# EXCAVATION AND TRENCHING

## INTRODUCTION

Excavation and trenching are among the highest-risk activities undertaken by municipalities. These endeavors typically involve Department of Public Works operations such as road construction and maintenance, or water and wastewater department installation and repair of water/sewer lines.

Collapses are the leading cause of excavation- and trenching-related injury or fatalities. In 2020, the U.S. Occupational Safety and Health Administration (OSHA) reported 21 such fatalities, most of which resulted from inadequate cave-in protection, such as shoring, sloping, or shielding with trench boxes. Protective measures, such as trench boxes, provide the most effective safeguards against collapses.

To mitigate these risks, municipalities must adhere to regulatory standards, train employees, and ensure proper safety measures are in place at every excavation site.

## DEFINITIONS

- A "trench" is an excavation with a depth greater than its width at the bottom.
- Per Michigan OSHA (MIOSHA) Rule 925(5), a “qualified person” is an individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them. Under Rule 925(10), this is an individual who, by possession of a recognized degree or certificate of professional standing, or who, by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

## MIOSHA REGULATIONS

- *MIOSHA Part 9: Excavations, Trenching, and Shoring* outlines specific requirements for sloping, shoring, and protective systems based on soil type and excavation depth.
- Regulations apply to trenches deeper than 48 inches.
- Proper ladders, stairways, or ramps for egress must be within 25 feet of workers and extend at least 3 feet above the excavation edge.
- Excavations deeper than 5 feet (or less if soil conditions suggest instability) must be sloped, benched, shored, or use a trench box.
- Spoils (excavated materials) must be kept at least 2 feet away from the excavation’s edge.

- Proper safety and rescue equipment (harnesses, ropes, tripods) must be on-site.
- Emergency plans must be in place before excavation work begins.
- A "qualified person" must oversee excavation work and be on-site whenever workers are present in the excavation.

## QUALIFIED PERSON RESPONSIBILITIES

The designated qualified person is responsible to:

- develop and communicate an emergency action plan prior to the commencement of work;
- oversee soil classification to determine proper excavation methods and protective systems;
- remain on-site whenever workers are present in the excavation;
- conduct daily inspections of the excavation, adjacent areas, and protective systems;
- inspect the site after weather changes or work interruptions;
- remove workers from the trench when hazards arise, such as water accumulation or compromised protective systems.

## TRAINING REQUIREMENTS

- Municipalities must train and supervise employees to ensure compliance with MIOSHA standards.
- Training topics must include the use of personal protective equipment (PPE) such as hard hats, safety glasses, gloves, high-visibility vests, and safety boots.
- Additionally, employees must be trained on recognizing potential hazards, following emergency procedures, and using safety and rescue equipment such as harnesses, ropes, and tripods.

## CONTRACTOR OVERSIGHT

<u>Selecting Contractors</u>

- Include MIOSHA compliance requirements in RFPs.
- Safety compliance should be a priority during the bidding and selection process.
- Verify the contractor’s expertise, equipment, and insurance coverage.
- Require contractors to sign hold harmless and indemnification agreements.

Municipal Responsibilities When Working with Contractors

- Train municipal employees who may enter trenches dug by contractors.
- Inspect contractors' work to ensure it meets safety standards before allowing employees to enter.
- Avoid shortcuts or unsafe practices, regardless of time or budget pressures.

## ADDITIONAL CONSIDERATIONS

Trench Boxes

- Trench boxes are recommended for all trenches deeper than 5 feet.
- Trench boxes provide the highest level of protection, but must be used alongside proper soil classification and sloping.

Confined Spaces

- Conduct air sampling and ensure proper ventilation for confined space excavations.
- Follow MIOSHA Parts 90 & 490 for permit-required confined spaces.

Water Accumulation

- Use pumps to manage water and monitor weather conditions continuously. Saturated walls increase collapse risks.

Traffic Control

- Use cones, barrels, fencing, and flaggers as needed. Ensure employees wear high-visibility PPE.
- Consider police assistance in high-traffic areas.

Seasonal Challenges

- Ensure employees hydrate in hot weather and have proper winter gear for cold conditions.

MISS DIG

- Always call MISS DIG at 811 before starting any excavation to locate and mark underground utilities.

Overhead Hazards

- De-energize power lines if possible. Use observers to guide operators working near high-voltage lines.

Lack of trained rescuers

- If your team lacks trained rescuers, coordinate with local emergency services or contract with experienced vendors.

## AVOIDING RISKY SHORTCUTS

Supervisors must emphasize that safety is non-negotiable, even under adverse conditions such as extreme weather, equipment failure, or time constraints. Employees must feel empowered to halt work if safety standards are compromised.

## SUMMARY CHECKLIST

1) Call MISS DIG well in advance.
2) Ensure a trained, qualified person is on-site at all times.
3) Inspect and reevaluate the site before work resumes after breaks.
4) Train all employees on excavation safety.
5) Use appropriate equipment and avoid makeshift solutions.
6) Address underground and overhead hazards.
7) Use trench boxes or equivalent protective systems.
8) Maintain safe egress points within 25 feet of workers.
9) Prepare for water accumulation and monitor weather conditions.
10) Develop and communicate an emergency plan.
11) Ensure traffic control measures are in place.
12) Hold pre-project safety meetings to reinforce expectations.

By following these steps, municipalities can significantly reduce the risk of injuries and fatalities in excavation and trenching projects.

***Contact MML Risk Management Services Staff***
***or your Loss Control Consultant for more information.***

**Important Phone Numbers**

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| MML Risk Management Services | 800.653.2483 |
| Loss Control Services | 800.482.2726 |

***Note:***
***This document is not intended to be legal advice.***
***It only identifies some of the issues surrounding this topic.***
***Public agencies are encouraged to review their procedures with an expert***
***or a competent attorney who is knowledgeable about the subject.***