Legislative – OSHA by Ellaway D. Amiker, III, JD, CCE

The great legend Vince Lombardi would start his training camp out by calling the team in the middle of the field, with him in the middle. There is his hands would be one object, and he would start out by saying, "This is a football".

This is a 'grave', with information that can help you and the people that work for us in OSHA words.

The following article is an attachment from the US Department of Labor-OSHA on the occupational hazards generated during grave digging and while working in and around graves.

A grave is an excavation. Therefore, employers are required to protect their employees from the hazards associated with excavations. First, the employer must designate a competent person(s) at their jobsite (cemetery). An OSHA "competent person" is defined as 'one 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" [29 CFR 1926.32(1)]. By way of training and /or experience, a competent person is knowledgeable of applicable standards, is capable of identifying workplace hazards relating to the specific operation, and has the authority to correct them.

The procedures used during grave digging and working in and around graves can create several occupational hazards. Cave-ins are perhaps the most feared trenching hazard. But other potentially fatal hazards exist, including exposure to falling loads or objects, hazardous atmospheres (asphyxiation due to lack of oxygen in a confined space, inhalation of toxic fumes, drowning, etc), working around with heavy machinery, falls, tripping hazards and ergonomic issues. Electrocution or explosions can occur when workers contact underground utilities.

The primary hazard of trenching and excavation is employee injury from collapse or cave-in. Therefore, employees shall be protected whenever they are working inside an excavation (grave) and they could be potentially exposed to cave-ins. OSHA's trenching standard, 29 CFR 1926, Subpart P, Excavations, required the use of a protective system for all excavations more than 5 feet deep. There are three different types of protective systems: shielding, shoring and sloping.

Shielding devices are commonly called trench boxes and they do not prevent a trench wall from collapsing. Trench boxes are different from shoring because, instead of shoring up or otherwise supporting the trench face, they are intended primarily to protect workers from cave-ins and similar incidents. The excavated area between the outside of the trench box and the face of the trench should be as small as possible. The space between the trench boxes and the excavation side are backfilled to prevent lateral movement of the box. Shields may not be subjected to loads exceeding those which the system was designed to withstand.

Shoring is the provision of a support system for trench faces used to prevent movement of soil, underground utilities, roadways, and foundations. Shoring or shielding is used when the location or depth of the cut makes sloping back to the maximum allowable slope impractical. Shoring systems consist of posts, wales, struts, and sheeting. There are two basic types of shoring: timber and aluminum hydraulic.

Sloping involves cutting back the trench walls at an angle so there is little chance for collapse or cave-in. The maximum allowable slopes for exactions less that 20 feet (6.09m) based on soil type and angle is described on the OSHA Technical Manual" Section V: Chapter 2, Excavations: Hazard Recognition in Trenching and Shoring.

It is important to highlight that the shielding and shoring protective systems only protect employees when they are inside the confines of the systems. Therefore, sloping is the preferred protective system. However, the employer could use the protective system that works best for their situation since the use of the system depends on many factors.

In addition, access to and exit from the trench require the following conditions:

- Trenches 4 ft or more in depth should be provided with a fixed means of egress.
- Spacing between ladders or other means of egress must be such that a worker will not have to travel more than 25 ft laterally to the nearest means of egress.
- Ladders must be secured and extend a minimum of 36 in (0.9m) above the landing.
- Metal ladders should be used with caution, particularly when electric utilities are present.

Graves can potentially have hazardous atmospheres and be considered confined spaces. Potentially hazardous gases that could be encountered when digging graves include carbon dioxide, carbon monoxide, natural gas from potential leaks or cut lines, and methane from decayed matter. Employees shall not be permitted to work in hazardous and/or toxic atmospheres. Such atmospheres include those with:

- Less than 19.5% or more than 23.5% oxygen.
- A combustible gas concentration greater than 20% of the lower flammable limit; and
- Concentrations of hazardous substances that exceed those specified in the *Threshold Limit Values for Airborne Contaminants* established by the ACGIH (American Conference of Governmental Industrial Hygienists).

All operations involving such atmospheres must be conducted in accordance with OSHA requirements for occupational health and environmental controls (see Subpart D of 29 CFR 1926) for personal protective equipment and for lifesaving equipment (see Subpart E of 29 CFR 1926). Engineering controls (e.g., ventilation) and respiratory protection may be required.

When testing for atmospheric contaminant, the following should be considered:

- Testing should be conducted before employees enter the trench and should be done regularly to ensure that the trench remains safe.
- The frequency of testing should be increased if equipment is operating in the trench.
- Testing frequency should also be increased if welding, cutting or burning is done in the trench.

Employees required to wear respiratory protection must be trained, fit-tested, and enrolled in a respiratory protection program. Some trenches qualify as confined spaces. When this occurs, compliance with the Confined Space Standard is also required.

Operators of heavy machinery are required to have training on the use and maintenance of the specific equipment they are using and they must inspect their equipment before each use. All employees must be aware of the swing radius of their heavy equipment because swinging loads can strike or catch a worker between the bucket and the machinery. Also, workers must be aware of the potential hazards of being run over by the heavy equipment.

Mobile equipment should have warning systems. The following steps should be taken to prevent vehicles from accidentally falling into the trench:

- Barricades must be installed where necessary.

- Hand or mechanical signals must be used as required.
- Stop logs must be installed if there is a danger of vehicles falling into the trench.
- Soil should be graded away from the excavation; this will assist in vehicle control and channeling of run-off water.

Cemetery employees are also exposed to falling loads. Employees must be protected from loads or objects falling from lifting or digging equipment. Procedures designed to ensure their protection include:

- Employees are not permitted to work under raised loads.
- Employees are required to stand away from equipment that is being loaded or unloaded.
- Equipment operators or truck drives may stay in their equipment during loading and unloading if the equipment is properly equipped with a cab shield or adequate canopy.
- Keep materials or equipment that might fall or roll into an excavation at least two feet from the edge, or use retaining devices.

Cemetery work is very physical. Cemetery workers usually do a lot of lifting and reaching of either heavy or light objects, and using tools for extended periods of time. Injuries can result from doing these jobs with poor ergonomics. OSHA has a four-pronged comprehensive approach to ergonomics designed to quickly and effectively address musculoskeletal disorders (MSDs) in the workplace. You can learn more about preventing ergonomic injuries by following this link: http://www.osha.gov/SLTC/ergonomics/index.html

Open graves should be clearly identified to prevent falls and guard rails must be provided if the grave is six feet deep or more. The cemetery should be continuously inspected to identify potential hazards and to immediately implement control measures.

This attachment provides some highlights of OHSA's policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirement of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations.