

EXCAVATION, TRENCHING, AND SHORING

1.0 SCOPE

This Performance Assessment Guide for Excavation, Trenching, and Shoring will be used to carry out the oversight responsibility of the U.S. Department of Energy (DOE) Brookhaven Group. This guide was prepared to assist in conducting performance-based assessments of both DOE prime contractors and subcontractors to ensure that their excavation, trenching, and shoring safety programs identify, disposition, and take corrective action on issues that affect satisfactory site performance. The goals are to ensure that laboratory employees and the public do not experience injuries and illness as a result of underground construction safety activities and that there is little or no economic loss to the Government.

Excavation, trenching, and shoring safety assessments will be directed at all prime contractors and subcontractors working at the site. DOE line management must ensure that these contractors comply with DOE Orders and Federal and State regulations. Information developed from this assessment will determine the degree to which this is being done as well as the effectiveness of the laboratory's program.

2.0 ATTRIBUTES AND LINES OF INQUIRY

This section provides lines of inquiry to help assess whether the organization has implemented a program that ensures that excavation, trenching, and shoring safety requirements are incorporated into line activities. This section will be used to evaluate the laboratory's line organization.

2.1 The laboratory has identified the locations within the site where excavation, trenching, and shoring safety program concerns exist.

- Does the scope of the laboratory's guidance include:
 - Trenching?
 - Excavations?
 - Aluminum hydraulic shoring?
 - Access and egress ramps?
 - Sloping and benching?

- Wood shoring materials?
- Shield systems?
- Competent-person certification?
- How are the hazards associated with excavations identified in the field (e.g., special warning signs, procedure cautions or warnings, barricades)?

2.2 The laboratory's training programs ensure that individuals working in and around trenching and other excavation activities do so in a safe manner.

- Are applicable governing regulations and standards addressed or described in the training programs?
- Does the training program address the excavation, trenching, and shoring program concerns, requirements, and practices to be followed?
- Does the training clearly identify who has responsibility for implementing the excavation, trenching, and shoring program?
- Are personnel who are in a position to detect and control performance of work with trenching and shoring equipment appropriately trained and instructed so that the required level of performance is maintained?
- Is the training on excavation safety provided on a periodic basis?
- Does a review of the training documentation show that the course content is comprehensive?
- When training has not yet been received, how is certainty provided that the correct and necessary actions will be carried out by the assigned individual (compensatory measures)?
- Has training been provided to all who are required to work on and with trenching and shoring equipment?
- Do interviews with workers show that they understand the importance and application of the excavation, trenching, and shoring safety program?
- Are there special training or certification requirements for individuals who work or maintain shoring equipment?

2.3 The laboratory's program ensures that the required safety design criteria for shoring systems are used to support excavation activities.

- Are there design processes to ensure that new shoring systems are designed to meet safety criteria with respect to the excavation, trenching, and shoring safety program?
- Are applicable design codes and standards referenced in the excavation program and are these documents readily accessible?
- Are existing installations reviewed against the excavation, trenching, and shoring safety program design criteria?
- Are the criteria and processes documented in procedures?

2.4 The laboratory has a comprehensive and effective program for the installation and inspection of shoring equipment to ensure worker safety.

- Has management designated an individual responsible for authorizing excavation and shoring activities? Is this person a "competent person" as defined in 29 CFR 1926, Subpart P?
- What procedural documents provide the guidance that is used to implement the process?
- Do the procedures ensure that subcontractors are aware of their responsibilities with respect to the excavation, trenching, and shoring program?
- Are there operational controls that specify criteria for personnel protection, protective clothing, and work in confined spaces?
- Are there procedures for an "excavation permit" program?

2.5 The laboratory periodically reviews the implementation of the excavation, trenching, and shoring safety program to ensure that it is comprehensive and effective.

- Is the safety program current with respect to excavation requirements?
- Have the program reviews been timely and thorough?
- What types of changes have been made to the program? Why were they made? Have they been effective?

- What is the laboratory's current assessment of the status of their performance in implementing the excavation, trenching, and shoring safety program?

2.6 The laboratory's self-assessment group periodically evaluates the effectiveness of the implementation of the excavation, trenching, and shoring safety program.

- Does the self-assessment group monitor the activities to determine if the excavations safety program has been properly implemented?
- When did the self-assessment group last evaluate the excavation, trenching, and shoring safety program?
- When is the next evaluation planned?
- What types of problems have been found?
- How responsive is the laboratory to correcting the deficiencies found?
- What performance trending is required and performed by the contractor?
- How is the DOE Occurrence Reporting and Processing System used to identify trends and problem areas in the safety program?
- How are lessons learned, generated either locally or from other facilities, applied to the program?

2.7 The laboratory's program has been effective at preventing accidents on or with shoring equipment.

- Does a review of accidents over the past year indicate any trends related to excavation safety concerns?

2.8 A walkthrough of the site indicates that the laboratory's program is effective in ensuring that shoring systems and equipment are safe to use.

- Does the use of special procedures and equipment apply to any excavation that has water accumulation?
- Does the walkthrough of the site indicate that the manufacturer's maintenance criteria are being met for shoring equipment?

- Do site and temporary worksite walkthroughs indicate that good practices are being followed by laboratory employees while installing shoring equipment?
- Are excavation permits used at all sites where excavation activities take place? Are the conditions of the permits met?
- Does a walkthrough of the site indicate that excavation hazards have been identified?
 - Are surface impediments (e.g., trees, boulders) that could create a hazard to employees involved in excavation or in the vicinity removed before excavation begins?
 - Prior to excavation, was an effort made to locate underground installations (i.e., sewers; telephone, fuel, and electric lines) through document review, utilities companies, or use of detection equipment?
 - Are the means for access and egress appropriate and in accordance with the regulations?
 - Are employees exposed to vehicular traffic provided with suitable high-visibility garments?
 - When mobile equipment is used in area, are substantial stop logs or barriers provided adjacent to trenches as a warning system ?
 - In areas where hazardous atmospheres could exist due to oxygen deficiency or toxic materials storage, are air samples in excavations taken?
 - Is protection from hazards associated with water accumulation provided (e.g., special shoring considerations, diversion dikes)?
 - Has the stability of structures adjacent to excavations been evaluated by a competent person?
 - Has protection of employees from loose rock or soil been provided by scaling to remove loose material, installing barriers, and maintaining setback criteria for excavated material?
 - Are daily inspections and inspections after rainstorms performed by the designated competent person?

- Where employees or equipment must cross over excavations, are walkways or bridges with standard guardrails provided?
- Do the findings of the walkthrough confirm the effectiveness of the self-assessment organization?

3.0 STANDARDS AND REQUIREMENTS

3.1 Specific DOE Orders and Standards.

- DOE O 232.1A, "Occurrence Reporting and Processing of Operations Information."
- DOE O 440.1A, "Worker Protection Management for DOE Federal and Contractor Employees."
- DOE 2300.1B, "Audit Resolution and Followup."
- DOE 2321.1B, "Auditing of Programs and Operations."
- DOE 5480.4, "Environmental Protection, Safety, and Health Protection Standards."

3.2 29 CFR Part 1926 Requirements.

- Subpart P, "Excavations."

4.0 GUIDANCE TO ASSESSOR

This assessment guide is intended to assist in conducting a performance assessment of excavations. It is not to be considered as all-inclusive, inflexible, or limiting reasonable assessment concentration when lines of inquiry responses dictate that an area must be more thoroughly probed.