# Trenching and Excavation

Purpose

Excavating is recognized as one of the most hazardous construction operations. The Occupational Health and Safety Administration (OSHA) requires employers who engage in safe excavation and trenching activities to protect employees from potential hazards. This policy has been developed to assist Arkansas State University in complying with the minimum safety standards adopted by OSHA and Arkansas Department of Labor.

Scope

This program shall serve only as a minimum for all university excavation and trenching activities performed by any department engaged in such activities. It does not prohibit additional levels of protection deemed necessary.

Definitions

Competent Person is an individual who is capable of identifying existing and predictable hazards or working conditions that are hazardous, unsanitary, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate or control these hazards and conditions.

Confined Space is a space that, by design and/or configuration, has limited openings for entry and exit, unfavorable natural ventilation, may contain or produce hazardous substances, and is not intended for continuous employee occupancy.

Excavation. 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 (in relation to its length) made below the surface of the ground. In general, the depth of a trench is greater than its width, and the width (measured at the bottom) is not greater than 15 ft (4.6 m). If a form or other structure installed or constructed in an excavation reduces the distance between the form and the side of the excavation to 15 ft (4.6 m) or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

Hazardous Atmosphere is an atmosphere that by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen-deficient, toxic, or otherwise harmful may cause death, illness, or injury to persons exposed to it.

Ingress and Egress mean "entry" and "exit," respectively. In trenching and excavation operations, they refer to the provision of safe means for employees to enter or exit an excavation or trench.

Maximum Allowable Slope means the steepest incline of an excavation face that is acceptable for the

most favorable site conditions as protections against cave-ins, and is expressed as the ratio of the horizontal distance to vertical rise. (H:V)
Protective System refers to a method of protecting employees from cave-ins, from material that could
fall or roll from an excavation face or into an excavation, and from the collapse of adjacent structures.
Protective systems include support systems, sloping and benching systems, shield systems, and other
systems that provide the necessary protection.
Support System refers to structures such as underpinning, bracing, and shoring that provide support to
an adjacent structure or underground installation or to the sides of an excavation or trench.
Responsibilities
Arkansas State University Employees
• Comply with the requirements of this program.
• Attend training sessions as required.
• Report any concerns related to trenching/excavating to their immediate supervisor.
EH&S
• Assist in implementing the provisions of this program.
• Periodically audit compliance with program.
• Ensure training records are maintained.
• Update the program as needed.
• Assist in the investigation of injuries and incidents related to trenching.
Facilities Management
• Identify and train the University’s competent person.
• Call Arkansas 811 to notify of the intent to dig, prior to starting work.
• Mark the locations of all Arkansas State owned utilities.
• Maintain utility markings.
• Submit Trenching/Excavation permit.
• Perform the excavation work, or secure contractor to perform work.
• Projects in which a contractor will be awarded a contract for a construction project that will involve a trench or excavation of five feet or more must complete this online form. Excavation and Trenching » Arkansas Department of Labor and Licensing Arkansas Code 22-9-212
• Ensure open trenches and excavations are secured or fenced with not attended.
• Install the appropriate protective system for class C soil (Unless soil is required to be reclassified)
• Perform trench inspections as needed (daily, weather change, condition change, etc)
Supervisors/Unit Leads
• Ensure employees attend training.
• Ensure employees comply with this program.
• Be thoroughly informed of the contents of this program and how it applies to their areas of responsibilities and authority.
• Investigate trenching injuries and incidents within their area of authority.
• Take prompt corrective action when unsafe conditions or practices are observed.
Contractors
• Contractors are required to follow all applicable OSHA trenching/excavating regulations and manufacturer’s instructions pertaining to protective systems.
• Contractors are not allowed to utilize any University owned trench/excavation shoring/shielding

equipment.
• Projects in which a contractor will be awarded a contract for a construction project that will involve a trench or excavation of five feet or more must complete this online form. Excavation and Trenching » Arkansas Department of Labor and Licensing Arkansas Code 22-9-212
• Call Arkansas 811 to notify of the intent to dig, prior to starting work.
• Maintain utility markings.
• Submit Trenching/Excavation permit.
• Perform the excavation work.
• Install the appropriate protective system for the soil class.
• Ensure open trenches and excavations are secured or fenced with not attended.
• Perform trench inspections as needed (daily, weather change, condition change, etc)
• Notify Facilities Management of any damage to utility system.
Program Components
1. Assign and train a competent person.
2. Ensure all workers have received awareness training.
3. Complete a Trenching/Excavation permit.
4. Call 811 to identify and mark underground utility lines.
5. Dig a minimum of 5 feet away from utility lines.
6. Evaluate the soil to determine its stability.
7. Plan the job layout to identify safe locations for spoil piles and heavy equipment routes.
8. All excavation sites must be adequately barricaded, using at a minimum fencing and flashing barricades on all sides in which work is not in progress. Public thoroughfares (sidewalks, common paths, etc.) shall be barricaded a minimum of ten (10) feet from the excavation work site. Any excavation greater than four (4) feet deep which is to be left unattended for greater than 24 hours, or is subject to water retention, must be fenced to a height of at least four feet using appropriate fencing materials.
9. Any excavation greater than 4 feet in depth must comply with 1926 Subpart P - Excavations | Occupational Safety and Health Administration (osha.gov) and this policy.
10. Before the job starts, if the trench will be 5 feet or deeper, set up a protective system.
11. Excavations less than 5 feet that have been determined by the “competent person” to be safe from cave-in are not required to be shored.
12. If the trench will be 20 feet or deeper, provide additional engineering protections.
13. All walls and faces of excavations to which employees are exposed must be guarded by a shoring
system, sloping of the ground, or other equivalent means.
14. All excavations must have adequate means of egress, including steps or ladders, and must be provided within 25 feet travel distance.
15. All slopes shall be excavated to the maximum allowable slope.
Safety considerations
1. Employees shall not be allowed to work on sloped or benched areas of excavations above other employees unless those employees at the lower level are adequately protected.
2. Structural ramps and runways associated with the excavation project shall be designed by a person qualified in structural design and constructed as to design. Structures to be used for employee access only may be designed and constructed by a “Competent Person”.
3. If excavation work is within 25 feet of a roadway, employees must be protected by reflective vests in addition to roadway barricades.
4. Employees working in excavations which have, or have the potential of having hazardous (i.e.

oxygen deficiency or toxic/flammable gases) shall be entered under procedures outlined in the "Permit Required" Confined Space Entry Policy. These procedures shall include atmospheric testing, mechanical ventilation, lifelines, respirators, and emergency rescue preparation.
5. Welding operations have the potential of creating a hazardous atmosphere in an excavation. The competent person shall ensure that additional safety factors are incorporated into any welding operation by completing a Hot Work Permit. This form shall be signed by the workers and the "Competent Person" and/or supervisor and attached to the excavation permit form.
6. Employees may not work in an excavation in which water has accumulated unless control devices are activated and employees are equipped with harnesses and lifelines.
7. All materials and equipment must be kept at least two (2) feet from the edge of the excavation.
8. The "Competent Person" must inspect the job site prior to beginning the excavation and prior to actual work within the excavation. Additionally, daily inspections must be conducted on all safety and support systems and more frequent inspections after rainfall and other unusual circumstances that may pose additional hazards for the employees.

Training

• Competent Person training must include:
o Requirements of OSHA 29 CFR 1926 Subpart P
o Excavating and trenching terms
o Competent person responsibilities
o Soil classifications
o Protective systems
o Hazardous atmospheres
o Other hazards, including those associated with working in confined spaces.
o Lockout/Tagout
• Workers
o Awareness training regarding trenching and excavation

Trenching and Excavation Checklist and Permit Form

Permit Request • CampusOptics

_____ Arkansas State employees will be completing this project
_____ Contractors will be completing this project
_____ Utilities Located (telephone, water, sewage, sprinkler system, etc.)
_____ High Voltage in Excavation Area
_____ Underground Tanks in Excavation Area
_____ Natural Gas Pipelines Located
_____ Site is within Ten (10) feet of a Roadway or Parking Lot
_____ Personal Protective Equipment is On-Site
_____ Barricades and Other Safety Equipment is On-Site
_____ Hazardous Atmospheres Present or Possible (refer to Confined Space Procedures)
_____ Welding to be Performed (Complete Hot Work Permit)
_____ Asbestos Containing Materials Involved (Contact EH&S prior to Commencing)
_____ Excavation will be Longer than 24 hours
_____ Water Accumulation is Imminent

Location

Dates of the project

Expected duration of the project

Description of work being performed

Name of Competent Person

Name of additional employees working on project

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