2022 Trench Stand Down

JUNE IS TRENCH SAFETY MONTH

SAVE the DATE

NUCA
We Dig America

Trench Safety STAND DOWN

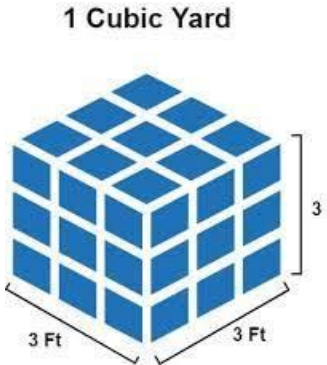
OSHA® Occupational Safety and Health Administration

OSHA Supports NUCA's Trench Safety Stand Down

June 20 - 24, 2020

Consider the Risks

- Trenching fatality is 112% greater than all other construction accidents
- Fifty percent of this who perish in cave-ins were people attempting a rescue.
- Most cave-ins occur in trenches five to fifteen feet deep
- One cubic yard of soil weighs ~3000 lbs..



= approximately 3000 lbs..

What is A Trench Safety Stand Down (TSSD)

- The TSSD presents the opportunity for employers to talk directly to employees and others about safety.
- Trench Safety Stand Down (TSSD) was first held in 2016 by NUCA, with OSHA joining as a partner a year later.
- Stand Downs focus on trench & excavation hazards, and other related hazards
- They reinforce the importance of using trench protective systems and protecting workers from trenching hazards.


Trench Safety
Stand Down

JUNE IS TRENCH SAFETY MONTH!

An Unprotected Trench Can Be An Early Grave

Trench Safety Stand Down

How to Conduct a Trench Safety Stand Down

Take a break to have a toolbox talk or another safety activity to draw attention to the specific hazards related to working in and around trenches/excavations.

Provide to NUCA feedback about their Stand Down,

NUCA will collect the information, publicize the overall total number of participants, and publish the names of the companies that held a Trench Safety Stand Down.

Recognition of Participation

For participants in the 2022 TSSD, NUCA will provide a ***Certificate of Participation*** which will be e-mailed

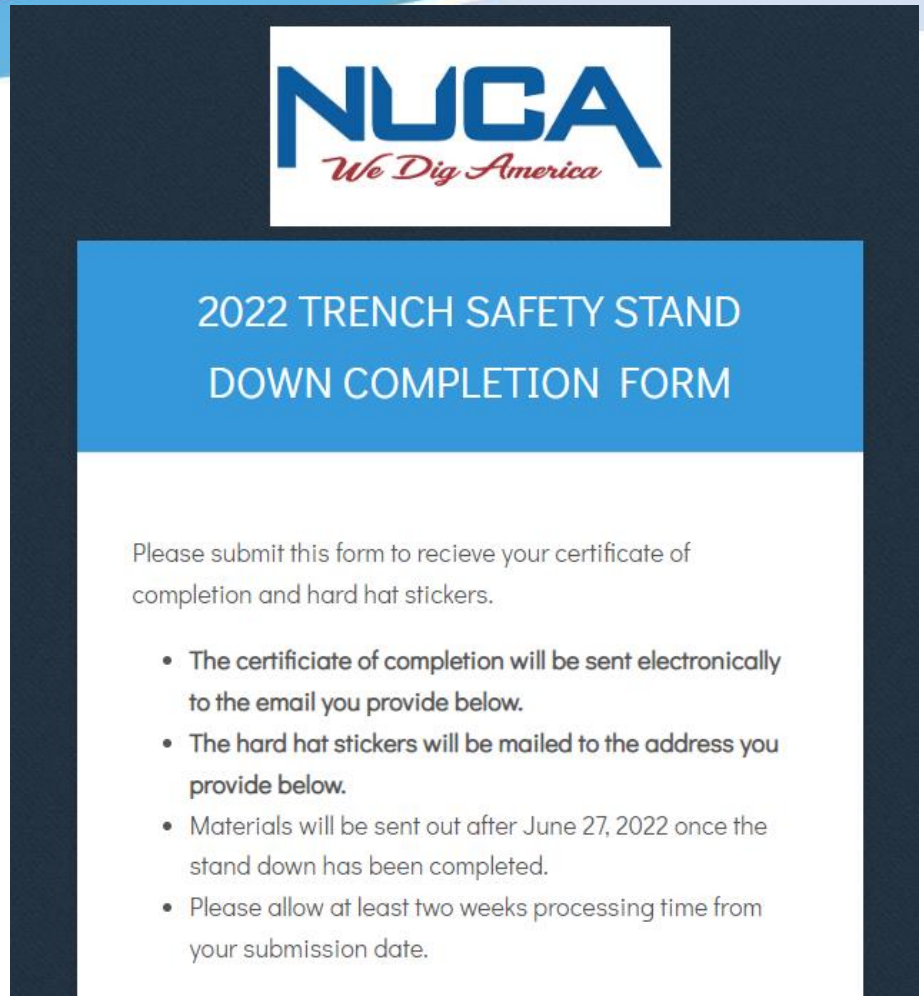
Helmet stickers will be physically mailed to the address provided on the form you will complete below.

NUCA will publish the list of names of participating organizations on the NUCA website and in our printed publications after the conclusion of the event.

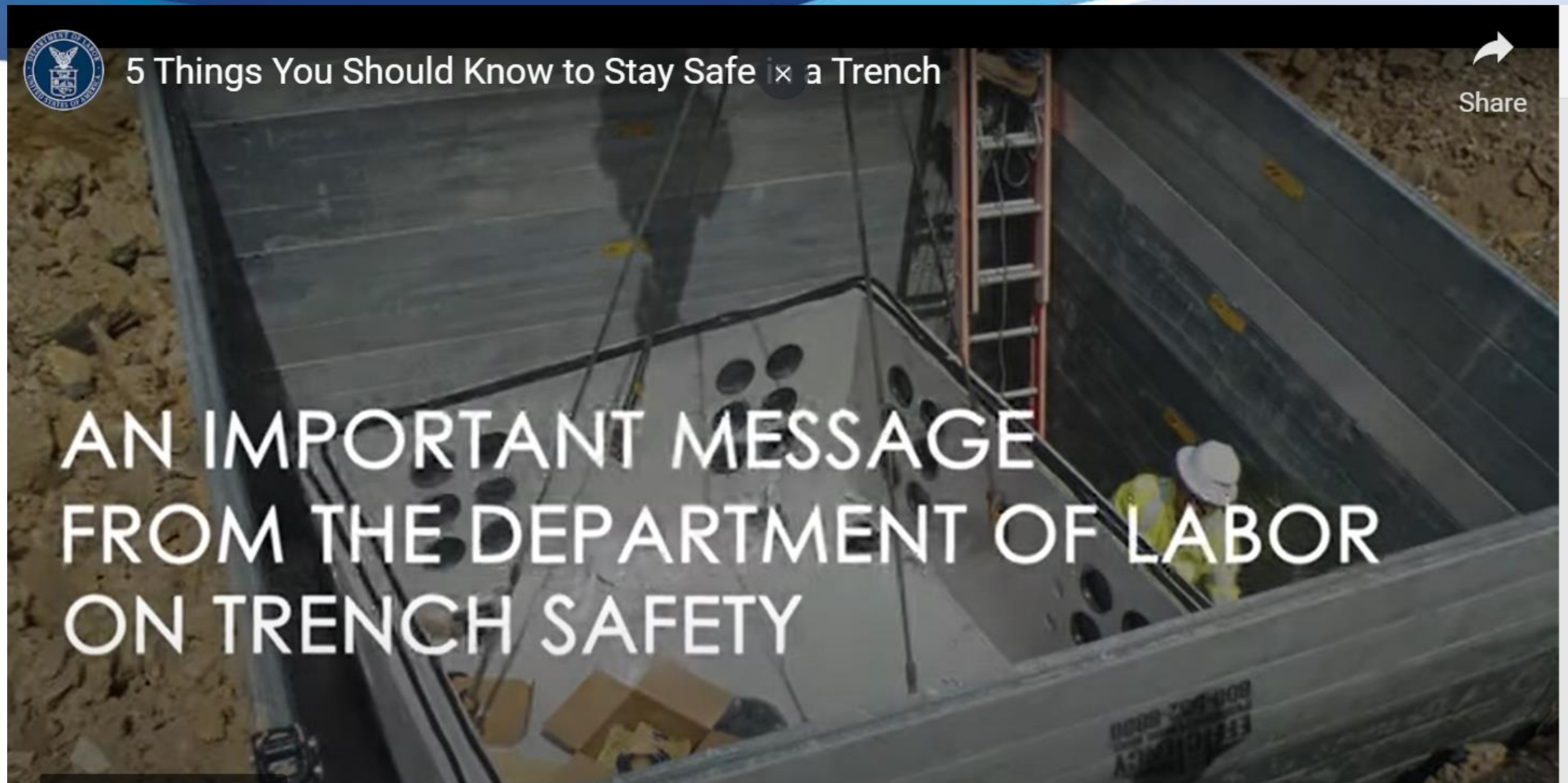
Send in any photos taken during your stand down to nuca@nuca.com.

2022 TRENCH SAFETY STAND DOWN COMPLETION FORM

- **TSSD 2022 Submission Form:** https://form.jotform.com/220684074665158



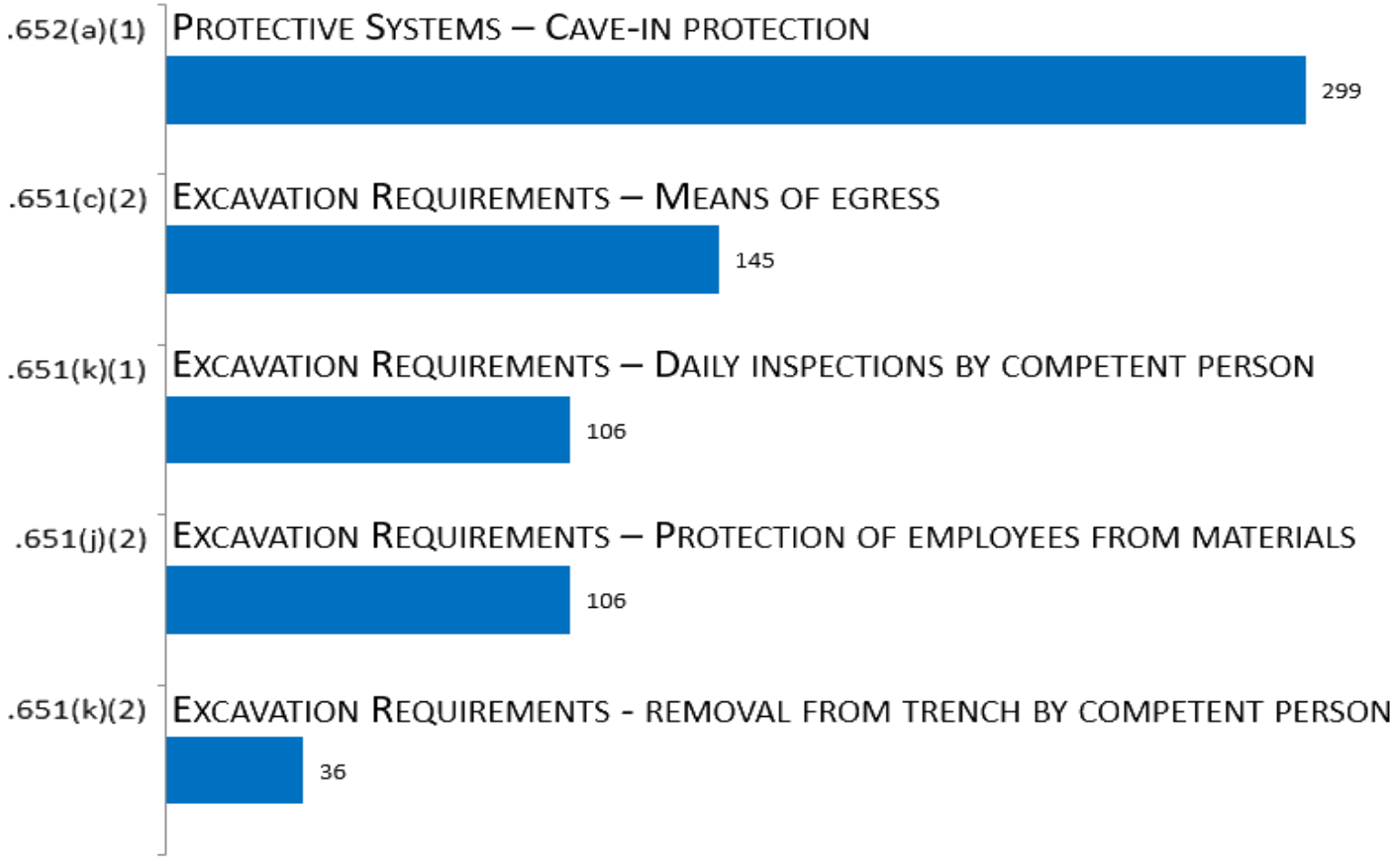
5 THINGS YOU SHOULD KNOW TO STAY SAFE



Excavations [1926.650 – .652]

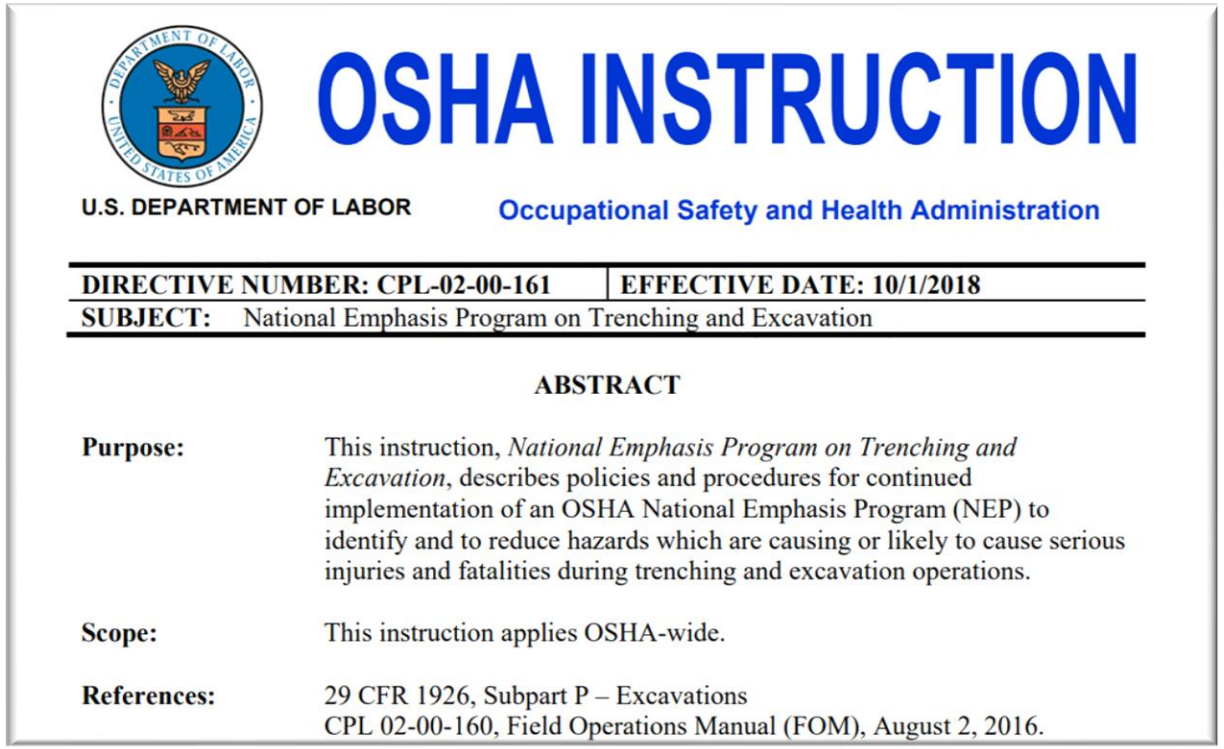
29 CFR 1926.

Subpart P



OSHA
FY21

Department of Labor – OSHA Directive



U.S. DEPARTMENT OF LABOR

OSHA INSTRUCTION

Occupational Safety and Health Administration

DIRECTIVE NUMBER: CPL-02-00-161	EFFECTIVE DATE: 10/1/2018
SUBJECT: National Emphasis Program on Trenching and Excavation	

ABSTRACT

Purpose: This instruction, *National Emphasis Program on Trenching and Excavation*, describes policies and procedures for continued implementation of an OSHA National Emphasis Program (NEP) to identify and to reduce hazards which are causing or likely to cause serious injuries and fatalities during trenching and excavation operations.

Scope: This instruction applies OSHA-wide.

References: 29 CFR 1926, Subpart P – Excavations
CPL 02-00-160, Field Operations Manual (FOM), August 2, 2016.

- OSHA is targeting workplaces of potential trench and excavation hazards for not only site inspections, but also for safety training
- OSHA is working with industry associations and public utilities to create a public/private effort to impact worker safety.
- OSHA will continue to track abated trench and excavation hazards

Excavation & Trench Safety

Excavation & Trench Safety

City of Boston

Almost midnight

Congress St parking garage

Worker in trench not fully protected

Ladder not at least three feet above

Silica

- Another NEP (Silica)
- Dry cutting
- Silica standard has table for exposure assessments.
- Chop saw needs an integral built-in water system for dust control

Planning

- Assign and train a competent person.
- Call 811 to identify and mark underground utility lines.
- Dig a minimum 5 feet away from utility lines.
- Evaluate the soil to determine its stability.
- Plan the job layout to identify safe locations for spoil piles and heavy equipment routes.
- Before the job starts, if the trench will be 5 feet or deeper, set up a protective system. <5', CP Insp.
- If the trench will be 20 feet or deeper, provide additional engineering protections.
- Have a traffic control plan and lane closure permits.
- Develop a trench emergency action plan.

Underground Construction Safety Overview

- Cave-Ins Are Preventable
- Injuries/Fatalities Occur Due To Lack Of Knowledge
- Injuries/Fatalities Occur Due To Willful Disregard
- Owners/Engineers/Supervisors/Foremen/Competent Persons Are Held Accountable
- **The Competent Person**

Excavations Hazards

- **NUMBER 1** – Cave-ins are the greatest risk
- Focus Four – **Caught-in-between, Struck-by, Electrocution**, Falls
- Asphyxiation due to lack of oxygen
- Inhalation of toxic materials
- Utility strikes

Injury and Death

- Trenching & excavation is one of the most hazardous construction operations
- **Most cave-ins occur 5-15 feet in depth**
- There is typically no warning before cave-in
- A second cave-in could happen

Definitions

- Excavation
- Trench
- **Competent Person**
- Qualified Person

- Three Ss
  - Shielding
  - Sloping
  - Shoring
- RPE (Registered Professional Engineer
- Cave-in
- Tabulated data

Worker Protection

- Workers must be protected from cave-ins by appropriate protection systems
- The protective systems must be able to resist all expected loads to the system

Protective System Requirements

"**Excavation**" means any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal..

1926.652(a)(1)

- Each employee in an **excavation** shall be protected from cave-ins by an adequate protective system designed in accordance with paragraph (b) or (c) of this section except when**: (NO MENTION OF DEPTH HERE)**

1926.652(a)(1)(i)

- Excavations are made entirely in stable rock; or

1926.652(a)(1)(ii)

- **Excavations are less than 5 feet (1.52m) in depth and examination of the ground by a competent person provides no indication of a potential cave-in.**

Employee Training

- The risks of Trenching & Excavation (T&E) work
- How employees are protected when they enter T&Es
- Factors that pose a hazard to workers in a T&E
- The role of the Competent Person

1926.21(b)(2)

The employer **shall *instruct* each employee** in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.

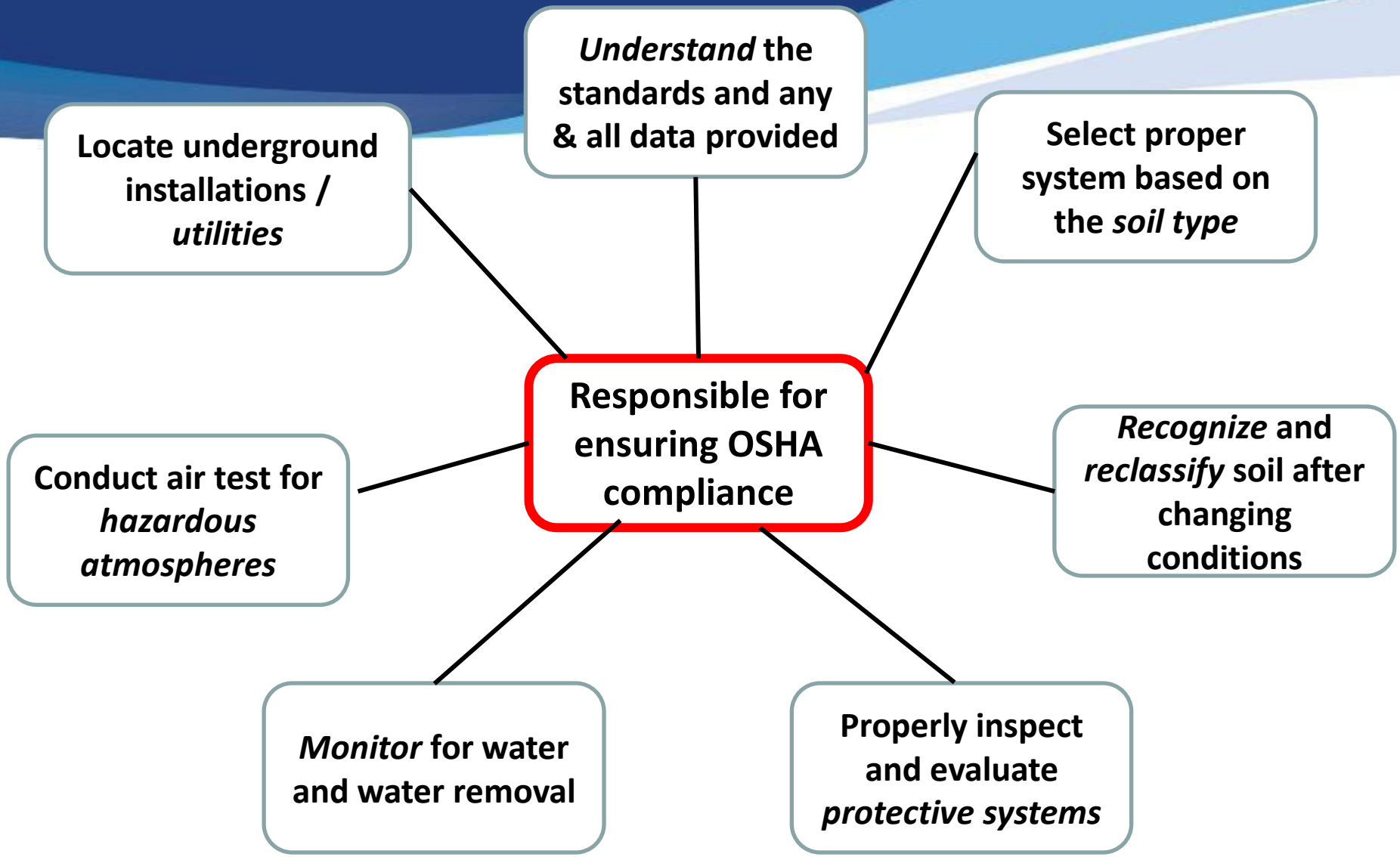
*Some common synonyms of **instruct** are **discipline, educate, school, teach, and train**.*

COMPETENT PERSON

- Capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and
- Has authorization to take prompt corrective measures to eliminate them

What does this mean?

Competent Person - Responsibilities



Competent Person – Required Training

Soil Analysis

Use of protective systems

Requirements of the standard, 1926 Subpart P

Federal Register / Vol. 54, No. 209 / Tuesday, October 31, 1989 / Rules and Regulations 45909

The proposal defined "bell-bottom pier hole" as "a type of shaft or footing excavation, a portion of which is made larger than the cross section above to form a belled shape." OSHA received three comments on this definition. CAL/OSHA and the Associated Builders and Contractors Inc. (ABC) (Exs. 4-4 and 4-78) suggested the definition should read "the bottom of which" not "a portion of which", since that more accurately describes the situation. The other commenter, Talbert Corporation (Ex. 4-72), suggested a completely revised definition in conjunction with a new section on excavation of pier holes. The commenter's suggestions are discussed in detail under Issue 13 above. OSHA has determined that the amendment suggested by CAL/OSHA and ABC presents a more accurate description of the defined conditions.

Section 1926.650(b) defines "benching" as "a method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels." This term is not used in the existing standard and therefore was not previously defined. The definition in the final rule is virtually identical to the proposal, except that the word "from" has been substituted for "against," based on a general comment made by the ACCSH (Tr. 8/5/87, p. 448). No other comments were received on this definition.

Section 1926.650(b) defines "cave-in" as "the separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person." The existing standard did not use or define the term "cave-in," but used the terms "moving ground" and "hazardous ground movement" instead. However, neither of these terms was defined in the existing standard. In order to eliminate this deficiency and resolve the confusion as to what these terms mean, OSHA proposed to eliminate these two terms and replace them with a definition of "cave-in," which would accurately convey the intended concept of the hazard by describing the mechanism of the hazard and its results. The proposed definition stated that cave-in means, "The separation of a mass of soil or rock material from the side of the excavation and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person."

OSHA received two comments and an ACCSH recommendation (Tr. 8/5/87, pp. 449-450) on this definition. Both the ACCSH and the Building and Construction Trades Department of the AFL-CIO (Ex. 4-17) noted that the definition did not cover the loss of soil from under a shield or support system. The Agency agrees that the hazard noted by the commenters needs to be addressed and has revised the final rule to reflect this input. The Carolinas Branch of the Associated General Contractors of America (CBAGC) (Ex. 4-54) supported the proposed definition of cave-in, but recommended that the term "hazardous moving ground" be retained and properly defined. However, CBAGC did not suggest a definition for "hazardous moving ground" and did not explain the rationale for recommending the inclusion of another term which has a similar if not identical meaning to "cave-in." Therefore, with regard to this recommendation, the Agency declines to act.

Based on the above discussion, OSHA promulgates this definition as revised.

Section 1926.650(b) defines "competent person." This definition is identical to the definition in § 1926.32(f) of subpart C of the current Construction Safety and Health Standards. The term is used throughout existing subpart P, but was not defined within the subpart, and there were no references to the existing definition in subpart C. In the proposal, OSHA added the definition to subpart P to help those using the standard. In addition, an explanatory note was added at the end of the definition in order to clarify the Agency's intent that the "competent person can act as the employer's designee for the purpose of choosing a protective system from the options provided in § 1926.652 (b) and (c) below, but cannot take an original design responsibility allowed by § 1926.652 (b)(3), (c)(3) or (c)(4), unless otherwise qualified."

Although the definition of "competent person" in § 1926.650 has not been changed from the proposal and is the same as that in existing § 1926.32, it is important to note that what constitutes a "competent person" depends on the context in which the term is used. In order to be a "competent person" for the purposes of this standard one must have had specific training in, and be knowledgeable about, soils analysis, the use of protective systems, and the requirements of this standard. One who does not have such training or knowledge cannot possibly be capable of identifying existing and predictable hazards in excavation work or taking prompt corrective measures.

The Agency received only one comment on the actual definition. The Michigan Department of Labor (Ex. 4-46) recommended dropping the term from the standard and making a reference to either "qualified person or qualified engineer." OSHA declines to act on this suggestion. The "competent person," as defined, is the appropriate person to use whenever an assessment of working conditions must be made with respect to safety. By definition, a competent person is capable of recognizing hazards and has the authority to correct them. By contrast, a "qualified" person or engineer, as defined in § 1926.32(l) might have more technical expertise, but would not necessarily have expertise in hazard recognition or the authority to correct identified hazards.

OSHA did receive input from the ACCSH (Tr. 8/5/87, p. 450) concerning the explanatory note at the end of the definition. The ACCSH recommended deleting "or otherwise qualified" from the note because it is ambiguous and there is no other way to be qualified to develop original designs unless the person is a registered professional engineer. The Agency recognizes the potential confusion that could result if the note remained, and has decided to delete the explanatory note from the Final Rule.

Section 1926.650(b) defines "cross braces" as "the horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales." This definition is identical to the proposed definition, and replaces the existing definition "braces (trench)." In the proposal, the term "stringers" was dropped from the current definitions and replaced with the term "wales." The existing standard defines "wales" and "stringers" identically as "the horizontal members of a shoring system whose sides bear against the uprights or earth." OSHA believes use of the term "wales," which is more consistent with industry terminology, would improve the definition of "cross braces."

The Agency received no comment on this definition, and therefore, promulgates this definition as proposed.

Section 1926.650(b) defines "excavation" as "any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal." The existing definition in § 1926.653(f) defines "excavation" as "any man-made cavity or depression in the earth's surface including its sides, walls, or

"…One who does not have such training or knowledge cannot possibly be capable of identifying existing and predictable hazards in excavation work or taking prompt corrective measures…"

Competent Person – Required Training

Although the definition of "competent person" in § 1926.650 has not been changed from the proposal and is the same as that in existing § 1926.32, it is important to note that what constitutes a "competent person" depends on the context in which the term is used. In order to be a "competent person" for the purposes of this standard one must have had specific training in, and be knowledgeable about, soils analysis, the use of protective systems, and the requirements of this standard. One who does not have such training or

of identifying existing and predictable hazards in excavation work or taking prompt corrective measures.

"…One who does not have such training or knowledge cannot possibly be capable of identifying existing and predictable hazards in excavation work or taking prompt corrective measures…"

Part II

Department of Labor

Occupational Safety and Health Administration

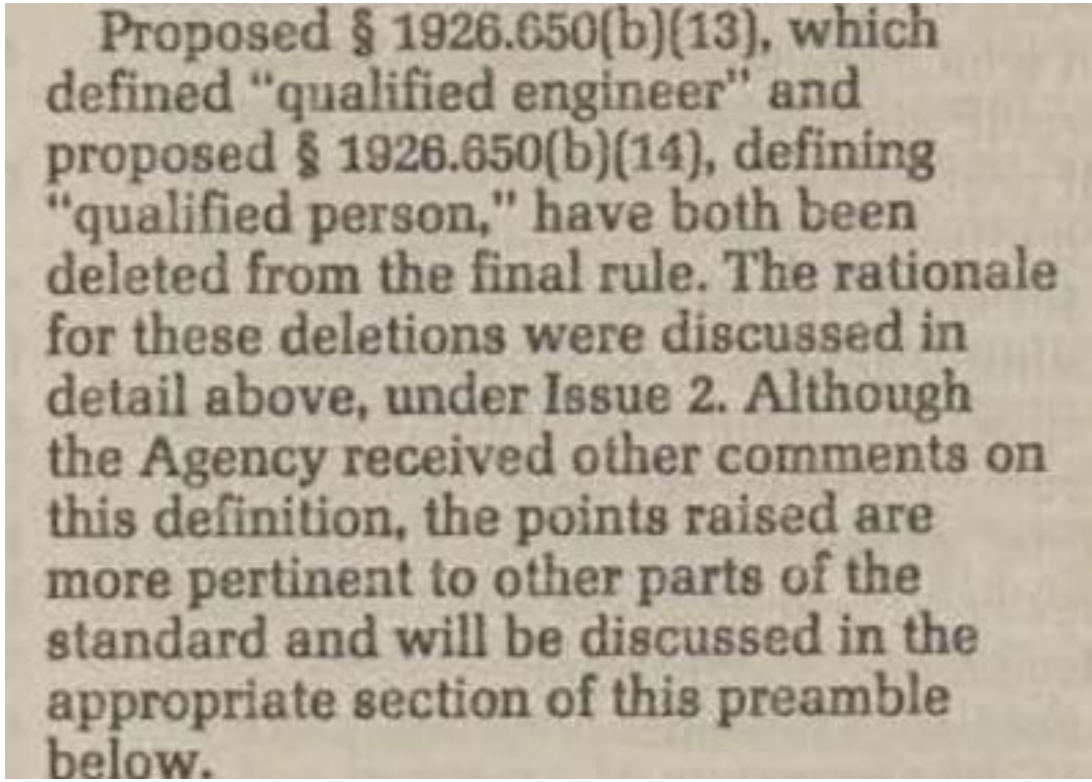
29 CFR Part 1926

Occupational Safety and Health Standards—Excavations; Final Rule

QUALIFIED PERSON*

- Person designated by employer
- By reason of training, experience or instruction
- Demonstrated ability to safely perform all assigned duties and
- When required, is properly licensed in accordance with federal, state, or local laws and regulations

Is this person different than the competent person?



Proposed § 1926.650(b)(13), which defined "qualified engineer" and proposed § 1926.650(b)(14), defining "qualified person," have both been deleted from the final rule. The rationale for these deletions were discussed in detail above, under Issue 2. Although the Agency received other comments on this definition, the points raised are more pertinent to other parts of the standard and will be discussed in the appropriate section of this preamble below.

REGISTERED PROFESSIONAL ENGINEER

- Person registered as professional engineer in state where work is to be performed
- Professional engineer, registered in any state is deemed to be “RPE” – approving designs for “manufactured protective systems” or “tabulated data” used in interstate commerce

Factors Involved in Selecting a Protective System

- Soil classification
- Depth of cut
- Water content of soil
- Changes due to weather and climate
- Other operations in the vicinity

Protection from Vehicles

- Install barricades
- Hand/mechanical signals
- Stop logs
- Grade soil away from excavation
- Plate, fence or barricade trenches left overnight
  - Massachusetts requires more (Jackie's Law)

OSHA's Top 5 – Subpart P

1926.652(a)(1) Protective Systems

- Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with paragraph (b) or (c) of this section except when:
  - Excavations are made entirely in stable rock; or
  - Excavations are less than 5 feet (1.52m) in depth and examination of the ground by a **competent person** provides no indication of a potential cave-in.

 # 1 Violation

1926.652(a)(1) Protective Systems
Four Options -Sloping and/or Benching

1926.652(a)(1) Protective Systems Four Options-Shielding (Trench Box)

1926.652(a)(1) Protective Systems
Four Options-Shielding (Trench Box)

1926.652(a)(1) Protective Systems
Four Options-Shoring-Timber, Alum Hyd.

1926.652(a)(1) Protective Systems
Four Options-Shoring-Timber, Alum Hyd.

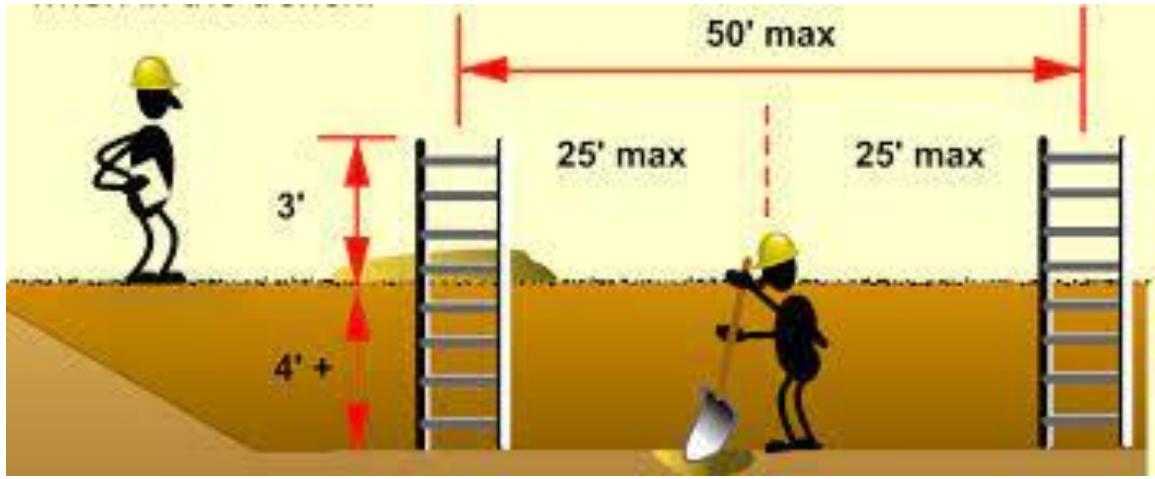
1926.652(a)(1) Protective Systems Four Options-RPE

No Protective System in Use

OSHA's Top 5 – Subpart P

1926.651(c)(2) Means of Egress

- Means of egress (ladder, ramp, stairs etc.)
- >4-feet required
- Lateral travel ≤25-feet
- Must be in and available while workers in the T&E



 # 2
Violation

1926.651(c)(2) Means of Egress

- Ladders

1926.651(c)(2) Means of Egress

- Ladders

1926.651(c)(2) Means of Egress

- Stairs
- Ladder
- Ramp
- Other safe means of egress

Regardless of the means of egress employed, it must be always available for use by the employees.

1926.651(c)(2) Means of Egress

OSHA’s Top 5 – Subpart

1926.651(k)(1) Daily Inspections by Competent Person

 # 3 Violation

TRENCHING SAFETY CHECKLIST

BEFORE YOU BEGIN THE WORKDAY

- ☐ Competent person inspected excavation and adjacent areas
- ☐ Hard hats, safety vests, and visible clothing are worn by all employees
- ☐ Warning systems are established and put into place
- ☐ All utility lines are located and obviously labeled
- ☐ Protective systems are inspected and working as intended
- ☐ Nothing is near the excavation that shouldn't or doesn't have to be there

CP

Competent Person

Must have had specific training in and be knowledgeable about:

- **Soils classification**
- **The use of protective systems**
- **The requirements of the standard**

- **Must be capable of identifying hazards, and authorized to immediately eliminate hazards**

OSHA's Top 5 – Subpart P
1926.651(k)(1) Daily Inspections by Competent Person

DAILY EXCAVATION CHECKLIST

Client		**Date**	
Project Name		**Approx. Temp.**	
Project Location		**Approx. Wind Dir.**	
Job Number		**Safety Rep**	
Excavation Depth & Width		**Soil Classification**	
Protective System Used			
Activities in Excavation			
Competent Person			

Excavation > 4 feet deep? ___Yes ___No

NOTE:* Trenches over 6 feet in depth are considered excavations. *Any items marked NO on this form MUST be remediated prior to any employees entering the excavation.

YES	NO	N/A	DESCRIPTION
GENERAL			
			Employees protected from cave-ins & loose rock/soil that could roll into the excavation
			Spoils, materials & equipment set back at least 2 feet from the edge of the excavation.
			Engineering designs for sheeting &/or manufacturer's data on trench box capabilities on site
			Adequate signs posted and barricades provided
			Training (toolbox meeting) conducted w/ employees prior to entering excavation
UTILITIES			
			Utility company contacted & given 72 hours notice &/or utilities already located & marked
			Overhead lines located, noted and reviewed with the operator
			Utility locations reviewed with the operator, & precautions taken to ensure contact does not occur
			Utilities crossing the excavation supported, and protected from falling materials
			Underground installations protected, supported or removed when excavation is open
WET CONDITIONS			
			Precautions taken to protect employees from water accumulation (continuous dewatering)
			Surface water or runoff diverted /controlled to prevent accumulation in the excavation
			Inspection made after every rainstorm or other hazard increasing occurrence
HAZARDOUS ATMOSPHERES			
			Air in the excavation tested for oxygen deficiency, combustibles, other contaminants
			Ventilation used in atmospheres that are oxygen rich/deficient &/or contains hazardous substances
			Ventilation provided to keep LEL below 10 %
			Emergency equipment available where hazardous atmospheres could or do exist
			Safety harness and lifeline used
			Supplied air necessary (if yes, contact safety department)

ENTRY & EXIT			
			Exit (i.e. ladder, sloped wall) no further than 25 feet from ANY employee
			Ladders secured and extend 3 feet above the edge of the trench
			Wood ramps constructed of uniform material thickness, cleated together @ the bottom
			Employees protected from cave-ins when entering or exiting the excavation

KEEP 1 COPY OF EACH DAILY EXCAVATION CHECKLIST ON SITE FOR THE PROJECT DURATION, AND FORWARD THE ORIGINAL TO THE OFFICE

CP

Competent Person Mentioned– 1926…

- **1926.32(f) and 1926.650(b) – Definitions**
- **1926.651** – Seven times: Design structural ramps, employee access & egress; structural ramps CP must be qualified in structural design; monitor water; drainage; inspect for cave-in hazards (daily as needed & prior to start of work); remove employees if hazards exist; ;
- **1926.652** – Three times: inspect T&E less than 5 feet, must inspect equipment, remove equipment from service

Competent Person Mentioned 1926 Subpart P

- **Appendix A** - Soil Classification, three times regarding classification
- **Appendix B** - Sloping and Benching, one time regarding surcharge loads

OSHA's Top 5 – Subpart P
Protection of Employees from Materials

OSHA's Top 5 – Subpart P (651(j)(2))
Protection of Employees from Materials

 # 4 Violation

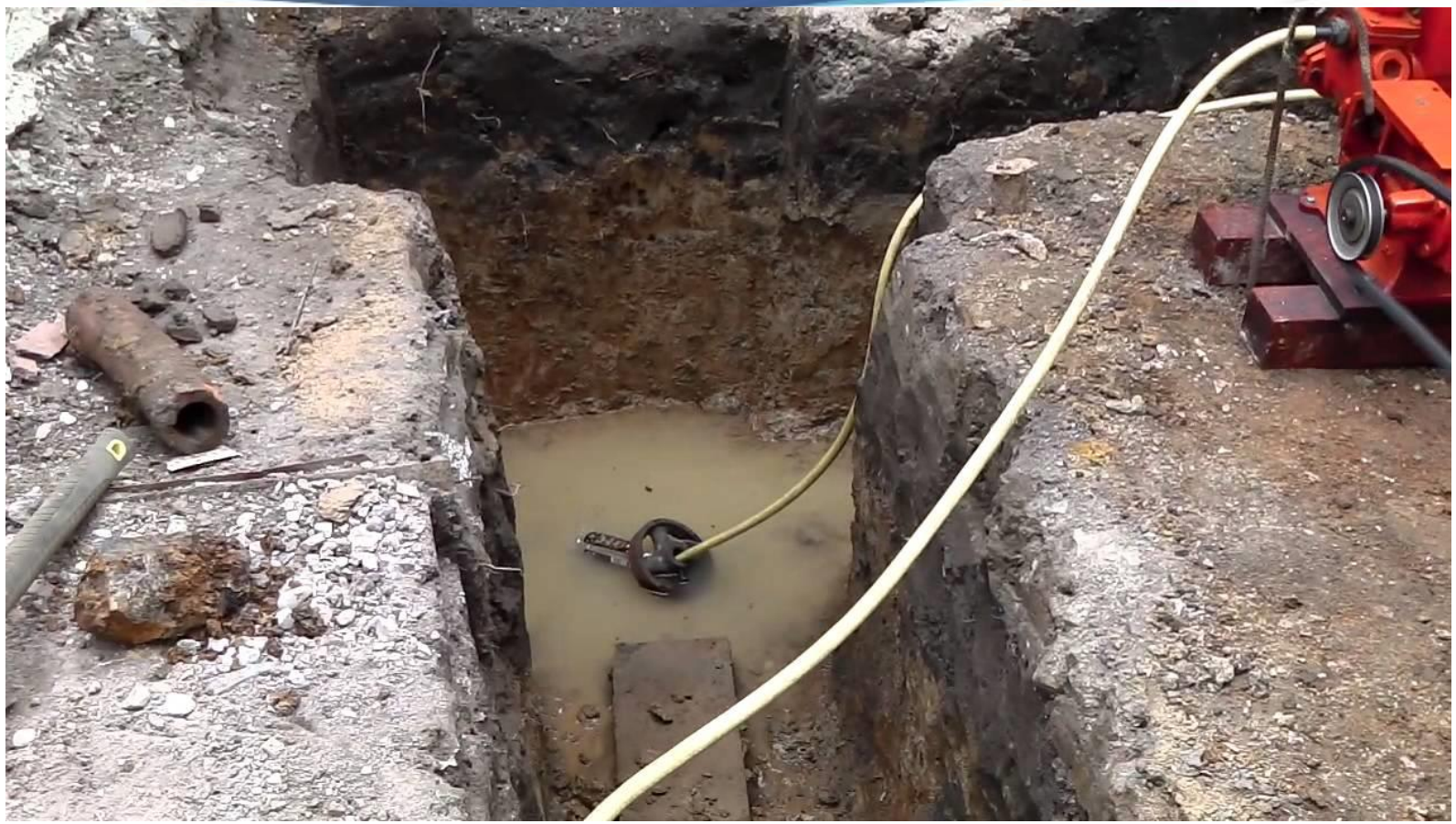
OSHA’s Top 5 – Subpart P (651(k)(2)) Removal from Trench By Competent Person

 # 5 Violation

Other Excavation Hazards

- Water accumulation
- Oxygen deficiency
- Toxic gases/fumes
- Explosive atmosphere
- Falls
- Underground & above ground utilities
- Mobile equipment

Water is Hazardous



Hazardous Atmosphere

- Test excavations before an employee enters the excavation if there is a reasonable possibility of a hazardous atmosphere. Test for:
  - Oxygen deficiency
  - High combustible gas concentration
  - High levels of other hazardous substances

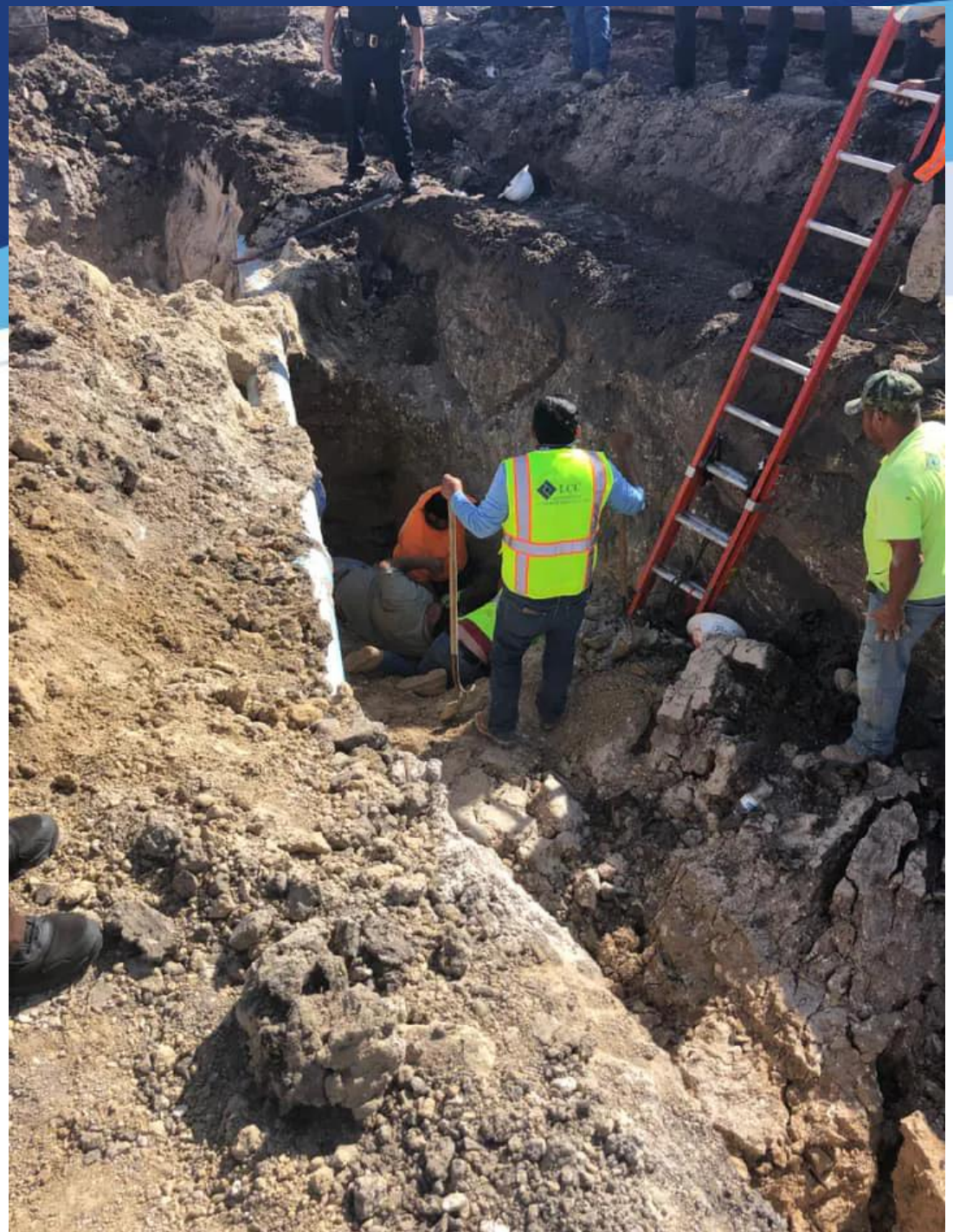
What's wrong with this trench?

Visual Hazards

- No safe means of egress
- Spoil pile to close to edge
- Shoring not complete
- Missing backfill
- No head protection
- No air monitoring
- No edge stabilization

Trench Rescue

- What's your plan?
  - Call 911
  - Perform a rescue operation
- Only a few major cities have the technical capabilities to perform this type of rescue
- May have to depend on a Regional Technical Rescue Team (minimum 1-hour response)
- **Will it be a rescue or recovery?**



Summary

- The greatest risk in an excavation is a cave-in.
- Employees can be protected through sloping, shielding, and shoring the excavation.
- A competent person is responsible to inspect the excavation prior to entry and throughout the day **as changes occur**.
- Other excavation hazards include water accumulation, oxygen deficiency, toxic fumes, falls, and mobile equipment.

What we learned…

- ✓ More pre-planning is needed
- ✓ Trenches often are unprotected and there is often not a **competent person** on site
- ✓ Incidents often involve contractors who are inexperienced or new to trench work
- ✓ New workers often lack proper competent person supervision
- ✓ There is a need to increase training and education on the standard and safe practice

What;’ been done so far by OSHA

- **Agency Priority Goal (APG) - Reduce Trenching and Excavation Hazards**
  - Trench Safety Initiative
  - Increase awareness of hazards and requirements
- **Balanced Enforcement and Compliance Assistance**
  - National Emphasis Program for Trenching – Revised effective October 2, 2018
  - Compliance Directive for the Excavation Standard, 29 CFR 1926, Subpart P – 07/01/2021
  - Onsite Consultation Program
  - Multiple Area Office Outreach Programs
  - Developed and Updated Training and Outreach Materials
  - OSHA/Industry Stakeholder Outreach Events (Trench Safety Stand-Down, etc.)

Give your employees a save place to work!

Practice the Three S' of Trench Safety: **Sloping, Shoring, and Shields**

#TrenchSafetyMonth

NUCA Resources

- Flyers
- Daily Excavation Checklist
- Excavation and Trenching Presentation
- Trench Safety Handout
- TSSD 2022 Participant Sign-in Sheet
- Trench Safety Toolbox Talk (English & Spanish)
- How To Give A Toolbox Talk (English & Spanish)

https://www.nuca.com/tssd

OSHA Resources

- https://www.osha.gov/trenching-excavation/resources
- Protect Workers in Trenches Poster (2115)
- Trench Safety: Slope It. Shore It. Shield It. Sticker (0088)
- OSHA QuickCard (3243)
- NEP CPL 02-00-161 (Oct 2018)
- CPL Directive 02-00-165 (July 2021)
- Soil Classification Video (vTools)
- Letters of Interpretation

Resources by CPWR…

Resources to Promote Safe Work in Trenches

- Trenches Hazard Alert (also available in Spanish)
- Trench Safety Toolbox Talk (also available in Spanish)
- No New Year -- Trench Collapse Video (also available in Spanish)
- Practice Trench Safety. It Saves Lives Infographic (also available in Spanish)
- Trench Fact Sheet
- Strategies to Prevent Trenching-Related Injuries and Deaths Report

Resources By NIOSH …

Trenching and Excavation topic page

- NIOSH Science Blog - Preventing Trenching Fatalities (planning needs and solutions)
- Work Place Solutions - Preventing Worker Deaths from Trench Cave-ins
- NIOSH Alert - Preventing Deaths and Injuries From Excavation Cave-Ins
- Web-based training - Trench Safety Awareness
- Research - Trench safety-using a qualitative approach to understand barriers and develop strategies to improve trenching practices


ANY
QUESTIONS