Module 03-02 TRENCHING AND SHORING

ALL EMPLOYEES ARE TO BE TRAINED PRIOR TO DOING ANY TRENCHING OR SHORING

Purpose

Youth offender job assignments can benefit the community, an OYA facility, and offenders living within the OYA facility. Job assignments provide youth with important learning opportunities: learning to follow instructions; learning to cooperate with others, and practicing positive social and work skills. They also provide youth with an opportunity to receive positive recognition for their accomplishments and achievement, and to receive pay for the work they do. In the course of performing a work assignment, a youth worker may need to know how and when to use a fire extinguisher. Knowing how and when to use a fire extinguisher can help prevent injury to youth offenders, co-workers and the public. Fire extinguishers are to be used only to control a small fire for the purpose of limiting damage to facilities or to ensure safe exit from a structure or building. Using a fire extinguisher requires rapid hazard analysis and ability to react quickly to changing situations. Fire extinguishers are not designed, and should not be used, to fight a fire.

Significant Environmental Aspects

Trenching has the potential to cause significant environmental impact to land use and resource protection. Ground soil disturbance can cause damage to sensitive plant or animal species and could disturb cultural resources. Any youth offender who is preparing to do trenching or shoring must have authorization for such activity from the Supervisor. The youth offender must know before starting that soil disturbance has been reviewed, is authorized, and is truly necessary. Without that knowledge, the youth offender cannot proceed.

Definition

An excavation is any man-made cut, cavity, trench, or depression in an earth surface that is formed by earth removal. A trench is a narrow excavation made below level in which the depth is greater than the width (measured at the bottom). The width cannot exceed 15 feet. The depth cannot exceed 20 feet. Anything over 20 feet requires a safety system designed by a registered professional engineer. Before any sloping, benching, or support system is selected, a competent person must classify the soil type. In any excavation more than 5 feet deep, employees must be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area.

I. Pre-Operation

A. Inspection/Service

- **Analysis** – Complete and have on site safety/health/jobsite analysis. How deep is the trench anticipated to be? What sloping, benching, supporting or shield system design will be used to protect employees if the trench will be more than 5 feet deep?
- **Surface Hazards** - Check for surface obstacles that may create hazards and remove or flag.

- **Underground Hazards** – Locate underground water, sewer, electrical lines, rocks, stumps, etc. Flag for visibility when working.
- **Conditions** – Assess any structures and their conditions, traffic, soil type, surface water, groundwater, the water table at time of digging, and anticipated weather conditions at time of digging.
- **Slope/Grade of Ground** – Identify risk of rolling, sliding, falling debris and protect workers by developing a barrier system ahead of time.
- **Water Accumulation** – If water is likely to build up, adequate protection must be taken, such as diversion ditches, dikes, or other suitable means to prevent surface water build up in an excavation. If water removal equipment is used to control or prevent water from accumulating, equipment operations must be monitored by a competent person to ensure proper use.
- **Hazardous Atmosphere –** If excavation is greater than four feet deep, the atmosphere must be tested by a competent person before employees may enter. If a hazardous atmosphere develops or exists in an excavation, emergency rescue equipment must be on hand (e.g., breathing apparatus, a safety harness and line, basket stretcher, etc.).
- **Utilities** – Check for overhead and underground utility locations. Call the Oregon Utility Notification Center (503)246-6699 (Portland), or 1-800-332-2344 for all other parts of the state. Allow two business days in advance of the digging for locates to be done.
- **Equipment** – Check equipment for appropriateness to job, damage requiring repair before use, sufficient lubrication, safe operation, and sufficient fuel, oil, parts, etc. to complete the job.

II. Sustainable Operation

A. **Resource Clearance Form –** There may be sensitive natural or cultural resources in the area where you are digging. Digging can disturb or harm these resources. Make sure that the area you are digging in has been cleared for below ground soil disturbance.

B. **Resource Disturbance –** In some instances, discovery of cultural artifacts in areas previously cleared is possible. If this happens, **YOU MUST CEASE WORK IMMEDIATELY and contact Supervisor.**

C. **Other Resource Concerns –** Excess soil or open trenches can have negative impacts on co-worker and public safety and resource protection. Cover and mark all excess materials, open trenches, or holes before you leave the work site for any reason.

III. Operation

A. Starting

- **Locate Underground/Overhead Utilities –** Call for a location to mark utilities if near public utilities.
- **Warning Systems, Barricades or Flagging –** Immediate dig area must be barricaded

or flagged off from staff, youth offender, public, and volunteer access. Provide warning systems such as mobile equipment, barricades, hand or mechanical signals, or stop logs to alert operators at the edge of an excavation.

- **Provide Scaling –** Remove loose rock or soil, or install protective barricades and other equivalent protection to protect employees from falling rock, soil, or materials.
- **Control Traffic** – Consider how the work will affect the traffic flow. Use the most appropriate means to safely control flow of traffic. Prohibit employees from working on faces of sloped or benched excavations at levels above other employees unless employees at lower levels are properly protected from falling, rolling, or sliding material or equipment hazards.
- **Pavement/Sidewalks** - Saw out pavement before trenching if necessary. Excavation under sidewalks and pavement is prohibited unless an appropriately-designed support system is provided.

B. Personal Protective Equipment

- **Hearing Protection –** Ear plugs/muffs are required if loud equipment is being used.
- **Eye Protection –** Safety goggles or glasses must be used if there is a risk of falling, flying, or blowing debris
- **Body Protection -** Safety vest must be worn for visibility in the trench and for traffic control.
- **Hand Protection –** Gloves must be worn.
- **Head Protection –** A hard hat must be worn by anyone working in a trench with a risk of equipment or debris falling down on the head.

C. Operation Includes

- **Shore –** Shoring can be done by sloping, benching, or shield. If ditch is more than 4 feet deep, consult with the OPRD Engineering Department as part of the site safety and health plan.
- **Deep Excavations -** All excavations more than 20 feet in depth must be protected by a system designed by a professional engineer.
- **Inspections -** Inspect excavations daily for cave-ins or potential cave-ins.
- **Backhoe -** See Backhoe manual for operation.

It may not be a good idea to leave the equipment out on the worksite over the weekend, especially in a flood plain!

IV. Post-Operation

A. Clean Up, Hazard Warnings, Storage

- Clean area where trenching was done.
- Place hazard signs/tape to identify any hazard for the safety of staff and visitors.
- Clean and inspect tools and equipment for damage or needed maintenance.
- Red Tag any non-energized tools or equipment damaged during work project.
- Complete Lockout/Tagout process for any energized tools or equipment damaged during work.
- Schedule repairs or replacement of damaged tools or equipment.

V. Demonstration of Proficiency

Anyone expected to do trenching and shoring must be trained in that process and is required to demonstrate proficiency prior to signing training ledger. See your training coach or manager.

Module 03-02 TRENCHING AND SHORING TEST QUESTIONS

Multiple Choice

1. **What should you do when inspecting a site prior to starting a trenching/shoring operation?**
   a) Set up and have on site safety/health/jobsite analysis.
   b) Check for surface obstacles that may create hazards.
   c) Check for impact on nearby structures or buildings, traffic issues, soil type, surface water, groundwater, and weather conditions.
   d) Check overhead and underground utilities.
   e) All of the above.

2. **When planning a trenching operation, what four things should you consider?**
   a) Is the area barricaded on all sides; Do you need traffic control; Do you need to saw out pavement before trenching; Call for help.
   b) Is the area barricaded on all sides; Do you need traffic control; Do you need to saw out pavement before trenching; Do you need to locate underground or overhead utilities?
   c) Stretch; Barricade area; Determine if job can be done with power tool; Get wood to shore up sides.

3. **What personal protective equipment *is required* when performing trenching/shoring operations?**
   a) Hearing protection if loud equipment is used, gloves, eye protection, safety vest, and hardhat if risk of objects falling onto head.
   b) Hearing protection, gloves, and safety vest.
   c) Gloves, eye protection, safety vest, hardhat if working in a trench.
   d) Eye protection.

4. **What personal protective equipment *is not* required?**
   a) Hearing protection if loud equipment is being used
   b) Eye protection.
   c) Gloves.
   d) Safety vest.
   e) Hip waders.

II. True/False

5. _____ If the trench is more than 4 feet deep, consult with the OPRD engineering department.
6. _____ You should rely on your most senior person to do the locates vs the utility maps.
7. _____ You don't need to do a site assessment for trenching operations.
8. _____ The purpose of barricading an excavation is to protect employees, youth offenders and the public.

III. Discussion Questions

1. What hazards would be present if no care was taken in trenching and shoring?
2. How would you slope or bench a trench?

Employee Name: _____ Pass ____ No Pass ____ Date: _____

Take this test to your supervisor or trainer for sign off.