

ATPL-2430: TRENCH & EXCAVATION SAFETY

Cuyahoga Community College

Viewing: ATPL-2430 : Trench & Excavation Safety

Board of Trustees:

2012-06-28

Academic Term:

Spring 2019

Subject Code

ATPL - Applied Ind Tech - Plumbers

Course Number:

2430

Title:

Trench & Excavation Safety

Catalog Description:

Introduction to hazards and dangers of working in confined spaces. Examination of spaces with limited means of egress and limited natural ventilation that are not meant for continuous occupancy and examination of permit-required work areas with compliance to OSHA standards.

Credit Hour(s):

1

Lecture Hour(s):

1

Requisites

Prerequisite and Corequisite

Departmental approval: admission to Plumbers' apprenticeship program.

Outcomes

Course Outcome(s):

1. Apply prescribed safety procedures when working in confined spaces.

Course Outcome(s):

2. Identify potentially hazardous situations and take appropriate steps to resolve the situation and prevent injuries/accidents from occurring.

Course Outcome(s):

3. Understand the requirements by OSHA CFR 29; Part 1926, Sub-Part P

Course Outcome(s):

4. Understand the importance of soil mechanics and testing in relation to the pipe trades

Course Outcome(s):

5. Recognize and implement the importance of job planning and protective systems in reducing hazards and accidents.

Methods of Evaluation:

1. Homework
2. Quizzes

- 3. Tests
- 4. Participation

Course Content Outline:

- 1. Concepts
 - a. Causes of falls
 - b. Potential hazards
 - c. Hazard/accident prevention techniques
 - d. Fall protection systems and equipment
 - e. Situations requiring fall protection equipment
 - f. When and where fall protection is necessary on all work surfaces.
 - g. Scaffold regulations and standards
 - h. OSHA safety regulations 1926 Subpart L and 1910.28
 - i. Definitions and properties of confined spaces
 - i. Limited means of entry/exit
 - ii. Not meant for continuous occupancy
 - iii. Poor natural ventilation
 - j. Atmospheric hazards of confined spaces
 - i. Oxygen deficiency
 - ii. Oxygen enrichment
 - iii. Flammable gases and vapors
 - iv. Flammable atmospheres
 - v. Vapor density
 - vi. Toxic atmospheres
 - k. OSHA's Permit system
 - i. Definition of confined spaces
 - ii. Entry permit
 - iii. Confined space standards 29 CFR 1910.146
 - l. Training requirement for MSDS (OSHA's standard 1926.59 / 1910.1200 (g))
 - m. Hazard recognition as it applies to material safety data sheets
 - n. Safe handling of various chemicals used
 - i. Adhesives
 - ii. Cleaning Chemicals
- 2. Skills
 - a. Setting up fall protection system and equipment including guard rail systems, personal fall arrest systems, lifelines, safety nets, fall protection plans, covers, stairways and ladders, aerial lifts, and housekeeping.
 - b. Preparing for protection from falling objects.
 - c. Selecting appropriate protective equipment.
 - d. Installing toe boards.
 - e. Installing catch platforms.
 - f. Setting up barricades.
 - g. Monitoring air in confined spaces with sampling pump/calibrating air monitors, and using intrinsic safe tools.
 - h. Ventilating confined spaces by placement of fans and purging confined spaces.
 - i. Using personal protective equipment with air purifying respirators, supplied air respirators, chemical protective clothing, and communications equipment.
 - j. Rescuing person from confined space using retrieval systems and equipment.
 - k. Interpreting and applying a chemical label.
 - l. Interpreting and applying a Material safety data sheet.
- 3. OSHA Requirements
 - a. Components of Standard
 - i. Soil Tests
 - ii. Protective Systems
 - iii. Air Testing
 - iv. Water Removal
 - v. Changes in Soil
 - b. Locate Information
 - i. How to use an OSHA Standard
 - ii. Resources for more information
- 4. Soil Mechanics and Testing

- a. Factors Affecting
 - i. Soil Types
 - ii. Weather Conditions
 - iii. Gravity
 - iv. Depth
 - v. Vibrations
 - vi. Duration of Exposed Trench
- b. Soil Types and Hazards
 - i. Type A
 - ii. Type B
 - iii. Type C
- c. Testing of Soil Types
 - i. Visual
 - ii. Manual
- 5. Job Planning and Protective Systems
 - a. Parts of Job Planning
 - i. Conditions
 - ii. Size and types of materials
 - iii. One person responsible for site
 - b. Inspection
 - i. Types of inspection
 - 1. Opening
 - 2. Daily
 - 3. Closing
 - 4. OSHA
 - ii. Inspection Reports
 - c. Protective Systems
 - i. Trench Slopping
 - ii. Shoring
 - iii. Shielding

Resources

State of Ohio. *2007 Ohio Plumbing Code*. Country Club Hills, IL : International Code Council, 2007.

U.S. Department of Health and Human Services. *NIOSH Pocket Guide to Chemical Hazards, Publication No. 2005-149*. 3rd Ed. Washington, D.C, 2007.

American Red Cross. *Standard First Aid and Personal Safety*. 2nd Ed. Garden City, NY: Doubleday and Company, Inc, 1979.

Hendrix, Laborn J. *Heavy Equipment Operator Instructional Materials, Basic Core*. Stillwater, OK: Oklahoma St. Dept. of Vocational and Tech. Educ./Curriculum Inst. Materials Cntr, 1981.

National Safety Council. *Annual Editions in Criminal Justice*. 7th Ed. Chicago, IL, 1974.

National Safety Council. *First Aid and CPR*. Sudbury, MA: Jones and Bartlett Publishers, 1997.

Associated General Contractors of America. *Manual of Accident Prevention in Construction*. 9th Ed. Arlington, VA: AGC of America, 2009.

Resources Other

1. NIOSH Pocket Guide to Chemical Hazards (electronic version): <http://www.cdc.gov/niosh/docs/2005-149/pdfs/2005-149.pdf>

Top of page

Key: 631