

TRENCHING & EXCAVATION SAFETY: *The Scott May Story*

This easy-to-use Leader's Guide is provided to assist in conducting a successful presentation. Featured are:

INTRODUCTION: A brief description of the program and the subject that it addresses.

PROGRAM OUTLINE: Summarizes the program content. If the program outline is discussed before the video is presented, the entire program will be more meaningful and successful.

PREPARING FOR AND CONDUCTING THE PRESENTATION: These sections will help you set up the training environment, help you relate the program to site-specific incidents, and provide program objectives for focusing your presentation.

REVIEW QUESTIONS AND ANSWERS: Questions may be copied and given to participants to document how well they understood the information that was presented. Answers to the review questions are provided separately.

INTRODUCTION

Trenching and excavation work—it's the starting point of most construction projects. Before you dig, there's a lot you need to know, because the risks, just like the weight of the soil, are too great to take a chance. This type of work is dangerous, with more than 100 workers killed in trench accidents each year. So if you work in a trench or excavation, no matter what your job, you need to know the safety requirements and that's the purpose of this program. Construction Safety Professional Bob Synnett returns to discuss the safety rules for trenching operations and when they apply as well as to share the lessons learned from the story of Scott May, a young worker who was killed in a tragic excavation accident.

Topics include duties of the competent trenching and excavation person, identifying the four types of soil, determining how to make excavations safe, slope-back ratios and the importance of thinking about safety every time we enter a trench.

PROGRAM OUTLINE

BACKGROUND

- Scott May was a native of Georgetown, SC, whose life, just like his career in construction was terribly short. This program is about that little time Scott worked in construction, but more specifically it is about trench and excavation safety and how you and your co-workers can work safely each and every time you work in a trench or excavation.
- Trenching and excavation work—it's the starting point of most construction projects. Before you dig, there's a lot you need to know, because the risks, just like the weight of the soil, are too great to take a chance.
- Trenching and excavations are dangerous. Over 100 workers were killed in trench accidents last year; that means every week nearly two workers are killed in a trench cave-in.
- If you work in a trench or excavation, no matter what your job, you need to know the safety requirements. Most cave-in victims are laborers, and unfortunately, most had little knowledge of the hazards around them; they were just doing what they were told.
- They left safety to their supervisor and what did that get them? Scott May did the same; his company was actually fined by OSHA for not conducting safety training, but that doesn't help Scott now.
- "After-the-accident" training won't help you either. Trenching and excavation training isn't complicated and one day it might save your life.

WHAT THE SAFETY RULES ARE & WHEN THEY APPLY

- So when do trench or excavation safety rules apply—and what are those rules? For instance, you've got maintenance work that involves digging a small trench. What safety rules apply?
- It doesn't matter if it's a small, shallow trench or your excavation is deep and part of a large construction project, OSHA Standards apply as soon as you start to dig.
- Remember, you've got some work to do before you dig. You've all heard the term "call before you dig" that mandates that utility companies locate and mark, usually within 24 to 48 hours and free of charge, any sewer, telephone, gas, electric, water lines or any other underground installation you might accidentally dig up.
- Make that call. What you dig up by mistake will not only cost you and probably shut down your work, but can also be really dangerous.
- You're also required to remove or support any obstacles before you start.

THE OSHA COMPETENT TRENCHING & EXCAVATION PERSON

- OSHA requires you to have a competent person manage all excavation work. That person has to be on the jobsite each and every time someone's working in your excavation; otherwise, those work areas need to be barricaded or "flagged off."
- An excavation and trenching competent person is defined as someone capable of identifying hazards and with the authority to make immediate corrections to eliminate those hazards.
- A competent person also has to have knowledge of OSHA soil-types and about the protective systems or methods used to keep workers safe in trenches and excavations.
- OSHA also assigns specific duties to competent persons. A competent person is required to inspect each excavation before starting work as well as after any change of conditions in the trench or excavation; a changing condition can be as simple as the work that's being done or some other outside event like a brief rainstorm that can alter the soil.
- A competent person has to make both a visual and physical inspection of the soil.
- The competent person's most important duty is to take action anytime action is necessary. Taking action means directing workers to get out of dangerous trenches or excavations now.
- Taking action—that's what a competent person is really all about. So many times it's occurred—OSHA has inspected a site where they question the so-called competent person, who seems to have a real working knowledge of soil-types and the OSHA Standards, but then they see his workers nearby in a dangerous trench with hazards all around them.
- Remember, you're not really a competent person unless you take action to remove workers from any hazardous situation each and every time you have to.
- You remove workers because the hazards are real. An average cubic yard of dirt weighs over 2,000 pounds, so if a cave-in occurs, that dirt delivers a crushing blow. A competent person's most important responsibility is to ensure worker safety, and that means getting workers out of dangerous situations fast.

IDENTIFYING SOIL TYPES

- Identifying soil-types and determining protective systems or methods are items a competent person absolutely needs to know, but information other excavation workers should know as well.

- OSHA rates soil-types from the most stable to the least. The first is stable rock, but remember, rock isn't stable if cracks exist.
- After solid rock, OSHA calls the most stable soil Type Soil A. Type A soil is so cohesive and stays together so well that when physically tested, a sample can be indented by the thumb but only with a great deal of effort.
- Type B soil is next in line in terms of stability and it's somewhat more difficult to visually identify. Remember Type B soil like Type A is still cohesive and strong, just not as much. Only moderate effort is needed to indent a Type B soil sample.
- While you may be able to visually identify OSHA soil types, OSHA still calls for a physical soil exam as well. For this, you can use your thumb, or a pocket penetrometer can be helpful, especially to verify that soil is cohesive and can be classified Type A or Type B.
- Type C is by far the least stable soil and is by far the most dangerous soil as it has very little cohesiveness. It will cave in or collapse easily and quickly.
- Water also affects and downgrades soil-type determination because water makes any soil less stable. So when there's water in your trench or excavation, OSHA requires it be removed as soon as possible.
- Soil type determination is critical because it's the first factor to consider when deciding how to protect your workers.

DETERMINING HOW TO MAKE AN EXCAVATION SAFE

- Once you identify the soil-type, your next consideration is the depth of your excavation. Then you can best decide how you're going to protect your workers and make the area safe.
- The depth, as well as the soil-type, is important because OSHA Standards deal with a four-foot deep trench much differently than you deal with a six-foot deep trench.
- How deep does an excavation have to be before you are required to start sloping back the soil or providing some other type of protection? While the OSHA Standards apply as soon as you start to dig no matter how deep or shallow your trench, they also seem to indicate that if your trench is less than five feet deep, it doesn't need to be sloped.
- So does that mean a trench or excavation that's less than five feet doesn't need to be sloped? Absolutely not. What the OSHA Standards really say is excavations less than five feet deep don't have to be sloped or protected unless the competent person believes the excavation is dangerous or the workers are somehow at risk.
- It doesn't matter that the trench is less than five feet deep; it needs to be sloped or protected because when the worker kneels down, the trench wall is over his head and if a cave-in were to occur, God forbid, he would be completely buried.
- Making a trench safe that doesn't appear dangerous is a competent person's responsibility. Most workers won't see the danger here, so a competent person needs to inspect, keep watch over and make a decision about each and every trench, not matter how deep, so workers are safe every time.
- Equipment operators need to be careful with the soil being dug out of trenches or excavations. The soil pile needs to be placed at least two feet from the edge of the excavation because if that pile is too close, the trench just got that much deeper with the more added weight and stress on the trench wall.
- Workers need to have a safe way out of excavations. More specifically, any trench or excavation more than four feet needs a ladder or some sort of ramp; OSHA rules state that trench ladders or ramps can be no further than 25 feet away from workers at any time.

SLOPE-BACK RATIOS

- Now that you know when to start sloping back an excavation, the next question is how far you need to slope back different types of soil.
- Type A soil, what OSHA considers the most stable soil, must be sloped back at least on a ratio of $\frac{3}{4}$ to one. That means $\frac{3}{4}$ of a foot back on each side of the trench for every one foot deep.
- Type B is not quite as stable as Type A, so it must be sloped back a little bit more, or at least on a ratio of one to one.
- OSHA considers Type A and B soils to be cohesive soils and allows these soils to be benched back instead of just using a gradual slope method.
- Type C is the least stable soil and according to OSHA, must be sloped back at a minimum ratio of one and a half to one. You can't bench Type C soil; it isn't cohesive enough. You have to slope it back or protect the area in some other way.

OTHER FORMS OF EXCAVATION PROTECTION

- In some cases, sloping back the soil is just not an option, usually because there's not enough room. In situations like this, you may need a trench box or some type of shoring or bracing. Many excavations include a combination of soils and obstacles that can make sloping the soil or otherwise protecting your workers real difficult.
- Don't get discouraged—always keep this thought in mind—your first responsibility, whether you're a competent person or not, is safety!
- Don't cut corners; don't take shortcuts; don't think, "I'm gong to back-fill this in just five minutes;" you might not have five minutes—make sure your excavation is safe now.

REVIEW OF MOST IMPORTANT SAFETY POINTS

- OSHA requires a competent person at every trench or excavation, and that person needs to inspect trenches and excavations every day; and, if there's ever a danger of a cave-in, get the workers out fast.
- Remember, trench and excavation protection is first based on OSHA soil type—either A, B or C and the depth of your excavation, but whether you slope it, shore it, bench it, brace it or use a trench box, do something. Make sure your trenches and excavations are safe.

THE SCOTT MAY STORY

- Scott May had never worked in construction before late June of 2003. His dad had worked in construction before. He was a strong, vibrant young man who thought he would give a construction career a try.
- Scott was hired right away because good, strong and smart workers like Scott don't walk through the door every day.
- The site where Scott worked was an addition to a power-generating plant. He had been instructed to work inside a large excavation at the site; he worked just over two weeks there and then the incident occurred.
- Scott and several workers had been shoveling dirt away from caissons inside a large excavation onsite because the heavy equipment couldn't reach the dirt piled up in those areas. The dirt was piled up high against each of the caissons and in one area, the dirt was over 11 feet high.
- Scott had no idea how dangerous this work was because his employer hadn't provided him with any safety training.

- One of Scott's co-workers, who was standing right beside him at his last moment, stated to OSHA, "Scott kind of worked by himself; he was a good worker. I was two feet from him when the wall caved in. It could have been me also. I hadn't had any hazard recognition training. I knew the 11½ wall was unsafe and we didn't get near it, but I didn't know the wall that caved in was dangerous. Now I know."
- Scott didn't know the wall was dangerous either and his superintendent had left that area of the site, so there was no competent person.
- The dirt that was piled next to that caisson probably didn't look dangerous to Scott, but that seven-foot wall proved lethal.
- OSHA was on the site the next day and the contractor who had hired Scott just two weeks earlier received three separate citations and fines for each of those violations.
- The violations included 1) Scott's employer had not been provided safety training; 2) Scott's employer had not conducted daily inspections of the excavation; and 3) Scott's employer had not provided adequate protection, like sloping or shoring, in the excavation.
- Scott May was only 30 years old, just starting out in life. Just days before his death, he and his wife Kathy had celebrated their seventh wedding anniversary on the fourth of July.
- Scott was hardworking, loved and in the prime of his life. His death, just like the countless others who die in trench cave-ins every year, was so unnecessary
- Don't kid yourself; if you don't pre-plan your work, if you don't think safety every time in every trench, the same can happen to you. It just takes one second and one cave-in and a man's dead.
- Forget about the excuses like you don't have enough time, you don't have enough room or this dirt is safe. Excuses will only get people hurt, or worse.

EXCAVATION SAFETY DEPENDS ON YOU

- Trenching and excavation safety isn't difficult, but you have to do it every time, in every trench. That's the real bottom line—excavation and trenching safety depends on you.
- It doesn't matter whether you're a competent person or not, you've got the power and the knowledge to keep yourself and your co-workers from getting hurt.
- Let's not let Scott May's death be in vain. Let's make each and every trench or excavation a safe place to work.

PREPARE FOR THE SAFETY MEETING

Review each section of this Leader's Guide as well as the videotape. Here are a few suggestions for using the program:

Make everyone aware of the importance the company places on health and safety and how each person must be an active member of the safety team.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline.

Copy the review questions included in this Leader's Guide and ask each participant to complete them.

Copy the attendance record as needed and have each participant sign the form. Maintain the attendance record and each participant's test paper as written documentation of the training performed.

Here are some suggestions for preparing your videotape equipment and the room or area you use:

Check the room or area for quietness, adequate ventilation and temperature, lighting and unobstructed access.

Check the seating arrangement and the audiovisual equipment to ensure that all participants will be able to see and hear the videotape program.

CONDUCTING THE PRESENTATION

Begin the meeting by welcoming the participants. Introduce yourself and give each person the opportunity to become acquainted if there are new people joining the training session.

Explain that the primary purpose of the program is to explain the employee safety requirements for trenching and excavation operations and to discuss the lessons to be learned from Scott May's tragic trenching accident.

Introduce the videotape program. Play the videotape without interruption. Review the program content by presenting the information in the program outline. Lead discussions about specific safe work practices your company requires to make trenches and excavations safe for employees and the importance of following these procedures each and every time someone enters a trench. Use the review questions to check how well the program participants understood the information.

After watching the videotape program, the viewer will be able to identify the following:

- The duties of the OSHA competent trenching and excavation person;
- The various types of soil and how they can be identified;
- The process for determining how to make an excavation safe;
- The slope-back ratios for Types A, B and C soil;
- The lessons that can be learned from Scott May's accident.

TRENCHING & EXCAVATION SAFETY:
The Scott May Story
REVIEW QUIZ

Name _____ Date _____

The following questions are provided to check how well you understand the information presented during this program.

1. No matter the size of an excavation, OSHA Standards apply as soon as you start to dig.
 - a. true
 - b. false

2. What is the most important duty of the OSHA competent trenching and shoring person?
 - a. inspection of soil at the excavation
 - b. making sure protective systems are installed
 - c. removing workers from dangerous situations as quickly as possible

3. How much does an average cubic yard of dirt weigh?
 - a. 500 pounds
 - b. 2,000 pounds
 - c. 5,000 pounds

4. Which type of soil is the least stable?
 - a. Type A
 - b. Type B
 - c. Type C

5. OSHA only requires a physical soil exam when you are unable to determine a soil type visually.
 - a. true
 - b. false

6. OSHA rules state that trench ladders or ramps can be no further than _____ feet from workers in a trench at any time.
 - a. 25
 - b. 50
 - c. 100

7. Type B soil at an excavation must be sloped back at a minimum ratio of _____.
 - a. $\frac{3}{4}$ to 1
 - b. 1 to 1
 - c. $1\frac{1}{2}$ to 1

8. Which of the following is ***not*** mentioned in the program as an OSHA violation by Scott May's contractor?
 - a. Scott had not been provided safety training
 - b. The contractor had not conducted daily inspections of the excavation
 - c. Scott had not been provided the appropriate personal protective equipment

ANSWERS TO THE REVIEW QUESTIONS

1. a

2. c

3. b

4. c

5. b

6. a

7. b

8. c