29CFR 1926.20(a)-Unsafe Working **Conditions 29CFR 1926.21**- Implementing Safety Training and Education

Excavation and Trenching

Preparation

1. Read Excavation and Trenching Background information and related Company Policy Chapter.

- 2. Make Copies of this Lesson Plan for Personnel
- 3. Make Transparency, procure transparency pens, etc.
- 4. Other:

Material

1.

Objective

By the end of this session, personnel shall be able to:

- 1. Discuss Company Procedures to be performed before and during digging operations
- 2. Discuss Backhoe Safety Procedures
- 3. Discuss Front End Loader Safety Procedures
- 4. Perform a Company Excavation Safety Checklist

Background

Excavation cave-ins cause serious and often fatal injuries to workers in the United States. An analysis by OSHA of workers' compensation claims suggests that excavation cave-ins caused about 1,000 work-related injuries each year. **Of these, about 140 result in permanent disability and 75 in death.** Thus, this type of incident is a major cause of deaths associated with work in excavations and accounts for nearly 1% of all annual workrelated deaths in the nation.

Notes

Lesson

Company Procedures to be performed before and during digging operations

The Company requires that the following procedures are observed and will be followed without exception:

• The Company will have all utilities marked before digging. The Company will call utility companies and shut off all electricity, gas, and water pipes in the trench.

• Shoring systems or sloping of the walls be used in all excavations 5 to 20 feet deep in any type of soil, except solid, stable rock.

• Appropriate shoring, shielding, or sloping requirements for all excavations deeper than 20 feet shall be determined by an engineer qualified to make these determinations.

• Materials must not be placed four feet or less from the edge of the excavation.

• Stop logs or barriers will be placed where vehicles and /or equipment that operate near the excavation do not accidentally fall into the excavation.

• Dirt generated from the excavated hole will not be stockpiled closer than 6 feet from the open hole

Before Using <u>ANY</u> Machine, personnel shall read the owner's manual to learn the characteristics of the machine. Personnel shall:

• Wear safety shoes, safety goggles, gloves, hearing protection, hard hat, pants and shirt, and a respirator during dusty conditions. Sunscreen protection is mandatory if not under a roof.

Notes

Personnel shall: (continued)

- Check the machine for the presence of the following safety devices and that they are in good working order:
 - Roll-over protective structure (ROPS), seat belt (if ROPS equipped)
 - Guards
 - Shields
 - Backup Warning System
 - Lights
 - Mirrors
- Fill the fuel tank while the engine is off and cool. Never fill inside a building. Wipe up spills immediately. Do not smoke
- Check the machine daily for broken, missing, or damaged parts. Make the necessary repairs or replacements.
- Keep the machine clean, especially steps, hand rails, pedals, grab irons. And floor of the cab.
- Check the work area for hidden holes, obstacles, dropoffs, etc. Clear children, pets, and bystanders from the area.
- Check overhead for utility lines, roofs, and other obstacles
- Check site for previous damage, to include sidewalks, poles, fences, buildings, telephone and cable TV pedistals, electric transformer boxes, water meter pits, etc. Photograph and document damage before moving loader onto property
- Request Blue Stake service to locate underground utility services
- Always use handrails, ladders, and steps provided when mounting the machine. Never grab controls or the steering wheel
- Allow no riders, especially children

	Notes	

Operating a Backhoe, personnel shall:

- Adjust the seat, fasten the seat belt, set the brake, and place the transmission in park or neutral before starting the engine
- Start the engine and check all controls for proper operation. Check horn and backup alarm
- Keep the bucket on the ground
- Level the machine for maximum stability
- Operate the backhoe only from the seat
- Never swing the bucket over a truck cab. Do not load a truck while the driver is still inside
- Dump the bucket uphill, if possible, when operating on a slope

Operating a Loader, personnel shall:

- Keep the working area as level and clean as possible.
- Always carry the bucket low for good visibility and maximum stability
- Use caution when backfilling to avoid collapsing the wall of the trench
- Never allow people to ride in the bucket
- Never work or walk under a raised bucket
- With loaded buckets, drive forward when going uphill. Back downhill with loads

Safe Stopping Procedure:

- Park the machine on level ground and set the parking brake. Place transmission in park (if so equipped)
- Lower the loader and backhoe buckets to the ground
- Stop the engine and remove the key
- Work the hydraulic controls to relieve pressure
- Do not jump from the machine ~ Dismount carefully using the steps and safety holds

Daily Excavation Checklist- Personnel shall keep 1 copy of each daily excavation checklist on site for the project duration, and forward the original to the safety manager.

Notes

DAILY EXCAVATION CHECKLIST

YES	NO	N/A	DESCRIPTION
			GENERAL
			Employees protected from cave-ins & loose rock/soil that could roll
			into the excavation
			Spoils, materials & equipment set back at least 2 feet from the edge of
			the excavation
			Engineering designs for sheeting &/or manufacturer's data on trench box capabilities on site
			Adequate signs posted and barricades provided
			Training (toolbox meeting) conducted w/ employees prior to entering excavation
YES	NO	N/A	UTILITIES
			Utility company contacted & given 24 hours notice &/or utilities
			already located & marked
			Overhead lines located, noted and reviewed with the operator
			Utility locations reviewed with the operator, & precautions taken to
			ensure contact does not occur
			Utilities crossing the excavation supported, and protected from falling
			Materials
			Underground installations protected, supported or removed when
			excavation is open
			WET CONDITIONS
			Air in the excavation tested for oxygen deficiency, combustibles, other Contaminants
			Ventilation used in atmospheres that are oxygen rich/deficient &/or contains hazardous substances
			Ventilation provided to keep LEL below 10 % Emergency equipment available where hazardous atmospheres could
			or do exist
			Safety harness and lifeline used
			Supplied air necessary (if yes, contact safety department)
			ENTRY & EXIT
			Exit (i.e. ladder, sloped wall) no further than 25 feet from ANY
			employee
			Ladders secured and extend 3 feet above the edge of the trench
			Wood ramps constructed of uniform material thickness, cleated together @ the bottom
			Employees protected from cave-ins when entering or exiting the
			excavation

OSHA has special rules to protect workers in trenches. Employees will follow the OSHA rules unless:

• The trench is in stable rock, or

• The trench is less than 5 feet deep and the Company Supervisor/Manager finds no reason to expect a cave-in.

A Company Supervisor/ Manager will inspect a trench:

- Before every shift
- If bad air is expected such as, the trench is in a sewer or near a dump or stored chemicals
- After anything that can increase hazards, such as:
 - •- Every rainstorm

•- The trench wall moves, causing cracking, scaling, or bulging

•- A heavy load near the trench moves or gets heavier.

Before Employees enter a trench they shall:

• Have it inspected by the Company's Supervisor/Manager.

• Make sure all equipment is in good condition. This includes water pumps and ventilators.

• Have a way to get out fast, like a ladder, if the trench is 4 feet deep or more.

IF A TRENCH CAVES IN:

Get out of the trench. Call 911 (or emergency services). Help your co-workers from outside the trench, if you can.

Never go into a trench that is caving in or has bad air — even to rescue co-workers. You can be killed.

What questions do you have?

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