Excavating & Trenching

Many of our members perform operations requiring excavation. This would minimally include water and sewer line installation/repair and road construction/repair. DPW’s, water departments and wastewater departments would typically be most likely to do the work.

Excavating is one of the highest risk jobs municipalities can conduct. Every year there are public employees who are seriously injured or killed in trench collapses. For this reason, employers are obligated to train and supervise their employees to ensure they perform this critical job task the correct way. MIOSHA is very clear in the requirements found in Part 9: Excavations, Trenching, and Shoring.

The Basics

A “trench” is defined as “an excavation having a depth greater than its width measured at the bottom.” Regulations come into play at a depth of 48 inches. All excavations deeper than that require ladders that extend at least 3 feet above the edge. A means of egress (ex. ladder) shall not be more than 25 feet away. The sides of any excavation more than 5 feet deep (or less if it appears earth movement may be expected) must be sloped, shored or employ a trench box. Spoils must be piled at least two feet away from the excavation.

MIOSHA is quite specific as to how to slope or shore dependent on the depth of the excavation and type(s) of soil involved. Trench boxes are not required if you are able to cut the sides back adequately.

Realize that you will usually be working in areas that are wide open for observation by the general public. They can and often do call MIOSHA to report what they perceive, rightly or wrongly, as unsafe conditions. The State will follow up on the complaint and inspect your site. Be prepared.

Complying with the regulations is important, but always remember that good common sense and experience matters greatly as well.

Training

Your main concern is obviously to describe the potential for wall collapse and the correct methods of preventing it. In some cases there may be confined space exposures which also must be addressed.

Part 9 “Excavation, Trenching and Shoring” of the MIOSHA regulations delineates how your trenches are to be constructed and what the responsibilities of the supervisor and employees are. This includes the designation of an on-site “qualified person” to oversee the operation. Rule 925 (6) defines that person as follows: “ ‘Qualified person’ means a person 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.” Usually, a qualified person will be one of your more experienced excavators.

Employees should be trained as to what other hazards are present in or around excavations and what the means of prevention are. This would include but not be limited to the use of hard hats, safety glasses, gloves, high visibility vests and safety boots.

Contractors

If contractors are to be used, starting with the bidding process, safety should be a primary concern. RFP’s should state “All work to be done in compliance with MIOSHA regulations” or a similar statement. This may
serve as a defense for the municipality in the event an incident occurs. The contractor has stated they would comply with the regulations relevant to the project.

Be certain the contractors have the expertise, experience and equipment to do the job. As usual, the lowest bid on the project does not by any means guarantee the lowest overall cost of the project. Do your homework.

If you have contractors do the dig, it is still imperative that your employees are trained in excavation operations. An example of this would be when a contractor digs the trench for a water tap but the municipal employee enters the trench to install the water line. The MML has in fact had several trench collapses where an outside private contractor did the trench but it was the municipal employees in it who suffered the consequences. You are betting your well-being on the trench being properly constructed by an outside company. Make sure the contractor knows what your expectations are and be certain their work meets these expectations.

Even if a contractor is hired to do the excavation and the repair/install, it would not be unusual for a municipal employee to be asked to enter the trench to make a decision or offer an opinion as requested by the contractor. Once again, if the trench is not safe your employee has every right to and should refuse to enter until the situation is remedied.

Other Potential Hazards

In some cases, the excavation may be classified as a confined space with the possible existence of a poisonous, flammable or oxygen deficient atmosphere. Removal of a leaking fuel underground storage tank is an example of where this could occur. If a confined space is created in the course of the work, Parts 90 & 490 must be adhered to, with regular air sampling conducted and recorded. Proper ventilation would be required as well.

Water is a common problem, particularly as much municipal trenching is done to repair broken water lines. Even if it is a new installation, rainstorms and naturally high water tables can accumulate water in the trench bottom. Saturated trench walls are a chronic collapse issue to be watched throughout the project. “Trash” pumps are commonly used to minimize water accumulation. Weather conditions and forecasts should be continuously monitored during all active operations. Pop-up storms or sudden rain showers can quickly overwhelm pump equipment.

Traffic control is almost always required. Cones, barrels, fencing, reduced speed limit signs and arrow boards should be placed around the construction site as necessary. They serve not only to minimize the chance of vehicles driving into the site but also minimize liability concerns from people falling into the excavation. If it is a long term project, lighting (flashers) will be necessary overnight. If it is a busy traffic area you may wish to consider using a flagman (traffic regulator). In all projects that are in or adjacent to the roadway, employees need to wear the appropriate reflective materials and safety equipment. The use of cell phones and texting by motorists has greatly increased the hazards of working in or near the roadways. In some cases you may ask your local police department to assist by stationing a patrol car in the immediate area of the project.

If it is summer time, there is little air circulation in the trench. Insure employees hydrate to prevent heat exhaustion/dehydration. If it is winter time, chances are it will be one of the coldest days of the year. Make sure employees wear gloves, hats, overalls and boots suitable for the ambient temperature to prevent frostbite.

Miss Dig

Always call MISS DIG. If you are not sure, call MISS DIG.

Do not be hesitant to use locators and hand dig if necessary. Many municipalities are using vactor trucks to assist in excavating when applicable.

Overhead Hazards

Power lines present another hazard. An observer should be in immediate, unrestricted communication with the excavator operator when working in close proximity to high voltage lines. If possible, have the line(s) de-energized.
And Now, Reality

So, your employees are properly trained, you have the right equipment and everybody knows what they are supposed to do. It seems though that, as is common, the water line break has occurred in the middle of winter. Temperatures are in the single digits. The snow is coming down hard, the bottom of the trench is a half-frozen mud pit, some of the equipment is breaking down, you’re short on people and traffic is a mess making for absolutely miserable working conditions.

This is the time people will want to take shortcuts, disregarding most everything they know is right. “No need to slope today. “We’ve done other breaks around here before and never had a collapse.” “Let’s just get in quick, get it done and get out.” “Man I am freezing, let’s just do it.” “We can dig under the curb/sidewalk just this one time.” “Forget using the trench box, too much hassle and takes too long.”

Most supervisors have already heard these excuses and more. There are lots of ways to make excavating easier but think of the consequences. Always think of the consequences. When emergency personnel and vehicles are on their way to your excavation site for a rescue of one or more of your employees, taking that extra time to do it right now seems like it should have been an easy, obvious call.

If you, as the department supervisor, will not personally be on site, make certain that all of your foremen know that if they are running the project you still expect that it will be done correctly regardless of weather or other outside factors. Also, your employees should never be afraid to question their supervisor regarding safety of the dig. Regularly tell them that as well.

Summary

1.) Call MISS DIG with enough time in advance to insure the site is properly marked.

2.) Make sure your employees are trained.

3.) Make sure you have the proper equipment and that it is adequate for the job. For example, if your excavator boom is not long enough, don’t try to “make it work”.

4.) Watch for underground and overhead hazards.

5.) Cut it back and cut it back properly. If you’re not sure, cut it back more. Grass seed and asphalt are substantially cheaper than having a trench collapse.

6.) If you need shoring or a trench box, use it. The employees using it should be familiar with how to install it.

7.) Insure your means of egress from the excavation is adequate (generally ladders).

8.) Be prepared and equipped to handle water accumulation.

9.) Meet with your employees and supervisors before you start and emphasize that the project will be done only one way, the right way.

10.) Insure traffic control is adequate.
Important Telephone Numbers

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<thead>
<tr>
<th>Service</th>
<th>Phone Number</th>
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<tbody>
<tr>
<td>Michigan Dept. of Labor, CET Division</td>
<td>517/284-7720</td>
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<tr>
<td>MML Risk Management Services</td>
<td>734/662-3246 or 800/653-2483</td>
</tr>
<tr>
<td>Loss Control Services</td>
<td>800/482-2726</td>
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Other RISK CONTROL SOLUTIONS that address some of these issues are:

- Contractors
  - Reducing Exposures from Confined Space Entry
  - Safety and Liability Exposures for Public Works Equipment

Note: This document is not intended to be legal advice. It does not identify all the issues surrounding the particular topic. Public agencies are encouraged to review their procedures with an expert or a competent attorney who is knowledgeable about the topic.