Excavation Safety

According to the Bureau of Labor Statistics, from 2013-2017 there were 97 trenching fatalities in the construction industry – an average of 19 per year, from a low of 10 deaths in 2014 to a high of 33 in 2016 [BLS, 2019]. Excavations are a common sight on construction sites all across the United States. This work can come with numerous hazards, but excavation work can be made safe by following basic safety guidelines.

Hazards Associated with Excavation and Trenching:

- Cave-ins and collapses
- Falls into open excavations
- Working around utilities
- Atmospheric hazards
- Water accumulation

Ways to Mitigate Hazards:

Cave-ins and Collapses

Protecting is preventing. To protect employees from cave-ins and collapses, the right protection system should be chosen prior to excavation. Employers can choose from the following options for protecting employees: shielding, shoring, sloping, or benching. All methods are feasible and offer protection to employees. OSHA's guidelines for protective systems should be followed for each application. It is important to understand the soil type and other factors surrounding the work before choosing the system. When utilizing a manufactured system, the manufacturer's recommendations should be followed for installation and use. Choose the right protection system for each application.

Falls

Falls can happen from any height at any time, including into excavations. It is important to have a plan for fall protection when conducting excavation work. If excavations are to be 6 feet or greater in depth, a fall protection plan should be established. Never leave the excavation open when work in not being performed in the area. Use barricades, fencing, and signage to protect employees and the public from falling or driving into the excavation.

Utilities

Underground utilities can pose serious hazards to employees if they are damaged or leaking. All utilities must be located prior to excavating. Utilities are to be supported, removed or protected while excavation is open to safeguard employees. Contact the utility company to locate service prior to start of excavation work. If they cannot, or do not, respond within 24 hours or if they cannot establish utility location the employer may proceed; with caution and detection equipment or other acceptable means used to locate utilities. Call 811 to locate utilities before you break ground. There are plenty of reasons to call before you dig.

Identification of hazardous utilities. Identification of utilities if broken, supports job completion, prevents down time, prevents negative publicity. Utilities that are exposed must be protected as to not allow them to droop/break. Sufficient materials must be used to secure utilities to ensure components will be protected. Pre-planning is required to support utilities correctly. Depending on the company you work for the policy

could vary, but the following are steps that should always be taken at some point to protect everyone involved:

- If damage occurs, you should immediately get out of the way of the danger and walk away. Take the necessary precautions to clear the area to protect you and your fellow employees.
- Contact the appropriate emergency contact.
- Protect persons and/or property from damage and minimize the number of safety hazards as reasonably possible until the correct responders arrive on scene.

Atmospheric Hazards

While working inside of an excavation, employees could become exposed to hazardous atmospheres. Oxygen deficient gases that could present themselves include carbon monoxide, carbon dioxide, hydrogen sulfide, and methane. Emergency rescue equipment i.e., breathing apparatus, safety harness, and line, basket stretcher, must be readily available where hazardous atmospheres exist or may be expected. Common causes of oxygen deficient atmospheres in trenches include generators, vehicles or machinery operating in close proximity or inside of an excavation. Gasoline powered saws being used inside of an excavation could also contribute to a hazardous atmosphere. Tool/Equipment assessment could also help to deter the need for atmospheric testing. Pick the right tool for the job i.e. (hydraulic vs. gas).

Water Accumulation

Employees must not work in excavations that contain water, unless adequate precautions have been taken. Precautions could include special shielding, dewatering, or the use of harness and lifeline. If dewatering equipment is used equipment and operations are to be monitored by a competent person. De-watering systems must be present and in working condition. Water cannot exceed 1 foot if workers are inside excavation/trench. PPE must be provided to workers for exposure. De-watering needs to be pre-planned. If employees are required to work in an excavation that has standing water or water accumulation, then a method for controlling the water must exist.

Discussion Questions

1. What are some other hazards that excavation operations can introduce to a jobsite?

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2. Has anyone ever been involved or know someone who has been involved in a trench collapse/cave-in? What was the outcome?

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3. How can we better protect ourselves on this jobsite?

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Topic:
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SMG

TOOLBOX TALK
Safety Briefing

Name	Signature

Date: _____