YOUR SAFETY Department SAFETY Solutions	**HSE MANAGEMENT SYSTEM** HSE Training OSHA 29 CFR 1926 Subpart P OSHA 29 CFR 1926.650 OSHA 29 CFR 1926.651 OSHA 29 CFR 1926.652

TRENCHING AND EXCAVATIONS – COMPETENT PERSON TRAINING		
91 Eagle Creek Ranch Blvd. Floresville, Texas 78114	HEALTH, SAFETY AND ENVIRONMENT	**OSHA Authorized Trainer** Chris Thuneman, CSP

Program of Instruction
Course Syllabus

Course Title: Trenching and Excavation – Competent Person Training

Course Duration: 8 hours

Program: Safety Requirements for Trenching and Excavation

Level of Training: Competent Person Level Training

Course Description: This course is designed to meet the following objectives:

- Increase the members' knowledge of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous or dangerous to employees.
- Develop new attitudes toward health and safety;
- Increase safety conscious behaviors for work in trenches and excavations, and
- Familiarize members with the OSHA requirements for working in trenches and excavations including general hazards of trenches and excavations, working around underground utilities, dangers with water accumulation, access and egress from trenches and excavations, vehicle and pedestrian exposure to trenches and excavations, soil testing, protective systems and rescue planning.

To accomplish these objectives, the course design integrates small group activities, hands-on workshops, site simulation exercises, demonstrations, facilitated discussions, and audio-visual aids.

Course Requirements and/or Recommendations: These can be divided into three categories: those completed prior to arriving in class (Pre-Course Work), those completed during class, such as homework assignments and quizzes (Course Work), and requirements completed after class but prior to receiving a certificate of completion. (Post-Course Work)

<u>Summary of Directions</u>

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Pre-Course Work**:** None

Course Work: This course meets or exceeds the initial training requirements of OSHA 29 CFR 1926 Subpart P, OSHA 29 CFR 1926.650, OSHA 29 CFR 1926.651 and OSHA 29 CFR 1926.652.

Post-Course Work: None

Course Content:

Module: 1 - Legal Rights and Responsibilities

Terminal Learning Objective:

- Identify which government agencies are responsible for aspects of safety, health and environmental protection.
- Find information you need from OSHA regulations.
- Discuss your health and safety rights on the job.
- Identify your health and safety responsibilities.

Module: 2 – Competent Person Requirements

Terminal Learning Objective:

- Define a Competent Person and his/her responsibilities in excavation activities and operations.
- Review Competent Person training requirements for soil analysis, use of protective systems and requirements of the standard.
- Explain Competent Person Authority requirements to take prompt corrective measures to eliminate existing hazards and authority to stop work to take such corrective actions.
- Explain Competent Person requirements for conducting inspections of the worksite, excavation, and protective systems.

Module: 3 – General Hazards Associated with Trenching and Excavation Work

Terminal Learning Objective:

- Identify hazards found in Trenching and Excavation work such as cave-ins, confined spaces, utilities, biological hazards, limited access and egress, and water accumulation.

- Review appropriate control measures to avoid trenching and excavation hazards using the hierarchy of control.
- Review appropriate inspections procedures and documentation of trenching and excavation operations.

Module: 4 – Identifying and Addressing Atmospheric Hazards

Terminal Learning Objective:

- Identify if the general criteria for atmospheric testing.
- Review testing considerations including instrument calibration and reliability.
- Describe acceptable limits in atmospheric testing.

Module: 5 – Soil Testing and Classification

Terminal Learning Objective:

- Describe soil mechanics.
- Determination of Soil Type by Manual, Dry, Thread, Ribbon, Mechanical and Thumb.
- Review Test Equipment and Methods for Evaluating Soil Type.

Module: 6 – Shoring and Shielding Types

Terminal Learning Objective:

- Describe different types of shoring methods.
- Describe shoring requirements for Registered Professional Engineer approval.
- Describe shielding methods and requirements.
- Describe the requirements for safely installing and removing protective systems.

Module: 7 – Sloping and Benching

Terminal Learning Objective:

- Review benching methods and requirements.
- Review sloping methods and requirements.
- Review the limititations of benching and sloping methods.

Module: 8 – Spoil

Terminal Learning Objective:

- Review hazards created by improper placement of spoil piles.
- Review appropriate methods for storing spoil.

Module: 9 – OSHA Directives and Interpretations

Terminal Learning Objective:

- Review OSHA enforcement methods on trenching and excavation work sites.
- Review OSHA inspection procedures for trenching and excavation work sites.

VARIOUS SMALL GROUP EXERCISES

These small group exercises will demonstrate how to use site specific information about trenching and excavations to reinforce the training module presented. They are designed to strengthen the modules core objectives and answer questions about job planning process.

COURSE EXAM

Participants will take a 50-question (multiple choice) exam. Minimum passing score is 70%.

EVALUATION STRATEGY:

A written test is conducted at the completion of the course. In addition, several simulated evolutions and scenarios are used throughout the course.

References:

29 CFR 1926 §§650–652 and Appendixes A–F.

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Excavations. Occupational Safety and Health Administration. OSHA 2226.

Manual of Accident Prevention in Construction. Washington, D.C.: Associated General Contractors of America, 1971.

Safety and Health in Excavation and Trenching Operations. U.S. Department of Labor, Occupational Safety and Health Administration.

“Trenching Safety for Concrete Contractors.” *Concrete Construction* (June 1986): 556–559.

Technical References

American Standard Safety Code for Building Construction. Institute of Architects. National Safety Council. June 1944.

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“Excavation Stabilized Using Rock Revetments.” *Journal of Geotechnical Engineering*. Vol. 109, No. 3 (March 1983): 424–439.

“Field Measurements of an Earth Support System.” *Journal of the Geotechnical Engineering Division*. Proceeding of ASCE. Vol. 107, No. GT 12 (December 1981): 1625–1642.

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Peck, Hanson and Thornburn. Foundation Engineering. New York: John Wiley and Sons, 1974.

Peck, R.B., *et al. Foundation Engineering*. New York: John Wiley and Sons, 1974.

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Terzaghi, K., and R.B. Peck. *Soil Mechanics in Engineering Practice*. New York: John Wiley and Sons, 1948.

“Trench Excavation Effects on Adjacent Buried Pipes: Finite Element Study.” *Journal of Geotechnical Engineering*. Vol. 109, No. 11 (November 1983): 1399–1415.

U.S. Department of Labor, OSHA Technical Manual (Section V: Chapter II), Excavations: Hazard Recognition in Trenching and Shoring.

Werblin, D.A. “Installation and Operation of Dewatering Systems.” *ASCE Journal Soil Mech*. 86 (1960): 47–66.

Yokel, Tucker, Lymon, Reese. *Soil Classification for Construction Practice in Shallow Trenching*. U.S. Department of Commerce, National Bureau of Standards.

Course Schedule

DAY ONE

Start Time: 08:00 to 17:00

Event	Duration
Orientation and Introductions – Course Objectives - Registrations	.5 hour
Module 1: Legal Rights and Responsibilities	.5 hour
Module 2: Competent Person Requirements	1 hour
Module 3: General Hazards Associated with Trenching and Excavation Work	1 hour
Module 4: Identifying and Addressing Atmospheric Hazards	1 hour
Lunch	
Module 5: Soil Testing and Classification	1 hour
Module 6: Shoring and Shielding Types	.75 hour
Module 7: Sloping and Benching	.75 hour
Module 8: Spoil	.5 hour
Module 9: OSHA Directives and Interpretations	.5 hour
Final Exam	.5 hour