

Underground Utility Damage Prevention Guidelines for Professional Firms



Although calling or having the appropriate party contact the state one-call system for utility mark-outs is just one of your many responsibilities on a project, it should not be taken lightly. Underground utility damage can result in injury and death, severe property damage, environmental impact and loss of vital services and products such as telecommunications, water and sewer, electric power, petroleum and natural gas. Damage can cause vital facility outages for homes, businesses, hospitals, government and emergency service providers.

Such an event may cause business interruption delays as well as result in sizable costs to repair the damage. Once the repairs have been made and businesses and project activities resume, the party responsible for the damaged utility line will be responsible for paying the resulting costs. This not only affects your loss history it impacts productivity in lost time for management and project personnel to address the issue.

Damage to underground utilities is usually preventable and most frequently occurs due to a breakdown in the risk management process. The responsibility for preventing excavation damage is shared by all stakeholders, and includes elements such as planning, effective use of one-call systems, accurate location and marking of underground facilities, adherence to safe digging practices, proper placement of facilities, and education/awareness.

Damage prevention practices vary significantly among the parties involved with underground utilities. Firms should be aware that states have a variety of unique laws and regulations governing the practices, enforcement, and performance analysis data related to underground facilities' damage prevention.

DOT's Research and Special Programs Administration (RSPA) established a Planning and Design Study Team to evaluate damage

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prevention practices associated with existing utility location systems and practices. The following were determined by Team consensus as some best practices:

1. PLAT DESIGNATION

Often the owners and operators of underground facilities do not receive notice of pending excavation that will impact their structures until just prior to excavation activities. Therefore, the identification of underground easements on plats can increase the awareness of developers and the public about the existence of underground facilities, fostering communication between developers and utility owners to plan accordingly.

2. GATHERING INFORMATION

All reasonable means of obtaining information about underground utilities in the area of the planned excavation should be exercised. During the *planning* phase of the project, gather all available information from utility owners/operators. This may include maps of existing, abandoned and out-of-service utilities, cathodic protection and grounding systems, as-builts plans, proposed project designs, and schedules of other work in the area. The purpose of gathering this information is for route selection and preliminary neighborhood impacts, as well as impact analysis when evaluating design possibilities.

Methods of gathering information may include contacting a one-call center, facility owners/operators, coordinating committees/councils, engineering societies, and governmental agencies. Gathering information may also include a review of the site for aboveground indications of under-



ground facilities (i.e. permanent signs or markers, manhole covers, vent pipes, pad mounted devices, riser poles, and valve covers). One-call centers can provide a listing of operators. Once identified, contact should be made to the operators directly or through the one-call system. The utility owner/operator may locate their underground facilities or provide locations of their underground utilities by other means.

At a minimum, plans and specifications for an excavation should contain information on underground facilities within and near the project area. Some states, such as Wisconsin, Pennsylvania and Minnesota have statutes requiring contact to one-call centers within a set time frame to obtain facility information prior to final design, which is independent of the contractors' requirements. Where the information obtained suggests facilities may conflict with the excavation, an underground facility survey or subsurface utility engineering is used.

An underground facility survey process can be used to minimize conflicts with existing underground facilities. These may include:

- Contacting utility owners/operators to obtain information about locations of existing underground facility locations.
- Visiting the job site to correlate gathered information with aboveground features.
- Using appropriate instruments to determine the approximate horizontal locations of underground facilities.
- Using test holes to positively determine the exact location of existing underground facilities.

3. IDENTIFYING EXISTING FACILITIES

Existing underground utilities should be indicated on drawings during planning and design. If information was gathered from field located utilities, underground surveys or subsurface utility engineering, this should be noted on the plans to identify the quality of the information. If an elevation was determined, it should also be shown. The plans should indicate active, abandoned, out-of-service, and proposed utilities, and include a summary drawing showing the proposed facility route or excavation including streets and a locally accepted coordinate system. The plans should then be distributed to the various utility owners/operators to provide the opportunity to furnish additional information, clarify information, or identify conflicts.

4. UTILITY COORDINATION

Project owners and utility owners/operators should regularly communicate and coordinate with each other concerning future and current projects. Utility coordination fosters an open exchange of information and cooperation among private and public facilities, governmental agencies and construction-related organizations.

Typical items of discussion include utility excavations in paved roadways, disruption of essential facility services, location of utility facilities, environmental impact, permit procedures, right-of-way access controls and underground facility damage prevention.

5. UNDERGROUND FACILITY MARKERS

Incorporating above ground markers to identify underground facilities will reduce the risk of impacting the underground structure during future excavations due to improper markings. The above ground markers are specified in the

construction plans. If non-detectable facilities are to be installed, the design should include a means to accurately locate the underground facility from the surface.

6. FOLLOW ALL APPLICABLE CODES, STATUTES AND FACILITY OWNER/OPERATOR STANDARDS

When planning and designing the installation of new or replacement underground facilities, all federal, state and local guidelines, codes, statutes and other utility owner/operator standards must be followed. Regulations, codes, standards and existing design documents generally specify depth of cover, and horizontal and vertical clearances between adjacent facilities. However, they are not always prescriptive and can be subject to interpretation.

Protection and temporary support of adjacent facilities and existing cathodic protection and grounding systems must be considered. Consequently, specifications on safety measures to be taken and procedures for emergency notification and repairs in the case of any damage to an adjacent facility must be provided.

Whenever possible, a minimum 12-inch radial separation should be maintained between supply lines and direct buried electrical lines.

7. USE OF QUALIFIED CONTRACTORS

Contractors that excavate on and near underground utilities must possess the qualifications necessary to conduct such activities in a manner that is skillful, safe and reliable. The project owner should be familiar with the contractors' work experiences and financial abilities and should not ask the contractors to bid beyond their capabilities.

8. MANDATORY PRE-BID CONFERENCES

Depending on the level of impact of proposed construction upon utilities in the excavation area, the project owner or designer may require potential contractors to attend a pre-bid conference. This pre-bid conference should discuss, among other things, the particular utilities in the area and the requirements to properly protect, support, and safely maintain the utilities during excavation. Official minutes should be taken and disseminated to all attendees. Only bids from attending contractors should be accepted.

This conference *must not* be a substitute for notifying underground facility owners/operators of intent to excavate.

9. CONTINUOUS INTERFACE BETWEEN PROJECT PLAYERS DURING THE PRE-BID/BID PHASE

Continuous involvement during the pre-bid/bid phase allows for effective communications between all parties. Benefits also include:

- Evaluation of expertise and understanding of intended design.
- Quality assurance: minimizing potential concerns and delays to project completion.
- The opportunity to relay information not readily shown on the plans.

10. CONTINUOUS INTERFACE DURING THE CONSTRUCTION PHASE

Ongoing interface between the project participants throughout the construction phase, particularly during unforeseen conditions, design changes, and post-construction conferences should occur. When an undesignated or otherwise unknown underground utility is discovered within a work area, the excavator reports such discovery to the one-call center and the project

manager. Discovery of unknown facilities can impact the project by requiring additional work, increased hazards, or conflict with the installation of the new underground facility. Discovered facilities may contain hazardous substances, or may present other hazards, which require notification of authorities. These facilities should be shown on the as-built drawings for consideration in future work.

11. AS-BUILT DRAWINGS

Utility information is to be recorded on as-built drawings to aid future excavations and utility locations. Any deviations from the approved construction plans need to be documented and indicated on the record drawings. As-built information needs to be recorded, retained and made available for subsequent excavation to serve as an information source for future projects to minimize damage to existing utilities.

The information contained herein is intended for informational purposes only and does not constitute legal advice. For legal advice, seek the services of a competent attorney. Any descriptions of insurance provisions are general overviews only.

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