss of those services.

The Excavation Practices Task Team identified and described practices used during excavation of, and around, underground facilities. Those practices can contribute to the reduction in the possibility and/or severity of damages or intrusions to those facilities.

The Excavation Team focused on the practices used during the various phases of an excavation project that would contribute to minimizing or preventing damage to underground facilities and promote safety for all personnel working within the excavation area. The Team broke these practices into the following categories:

Project Preparation

1. One-Call Facility Location Request.
2. White Lining.
3. Locate Reference Number.
4. Pre-excavation Meeting.
5. Facility Relocations.
6. Separate Location Requests.
7. One-Call Access (24x7).
8. Positive Response.

On-Site Preparation/Ground Breaking

9. Facility Owner/Operator Failure to Respond.
10. Locate Verification.
11. Documentation.
12. Work Site Review with Company Personnel.
13. One-Call Reference Number at Site.
14. Contact Names and Numbers.
15. Facility Avoidance.

On-Going Excavation

16. Federal and State Regulations.
17. Marking Preservation.
18. Excavation Observer.
19. Excavation Tolerance Zone.
20. Excavation Within the Tolerance Zone.
21. Mis-Marked Facilities.
22. Exposed Facility Protection.
23. Locate Request Updates.
24. Facility Damage Notification.
25. Notification of Emergency Personnel.
26. Emergency Excavation.
27. Backfilling.

Project Completion

28. As-Built Documentation.

Implementation of these practices by any individual, company, or other excavating organization would greatly reduce damages to underground facilities, injuries to excavating personnel, injuries of the public at large, and damage to private and public property.

5.2 BACKGROUND AND MOTIVATION

5.2.1 Excavation Mission Statement

The mission of the Excavation Team was to identify and describe preventive and safe practices for the construction and maintenance of, and around, buried facilities. The Team attempted to provide a collection of practices in the full range of underground excavation activities, including initial project preparation, on-site preparation/breaking ground, on-going excavation procedures, and project restoration/completion.

5.2.2 Goals

The goals of the Excavation Team were to:

1. Identify actual practices that can be used to minimize the potential of damage to underground facilities during the excavation process.
2. Encourage partnerships between the facility owners/operators, excavators, one-call centers and locators.

5.3 TEAM MEMBERS

The Excavation Team was composed of representatives from one-call centers, excavators, locators, facility operators, trade associations, and federal and state government agencies. A brief biographical sketch of each Team member, that serves to validate their participation in the Study effort, is included in Appendix F, “Common Ground Study Team Member Biographies.”

Team Member	Representing¹⁸	Employer
Nathan Beil	ARTBA	KCI Technologies
Fred Boley	INGAA	Southern Natural Gas
Deborah Clark	NUCA	C & B Associates II, Ltd.
Jack Connolly	NCTA	Cox Cable
Roy Dahl	AAR	BNSF Railway
Walter Gainer, Co-Chairperson	NUCA	W. F. Wilson & Sons, Inc.
James Geromette	NULCA	MichCon, Coolidge Region
Corky Hanson	State Governments	Arizona Corporation Commission
Jim Harrison, Co-Chairperson	NUCA	Pauley Construction
George Kennedy	NUCA	NUCA
Max Nichols		Jomax Construction Co.
Terry Pollak	NTDPC	Ameritech
Melanie Powers	AGA	Columbia Gas of Ohio

¹⁸ See Appendix D for a detailed list of acronyms.

Team Member (cont.)	Representing (cont.)	Employer (cont.)
Scott Sands	U.S. DOT	FHWA, Colorado Division
Gary Schulman	NTDPC	Bellsouth
Charlie Scott		SubSite Electronics
Tom Shimon	OCSI	Kansas One-Call Systems, Inc.
David Spangenberg	States' DOT	Michigan DOT
Loren Sweatt	AGC	AGC
Jeff Vaughter	AGC	Craft Construction Co. of Starr

Others that participated in the Task Team's discussions but did not participate in the consensus decision process include:

Team Participant	Representing	Employer
Chuck Cohen, Emerging Task Team Liaison	NUCA	Tires N Tracks, Inc.
Rich Maxwell, Linking Team Liaison	Independent Contr.	A & L Underground, Inc.

5.4 DATA COLLECTION AND EVALUATION PROCESS

5.4.1 Information Sources

The Task Team drew heavily on the collective experience and expertise of its Team members. Team members solicited opinions from their affiliated or sponsoring organizations and brought those diverse points of view to the discussions and evaluations in the Task Team meetings. Various state one-call laws, federal regulations, industry standards, company guidelines and operating practices, and other documents were reviewed and referenced during the Task Team's efforts. Some specific sources included:

- Occupational Safety and Health Administration (OSHA) Subpart P - Excavation Standard 29 CFR 1926.651.
- CNA, "Minimum Damage Prevention Guidelines" (August 1998).
- National Transportation Safety Board (NTSB), "Protecting Public Safety Through Excavation Damage Prevention" (1997).
- American Public Works Association (APWA), "Guidelines for Uniform Temporary Marking of Underground Facilities."

- Telecommunications Industry Association and Electronic Industry Association (TIA/EIA), “Standard for Physical Location and Protection of Below-Ground Fiber Optic Cable Plant” (ANSI/TIA/EIA-590-A-1996).

5.4.2 Process for Collecting Information

Excavation Task Team members brought forward issues and practices based on their professional experience. In addition, input was collected from peers, various professional and industry organizations, other Task Teams, and from the general public through the OCSS Information System on the Internet. A Task Team member volunteered to research each issue and provided objective information about that issue for Team discussion.

5.4.3 Process for Selecting Issues

Using an outline developed by the Linking Team, the Excavation Team brainstormed and identified issues and candidate practices early in its initial meeting. After that initial meeting, Team members went to their various constituencies for input. In consideration of feedback received, items were reworked and external input was again solicited. Members actively interacted with their peers to discuss the issues and practices identified as part of this Study.

5.4.4 Process for Evaluating Practices

The Excavation Task Team developed the following criteria to determine which practices should be considered as best practices:

1. Best practices must be actual activities that are being used somewhere and could be documented. Industry standards, company policies and procedures, federal/state/local regulations and various other sources can be used to review and document issues and practices.
2. Best practices must be practical and cost effective with current technology.
3. Best practices must be considered reasonable by the majority of the constituency that would be asked to implement the practices.

5.5 ISSUES IDENTIFIED

The Excavation Team identified and evaluated many issues related to damage prevention during the actual excavation process. In almost all cases, best practices were developed to address those issues.

The Excavation Team identified one issue that was discussed at several of the Team's meetings but that has not been resolved. That issue is “Depth Requirements.” Due to the complexity and controversial aspects of the issue, the Task Team determined there was insufficient time to reach a consensus on any potential

best practices. The Team did reach consensus that this is an important issue and that further discussion and development work is warranted.

5.6 FINDINGS

The best practices for excavation have been divided into four phases of the excavation project: Project Preparation, On-Site Preparation/Breaking Ground, On-going Excavation Procedures, and Project Restoration/Completion. The Task Team agreed on the following best practices:

Project Preparation

1. One-Call Facility Locate Request.
2. White Lining.
3. Locate Reference Number.
4. Pre-Excavation Meeting.
5. Facility Relocations.
6. Separate Locate Requests.
7. One-Call Access (24x7).
8. Positive Response.

On-Site Preparation/Ground Breaking

9. Facility Owner/Operator Failure to Respond.
10. Locate Verification.
11. Documentation of Marks.
12. Work Site Review with Company Personnel.
13. One-Call Reference Number at Site.
14. Contact Names and Numbers.
15. Facility Avoidance.

On-Going Excavation

16. Federal and State Regulations.
17. Marking Preservation.
18. Excavation Observer.
19. Excavation Tolerance Zone.
20. Excavations within Tolerance Zone.
21. Mis-Marked Facilities.
22. Exposed Facility Protection.
23. Locate Request Updates.
24. Facility Damage Notification.
25. Notification of Emergency Personnel.

- 26. Emergency Excavation.
- 27. Backfilling.

Restoration/Completion

- 28. As-Built Documentation.

5.6.1 Project Preparation

1. One-Call Facility Locate Request

Practice Statement: The excavator requests the location of underground facilities at each site by notifying the facility owner/operator through the one-call system. Unless otherwise specified in state law, the excavator calls the one-call center at least two working days and no more than ten working days prior to beginning excavation.

Practice Description: Currently 48 states have passed one-call legislation and have established one-call notification systems recognizing that excavation performed without prior notification poses a risk to public safety, excavators, the environment, and disruption of vital services provided by facility operators. Increased participation in this one-call notification system provides for improved communication between excavators and facility operators necessary to reduce damage. Laws in 41 states call for a minimum of 2 days prior and laws in 16 states call for no more than 10 days.

Reference:

Existing state laws, including Ohio and West Virginia.

2. White Lining

Practice Statement: When the excavation site can not be clearly and adequately identified on the locate ticket, the excavator designates the route and/or area to be excavated using white pre-marking prior to the arrival of the locator.

Practice Description: The route of the excavation is marked with white paint, flags, stakes, or a combination of these to outline the dig site prior to notifying the one-call and before the locator arrives on the job. Pre-marking allows the excavators to accurately communicate to facility owners/operators or their locator where excavation is to occur. The 1997 safety study "Protecting Public Safety Through Excavation Damage Prevention" by the NTSB reached the conclusion that pre-marking is a practice that helps prevent excavation damage. Maine was one of the first states to have mandatory pre-marking for non-emergency excavations. Connecticut has also adopted a pre-marking requirement; however, the law provides for face-to-face meetings between operators and excavators on projects that are too large for or not conducive to pre-marking. Facility owners/operators can avoid unnecessary work locating facilities that are not associated with planned excavation.

Reference:

Existing state laws, including California, Missouri, New Jersey and others.

3. Locate Reference Number

Practice Statement: The excavator receives and maintains a reference number from the one-call center that verifies the locate was requested.

Practice Description: All calls from excavators processed by the one-call center receive a unique message reference number, which is contained on all locate request messages. The excavator records this number; it is proof of notification to the members. The computer generated request identifies the date, time, and sequence number of the locate request.

Each locate request ticket (notification) is assigned a unique number with that one-call center, the requestor and the facility owner/operator. This number separates this ticket from all other tickets so that it can be archived and recalled upon request with the details of that request only.

References:

- Existing state laws, all 50 states have one-call centers and/or state statutes.
- Existing operating procedures from various states one-call centers.

4. Pre-Excavation Meeting

Practice Statement: When practical, the excavator requests a meeting with the facility locator at the job site prior to the actual marking of facility locations. Such pre-job meetings are important for major, or unusual, excavations.

Practice Description: The meeting will facilitate communications, coordinate the marking with actual excavation, and assure identification of high priority facilities. An on-site pre-excavation meeting between the excavator, the facility owners/operators and locators (where applicable) is recommended on major or large projects. This include projects such as road, sewer, water, or other projects that cover a large area, progress from one area to the next, or that are located near critical or high priority facilities. Such facilities include, but are not limited to, high-pressure gas, high voltage electric, fiber optic communication, and major pipe or water lines.

References:

- Existing insurance carrier guidelines.
- Existing practice among excavators, including Pauley Construction and W.F. Wilson & Sons, Inc.

5. Facility Relocations

Practice Statement: The excavator coordinates work which requires temporary or permanent interruption of a facility owner/operator's service with the affected facility owner/operator in all cases.

Practice Description: Any temporary or permanent interruption requires the active participation by the facility owner/operator and the excavator to ensure protection of facilities through a joint preplanning meeting or conference calls. One-call centers note special contractor requests for a joint meeting on the ticket to the facility owner/operator to initiate the process.

Reference:

Existing practice among one-call centers.

6. Separate Locate Requests

Practice Statement: Every excavator on the job has a separate one-call reference number before excavating.

Practice Description: Often, there are several excavators on a job site performing work. The construction schedule may dictate different types of work requiring excavation from different specialty contractors simultaneously. In these situations it is imperative for each excavator to obtain a one-call reference number before excavation to ensure that the specific areas have been appropriately marked by any affected underground facility owner/operator.

Reference:

Existing state laws, including Ohio, Kansas, Michigan, Maryland, Illinois and others.

7. One-Call Access (24x7)

Practice Statement: The excavator has access to a one-call center 24 hours per day, 7 days a week.

Practice Description: Utilities service the public needs 24x7 and thus should be protected the same amount of time. Certain conditions exist which requires excavators to work during off-hours (city/road congestion, off peak utility service hours). While most excavators are on the job site during regular work hours, the ability to call in future work locations after five p.m. allows more flexibility to schedule work, not to mention getting around peak hours of locate requests at the one-call center.

Reference: Existing states laws, including Texas, Idaho, Minnesota, Pennsylvania, and others. There are 25 participating states or one-call centers with 24x7 access.

8. Positive Response

Practice Statement: The excavator is notified by the underground facility owner/operator of the tolerance zone of the underground facility by marking, flagging, or other acceptable methods at the work site, or is notified that a no conflict situation exists. This takes place after notification from the one-call center to the underground facility owner/operator and within the time specified by state law.

Practice Description: If a facility owner/operator determines that the excavation or demolition is not near any of its existing underground facilities, it notifies the excavator that no conflict exists and that the excavation or demolition area is "clear." This notification by the facility owner/operator to the excavator may be provided in any reasonable manner including, but not limited to: face-to-face communications; phone or phone message, facsimile or other electronic means; posting at the excavation or demolition area; or marking the excavation or demolition area. If an excavator has knowledge of the existence of an underground facility and has received an "all clear," a prudent excavator will attempt to communicate that a conflict does indeed exist and the locator should make marking these facilities a priority before excavation begins.

More communication between the excavator and the facility owner/operator is a growing necessity as the area of excavation is getting more crowded everyday with new underground facilities. Positive response is a term used to describe the two types of action to be taken by a facility owner/operator after it has received notification of intent to excavate. The facility owner/operator is required to 1) mark its underground facilities with stakes, paint or flags or 2) notify the excavator that the facility owner/operator has no underground facilities in the area of excavation. This process allows the excavator to begin work on time or in a timely manner.

When the excavator makes the request to the one-call center, he/she is told which facility owners/operators will be notified. The excavator logs these facilities on his/her job sheet so that he/she can identify which facility owners/operators have responded by marking and which ones have cleared the area. On the flip side, when a facility owner/operator does not respond by marking or clearing, this could signal that the facility owner/operator did not receive a locate notice. It could also indicate that the facility owner/operator data base used at the one-call center is either corrupt or lacking the correct information to process the request at the location, which could result in calamity. Once the excavator has all of the information needed for the work area, he/she can then excavate with confidence with safety in mind for the work crew and the public at large.

References:

- Existing state laws, including California, Maryland, Nevada and others.
- Existing operating procedure for various one-call centers. (Number of participating states or one-calls: 31.)

5.6.2 On-Site Preparation/Ground Breaking

9. Facility Owner/Operator Failure to Respond

Practice Statement: If the facility owner/operator fails to respond to the excavator's timely request for a locate (e.g., within the time specified by state requirements) or if the facility owner/operator notifies the excavator that the underground facility cannot be marked within the time frame and a mutually agreeable date for marking cannot be arrived at, the excavator re-calls the one-call center. However, this does not preclude the excavator from going on with the project. The excavator may proceed with excavation at the end of two working days, unless otherwise specified in state law, provided the excavator exercises due care in his endeavors.

Practice Description: It is determined that the facility owner/operator and the excavator will partner together to ensure facilities are marked in an acceptable time frame to allow for underground facility protection.

Reference:

Existing state laws, including Ohio, Kansas, South Carolina, Michigan and others.

10. Locate Verification

Practice Statement: Prior to excavation, excavators verify they are at the correct location and verify locate markings and, to the best of their ability, check for unmarked facilities.

Practice Description: Upon arrival at the excavation site prior to beginning the excavation, verify that the dig site matches the one-call request and is timely. Verify that all facilities have been marked, reviewing color codes if in doubt. Verify all service feeds from buildings and homes. Check for any visible signs of underground facilities, such as pedestals, risers, meters, and new trench lines. Check for any facilities that are not members of the one-call and contact someone to get them located. Use of a pre-excavation checklist is recommended by insurers and practiced by responsible excavating contractors.

Reference:

Existing practice by excavators, including Pauley Construction and W.F. Wilson & Sons, Inc.

11. Documentation of Marks

Practice Statement: An excavator uses dated pictures, videos, or sketches with distance from markings to fixed objects recorded, to document the actual placement of markings.

Practice Description: In most situations when underground facilities are not properly marked, excavators have no way of knowing where underground utilities are located. If locate markings are adequately documented through the use of photographs, video tape, or sketches before excavation

work begins, it will be easier to resolve disputes if an underground facility is damaged due to improper marking, failure to mark, or markings that have been moved, removed, or covered. It is important for excavators and locators to document the location of markings before excavation work begins. The primary purpose of this best practice is to avoid unnecessary litigation and expensive legal fees for all parties involved.

Reference:

Existing practice by excavators, including Pauley Construction.

12. Work Site Review with Company Personnel

Practice Statement: Prior to starting work, the excavator reviews the location of underground facilities with site personnel.

Practice Description: Sharing information and safety issues during an on-site meeting between the excavator and his excavating crews will help to avoid confusion and needless damage to underground facilities.

Reference:

Existing practice by excavators, including Pauley Construction, A&L Underground, W.F. Wilson & Sons, Inc.

13. One-Call Reference Number at Site

Practice Statement: The excavator's designated competent person at each job site has the one-call ticket number.

Practice Description: This serves as constant reminder that all excavators will be required to call the one-call center to request a locate before they start excavation. If a representative for the facility owner/operator sees work being conducted and is unaware of the work being done, he/she can 1) stop and verify that the excavator does indeed have a valid ticket number or 2) check the third-party locator's work. If an excavator is found working without a valid one-call ticket number, he/she should be requested to stop work immediately and appropriate actions should be taken.

Another positive aspect of this practice will be that it should speed up the notification process back to the one-call center should the excavator find a facility incorrectly marked or not marked at all. Requiring personnel at the job site to have this number should minimize or eliminate calls to a supervisor, foreman, dispatcher, or other personnel to find the correct number if a problem is encountered. When multiple crews are working on the same project at separate locations, each crew should be responsible for having a designated competent person responsible for having this one-call ticket number in their possession.

References:

- Existing practices by excavators, including Pauley Construction and W.F. Wilson & Sons, Inc.
- Existing practices by facility owners/operators, including Ameritech.

14. Contact Names and Numbers

Practice Statement: The excavator's designated competent person at each job site has access to the names and phone numbers of all facility owner/operator contacts and the one-call center.

Practice Description: Situations arise on the job site that require immediate notification of the facility owner/operator, one-call center or local emergency personnel. To avoid costly delays, the excavator ensures the designated job site personnel have all appropriate names and phone numbers. If telephone communication is unavailable, radio communication to the “home office” is available so that timely notification can be made. The “home office” also has immediate access to all appropriate names and telephone numbers.

Reference:

Existing state regulations, including Michigan DOT.

15. Facility Avoidance

Practice Statement: The excavator uses reasonable care to avoid damaging underground facilities. The excavator plans the excavation so as to avoid damage or minimize interference with the underground facilities in or near the work area.

Practice Description: Foremost on any construction project is safety. Excavators using caution around underground facilities significantly contribute to safe excavation of existing facilities.

Reference:

Existing state laws, including Kansas, Ohio, West Virginia and others.

5.6.3 On-Going Excavation

16. Federal and State Regulations

Practice Statement: The excavator adheres to all applicable federal and state safety regulations, which includes training as it relates to the protection of underground facilities.

Practice Description: Although most existing state damage prevention legislation does not include reference to federal and state regulations, it is important to include reference to worker safety and training in the best practices. Excavators are required to comply with federal and state

occupational safety and health requirements to protect employees from injury and illness. These regulations include reference to training each employee in how to recognize and avoid unsafe conditions and the regulations applicable to his/her work environment to control or eliminate any hazards or exposures to illness or injury. Therefore, the excavator's crew, as part of its safety training, is informed of the best practices and regulations applicable to the protection of underground facilities.

References:

- Required by federal and state law.
- Existing practice by excavators and facility owners/operators.

17. Marking Preservation

Practice Statement: The excavator protects and preserves the staking, marking, or other designations for underground facilities until no longer required for proper and safe excavation. The excavator stops excavating and notifies the one-call center for re-marks if any facility mark is removed or no longer visible.

Practice Description: During long complex projects, the marks for underground facilities may need to be in place far longer than the locating method is durable. Paint, staking and other marking techniques last only as long as the weather and other variables allow. When a mark is no longer visible, but work continues around the facility, the excavator requests a re-mark to ensure the protection of the facility.

Reference:

Existing state law, including Ohio.

18. Excavation Observer

Practice Statement: The excavator has an observer to assist the equipment operator when operating excavation equipment around known underground facilities.

Practice Description: The observer is a worker who is watching the excavation activity to warn the equipment operator while excavating around a utility to prevent damaging that buried facility. This is common practice among excavators and large facility owners/operators. Further, some state laws suggest the same, for example, Ohio law.

References:

- Existing state law, including Ohio.
- Existing practice among large facility owners/operators, including Southern Natural Gas, Bell South, and Columbia Gas.

19. Excavation Tolerance Zone

Practice Statement: The excavator observes a tolerance zone which is comprised of the width of the facility plus 18" on either side of the outside edge of the underground facility on a horizontal plane. This practice is not intended to preempt any existing state requirements that currently specify more than 18".

Practice Description: (See Practice Description for #20 below.)

References:

- Existing state laws, including New Mexico, Pennsylvania, South Dakota and others.
- Telecommunications Industry Association and Electronic Industry Association (TIA/EIA), "Standard for Physical Location and Protection of Below-Ground Fiber Optic Cable Plant" (ANSI/TIA/EIA-590-A-1996).
- American Public Works Association (APWA), "Guidelines for Uniform Temporary Marking of Underground Facilities."

20. Excavation within Tolerance Zone

Practice Statement: When excavation is to take place within the specified tolerance zone, the excavator exercises such reasonable care as may be necessary for the protection of any underground facility in or near the excavation area. Methods to consider, based on certain climate or geographical conditions, include: hand digging when practical (pot holing), soft digging, vacuum excavation methods, pneumatic hand tools, other mechanical methods with the approval of the facility owner/operator, or other technical methods that may be developed. Hand digging and non-invasive methods are not required for pavement removal.

Practice Description: Safe, prudent, non-evasive methods that manually determine a facility are considered "safe excavation practices" in a majority of state laws (38 states). A majority of states outline safe excavation practices to include hand digging or pot holing (16 states). Some states specifically allow for the use of power excavating equipment for the removal of pavement. Each state must take differing geologic conditions and weather related factors into consideration when recommending types of excavation within the tolerance zone.

Reference:

Existing state laws, including Arizona, New Hampshire, Pennsylvania and others.

21. Mis-Marked Facilities

Practice Statement: The excavator notifies the facility owner/operator directly or through the one-call system if an underground facility is not found where one has been marked or if an unmarked underground facility is found. Following this notification, the excavator may continue work if the excavation can be performed without damaging the facility, unless specified otherwise in state law.

Practice Description: When an excavator finds an unmarked or inaccurately marked facility, excavation stops in the vicinity of the facility and notification takes place. If excavation continues, the excavator plans the excavation to avoid damage and interference with other facilities and protects facilities from damage.

References:

- Existing state/local laws, including Arizona.
- Existing practice among excavators, including W.F. Wilson & Sons, Inc.

22. Exposed Facility Protection

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

Practice Description: Protection of exposed underground facilities is as important as preventing damage to the facility when digging around the utility. Protecting exposed underground facilities helps to insure that the utility is not damaged and at the same time protect employees working in the vicinity of the exposed facility.

Exposed facilities can shift, separate, or be damaged when they are no longer supported or protected by the soil around them. Excavators support or brace exposed facilities and protect them from moving or shifting which could result in damage to the facility. This can be accomplished in different ways, for example, by shoring the facility from below or by providing a timber support with hangers across the top of an excavation to insure that the facility does not move or bend. In addition, workers are instructed not to climb on, strike, or attempt to move exposed facilities which could damage protective coatings, bend conduit, separate pipe joints, damage cable insulation, damage fiber optics, or in some way affect the integrity of the facility.

The Occupational Safety and Health Administration (OSHA) has also addressed this issue in Subpart P - Excavation Standard 29 CFR 1926.651(b)(4) which states: "While the excavation is open, underground installations shall be protected, supported, or removed as necessary to safeguard employees." For example, an unsupported sewer main could shift causing the pipe joints to separate which could result in the trench where employees are working to flood, endangering the safety of employees.

Reference:

Existing state/local laws, including Washington, DC, Idaho, Utah, Arizona, Virginia, Pennsylvania, New York and others.

23. Locate Request Updates

Practice Statement: The excavator calls the one-call center to refresh the ticket when excavation continues past the life of the ticket (sometimes, but not always, defined by state law). This recognizes that it is a best practice to define ticket life. If not currently defined in state law, ticket life would best be 10 working days but not to exceed 20 working days.

Practice Description: Refreshing the ticket recognizes that markings are temporary and provides notification to facility owners/operators of ongoing excavation when a job is started but not completed as planned. Any excavation not begun during the life of the ticket is recalled to the one-call center. Any excavation that covers a large area and will progress from one area to the next over a period of time is broken into segments when notifying the one-call center in order to coordinate the marking with actual excavation. The possibility exists that new facilities have been installed in the area where the excavation is to be conducted after the original notification and marking.

This practice also helps in situations where multiple excavators are working in the same area at essentially the same time. An example of when this can occur is when two facility owners, such as a cable television company and the telephone company, are planning to serve a new section of a subdivision. In their pre-planning process, they see a vacant space in the right-of-way to place their new facility. Each excavator (internal or external) calls the one-call center for locates and each facility owner/operator comes and marks their respective facilities indicating that nothing exists. For one reason or another, one of the excavators gets delayed and does not start construction as planned, and when returning to the job site to place the new facility, finds new lines have been installed in the previously vacant space.

Many facility owners/operators do not perform their own locates and utilize the services of a contracted facility locator. These contracted facility locators may not be aware of work planned in the near future. By excavators refreshing the locate ticket, the contract locator has another opportunity to identify newly placed facilities. This practice also gives the facility owner/operator another chance to identify the location of their facilities and to avoid a possible damage and disruption of service should something have been marked incorrectly or missed on a previous locate.

Reference:

Existing state laws that specify 10 working days include Kansas, Ohio, Wisconsin, Pennsylvania, and Texas. Existing state laws that specify 15 working days include Virginia and Tennessee.

24. Facility Damage Notification

Practice Statement: An excavator discovering or causing damage to underground facilities notifies the facility owner/operator and the one-call center. All breaks, leaks, nicks, dents, gouges, groves, or other damages to facility lines, conduits, coatings or cathodic protection will be reported.

Practice Description: A majority of states require notification for damage or substantial weakening of an underground facility (27 states). The possibility of facility failure or endangerment of the surrounding population dramatically increases when a facility has been damaged. While the facility may not immediately fail, the underground facility owner/operator should have the opportunity to inspect the damage and make appropriate repairs.

Reference:

Existing state laws, including Arkansas, Idaho, Maryland and others.

25. Notification of Emergency Personnel

Practice Statement: If the protective covering of an electrical line is penetrated or gases or liquids are escaping from a broken line which endangers life, health or property, the excavator immediately contacts local emergency personnel or calls "911" to report the damage location.

Practice Description: This practice is already required by a majority of the states' one-call legislation. This practice minimizes the danger to life, health or property by notifying the proper authorities to handle the emergency situation. In these situations, local authorities are able to evacuate as appropriate and command substantial resources unavailable to the excavator or underground facility owner/operator.

Reference:

Existing state laws, including Kansas, Ohio, Oregon and Minnesota.

26. Emergency Excavation

Practice Statement: In the case of an emergency excavation, maintenance or repairs may be made immediately provided that the excavator notifies the one-call center and facility owner/operator as soon as reasonably possible. This includes situations that involve danger to life, health or property, or that require immediate correction in order to continue the operation of or to assure the continuity of public utility service or public transportation.

Practice Description: This allows excavation to begin immediately to restore service or stop a hazardous situation from getting worse in the case of gas or pipeline leak, telephone cable cut, or other facility damage.

Reference:

Existing state laws, including Colorado, Nevada, West Virginia and others. (Number of participating states or one-calls = 49.)

27. Backfilling

Practice Statement: The excavator protects all facilities from damage when backfilling an excavation. Trash, debris, coiled wire, or other material that could damage existing facilities or interfere with the accuracy of future locates are not to be buried in the excavation.

Practice Description: Extra caution must be taken to remove large rocks, sharp objects, and large chunks of hard packed clay or dirt. No trash or pieces of abandoned lines are backfilled into the trench. This will avoid any inadvertent damage to the facility during the backfill process.

References:

- Michigan DOT specification.
- Existing insurance carrier guidelines.

5.6.4 Restoration/Completion

28. As-Built Documentation

Practice Statement: Contractors installing underground facilities notify the facility owner/operator if the actual placement is different from expected placement.

Practice Description: In order for a facility owner/operator to maintain accurate records of the location of their facilities, it is critical that the contractor installing the new facility be required to notify the facility owner/operator of deviations to the planned installation. Some facility owners/operators do not require a full time inspector and use a sampling process to insure the new facilities are being installed correctly and in adherence to the specifications. When this occurs, it becomes much more critical for the contractor to notify the facility owner/operator of changes. For example, it is common for the contractor to make adjustments in the location of the new facilities when rocks or other underground obstructions are encountered or the location of the new facility conflicts with another existing underground facility.

This change in plan can be both changes in horizontal or vertical distances from the specified plans. The facility owner/operator should establish standards that require notification if a deviation is beyond specified tolerances, such as changes in depth of 6 inches or more and lateral measurement changes of greater than 1 foot. Once these changes to the expected location are communicated to the facility owner/operator, it is their responsibility to take appropriate action to update their records so that an accurate locate can be conducted in the future.

Reference:

Existing operating practice among facility operators, including Ameritech, Sprint, Columbia Gas and others.