



## Section 28: Excavation and Trenches

### 1. General Information

- 1.1 The contractor will provide EQ a list of persons who are trained to serve as the “competent person” as well as a list of additional personnel that have received training on the basics of hazard recognition and safe work practices for excavation operations and will be working in or around excavations. A “competent person” must be on site during all excavation and trenching work.

### 2. Training Requirements

- 2.1 Contractors shall provide training to ensure the purpose and function of the trenching and excavation program is understood by their employees and subcontractors under their control and possess the knowledge and skills required for safe trenching and excavation operations on EQ sites.
- 2.2 EQ reserves the right to request employees be re-trained in the event of an incident, when periodic inspections reveal a need, or when EQ or an EQ representative has reason to believe there are deviations from or inadequacies in the employee’s knowledge or use of these procedures.

### 3. Earthwork Clearance Permit

- 3.1 Excavation performed on EQ property by any type of machine or tool requires an Earthwork Clearance Permit (ECP) prior to starting work. This would include using stakes, erecting tents, and putting up signs.
- 3.2 The contractor in charge of the work must perform the following tasks:
  - A. Complete the ECP and forward it to the EQ representative for approval.
  - B. Ensure that the utility providers and other locating services are contacted and that the area impacted is free from utilities and other hazards.
  - C. Ensure that approval signatures on the ECP are obtained after the required personnel have reviewed the field drawings or sketches. Electronic approval is acceptable.
  - D. Present the completed ECP to the operator.
  - E. Protect the excavation area from unauthorized personnel by means of barricades or fencing.
- 3.3 Do not begin excavation until the ECP is present at the excavation site and signed by the required personnel.
- 3.4 The ECP must remain at the excavation site during the entire time of the excavation.

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## **4. Protective Design**

- 4.1 Excavations and trenches over 4 feet deep must be sloped, shored, benched, braced, or supported. When soil conditions are unstable, excavations less than 4 feet must be sloped, shored, or supported as required by regulations.
- 4.2 Each employee in an excavation will be protected from cave-ins by an adequately designed protective system. Protective systems shall have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transferred to the system.
- 4.3 Slopes and configurations of sloping and benching systems will be properly selected and constructed as follows:
  - A. Option 1 – Excavations will be sloped at an angle not steeper than one and one-half horizontal to vertical (34° measured from the horizontal).
  - B. Option 2 – Determination of slopes and configurations is made using 29 CFR 1926.652 Appendices A and B – “Maximum Allowable Slopes.”
  - C. Option 3 – A sloping and benching system approved by a professional engineer registered in the state where the work is being performed.

## **5. Design and Construction of Protection Systems**

- 5.1 Ensure shoring materials and equipment are in good condition. Materials and equipment used for protective systems shall be free from damage or defects that might impair their proper function.
- 5.2 Manufactured materials and equipment used for protective systems shall be used and maintained in a manner that is consistent with all specifications, recommendations, and limitations issued or made by the manufacturer and in a manner that will prevent employee exposure to hazards.
- 5.3 Deviation from the manufacturer’s specifications, recommendations, and limitations will only be allowed after the manufacturer issues specific written approval and it is accepted by the EQ EHS manager.
- 5.4 Timber shoring of any kind is unauthorized on EQ sites unless approved in writing by the EQ EHS manager.

## **6. Inspections**

- 6.1 Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions.
- 6.2 An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other events which could appreciably increase the likelihood of a hazard when employee exposure can be reasonably anticipated. Water must not be allowed to accumulate in a trench or excavation.

- 6.3 If dangerous ground movements such as tension cracking are apparent, stop work in the excavation until the problem has been corrected.

## **7. Egress**

- 7.1 Egress means shall be provided from trenches and excavations. A stairway, ladder, ramp, or other safe means of egress shall be located in trench excavations that are 4 feet or more in depth so as to require no more than 25 feet of lateral travel for employees.
- 7.2 Ladders must be in good condition, extend from the floor of the trench to 3 feet above the top of the excavation, and secured at the top.

## **8. Completion of Work**

- 8.1 Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support system.
- 8.2 Individual members of support systems shall not be subjected to loads exceeding those which the members were designed to withstand.
- 8.3 Before temporary removal of individual members begins, additional precautions shall be taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system.
- 8.4 Removal shall begin at, and progress from, the bottom of the excavation. Members shall be released slowly so as to note any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation.
- 8.5 Backfilling shall progress together with the removal of support systems from excavations.

## **9. Drilling Operations**

- 9.1 An ECP is required for drilling operations in order to prevent drilling in restricted areas.
- 9.2 Inspect the drilling area for hazards before starting the drilling operation. Utility lines must be located and marked prior to any drilling operations. OSHA mandated clearance from power lines is required.
- 9.3 Drill crews and other employees must stay clear of augers or drill stems that are in motion.
- 9.4 When drill helpers assist the drill operator during installation or operation of a drilling rig, the helpers must be in sight of or communication with the operator at all times.
- 9.5 Attend drilling rigs while in operation. Do not drill from positions that hinder access to the controls, or from insecure footing or staging.
- 9.6 A competent person must inspect drilling equipment at the start of each shift, and defects must be corrected before the equipment is used.
- 9.7 Warn workers in the area around the drilling operation before each drilling cycle is started.