

Excavation Safety for Competent Persons / CPT Course Outline

Lesson A – Course Introduction and Objectives

30 minutes

A.1 Introduction

A.2 Objectives

1. 1926 Subpart P Excavations Standard
2. Hazards associated with trenching and excavation
3. Protective Systems
 - a. Sloping
 - b. Benching
 - c. Shoring
 - d. Shielding
4. Soil Classification
 - a. Visual
 - b. Manual

A.3 Becoming the Competent Person

1. Training
2. Experience
3. Authority

A.4 “Competent Person” Definition

A.5 Responsibilities of a the Competent Person

1. Stop work
2. Inspect excavations
3. Test atmospheres
4. Inspect equipment
5. Monitor water removal
6. Visually evaluate soil
7. Manually test excavation soil

Lesson B – OSHA Excavation standards and the Competent Person

30 minutes

B.1 Basic OSHA Facts

1. What is OSHA
2. Why was OSHA created
3. Impact of OSHA on the industry
4. States that work with OSHA

B.2 Statistics for trench Collapse

B.3 Fines, Penalties, and Damage awards for trench collapse

Lesson C – OSHA 1926.650 Scope, application, and definitions

30 minutes

C.1a Scope and Application

1. Excavations
2. Trench Excavations

C.1b Definitions

1. Accepted Engineering Practices
2. Aluminum Hydraulic Shoring
3. Bell-bottom Pier Hole
4. Benching (benching system)
5. Cave-in
6. Competent Person
7. Cross Braces
8. Excavations
9. Faces or Sides
10. Failure
11. Hazardous Atmospheres
12. Kick Out
13. Protective Systems
14. Ramp
15. Registered Professional
16. Sheeting
17. Shield (Shield systems)
18. Shoring (Shoring System)
19. Sides
20. Sloping (Sloping Systems)
21. Stable Rock
22. Structural Ramp
23. Support System
24. Tabulated Data
25. Trench (Trench Excavation)
26. Trench Box
27. Trench Shield
28. Uprights
29. Wales

Break

Lesson D – OSHA 1926.651 Specific Excavation Requirements **75 minutes**

- D.1 OSHA 1926.651 Introduction
- D.2a Surface encumbrances
- D.2b Underground installations
- D.2c Access and egress
- D.2d Exposure to vehicular traffic
- D.2e Exposure to falling loads
- D.2f Warning systems for mobile equipment
- D.2g Hazardous atmospheres
- D.2h Protection from hazards associated with water accumulation
- D.2i Materials and equipment
- D.2j Protection of employees from loose rock and soil
- D.2k Inspections
- D.2l Fall protection

Break

Lesson E – OSHA 1926.652 Requirements for protective systems **30 minutes**

- E.1 OSHA 1926.652 Introduction
- E.2a Protection of employees in excavations
- E.2b Design of sloping and benching systems
- E.2c Design of support systems, shield systems, and others
- E.2d Materials and equipment
- E.2e Installation and removal of support
- E.2f Sloping and benching systems
- E.2g Shield systems
- E.3 Protective system excavation comparisons

Lesson F – Understanding Tabulated Data **30 minutes**

- F.1 Introduction to tabulated (tab) data
- F.2 The meaning of tabulated data
- F.3 The importance of tabulated data
- F.4 How to read tabulated data
- F.5 An example of common tabulated data
- F.6 An example of manufacturer's guidelines
- F.7 An example of manufacturer's tabulated data charts

Break

Lesson G – About OSHA Appendices

5 minutes

- G.01 The importance of OSHA Appendices A-F
- G.02 Understanding Appendix navigation

Lesson H.1 – Appendix A – Soil Classification

35 minutes

- H.1a About Appendix A – Soil Classification
- H.1b.01 Introduction to soil classification
- H.1b.02 Environmental factors and testing
- H.1b.03 Environmental factors in the field
- H.1b.04 Physical characteristics of soil
- H.1b.05 OSHA soil classification system definition
- H.1b.06 OSHA soil classification system requirements
- H.1b.07 Acceptable soil classification visual tests
- H.1b.08 Acceptable soil classification manual tests
- H.1b.09 About unconfined compressive strength
- H.1b.10 The importance of soil type C-60
- H.1b.11 Speedshore C-60 Classification and checklist

Lesson H.2 – Appendix B – Sloping Benching

35 minutes

- H.2b.01 Introduction to sloping and benching
- H.2b.02 Soil classification factors for sloping and benching
- H.2b.03 OSHA sloping and benching definitions
- H.2b.04 Requirements for distressed soil
- H.2b.05 Configuration requirements for type A soil
- H.2b.06 Configuration requirements for type B soil
- H.2b.07 Configuration requirements for type C soil
- H.2b.08 Configuration requirements for multiple soil types

Lunch

Video: Darby Patrick Video

15 minutes

Lesson H.3 – Appendix C – Timber Shoring

5 minutes

- H.3a About Appendix C – Timber shoring
- H.3b.01 Introduction to timber shoring
- H.3b.02 Soil classification factors for timber shoring
- H.3b.03 Using the OSHA tables for footnotes for timber shoring

Lesson H.4 – Appendix D – Aluminum hydraulic shoring for trenches **5 minutes**

- H.4a About Appendix D – Aluminum hydraulic shoring for trenches
- H.4b.01 Introduction to aluminum hydraulic shoring for trenches
- H.4b.02 Soil classification factors and the use of tables
- H.4b.03 Using manufacturer's tabulated data
- H.4b.04 Remember these safety tips

Lesson H.5 – Appendix E – Alternatives to timber shoring **5 minutes**

H.5a About Appendix E – Alternatives to timber shoring

H.5b.01 Figure 1- Figure 4

Lesson H.6 – Appendix F – Selection of Protective Systems **5 minutes**

H.6a About Appendix F – Selection of protective systems

H.6b.01 Figure 1 – Figure 3

Lesson I – The Four Types of Trench Collapse **5 minutes**

L.1 Introduction

L.2.a The spoil pile

L.2.b The shear wall

L.2.c The belly slide

L.2.d The lip slide

L.3Trench collapse summary

Lesson J – The Good, Bad, and the Ugly on the job **10 minutes**

J.1 About the examples in this section

J.2 Ugly site photos

J.3 Comparing wrong and right protective systems solutions

J.4 Things to really avoid

J.5 An example of a good innovation that works

Lesson K – Summary **10 minutes**

K.1 A review of the Competent Person responsibilities

K.2 What you have learned about OSHA 1926 Subpart Appendices A-F

K.3 What you have learned in this course

Test & Review