
MODULE 3—EXCAVATION AND TRENCHING

Objectives

After completing *Module 3*, participants will be able to:

- Cite facts relating to excavation and trenching injuries.
- Define the important words that relate to excavation and trenching.
- Recognize and use the OSHA regulations that relate to excavation and trenching.
- Identify practices at their work that protect them from excavation and trenching injuries.
- Perform a worksite analysis to find hazards that could cause an excavation or trenching injury.
- Describe behaviors at their worksites that could cause an excavation or trenching injury.

Resources

- To help you prepare for this module, you may want to spend some time reviewing the OSHA e-tool relating to excavation and trenching.

<http://osha.gov/SLTC/etools/construction/trenching/mainpage.html>

- The entire OSHA 29 CFR 1926 standard can be found on the OSHA website.

http://www.osha.gov/pls/oshaweb/owastand.display_standard_group?p_part_number=1926&p_toc_level=1

- OSHA's general industry confined spaces standard (OSHA 29 CFR 1910.146) can be found on the OSHA website.

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9797&p_table=STANDARDS

Tips for Customizing this Module to Your Organization

Following are some things you can do to customize this module to your organization. This customization applies whether you are facilitating a class, holding a tailgate session, or coaching an employee. When you see an agenda item number, it refers to the recommended agenda on Page 3 of this Facilitator Guide (for the Classroom Session) or on Page 18 (for the Tailgate Session).

1. **Classroom Agenda Item #2, Tailgate Agenda Item #1**—When you present this agenda item, consider using some of your organization’s own statistics relating to excavation and trenching. Use your OSHA logs and Incident Investigation reports to derive some numbers. Share these numbers at the appropriate time.
2. **Classroom Agenda Item #3, Tailgate Agenda Item #2**—Regarding this item, consider tailoring the terminology discussion to include the types of protective systems your organization uses, why you use them, and how they work.
3. **Classroom Agenda Item #4, Tailgate Agenda Item #3**—To prepare for this agenda item, read the OSHA regulations that are referenced on Page 6 of Module 3 of the Participant Guide. You can find the OSHA regulations on the OSHA website. (The OSHA web address is listed on the previous page.) As you read the regulations, identify the parts that most apply to your organization. Plan to emphasize these in your discussion. To make this section fun, there is a mini quiz that tests participants on these regulations. Feel free to use the provided quiz, or create your own quiz that is specifically appropriate to your organization.
4. **Classroom Agenda Item #5, Tailgate Agenda Item #4**—To prepare for this item, think of the best practices you expect employees to use when at their construction sites. Be prepared to discuss these practices in class.
5. **Classroom Agenda Item #6, Tailgate Agenda Item #5**—Regarding this item, you will have to do some additional preparation if you are working with people who are unable to read. Rather than giving them the written checklist, discuss orally the things they need to check. After class and over a period of time, you will need to continue to reinforce this “mental checklist” until employees have committed it to memory.
6. Plan to refer to both the OSHA e-tool and the regulations frequently. Use the information to foster continuous improvement. Once you have learned a specific standard and instilled it in your employees, go back to the OSHA regulations, reread them and determine a new standard to learn and instill.

CLASSROOM PRESENTATION TIPS

Time

75 minutes: 12:40 to 1:55 PM

Followed by a 10 minute break, 1:55 to 2:05 PM

Recommended Agenda for Classroom Training

1. Module Introduction—Presentation and Large group activity (5 minutes)
2. Important Statistics—Discussion (10 minutes)
3. Important Terminology—Discussion (5 minutes)
4. OSHA Requirements—Discussion and Quiz (10 minutes)
5. Best Prevention Practices—Activity (20 minutes)
6. Checklist for Worksite Analysis—Presentation and Case Study (15 minutes)
7. Concerns at Your Worksite—Activity (10 minutes)

RECOMMENDED PROCESS

1. Module Introduction—Presentation and Large Group Activity (5 minutes)

Cues	Content
Power Point (PPT) 3-1	<ul style="list-style-type: none"> ■ Start promptly after the lunch. Show PPT 3-1 as the class returns.
Participant Guide Module 3	<ul style="list-style-type: none"> ■ Refer participants to Module 3, Page 1 of their Participant Guides. Tell participants that they will now be learning how to stay safe during excavation and trenching construction.
PPT 3-2 through PPT-3-4	<ul style="list-style-type: none"> ■ Show PPT 3-2 through PPT 3-4 to introduce the objectives for this module. ■ Tell participants that they did a great job of identifying hazards for falls and electrocutions. ■ Now they are going to have a chance to identify hazards relating to excavation and trenching.

**1. Module Introduction—Presentation and Large Group Activity
(5 minutes)—continued**

Cues	Content
Facilitator Note	<ul style="list-style-type: none"> ■ Once again, for the following activity, you can have participants work in pairs, or you can do the activity as a large group. Following are instructions for working in pairs.
PPT 3-5	<ul style="list-style-type: none"> ■ Refer participants to Page 2. Show PPT 3-5 as you explain the following. <ul style="list-style-type: none"> – Just as before, there is a picture both in your book and on the screen. – This time, work with your partner to find the excavation and trenching hazards. ■ Allow about a minute, then call the large group together and ask participants to share the hazards they identified. ■ Encourage participants to take notes in the space provided on Page 2. ■ Following is a summary of what they should identify.
PPT 3-5	<ul style="list-style-type: none"> ■ PPT 3-5—Find the excavation and trenching hazards <ul style="list-style-type: none"> – Trench is over six feet deep – No protection system – Man in the trench could get struck by the equipment – No easy exit – Soil is wet ■ Close by telling participants that the photo illustrates the type of hazards they will be learning about in this module.

2. Important Statistics—Discussion (10 minutes)

Cues	Content
PPT 3-6	<ul style="list-style-type: none"> ■ Refer participants to Page 3 in their Participant Guides. Tell them that excavations seem to present problems for construction workers. ■ Show PPT 3-6 to review information about excavation injuries and deaths. ■ Emphasize how much higher the death rate is for excavation than it is for general construction. ■ Get participant ideas on why this may be true.
PPT 3-7	<ul style="list-style-type: none"> ■ Show PPT 3-7 to review the information about cave-ins. ■ Emphasize that cave-ins are a particular problem at excavation sites.
PPT 3-8	<ul style="list-style-type: none"> ■ Show PPT 3-8 as you point out that a large percentage of excavation and trenching incidents do not involve giant projects. ■ Emphasize that small projects are especially vulnerable to injury.
Your Organization's Statistics	<ul style="list-style-type: none"> ■ Share the statistics from your own organization related to injuries at excavation sites. Discuss where the most excavation incidents have occurred. ■ Close by making one of the following points depending on your organization's situation. <ul style="list-style-type: none"> – So far, our organization has done a great job of operating without serious incidents or injuries at excavation sites. That's why we are completing this training: to ensure that our good record continues into the future. – We have had some excavation and trenching incidents in the past, so we are completing this training to ensure that every worker stays safe and uninjured in the future.

3. Important Terminology—Discussion (5 minutes)

Cues	Content
PPT 3-9	<ul style="list-style-type: none"> ■ Refer participants to Page 4. Tell them you are now going to review some of the terminology relating to excavations. ■ Show PPT 3-9 as you review the terms at the top of the page. ■ Introduce the terms <i>excavation</i> and <i>trench</i>. Emphasize the following points. <ul style="list-style-type: none"> – A trench is actually also an excavation—it’s simply a special kind of excavation. – A trench is narrow and deep. ■ Introduce the term <i>spoils</i>. Describe how spoils that are too close to the trench can spill into the trench and cover workers very quickly. ■ Introduce the term <i>cave-in</i>. Emphasize once again that a cave-in can come from a very small excavation or trench. ■ Discuss <i>confined spaces</i>. ■ Discuss <i>soil sample</i>. Describe how important it is to know the type of soil in a trench. ■ Refer participants to Page 19 of their Pocket Reference Guides. Tell them that they should refer to this chart when they want to know the type of soil they are working with at an excavation. ■ Introduce participants to <i>protection systems</i>, which are various methods for protecting employees from cave-ins. ■ Show PPT 3-10 as you discuss the four types of protection systems listed on the bottom of Page 4. ■ Ask participants: Which system or systems do you have experience with?
Pocket Reference Guide	
PPT 3-10	
Question	

3. Important Terminology—Discussion (5 minutes)—continued

Cues	Content
	<ul style="list-style-type: none"> ■ Get some responses, then discuss how the various systems work. ■ Refer participants to Page 5. Tell them that there is one other word they will be hearing a lot in this module: <i>competent person</i>.
Question	<ul style="list-style-type: none"> ■ Ask participants: What is a competent person? ■ Get some responses, then encourage participants to take notes in the space on Page 5. ■ Tell them that excavations are complex and, for them to be safe, much scientific and engineering expertise is required.
PPT 3-11	<ul style="list-style-type: none"> ■ Show PPT 3-11 to give the definition of a competent person.
Pocket Reference Guide	<ul style="list-style-type: none"> ■ Refer participants to Page 20 of their Pocket Reference Guides and state that this page provides a summary of the qualifications and duties of the competent person. ■ Quickly review the qualifications and duties of a competent person.
Question	<ul style="list-style-type: none"> ■ Ask participants: Do you know who the competent person is when you are working at an excavation site? ■ Get some responses, then emphasize that it is important for them to know who that person is.
Facilitator Note	<ul style="list-style-type: none"> ■ If a competent person from your organization is in the class, introduce that person, then have them say a few words about what they do and about what they think is important in order to have a safe excavation. ■ Close the discussion by emphasizing that they will learn more about what a competent person does when you get into the discussion of the OSHA regulations.

4. OSHA Requirements—Discussion and Quiz (10 minutes)

Cues	Content
	<ul style="list-style-type: none"> ■ Tell participants that they are now going to learn the OSHA regulations relating to excavation and trenching. ■ Refer participants to Page 6. Review the four OSHA categories that pertain to excavations. <ul style="list-style-type: none"> – 29 CFR 1910.146 is the part of the general OSHA standard that deals with confined spaces. – 29 CFR 1926 Subpart D addresses environmental controls in construction. – 29 CFR 1926 Subpart E personal protective and life saving equipment. – 29 CFR 1926 Subpart P addresses employee safety at excavations. ■ Refer participants to Page 7. Tell them that, once again, you will be reviewing this quiz as a class and that they can use this page to take notes.
PPT 3-12	<ul style="list-style-type: none"> ■ Show PPT 3-12 and read the statement on the slide. Ask participants to stand up if they think the statement is true and to remain seated if they think the statement is false. ■ Before giving the answer, call on one or two participants to get their rationale for their response. ■ Once you’ve had some good discussion, provide the answer and the rationale. Encourage participants to write the OSHA reference numbers in the appropriate spaces on Page 7.
PPT 3-13	<ul style="list-style-type: none"> – Answer to Quiz Question #1 and Rationale: False. OSHA 29 CFR 1926.57 states that when dusts, fumes, mists, vapors or gases are produced, they must be handled.

4. OSHA Requirements—Discussion and Quiz (10 minutes)—continued

Cues	Content
Question	<ul style="list-style-type: none"> ■ Ask participants: How do you know if the air in a trench is hazardous and how do you know what to do about it? ■ Get some responses, then say that this is why it is important to have a competent person at the site. ■ The competent person will know how to test the air, and will also know how to handle the situation if the air is bad.
PPT 3-14	<ul style="list-style-type: none"> ■ Show PPT 3-14 and read the statement on the slide. Ask participants to stand up if they think the statement is true and to remain seated if they think the statement is false. ■ Before giving the answer, call on one or two participants to get their rationale for why they believe the statement is true or false. ■ Once you've had some good discussion, provide the answer and the rationale.
PPT 3-15	<ul style="list-style-type: none"> – Answer to Quiz Question #2 and Rationale: False. OSHA 29 CFR 1926.651(h)(1) states that employees shall not work in a trench where water is standing or accumulating, unless there is a system to remove the water, and the trench is now classified as Type C and shall be protected as such.
PPT 3-16 through PPT 3-21	<ul style="list-style-type: none"> ■ Repeat the above process with Quiz Questions #3 through #5. Show PPT 3-16 through PPT 3-21 at the appropriate times.
PPT 3-17	<ul style="list-style-type: none"> – Answer to Quiz Question #3 and Rationale: False. OSHA 29 CFR 1926.651(c)(1)(i) states that structural ramps at excavations must be designed by a competent person and constructed in accordance with the design. Note that once again, here is that competent person to save the day!

4. OSHA Requirements—Discussion and Quiz (10 minutes)—continued

Cues	Content
PPT 3-19	<ul style="list-style-type: none"> – Answer to Quiz Question #4 and Rationale: False. OSHA 29 CFR 1926.651(j)(2) states that the spoils must be kept at least two feet from the edge of the excavation.
Question	<ul style="list-style-type: none"> ■ Ask participants: What if there is no room to place the spoils two feet away from the excavation? ■ Get some responses, then make the following points if they haven't already been made. <ul style="list-style-type: none"> – The spoils need to be moved to another site, or – A retaining device needs to be built.
PPT 3-21	<ul style="list-style-type: none"> – Answer to Quiz Question #5 and Rationale: True. OSHA 29 CFR 1926.651(k)(2) gives the competent person this authority. ■ After reviewing the quiz, encourage participants to learn more about the OSHA standards by continually referring to them and discussing them with their supervisor or foreman. ■ Close by discussing soil types. Make the following points. <ul style="list-style-type: none"> – One thing a competent person must do is recognize the various soil types and how they affect the excavation. – The good news for you is that you can rely on the competent person to know the soil – However, you should also become familiar with the various soil types, and have an idea of which are the most stable and which are the weakest. – As we have already discussed, your Pocket Reference Guide has a summary of soil classifications on Page 19. ■ Close by telling participants that, if they keep their Pocket Reference Guides handy they will always have a way to tell which type of soil is at their excavation site.
Pocket Reference Guide	

5. Best Prevention Practices—Activity (20 minutes)

Facilitator Note: The following instructions are set up so that participants work in small groups, and each group identifies the best practices in both of the areas listed on Page 8. If you prefer (or if you are short of time), you can divide the class in half, then assign each half one best practice area. Encourage participants to work in smaller groups of four to six people each.

Cues	Content
PPT 3-22	<ul style="list-style-type: none"> ■ Refer participants to Page 8. Tell them that, once again, they are going to share what they do on the job to apply the OSHA standards. ■ Divide the participants into small groups of 4 to 6 participants. ■ Tell them they have 10 minutes to identify the best practices they use in each of the two categories listed on Page 8. ■ Show PPT 3-22- as you review the categories they will be addressing. <ul style="list-style-type: none"> – What safety practices do they use when they have spoils from the excavation? – What general safety practices do they use at excavation sites? ■ Tell participants to write their group’s ideas in the space provided on Page 8. ■ As participants work, walk around the room to see if they have any questions. ■ At the end of 10 minutes, call the small group back together and lead a 10 minute debriefing. ■ Ask the groups to share the <i>best practices</i> they identified. ■ When the groups have shared their responses, add any that you feel are necessary. ■ Following are some of the typical responses you will get.

5. Best Prevention Practices—Activity (20 minutes)—continued

Cues

Content

- Spoil Placement
 - Immediately move the spoils from the excavation site.
 - Avoid placing spoils where rainwater can catch them and carry them into the excavation site.
 - Avoid working in the area where the backhoe is digging up the dirt.
- General Work Practices
 - Always wear a hard hat.
 - Always use the provided ramps or ladders for entering and exiting the excavation.
 - Wear non-skid shoes.
 - Always wear a bright colored vest within the excavation site.
 - Stay clear of barricaded areas.
 - Never cross a trench unless you use a ramp made specifically for that purpose.
 - Alert your supervisor (or the competent person) if you smell any gases or strange odors.
 - Alert your supervisor (or the competent person) if you detect any odd cracks or fissures in the excavation walls.
 - Avoid walking under suspended loads that are being hauled to the excavation site.
- Congratulate participants for doing a good job of identifying best practices.

6. Checklist for Worksite Analysis—Presentation and Case Study (15 minutes)

Note on the time allocation: Spend about 5 minutes introducing the checklist on Pages 9 through 13 and reviewing the worksite analysis process. Spend the remaining 10 minutes on identifying the hazards in the slides. The following instructions tell you to divide the class into small groups to identify the hazards on the slides, then discuss their findings as a large group. If you prefer (or if you are short of time), you can simply discuss the hazards in the slides as a large group.

Cues

Content

- Tell participants that once again they will use a checklist to identify some hazards.
- Ask participants to envision a typical excavation site.
- Ask them to think some of the hazards they have to be aware of at excavation sites.
- Refer participants to Pages 9 through 13.
- Tell them that this is the checklist they can use to help them find hazards at the excavation site
- Review this checklist by doing the following.
 - Review the nine major categories on the checklist: Spoil Placement, Protection Systems, Safe Entry and Exit, Vehicle Safety, Surface Crossing, Water Management, Hazardous Atmosphere, Inspections, and General Safety Practices.
 - Emphasize that this list is derived from the OSHA standards, which are referenced at the end of the list.
 - Point out that this list is only a small part of the OSHA standards, but it represents items that they can either control or call to the attention of their supervisor or competent person.

**6. Checklist for Worksite Analysis—Presentation and Case Study
(15 minutes)—continued**

Cues	Content
Facilitator Note	<ul style="list-style-type: none"> ■ Ask participants to review the items on Pages 9 through 13 and place an “X” by items that may pose a hazard at their worksites. ■ Participants won’t have time to review the entire checklist. Simply encourage them to review as much as they can in the allotted time. ■ After participants have had some time to review the list, ask if they have any questions. ■ Point out that this checklist can be used when they perform a worksite analysis.
Question	<ul style="list-style-type: none"> ■ Ask participants: Once again, let’s see if you remember the four steps to worksite analysis. What are the four steps?
PPT 3-23	<ul style="list-style-type: none"> ■ Get participant responses, then use PPT 3-23 to review the four steps. ■ Refer participants to Page 14. Tell them that you are now going to give them practice in doing a worksite analysis. ■ Divide the class into small groups of four to six participants each, then tell them the following. <ul style="list-style-type: none"> – I’m going to show you some slides. – Your job is to work in your group and use your checklist to identify the hazards in each slide.
PPT 3-24	<ul style="list-style-type: none"> ■ Show PPT 3-24, which is Case #1. Allow the groups one minute to identify the hazards in the slide.
PPT 3-25 through PPT 3-27	<ul style="list-style-type: none"> ■ Repeat the above process with PPT 3-25 through PPT 3-27, which are Cases #2 through #4.

6. Checklist for Worksite Analysis—Presentation and Case Study (15 minutes)—continued

Cues	Content
	<ul style="list-style-type: none"> ■ Once you have shown all four cases, call the small groups back together as a large group.
PPT 3-24	<ul style="list-style-type: none"> ■ Go back to PPT 3-24 and have the groups share the hazards they identified.
	<ul style="list-style-type: none"> ■ Once all the groups have shared their hazards, add any that were not mentioned.
PPT 3-25 through PPT 3-27	<ul style="list-style-type: none"> ■ Repeat the above process with PPT 3-25 through PPT 3-27. Following is a summary of the hazards on each slide.
PPT 3-24	<ul style="list-style-type: none"> ■ Excavation and Trenching Hazards—Case #1 <ul style="list-style-type: none"> – Entry ladder not properly secured – Not an approved ladder – Equipment too close to edge – Rails of ladder not high enough over trench – Ladder not at proper leaning distance
PPT 3-25	<ul style="list-style-type: none"> ■ Excavation and Trenching Hazards—Case #2 <ul style="list-style-type: none"> – Proper pumping system hasn't been used – Some caving occurring on the right of the slide

6. Checklist for Worksite Analysis—Presentation and Case Study (15 minutes)—continued

Cues	Content
PPT 3-26	<ul style="list-style-type: none"> ■ Excavation and Trenching Hazards—Case #3 <ul style="list-style-type: none"> – Trench boxes are too low – May be a confined space – Potential for cave-in on left – Gap on left indicates condition of soil is unstable – Crane could tip if it tried to drive over
PPT 3-27	<ul style="list-style-type: none"> ■ Excavation and Trenching Hazards—Case #4 <ul style="list-style-type: none"> – Man in trench in danger of being hit or crushed by pipe – Aluminum ladder – Load above person – Person on right standing too close to the trench – Person in background not wearing a hard hat
Pocket Reference Guide	<ul style="list-style-type: none"> ■ Refer participants to Pages 21 through 25 of their Pocket Reference Guides. Tell them that the checklist they have just reviewed is located here so that they can use it any time they do a worksite analysis. ■ Close this activity by congratulating participants on being so good at identifying hazards relating to excavations.

7. Concerns at Your Worksite—Activity (10 minutes)

Cues	Content
	<ul style="list-style-type: none">■ Begin by saying that it's once again time to discuss behavior.■ Refer participants to Page 15. Ask them to form back into their small groups.■ Give participants 5 minutes to answer the questions in their groups.
PPT 3-28	<ul style="list-style-type: none">■ While participants are working, show PPT 3-28.■ When time is up, call the participants back together as a large group and have groups share their answers to the questions.■ Thank participants for their thoughtful answers and remind them that at the end of the day, they will have a chance to identify some things they can do to change the at-risk behavior.
10 Minute Break	Take a 10 minute break.

TAILGATE OR COACHING PRESENTATION TIPS

Recommended Agenda for the Tailgate or Coaching Session

Module 3—Excavation and Trenching can be taught in a 90-minute tailgate or coaching session.

1. Important Statistics—Discussion (10 minutes)
2. Important Terminology—Discussion (5 minutes)
3. OSHA Requirements—Discussion and Quiz (10 minutes)
4. Best Prevention Practices—Activity (20 minutes)
5. Checklist for Worksite Analysis—Activity (35 minutes)
6. Concerns at Your Worksite—Activity (10 minutes)

Facilitator Note: The following facilitator notes are designed to be presented at a tailgate meeting at the excavation site. For their hazard identification exercise, employees will be asked to do a worksite analysis of the actual excavation site. If you are facilitating the tailgate session in a meeting room or classroom, follow the facilitator notes for the classroom session.

1. Important Statistics—Discussion (10 minutes)

Cues

Skip Page 2

Content

- Begin the tailgate session by handing out the Participant Guide for Module 3.
- Refer employees to Page 1 of their Participant Guides. Tell them that they will now be learning about the third of the focus four hazards: excavation and trenching.
- Review the objectives on this page.
- Instruct employees to skip Page 2.
- Refer employees to Page 3. Tell them that excavations are another area that create problems for construction workers.
- Review the first set of statistics on Page 3.
- Emphasize how much higher the death rate is for excavation than it is for general construction.
- Get employee ideas on why this may be true.

1. Important Statistics—Discussion (10 minutes)—continued

Cues

Your
Organization's
Statistics

Content

- Review the information on cave-ins from the middle of Page 3.
- Emphasize that cave-ins are a particular problem at excavation sites.
- Refer employees to the information at the bottom of Page 3.
- Emphasize that small projects are especially vulnerable to injury.
- Share the statistics from your own organization relating to injuries at excavation sites. Discuss where the most of the excavation incidents have occurred.
- Close by making one of the following points depending on your organization's situation.
 - So far, our organization has done a great job of operating without serious incidents or injuries at our excavation sites. That's why we are completing this training: to ensure that our good record continues into the future.
 - We have had some excavation and trenching incidents in the past, so we are completing this training to ensure that every worker stays safe and uninjured in the future.

2. Important Terminology—Discussion (5 minutes)

Cues	Content
	<ul style="list-style-type: none"> ■ Refer employees to Page 4. Tell them you are now going to review some of the terminology relating to excavations. ■ Introduce the terms <i>excavation</i> and <i>trench</i>. Emphasize the following points. <ul style="list-style-type: none"> – A trench is actually also an excavation—it’s simply a special kind of excavation. – A trench is narrow and deep. ■ Introduce the term <i>spoils</i>. Describe how spoils that are too close to the trench can spill into the trench and cover workers very quickly. ■ Introduce the term <i>cave-in</i>. Emphasize once again that a cave-in can come from a very small excavation or trench. ■ Discuss <i>confined spaces</i>. ■ Discuss <i>soil sample</i>. Describe how important it is to know the type of soil in a trench.
<p>Pocket Reference Guide</p>	<ul style="list-style-type: none"> ■ Refer participants to Page 19 of their Pocket Reference Guides. Tell them that they should refer to this chart when they want to know the type of soil they are working with at an excavation. ■ Introduce employees to <i>protection systems</i>, which are various methods for protecting employees from cave-ins. ■ Discuss the four types of protection systems listed on Page 4.
<p>Question</p>	<ul style="list-style-type: none"> ■ Ask employees: Which protection systems do we typically use at our construction sites? ■ Get some responses, then ask employees if they have questions about how the various systems work.

2. Important Terminology—Discussion (5 minutes)—continued

Cues	Content
	<ul style="list-style-type: none"> ■ Refer employees to Page 5. Tell them that there is one other word you will be talking about a lot in this module: <i>competent person</i>. ■ Ask employees if they know what a competent person is. ■ Get some responses, then encourage them to take notes in the space on Page 5 as you say the following. <ul style="list-style-type: none"> – Excavations are very complex and, for them to be safe, lots of scientific and engineering expertise is required. – A competent person is someone who is trained and qualified to make decisions based on science and engineering.
Pocket Reference Guide	<ul style="list-style-type: none"> ■ Refer employees to Page 20 of their Pocket Reference Guides and tell them that this page summarizes the qualifications and duties of the competent person. ■ Quickly review the qualifications and duties of a competent person.
Question	<ul style="list-style-type: none"> ■ Ask employees: Do you know who the competent person is when you are working at an excavation site? ■ Get some responses, then emphasize that it is important for them to know who that person is. ■ Close the discussion by emphasizing that they will learn more about what a competent person does when you get into the discussion of the OSHA regulations.

3. OSHA Requirements—Discussion and Quiz (10 minutes)

Cues

Content

- Tell employees that it’s now time to introduce them to the OSHA regulations relating to excavation and trenching.
- Refer employees to Page 6. Review the four OSHA categories that pertain to excavations.
 - **29 CFR 1910.146** is the part of the general OSHA standard that deals with confined spaces.
 - **29 CFR 1926 Subpart D** addresses environmental controls in construction.
 - **29 CFR 1926 Subpart E** personal protective and life saving equipment.
 - **29 CFR 1926 Subpart P** addresses employee safety at excavations.
- Refer employees to Page 7. Tell them that you will be reviewing this quiz as a group and that they can use this page to take notes.
- Read each quiz question on Page 7 and have employees respond by standing to your left if they think the statement is true and standing to your right if they think the statement is false.
- Before giving each answer, ask employees to give their rationale for why they believe the statement is true or false.
- When you show the quiz answers, encourage employees to write the OSHA reference numbers in the appropriate spaces on Page 7.
- Following are the answers and the rationale.
 - **Quiz Question #1:** Because trenches are outdoors, it is not necessary to be concerned about hazardous air. The outdoor air will neutralize any bad air in the trench

3. OSHA Requirements—Discussion and Quiz (10 minutes)—continued

Cues

Content

- **Answer to Quiz Question #1 and Rationale:** False. OSHA 29 CFR 1926.57 states that when there are dusts, fumes, mists, vapors or gases, they must be handled.
- Ask employees how they know if the air in a trench is hazardous and how do they know what to do about it?
- Get some responses, then say that this is why it is important to have a competent person on the site.
- The competent person will know how to test the air, and will also know how to handle the situation if the air is bad.
- **Quiz Question #2:** If you are working in a trench where there are only a few inches of water, you are permitted to work in the trench.
- **Answer to Quiz Question #2 and Rationale:** False. OSHA 29 CFR 1926.651(h)(1) states that employees shall not work in a trench where water is standing or accumulating, unless there is a system to remove the water, and the trench is now classified as Type C and the correct protective system chosen for Type C.
- **Quiz Question #3:** If an excavation needs a ramp for entering and exiting, anyone on the construction crew can be assigned to find a ramp and put it in place.
- **Answer to Quiz Question #3 and Rationale:** False. OSHA 29 CFR 1926.651(c)(1)(i) states that structural ramps at excavations must be designed by a competent person and constructed in accordance with the design. Note that once again, here is that competent person to save the day!
- **Quiz Question #4:** When a construction crew digs for an excavation, it is okay to pile the dirt that is dug up (the spoils) right at the edge of the excavation.

3. OSHA Requirements—Discussion and Quiz (10 minutes)—continued

Cues

Content

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Guide

- **Answer to Quiz Question #4 and Rationale:** False. OSHA 29 CFR 1926.651(j)(2) states that the spoils must be kept at least two feet from the edge of the excavation.
- Ask employees what typically happens to spoils if it’s impossible to get them two feet away from the excavation.
- Get some responses, then make the following points if they haven’t already been made.
 - The spoils need to be moved to another site, or
 - A retaining device needs to be built.
 - **Quiz Question #5:** A competent person has the authority to evacuate an excavation site if that person believes the site is exposing employees to unsafe conditions such as a possible cave-in or hazardous air.
 - **Answer to Quiz Question #5 and Rationale:** True. OSHA 29 CFR 1926.651(k)(2) gives the competent person this authority.
- Close by once again reviewing soil types. Make the following points.
 - One thing a competent person must do is recognize the various soil types and how they affect the excavation.
 - The good news for you is that you can rely on the competent person to know the soil
 - However, you should also become familiar with the various soil types, and have an idea of which are the most stable and which are the weakest.
 - As we have already discussed, your Pocket Reference Guide has a summary of soil classifications on Page 19.

4. Best Prevention Practices—Activity (20 minutes)

Cues

Content

- Refer employees to Page 8. Tell them that, once again, they are going to share what they do on the job to apply the OSHA standards.
- Divide employees into two small groups.
- Tell them they have 10 minutes to identify the best practices they use in each of the two categories listed on Page 8.
 - What safety practices do they use when they have spoils from the excavation?
 - What general safety practices do they use at excavation sites?
- Tell that if they want to walk around the site to get ideas, that is fine.
- Encourage them to write their group's ideas in the space provided on Page 8.
- At the end of 10 minutes, bring the groups back together and lead a 10 minute debriefing.
- Ask the groups to share the *best practices* they identified.
- When the groups have shared their responses, add any that you feel are necessary.
- Some of the typical responses you will get are below.
- Spoil Placement
 - Immediately move the spoils from the excavation site.
 - Avoid placing spoils where rainwater can catch them and carry them into the excavation site.
 - Avoid working in the area where the backhoe is digging up the dirt.

4. Best Prevention Practices—Activity (20 minutes)—continued

Cues

Content

- General Work Practices
 - Always wear a hard hat.
 - Always use the provided ramps or ladders for entering and exiting the excavation.
 - Wear non-skid shoes.
 - Always wear a bright vest within the excavation site.
 - Stay clear of barricaded areas.
 - Never cross a trench unless you use a ramp made specifically for that purpose.
 - Alert your supervisor (or the competent person) if you smell any gases or strange odors.
 - Alert your supervisor (or the competent person) if you detect any odd cracks or fissures in the excavation walls.
 - Avoid walking under suspended loads that are being hauled to the excavation site.
- Congratulate employees for doing a good job of identifying best practices.

5. Checklist for Worksite Analysis—Activity (35 minutes)

Note on the time allocation: Spend about 5 minutes introducing the checklist and reviewing the worksite analysis process, then allow employees about 15 minutes to go around the worksite with the checklist, and finally spend 15 minutes debriefing what they discovered.

Cues	Content
	<ul style="list-style-type: none"> ■ Tell employees that once again they will use a checklist to identify some hazards. ■ Refer employees to Pages 9 through 13. ■ Tell them that this is the checklist they can use to help them find hazards at their excavation sites. ■ Review this checklist by doing the following. <ul style="list-style-type: none"> – Review the nine major categories on the checklist: Spoil Placement, Protection Systems, Safe Entry and Exit, Vehicle Safety, Surface Crossing, Water Management, Hazardous Atmosphere, Inspections, and General Safety Practices. – Emphasize that this list is derived from the OSHA standards, which are referenced at the end of the list. – Point out that, this list is only a <u>small</u> part of the OSHA standards, but it represents items that they can either control or call to the attention of their supervisor or competent person. ■ Ask employees to review the items on Pages 9 through 13 and place an “X” by items that may pose a hazard at their worksites.
Facilitator Note	<ul style="list-style-type: none"> ■ Employees won’t have time to review the entire checklist. Simply encourage them to review as much as they can in the allotted time. ■ After employees have had some time to review the list, ask them if they think this list will help them to identify hazards at their excavation sites.

5. Checklist for Worksite Analysis—Activity (35 minutes)—continued

Cues	Content
Question	<ul style="list-style-type: none"> ■ Get some responses, then point out that this checklist can be used when they perform a worksite analysis. ■ Ask employees: Once again, let’s see if you remember the four steps to worksite analysis. What are the four steps? ■ Get employee responses, then review the four steps. <ul style="list-style-type: none"> – 1. Identify the space where you will be working. – 2. Look for hazards that might cause injuries. – 3. Use a checklist to help you identify hazards. – 4. Discuss problems and corrections with your supervisor.
Pocket Reference Guide	<ul style="list-style-type: none"> ■ Refer employees to Pages 21 through 25 of their Pocket Reference Guides. Tell them that the checklist they have just reviewed is located here so that they can use it any time they do a worksite analysis. ■ Tell them that they are now going to do a worksite analysis just as they did in the last tailgate session. ■ Divide the group in half, then tell them the following. <ul style="list-style-type: none"> – Using this checklist, you are now going to perform a worksite analysis of this excavation site. – Your job is to work in your group and use your checklist to identify the hazards (or potential hazards) you see. – Concentrate only on the hazards that you typically see at an excavation site. That is, concentrate only on the items on this checklist. ■ Allow employees about 15 minutes to go around the worksite with their checklists.

5. Checklist for Worksite Analysis—Activity (35 minutes)—continued

Cues

Content

- If they are hesitant to get started, walk with them and go through the first several items on the checklist to give them an idea of what to do.
- As employees work, walk from one group to the other to get an idea of how they are doing and to answer any questions they have.
- When time is up, bring the two groups together and spend 15 minutes discussing what they've found.
- When employees discuss a hazard they've found, ask them to give some ideas for corrective action.
- If it is within their authority, encourage employees to take the corrective action. Otherwise, make a commitment yourself to take the corrective action.
- Close this activity by congratulating employees on being so good at identifying hazards at the excavation site
- Emphasize that you want them to be open about identifying hazards so that they can be corrected.

6. Concerns at Your Worksite—Activity (10 minutes)

Cues	Content
Skip Page 14	<ul style="list-style-type: none"> ■ Begin this segment by telling employees it’s time to take a look at people’s behavior at excavations. ■ Instruct employees to skip Page 14. ■ Refer employees to Page 15. Ask them to form back into their two separate groups. ■ Give employees 5 minutes to answer the questions in their groups. ■ When time is up, bring the employees back together as one group and have them share their answers to the questions. ■ Once employees have shared their answers, ask them what they think they should do or say when they see other employees ignoring safe work practices. ■ Get some responses from the group, then ask them what they expect their supervisors to say or do when they know employees are ignoring safe work practices. ■ Thank them for their thoughtful answers and tell them that you will revisit this issue in the final tailgate session because it is so important.
End of Session	<p>Thank employees for attending the tailgate session. Remind them to bring their Pocket Reference Guides to the next tailgate meeting.</p>