



Risk Control

Damage Prevention Guidelines: Excavation Procedures for Underground Facilities

Part 1. Owners/Senior Managers

Following are practices owners and senior managers of excavating construction firms may find beneficial for helping equipment operators and job site foremen plan and execute an accident-free excavation. Consult your legal counsel regarding statutes or regulations governing excavation in jurisdictions where you operate, on the development and implementation of your excavation guidelines, and any other legal concerns that may arise regarding excavation.

All Excavations

1. The contractor should communicate by phone and/or online request with the local One-Call Service Center/811 and utility owners who are not members of the One-Call Service Center/811. This communication should take place 48 hours to 72 hours, but not more than 10 days prior to the start of the excavation.
2. The route of the excavation should be white-lined (with white spray paint), flagged, staked, or a combination of these to mark the dig site before the locator arrives on the job.
3. The contractor should hand dig, or use other non-destructive methods such as vacuum excavations, to safely expose utilities when within 18 inches or 24 inches horizontally on either side of the marked facility, depending on governmental regulation.
4. The contractor should request new locates to again identify the underground facilities on all excavations incurring extended time requirements of 10 days or more and following inclement weather.
5. Photographs or videos should be taken after the utility has been marked and before the excavation begins.

Critical/High Priority Excavations

On numerous occasions contractors will be required to excavate on or near critical or high priority underground facilities. These

utilities, if hit during the excavation, can result in death, severe injury, or extensive property damage, or business interruption if power or communication service are interrupted. Examples would include high pressure gas or petroleum lines (catastrophic explosions) and water lines (flooding and ground collapse), power transmission facilities, and fiber optic communication cables (service disruption to more than 30,000 customers for 30 minutes or more). In these situations, before any excavation begins, the contractor can assertively discuss this risk with the owner to identify if critical or high priority facilities are located at the excavation site. They can also inquire with the facility owner if they provide watch and protect services for critical/high priority facilities.

If so, in addition to the five suggestions defined above, the following three suggestions should be implemented:

6. The contractor should request a pre-excavation meeting on site with the facility owner and prime contractor (if any).
7. The contractor should "pot hole" (i.e. hand dig, using air knives or vacuum excavation techniques) to verify utility locates or mark-outs.
8. The contractor should sketch the coordinates of the locates in relation to stationary objects, such as trees, fences, buildings, etc. and can take pictures and/or video clips of the site and obstructions with documentation in the project management records.

Documentation

Documentation could include the following information:

Name of Contractor:

Location of Excavation:

Date(s) One-Call Notified:

Ticket Number:

	1.
	2.
Names of Non-members	3.
Notified:	4.
	5.
	6.

Date and Time of Excavation: _____ / _____ / _____ a.m. p.m.

Property Owner Present: Yes No

Locate Accurate: Yes No

Measurement Off By: Feet Inches

Route White Lined: Yes No

Hand Dug: 18" 24"

Dirt Above Marked Facility

Mechanically Removed: Yes No

New Locates Requested: Yes No

Photos/Video Taken: Yes No

If yes, please attach copies.

Part 2. Equipment Operators/Foremen

Objectives

- To support the company's goal of managing an accident free work place by working within operating budgets to ensure that each job is completed profitably, timely and safely.
- To reduce accident potential by following excavating and locating procedures as part of a normal, daily routine.

Preplanning of Excavation Project

- Notify local One Call Service Center/811: Federal OSHA rules and statutes in most states require contractors who plan to excavate to notify the local One Call Service Center/811 and non-member facility owners 48 to 72 hours before the job begins. Additionally, all excavating, whether mechanical or by hand, should not proceed without first obtaining locates. If private lines exist, they too must be properly located. Property managers or owners of private facility systems can assist prior to calling for locates.
- The excavator should have a thorough knowledge of the jurisdictional regulations in which the dig site is located, and digs should be planned according to such regulations. For example, in some metropolitan areas it is unlawful for contractors to touch water valves or other utility control devices.
- To enhance the quality of the job preplanning phase, the company should determine if the excavation involves critical or high priority facilities. The contractor should specifically ask the owner to identify these in the bid specifications, or should discuss them with the owner and document the discussions.

Identify Facilities – Large Projects

- Be sure to maintain documentation of the locate request number and a sketch of the locates. This documentation should be available at the site of excavation.
- Verify that request numbers are valid and that they are issued in your company's name.
- The proposed dig area should be pre-marked with white paint prior to notifying the One Call Service Center/811 for locates.
- Request a pre-construction meeting with facility owners and locators to review the excavation area. This is very important if the job involves a critical or high priority facility or the job is in a congested metropolitan area. The owner should be questioned concerning the need for Subsurface Utility Engineering.
- Make sure that all utility owners (One Call members and non-member owners) have been contacted for locates.
- Photograph and/or videotape the dig area in relation to the locates in case problems occur later on. An alternative would be to map the coordinates of the locates in relation to a stationary object(s), such as a tree, fence, building, etc.

Identify Facilities – Small Projects

- The proposed dig area should be pre-marked with white paint prior to notifying the One Call Center for locates.
- Make sure that all utility owners (One Call members and non-member owners) have been contacted for locates.
- Be sure to maintain documentation of the locate request number and a sketch of the locates if supplied by the facility owner. This documentation should be available at the site of excavation.
- Verify that request numbers are valid and that they are issued in your company's name.
- If there is a critical or high-priority facility line in the dig area, make arrangements for the locator and the facility owner to be on the job site with you during the excavation. If the locator and/or facility owner refuses to be present, then document this response by appending it to the ticket request.

On the Job Site

- Once on the job site, begin job preparation by reviewing list of multiple non-members of your One Call Service Center/811 that are in your dig area and make sure that locate marks for all facilities are present. Consult your color chart, if necessary, to ensure all facilities have been located. If any underground system is not marked, contact your supervisor and call the owner immediately, and then document responses.
- Account for all feeds to houses or buildings before you excavate. You should be able to see them in the air or marked on the ground.
- Identify and/or locate all private facilities that have not already been discovered. This includes propane and private lines, sprinklers, etc. Look for sewer vents on the roof of the house, look for sprinkler heads and turn on the system, if necessary. Look for physical evidence that facilities have not been located.
- Sketch the location and document the depth of all public and private facilities on your work order for future reference.
- If there is not a sketch of all other facilities, draw a sketch of locates with measurements to fixed objects for future reference.
- Expose all facilities that you will be crossing. All critical or high-priority facilities should be exposed by pot holing or use of locating equipment every 100 feet if within 5 feet parallel of dig area.
- If there are no locates, if marks are incomplete, or if exposing indicates locates are not accurate, DO NOT DIG. Contact the facility owner to complete the locates.
- Request new locates if the job extends beyond 10 days and following inclement weather.

- Once you have verified the location of all lines and you have completed the Job Checklist, you can begin to excavate. Remember to complete the sketch of your dig site before you start excavating.
- Photograph or video tape the dig site in relation to the locates before the excavation begins so that valid documentation can be presented in case of problems occur later on.

Excavating

- You should hand dig within 24 inches (or as your state requires) of any line, pedestal, closure, riser guard, pole (with riser), meter or other structure.
- If you must use mechanical equipment within 24 inches of a mark you should expose the line first.
- If you are paralleling a critical or high priority line, or working on one, you should spot hole every 100 feet, or as appropriate, to verify the location and depth of the line. If the locate is not accurate, the facility owner should be contacted immediately.
- If you are using a boring machine, you should try to bore away from all facilities. If you must cross a facility, expose the line to verify location and depth and change the bore route and/or depth to avoid the facility. Contact your supervisor to approve route changes. Always pothole to be able to watch the tool head safely pass the facility you have exposed.
- Do not place excavated dirt or street plates on top of locate marks. Every attempt should be made to keep marks visible and fresh at all times. When excavated soil must be placed on locate marks, ensure that a detailed sketch of the marks has been made and pictures taken to support the sketch.
- Be mindful that you may have to protect or support underground facilities from being damaged during excavation.
- Have a plan to barricade any unattended excavations.

Backfilling

- All lines exposed during excavation should be supported to prevent damage, stretching, kinking, etc.
- Before backfilling, extra caution should be taken to remove large rocks, sharp objects, and large chunks of hard-packed clay or dirt.
- No trash or pieces of abandoned lines should be backfilled into the trench.

What to do if Damage Occurs

Immediately contact the police and fire department emergency services in case evacuation is required.

In addition:

- All damage, including kinking or sheath damage should be reported immediately to a supervisor and to the facility owner or operator.
- All damage should be documented to assist in resolving any claim or lawsuit that may be filed.
- If a water line is damaged, you should attempt to stop the flow of water if you are allowed to do so within jurisdictional regulations at the site.
- If a gas or power line is damaged, it may be necessary to leave the area immediately and notify other workers in the area and facility owners.
- **Remember, safety first! Follow statutory, regulatory and company safety standards and procedures.**

Employee Accountability

Consider instituting disciplinary procedures for the following actions, and communicate them to your employees.

- Digging without obtaining locates.
- Smoking in or around the excavation (in case of gas leaks).
- Excavating, including hand digging, without locates for any or all facilities, including private lines.
- Failing to report any facility damage, regardless of severity.
- Failing to check paperwork or equipment before leaving the shop.
- Failing to utilize the job checklist provided.

Pre-Excavation Checklist

Do not dig without locate marks.

Complete this sheet prior to excavating.

Before you leave the shop obtain locate numbers and answer these questions:

- Has locate been completed (look at due date)?
- Do you have a field sketch or was one left at job site?

If you do not have what you need as listed above, do not leave the shop. See your supervisor.

On the Job Site

Pre-Survey (checking for locates)

- Do you have a field sketch?
- Do you have a camera to take pre-excavation photos or video?
- Look for all facility marks on ground.
- Verify all service feeds from buildings and homes and that they have been located and/or that they are aerial.
- Draw a sketch of the marked facilities for future use and memorialize with photos/video.
- Look for any visible signs of pedestal, riser, and new trench lines that may have been missed in your dig area.
- Is dig area defined and does it match locate sketch?
- Look for any private facilities not located.
- If they are not located, locate them or contact someone to get them located.
- If there are high priority facilities in your dig area, is facility owner/locator on job site and/or has been contacted for advice?

If lines are not located completely, consult your dig ticket and contact responsible party.

Completed by:

Signature: _____

Print Name: _____

Date: _____

For more information visit cna.com.

Public and Private Utilities

- Ask for property owner’s assistance, utilize locating equipment, and use common sense.
- Locate septic lines.
- Locate water yard lines.
- Locate private power lines to sheds, wells, invisible fences, etc.
- Locate private gas or propane lines.
- Locate emergency generators and fueling systems.
- Locate sprinkler lines and heads and drip systems.
- Draw a sketch of locations for all private facilities on job site.
- Locate telecommunication cable (TV, telephone, fiber optics, etc.)

Excavating

- If paralleling or working on a critical or high priority line, pot hole or use locating equipment to expose and verify location and depth of facility every 100 feet.
- Hand dig within 24 inches (or as required in your jurisdiction) of lines, peds, pole risers, meters or other structures. Bore away from facilities.
- Verify depth of any facilities boring across, change route or depth, as required. Notify supervisor.
- Do not place excavated dirt on locate marks, flags, whiskers, etc.
- Support all lines exposed during excavation to avoid kinks or other damage.

Backfilling

- Shade all lines placed or exposed with good fill dirt.
- Verify all fill dirt is free from rocks, cable trash, crew trash, and large dirt clods.

Please dig safely.

