IRON LOT

TRENCH SAFETY

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www.ironlot.com

IRON LOT SAFETY TRAINING SERIES

NATIONAL TRENCH SAFETY MONTH

WEEK 3 TRAINING: TRENCH BOXES AND SHORING

Training Topic:

Trench Boxes and Shoring: Choosing the Right Protection System

Training Duration

15–20 Minutes

Audience

- Equipment Operators
- Laborers
- Foremen
- Superintendents
- Project Managers
- Utility Crews

Training Objectives

Upon completion of this training, employees should be able to:

✓ Understand the basic difference between trench boxes and shoring

✓ Recognize common types of protective systems

✓ Understand when trench boxes may be used as shielding systems

✓ Identify factors that affect steel vs. aluminum trench box selection

✓ Understand why manufacturer tabulated data must be reviewed

✓ Recognize common protective system mistakes

✓ Explain why the Competent Person must evaluate the selected system

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Why Protective Systems Matter

Trench protection systems exist to help protect workers from cave-ins and other excavation hazards.

OSHA's excavation standards are found in **29 CFR 1926 Subpart P**. OSHA **29 CFR 1926.652** generally requires workers in excavations to be protected from cave-ins by an adequate protective system, with limited exceptions such as excavations made entirely in stable rock or certain excavations less than 5 feet deep where a competent person determines there is no indication of a potential cave-in.

Protective systems may include:

- Sloping
- Benching
- Shoring
- Shielding with trench boxes

The correct system depends on the excavation, soil conditions, depth, water, nearby loads, manufacturer tabulated data, and competent person review.

Trench Boxes vs. Shoring

Trench boxes and shoring are both used in excavation safety, but they serve different purposes.

Trench Boxes

A trench box is a shielding system placed inside an excavation to help protect workers if soil movement or a cave-in occurs.

Workers should stay inside the protected area of the trench box.

A trench box is not designed to prevent all soil movement. It is designed to help protect workers inside the box if soil movement occurs.

Shoring

Shoring is designed to support trench walls.

Common shoring systems may include:

- Hydraulic shoring
- Aluminum hydraulic shoring
- Timber shoring
- Engineered shoring systems

Key Difference

- Trench boxes shield workers inside the protected area.
- Shoring supports the excavation walls.

Discussion Question

Why is it important to understand the difference between shielding and shoring?

Steel vs. Aluminum Trench Boxes

Steel and aluminum trench boxes serve different jobsite needs.

Neither material is automatically better in every situation.

The correct choice depends on the job.

Steel Trench Boxes May Be Used For:

- Larger excavations
- Deeper trench applications
- Heavy-duty utility work
- Projects with larger excavators or lifting equipment
- Jobs where durability and strength are major considerations

Aluminum Trench Boxes May Be Used For:

- Smaller crews
- Municipal utility work
- Service line work
- Jobs with smaller equipment
- Projects requiring easier transport and handling
- Excavations where reduced weight is helpful

Safety Reminder

Steel versus aluminum should not be chosen by weight alone. Selection should consider trench depth, soil conditions, water, equipment capacity, configuration, tabulated data, and competent person review.

Soil Conditions and Depth Ratings Matter

A trench box or shoring system that is appropriate for one job may not be appropriate for another.

Factors that affect protective system selection include:

- Soil classification
- Previously disturbed soil
- Water accumulation
- Nearby traffic or equipment vibration
- Adjacent structures
- Spoil piles or materials near the edge
- Trench depth and width

Depth ratings matter because trench boxes and shields are designed for specific conditions and configurations.

Discussion Question

What site conditions could make one trench protection system inappropriate for a job?

Manufacturer Tabulated Data

Manufacturer tabulated data is one of the most important documents associated with trench boxes and shield systems.

Tabulated data may include:

- Allowable depths
- Soil conditions
- Panel configurations
- Spreader requirements
- System limitations
- Assembly details
- Engineering information
- Use restrictions

OSHA defines tabulated data as tables and charts approved by a registered professional engineer and used to design and construct protective systems. OSHA also allows certain support systems, shield systems, and other protective systems to be designed using manufacturer tabulated data when used according to the requirements in 29 CFR 1926.652.

Every trench box Iron Lot sells comes with manufacturer tabulated data that includes depth ratings and a registered professional engineer stamp.

Safety Reminder

Tabulated data does not mean a trench box is automatically appropriate for every excavation.

The Competent Person should review the tabulated data and confirm that the system is appropriate for the excavation, soil conditions, depth, configuration, spreader setup, and jobsite conditions.

Basic Installation and Use Practices

Protective systems only work as intended when installed and used correctly.

Basic trench box and shield use practices include:

- Review manufacturer tabulated data before use
- Inspect panels, spreaders, pins, and connections
- Use the correct spreader size and configuration
- Do not use damaged components
- Keep workers inside the protected area
- Provide safe access and egress
- Keep spoil piles and equipment back from the trench edge
- Monitor water accumulation
- Reinspect when conditions change

OSHA requires safe access and egress in trench excavations 4 feet or more in depth. OSHA also requires excavated material and equipment to be kept at least 2 feet from the edge of excavations or otherwise retained.

Common Protective System Mistakes

Protective systems can create a false sense of security if they are used incorrectly.

Common mistakes include:

- Using a trench box outside its tabulated data
- Using the wrong system for the depth or soil conditions
- Missing, incorrect, or damaged spreaders
- Using damaged panels or components
- Workers standing outside the protected area

- Improper ladder placement
- Spoil piles too close to the trench edge
- Heavy equipment operating too close to the excavation
- Ignoring water accumulation
- Failing to inspect after rain or changing conditions
- Assuming one trench box works for every job

Discussion Question

Which of these mistakes would be easiest to overlook on a busy jobsite?

The Competent Person Must Evaluate the System

The Competent Person plays a central role in protective system selection and use.

Before workers enter the excavation, the Competent Person should evaluate:

- Soil type
- Trench depth
- Protective system selected
- Manufacturer tabulated data
- Water conditions
- Spoil pile placement
- Equipment near the trench
- Access and egress
- Signs of movement or instability
- Visible damage to protective equipment

The Competent Person must have authority to take corrective action when unsafe conditions exist.

Key Takeaways

✓ Trench boxes and shoring serve different purposes

✓ Trench boxes shield workers inside the protected area

✓ Shoring supports trench walls

✓ Steel and aluminum trench boxes serve different jobsite needs

✓ Soil conditions and depth ratings must be considered

✓ Manufacturer tabulated data must be reviewed and followed

✓ Workers should stay inside the protected area of the trench box

✓ Protective systems must be inspected and used correctly

✓ The Competent Person must verify that the system is appropriate

✓ No worker should enter an unsafe or improperly protected trench

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Knowledge Check

1. True or False:
   A trench box and shoring system serve the exact same purpose.

☐ True
☐ False

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2. What is the main purpose of a trench box?

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3. Name two factors that affect protective system selection.

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4. True or False:
   A trench box should be used according to manufacturer tabulated data.

☐ True
☐ False

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5. Name one common protective system mistake.

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6. Who should evaluate whether the protective system is appropriate for the excavation?

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Employee Acknowledgement

I have participated in this trench safety training session and understand the topics discussed.

Employee Name: _____

Signature: _____

Date: _____

Instructor Verification

Instructor Name: _____

Signature: _____

Date: _____

Attendance Record

Name: _____

Signature: _____

Date: _____

Iron Lot, LLC

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