

Best Practices for **Excavation**



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Introduction

Trenching and excavation operations are inherently hazardous, with possible cave-ins, heavy equipment mishaps and suspended loads creating potentially unsafe circumstances for employees.

While the Occupational Safety and Health Administration (OSHA) has developed specific safety rules and standards to help protect employees, mere compliance with a standard does not guarantee safety. Other factors are at work that can have an impact on job-site safety.

This publication provides useful information on major safety factors in trenching and excavation operations and how best to maximize their impact on your company. For more information, contact your nearest BWC customer service office, or call 1-800-OHIOBWC.



Management commitment

Excavation companies can incorporate safety as a core value by starting at the top.

Owners, chief executive officers and management should:

- Visit job sites to observe safety issues and ask for demonstrations of safety activities;
- Attend job progress meetings with excavation buyers;
- Hold site management accountable for loss prevention;
- Ensure adequate shoring systems are available and used;
- Require documentation of site inspections by the competent person;
- Write a safety policy statement explaining the value of employee safety as a priority;
- Communicate with the excavation buyer concerning safety needs, such as establishing traffic patterns, arranging a first-aid area, setting up emergency communications and designating an area large enough for equipment and material storage;
- Schedule regular meetings with employees using safety as the agenda;
- Attend safety and health training sessions.

Employee involvement

Involve employees in the safety process by making sure that:

- An employee's job description does not affect the level of participation in the company's safety program. All employees should participate in the safety process. Regardless of what other duties (job description) an employee has, everyone is equally responsible for the safety process, from the person shoveling dirt to the company president/owner;
- Designate a competent person for each job site. A competent person has the ability to recognize hazards and the authority to take corrective actions;
- Estimators participate in the safety and health committee;
- Peers review work in process.

Recognize employees for using safe work practices. Effective strategies include:

- Senior management acknowledging employees for their involvement;
- Possible bonus rewards earned for safety activities;
- Active participation in a merit system for advancement. For example, promoting a crew member to a foreman, advancing a foreman to a superintendent and a superintendent to a project manager.

Communication

Employers should keep employees informed and solicit feedback and suggestions to improve the safety process by:

- Making safety an agenda item at weekly job meetings. This includes meetings with the construction buyers, excavation contractors, site operation personnel and company headquarters personnel;
- Encouraging employees to report safety concerns and solutions to hazards they identify;
- Requiring a management response to all safety concerns;
- Promoting one-on-one safety and health discussions;
- Including written communications. For example, using the owner's manual for new equipment for training and incorporating it into the company's written safety and health program;
- Distributing safety alerts, creating bulletin boards and maintaining safety signs.

Safety education and training

Safety and health process coordination

Employers should coordinate safety and health efforts for the company by:

- Designating an individual to coordinate the loss-prevention process. Give this person the authority to develop the safety and health process. Provide this person access to necessary resources such as time and money. This individual acts as technical safety adviser for the company and obtains continuous proficiency training in the field of safety and health;
- Synchronizing responsibility for pre-bid safety evaluation;
- Assigning responsibility for pre-job safety processes;
- Coordinating safety responsibility for each job site/crew. For example, designate a competent person for each job site;
- Identifying safety and health training needs for employees, including management, estimators, foremen, operators and laborers;
- Attending professional safety and health seminars and workshops;
- Tracking safety and health progress;
- Assisting in the collection and analysis of safety and health data.

Written orientation and training plan

Employers can ensure that employees know and understand acceptable safety work practices by:

- Developing a training plan that incorporates general and specific safety and health orientation;
- Employing a baseline safety audit to determine the training needs for employees, both management and labor;
- Drawing on accident/incident history to establish the exposures and outline training topics covering these items;
- Using OSHA check lists for compliance issues;
- Surveying employees for work experience;
- Observing job-site activities to reveal unsafe work practices;
- Explaining safe work practices, procedures and processes;
- Demonstrating safe work practices, procedures and processes;
- Asking workers to repeat safe work practices, procedures and processes;
- Documenting training provided and evaluating its use.



Written and communicated safe work practices

Successful safe work practices include:

- Publishing safe work practices so employees have a clear understanding of how to perform their jobs safely;
- Expressing clear accountability measures for each position in the company;
- Recording both general and specific safety-related activities and practices;
- Prescribing safe behaviors expected of employees;
- Scheduling reviews with employees on a regular basis — at least annually;
- Insisting that employees read and understand these work practices. To ensure completion, have them sign a statement to that effect.

Written safety and health policy

To clearly define safety and health:

- Create a policy written signed by the top company official that expresses the company's commitment to work-place safety and health;
- Define company safety and health responsibilities to management, supervisors and laborers to establish an effective process;
- Review and update the safety policy annually;
- Observe and record safe behavior practices at the company and include these observations in the safety policy.

Record keeping and data analysis

To evaluate a company's safety and health process, use the following measures:

- Workers' compensation experience modification rate;
- OSHA's 300 Log;
- Lost work day incident rate;
- Review of job-site safety meetings.

Use these six measures to assess:

- Timeliness of topics;
- Competence of information;
- Attendance of assigned workers to the job site;
- Attendance of personnel assigned to the superintendent/foreman;
- Review of job meeting minutes;
- Communication among employees.

To support safety and health on the job between the trades and on multi-employer work sites, progressive companies use an observation system to track:

- The types and amount of safe and unsafe behaviors observed;
- Safety equipment costs;
- The number of safety problems solved and suggestions implemented;
- The number of dangerous operations completed successfully by removing the degree of risk. For example, live sewer taps with protective system installed and gas detection equipment used.

Injury reporting and treatment

First, formalize the injury reporting and treatment process, document it in writing and ensure you effectively communicate it and all employees understand it. And make sure injured employees report all injuries, no matter how minor, to their supervisor. Consider specifying the time frame for reporting injuries in your policy (within 24 hours). Provide the necessary contact names and phone numbers to allow for this communication.



Ensure the injured employee receives proper medical treatment. We recommend you take the following steps:

- Establish a list (network) of preferred medical providers in your area;
- Visit those providers and discuss treatment protocol and communication procedures;
- Invite providers to tour your job site to familiarize them with your operations;
- Develop written job descriptions that include physical demands analysis and provide copies to the medical providers to assist them with return-to-work orders (see Return to work/transitional work on page 9);
- Clearly identify which party (employer or medical provider) will complete BWC's *First Report of an Injury, Occupational Disease or Death* (FROI) form and submit it to the MCO.

While your employee recovers from his or her injury, maintain close contact with the injured employee. Help him or her through the workers' compensation process. Provide the injured worker with information and answer his or her questions. Remind the injured worker of your interest to get him or her back to work as soon as possible. Hold the injured employee accountable to provide appropriate medical forms and information. And work closely with the injured employee, medical provider and the MCO to return the injured employee to work as soon as medically able.

Following an accident, conduct immediately an accident analysis (investigation). Identify the person responsible for conducting accident analyses.

This person may differ from job site to job site. Typically, the injured employee's immediate supervisor, the safety coordinator, member(s) of the safety committee or a combination of these people, conduct accident analyses. Provide comprehensive training for all persons that will conduct accident analyses.

Ensure the accident report form includes accident-causation analysis and corrective action. It is critical to learn how and why the accident occurred, and make the necessary changes to prevent recurrence of a similar accident. Also, consider having an accident review team (can be safety committee) to review all accidents for the following elements:

- Accident reports filled out completely and in a timely fashion;
- Causal factor analysis completed with accident causes identified;
- Corrective action specified, assigned and completed;
- Coordinate communication between accident analysis process and workers' compensation process. Often these functions are managed separately and yet to be effective, they must be closely coordinated;
- Provide at least one well-equipped accident analysis kit for each facility.

Enter all recordable injuries onto the OSHA 300 Log or other equivalent database. And analyze the OSHA 300 Log or injury database to identify and address possible injury trends.

Note: the Division of Safety & Hygiene offers Accident Analysis training (train-the-trainer). Contact the training center for details.

Return to work/transitional work

Benefits of transitional work include:

- The employee earns full wages, retains all benefits, earns service credits and continues as an active member of the union;
- The company gets a productive worker, can take advantage of the injured employee's experience, can use injured employees as trainers for substitutes or replacement workers and saves workers' compensation costs.

A transitional work program uses real job duties for a specified time period to gradually return the injured worker to the worker's original job. The program's components include company analyses and job analyses of the employee's job tasks, labor-management collaboration, and program-policy development and program evaluation for effectiveness.

Returning an injured worker to the job as soon as safely possible before the worker is 100-percent recovered lowers your workers' compensation costs. It's a guaranteed return on your human resources investment and your most valuable asset — your employees.

Fact: National statistics show indirect costs for a work-place injury that becomes a lost-time claim is four times greater than any direct claim expense. These costs include decreased productivity, hiring and training replacement expenses, overtime for loss of work, legal bills and loss of morale, business and customer good will. The costs to your injured workers are even greater.

For more information on transitional work, contact your local BWC employer services specialist. In addition, you can access transitional work information on BWC's Web site at ohiobwc.com.

Safety audits (inspections)

If your company doesn't conduct regular safety audits, BWC safety consultants are available to assist you with developing and implementing a safety audit process.

The primary purpose of a safety audit process is to identify and correct potential safety hazards before an injury occurs. Audits should focus on both unsafe conditions and unsafe behaviors.

The following are examples of safety audits that many companies have implemented:

- Comprehensive safety audits (all job sites and facilities, annually or quarterly);
- Supervisor daily inspection check list;
- Office self-audit check list;
- Equipment operator's daily safety check list;
- Monthly inspection and maintenance form;
- Excavation/trenching security check list;
- Request for repair forms (work orders).

Ensure all person(s) participating in an audit are thoroughly trained. Also, each audit process must have a review process associated with it. Review each audit report and identify action steps required to make necessary improvements. Assign responsibility for each action step, set target dates, and hold people accountable for timely completion of action steps.



Follow up to ensure the corrective actions were completed, they adequately resolved the original safety issue and no new safety hazards were created in the process.

In addition, many of the Division of Safety & Hygiene training courses will help you learn how to conduct a safety audit. Contact the training center for more information.

BWC's safety services

To learn about the safety services BWC offers, visit BWC's Web site, ohiobwc.com, or call 1-800-OHIOBWC, to request a *Safety Services Catalog*.

Booklets and manuals are available on a variety of safety topics, including lockout/tagout, forklifts, electrical power tools and fall protection.

Resources

To obtain technical information on trenching and excavation, reference OSHA 29CFR 1926, Sub-part P-Excavation, Ohio Administrative Code 4123:1-3, Chapter 13 - Trenching and Excavation.

Internet references for trenching and excavation:

- www.cdc.gov/niosh/topic/trenching—provides links to publications, research and accident reports on trenching and excavation, etc.
- www.osha.gov/SLTC/trenching_excavation/index.html/Trench.html — Provides OSHA links to trenching and excavation safety.
- www.pp.okstate.edu/ehs/manuals/trench_a.htm — Oklahoma State University trenching and shoring procedures.
- www.ag.ohio-state.edu/~ohioline/aex-fact/0391.html — The Ohio State University Extension fact sheet — Trenching and excavation: Safety principles.
- www.pp.okstate.edu/ehs/links/trench.htm — Online safety library: Trenching and shoring/excavation safety.

Self-inspection check list

Excavation sites

1. Competent person
 - Designated in writing by employer
 - Must be on-site
 - Capable of identifying hazards
 - Authorized to take prompt corrective measures.
2. Daily and documented inspections, prior to start of work and as needed throughout shift
 - Excavation
 - Adjacent areas
 - Protective systems
3. Trenches
 - Exposed faces of trench are shored, shielded or laid back to a stable slope.
 - All completed portions of trench are back-filled as work progresses.

4. Trench boxes

- Personnel use and always remain inside trench box. When digging a trench, either the sides of the hole must be at an angle (usually 45 degrees) or, more normally, the personnel in the trench are to be protected from cave-ins by wood or metal shoring or boxes. These boxes prevent dirt from falling onto workers. Numerous injuries/deaths have occurred when an employee ventures out of one end of the box into an unprotected part of the trench and it caves in.
- Legible manufacturer's identification plate appears on commercial trench box. Trench box extends at least 6 inches above trench face.
- Trench shield is no more than 2 feet above bottom of trench.

5. Ladders

- Use ladders in trenches deeper than 4 feet.
- Space ladders no more than 25 feet apart.

6. Personnel do not work under suspended loads.

7. You must locate spoil pile at least 2 feet from edge of trench.

8. You must remove all water from trench.

9. A registered professional engineer has determined that adjacent structures are not endangered by the excavation work.

10. Employers working near roadways must always wear warning vests.

11. Use a warning system to keep mobile equipment away from excavation.