Many residential and commercial construction projects require the use of some form of scaffolding. Unsafe scaffolding procedures can cause accidents, serious injuries and even death. Accidents involving scaffolding mainly involve workers falling, incorrect operating procedures, environmental conditions, and falling materials. This course will discuss the elements of an effective Scaffold Safety Program (SSP) with emphasis on pre-planning the erection, use and dismantling processes.
OSHAcademy Course 803 Study Guide

Scaffold Safety Program Management

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The final exam will consist of questions developed from the course content and module quizzes.

We hope you enjoy the course and if you have any questions, feel free to email or call:

OSHAcademy
15220 NW Greenbrier Parkway, Suite 230
Beaverton, Oregon 97006
www.oshatrain.org
instructor@oshatrain.org
+1.888.668.9079

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Revised: August 9, 2017
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Course Introduction

Many residential and commercial construction projects require the use of some form of scaffolding. Unsafe scaffolding procedures can cause accidents, serious injuries and even death. Accidents involving scaffolding mainly involve workers falling, incorrect operating procedures, environmental conditions, and falling materials.

As with many considerations on construction projects, safety is very important in scaffolding design and use. There are a number of legal requirements, legislations, and regulations that must be met by a construction company. According to OSHA, it is mandatory for employers to “furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees”. Developing a Safe Scaffold Program (SSP) is an effective way to make sure the company meets these requirements.

An important support organization for those involved with the use of scaffolds is the Scaffold & Access Industry Association. In 2013, OSHA renewed an Alliance agreement with SAIA to mutually share information on OSH laws and standards, and to continue educational opportunities to forge solutions to OSH issues.

This course will discuss the elements of an effective Scaffold Safety Program (SSP) with emphasis on pre-planning the erection, use and dismantling processes.

Note: Special thanks goes out to the North Carolina Department of Labor (NCDOL), Occupational Safety and Health Division, for providing the primary source document for this course, A Guide to Safe Scaffolding. NCDOL provides many other valuable publications for safety professionals, and we recommend visiting their website.
Module 1: The Scaffold Safety Program

Introduction

When scaffolds are not erected or used properly, falls from elevation can occur. About 2.3 million construction workers frequently work on scaffolds. According to OSHA, protecting these workers from scaffold-related accidents would prevent an estimated 4,500 injuries and 50 fatalities each year.

It’s very important everyone working around scaffolds is familiar with scaffold safety requirements. Employees who erect or work on scaffolds should be properly trained. To make sure that happens, develop an effective formal Scaffold Safety Program (SSP).

First, as a short review, let’s cover some scaffold basics.

Scaffold Definition

A scaffold is defined as an elevated, temporary work platform. The three basic types of scaffolds are described below:

1. Supported scaffolds:
   Consist of one or more platforms supported by rigid, loadbearing members, such as poles, legs, frames, outriggers, etc.

2. Suspended scaffolds: Suspended scaffolds are platforms suspended by ropes, or other non-rigid means, from an overhead structure.

3. Other scaffolds: Principally man lifts, personnel hoists, etc., which are sometimes thought of as vehicles or machinery, but can be regarded as another type of supported scaffold.
Who Uses Scaffolds

Workers on scaffolds can be divided into two groups, erectors/dismantlers and users.

Erectors/Dismantlers: Erectors and dismantlers are those workers who are mainly responsible for assembling and disassembling scaffolding. This is done before other work can continue, and/or after work has been completed.

Users: Scaffold users are those whose work requires them, at least some of the time, to be supported by scaffolding. Employers are required to have a qualified person provide training to each employee who uses the scaffold. The training should teach employees to recognize the hazards associated with the type of scaffold being used. They should also understand the procedures to control or minimize those hazards. Here are a few of the hazards:

- Falls from elevation, due to lack of fall protection;
- Collapse of the scaffold, caused by instability or overloading;
- Being struck by falling tools, work materials, or debris; and
- Electrocution, principally due to proximity of the scaffold to overhead power lines.

You can learn more about basic scaffold safety by taking OSHAcademy course 604, Scaffold Safety.

Scaffold Safety Program Defined

A Scaffold Safety Program (SSP) may be thought of as a plan of action to accomplish a safety objective related to work with scaffolds. An effective SSP is designed around the processes, procedures, and practices normally assigned to employees and integrates safety-related decisions and precautions into them. Construction contractors must initiate and maintain safety programs as may be necessary to comply with CFR 1926.451, Scaffolds.

Now let’s talk about the critical components to help ensure a successful scaffold safety program.

Safety Culture

The scaffold safety program is never going to be successful unless the company has an effective safety culture. Believe it or not, OSHA actually has a pretty good definition for a safety culture. OSHA defines culture as “a combination of an organization's, attitudes, behaviors, beliefs, values, ways of doing things, and other shared characteristics of a particular group of people."
It's important to understand that, from the employer's point of view, the company's corporate culture is something to be managed. However, if you ask an employee to define culture, he/she will likely tell you it's just "the way things are around here."

**Commitment**

The success of your company's scaffold safety program also depends on the willingness of top management to demonstrate a long-term serious commitment to protect every employee from injury and illness on the job.

Managers will invest serious time and money into effective safety management by developing safety policies, programs, plans and procedures. They will also display leadership through effective accountability and recognition of behaviors and results.

**Leadership**

For the SSP to be truly successful, employers must understand that the simple expression of tough-caring safety leadership (being tough about safety standards while working with scaffolds because they care about each worker's safety) a result in enormous benefits. The ability to perceive leadership opportunities improves the company's potential to succeed.

Tough-caring leaders also assume their workers, at all levels of the organization, are good people trying to do the best they can with the skills they have.

**Accountability**

Accountability ranks right at the top with management commitment as a critical ingredient in a company's scaffold safety program. When you are held accountable, your performance is measured against specific criteria and consequences (discipline or recognition) are administered appropriate to the level or quality of performance. Employers have a responsibility to provide everything workers need to do the job safely. If employers don’t do that, then justification for discipline is not established.

It’s important to understand employers should make sure adequate physical resources (tools, equipment, machinery, materials, etc.), training, time to do the job, and supervision have been provided before they consider administering discipline for non-compliance while working on a scaffold.
Elements of an Effective SSP

Safe scaffold erection and use should begin by developing a SSP that includes at least the following elements:

- a written plan
- policy statement
- work rules
- hazard identification and controls

Written Scaffold Safety Plan

It’s important to create a written plan that clearly states policies, rules, responsibilities, etc. This will help reduce confusion, aid in training scaffold safety, and formalize processes.

Click here to download a Sample Scaffold Safety Plan.

Policies and Work Rules

Policies and work rules should concentrate on:

- sound design
- assigning personnel
- fall protection
- rules for use
- inspections
- selecting the right scaffold for the job
- instruction and training
- rules for proper erection
- rules for alteration and dismantling
- maintenance and storage

Sources of information for policy development and work rules include OSHA and ANSI standards, scaffold trade associations, scaffolding suppliers, and safety and engineering consultation services.

Sound Design

The scaffold should be capable of supporting its own weight and at least four times the maximum intended load to be applied or transmitted to the scaffold and components. Suspension ropes should be capable of supporting six times the maximum intended load. Guardrails should be able to withstand at least 200 pounds of force on the top rail and 100
pounds on the midrail. On complex systems, the services of an engineer may be needed to determine the loads at particular points.

**Selecting the Right Scaffold for the Job**

You cannot contract away the responsibility for selecting the right scaffold for your job. But if you do contract for scaffolding:

- Choose a scaffold supplier, rental agency and/or erector who is thoroughly knowledgeable about the equipment needed and its safe use.

- Obtain the owner’s manual prepared by the scaffolding manufacturer, which states equipment limitations, special warnings, intended use, and maintenance requirements.

If you are to select your own scaffold, begin by reviewing the written requirements (blueprints, work orders, etc.) to determine where scaffolds should be used and the type of scaffolding needed. Make sure that the scaffolds meet all government and voluntary requirements. Consider that scaffolds are generally rated light, medium and heavy duty.

- Light duty scaffolds can support a limited number of employees and hand tools.

- Medium duty scaffolds should be capable of safely holding workers, hand tools and the weight of construction materials being installed.

- Heavy duty scaffolds are needed when the scaffold should sustain workers, tools and the weight of stored materials.

Account for any special features of the building structure in relationship to the scaffold, including distinctive site conditions. Factor these considerations into your policy:

- experience of erection and working personnel

- length and kind of work tasks to be performed

- weight of loads to be supported

- hazards to people working on and near the scaffolding

- needed fall protection

- material hoists
• rescue equipment (particularly for suspended scaffolds)

• weather and environmental conditions

• availability of scaffolding, components, etc.

Hazard Identification and Control

Controlling exposures to worksite hazards while working on scaffolds is the fundamental method of protecting workers. Traditionally, the widely-accepted hierarchy of controls has been used as a means of determining how to implement feasible and effective controls.

ANSI/AIHA Z10-2005 discusses the five control measures below:

1. **Elimination** – doing the work at ground level if possible eliminates any fall-from-elevation hazard

2. **Substitution** – replacing an old scaffold with a new one

3. **Engineering controls** – redesigning the scaffold to provide more protection

4. **Administrative controls** – safe practices and rules for safe behavior

5. **Personal protective equipment** – harnesses, lifelines, etc.

The idea behind this hierarchy is the control methods at the top of the list are potentially more effective and protective than those at the bottom. Following the hierarchy normally leads to the implementation of inherently safer systems. The risk of illness or injury should be substantially reduced.
Module 1 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

1. Which of the following is most likely to occur if scaffolds are NOT erected and used properly?
   a. falls from elevation
   b. struck by falling objects
   c. slips, trips, and falls
   d. ergonomic injuries

2. Which of the following is one of the three basic types of scaffolds?
   a. pitched scaffold
   b. painter’s scaffold
   c. suspended scaffold
   d. commercial scaffold

3. The scaffold should be capable of supporting its own weight and _____ to be applied or transmitted to the scaffold and components.
   a. 200 pounds per foot on planks
   b. more than four times the minimum load
   c. at least four times the maximum intended load
   d. the weight of all workers, tools, and materials

4. Which of the following factors should be considered in selecting scaffolds when considering any special features of the building structure?
   a. earthquake zone rating
   b. size of the building
   c. local traffic conditions
   d. hazards to people working on or near the scaffolding
5. Which of the following types of scaffolds should be used when only a limited number of employees and hand tools will be used?

a. medium duty scaffolds
b. light duty scaffolds
c. heavy duty scaffolds
d. variable duty scaffolds
Module 2: Project Supervision

CFR 29 1926.451, Scaffolding, was the #3 most cited standard by OSHA in 2013. If employers had focused their compliance efforts on these sections of the standard, they could have not only reduced workers’ compensation costs by lessening their employees’ exposure to some extremely serious workplace hazards, but they would have also significantly reduced their risk of receiving a citation.

Immediate supervisors on construction projects should review, investigate, and take any necessary and appropriate action on all employee reports of hazards or potential hazards.

Minimum OSHA Requirements

OSHA dictates that employers in the construction industry provide a safe and healthful workplace, including:

- providing employees with sanitary and safe working conditions
- assigning safety and health responsibilities
- giving safety and health designees authority to correct hazards
- ensuring employees may voice safety and health concerns without fear of reprisal
- informing employees of worksite hazards
- coordinating hazard communication with other employers on site
- posting the OSHA state or federal poster

Responsibilities

It’s important to understand who is responsible for safety on the construction worksite. According to OSHA, there are four employer roles or categories on a multi-employer worksite.

1. Creating employer: The employer who caused a hazardous condition that violates an OSHA standard. An example would be a contractor who erects a defective scaffold.

2. Exposing employer: This is an employer whose own employees are exposed to the hazard. An example would be an employer who allows his own employees to work on a scaffold without proper guardrails.

3. Correcting employer: This is an employer who is engaged in a common undertaking, on the same worksite as the exposing employer, and is responsible for controlling or
otherwise eliminating a hazard. This usually occurs when an employer is given the responsibility of installing and/or maintaining particular safety/health equipment or devices such as scaffolds.

4. **Controlling employer:** This is an employer who has general supervisory authority over the worksite, including the power to correct safety and health violations itself or require others to correct them. Control can be established by contract or, in the absence of explicit contractual provisions, by the exercise of control in practice. An example would be the general contractor who has control over the erection of scaffolds on the worksite.

**Assigning Competent and Qualified Personnel**

Assign a competent and qualified person to oversee the scaffold selection, erection, use, movement, alteration, dismantling, maintenance and inspection. Only assign trained and experienced personnel to work on scaffolding.

**Competent Person**

A competent person can identify hazardous working conditions and has authorization to take prompt corrective measures to eliminate them. The competent person, who has primary responsibility for supervising and directing all scaffolding erection, dismantling, and altering work, should:

- Know Subdivision 3/L requirements applicable to the types of scaffolds used.
- Identify and correct hazards encountered in scaffold work.
- Be trained in the structural integrity of the types of scaffolds used.
- Have authority to promptly abate hazardous worksite conditions.

**Competent Person Duties**

A competent person’s duties can be shared as long as each person is qualified to perform the duty and has authority to correct hazards promptly. Competent persons must be able to do the following:

**General**

- Select and direct employees who erect, dismantle, move, or alter scaffolds.
• Determine if it is safe for employees to work on or from a scaffold during storms or high winds and to ensure that a personal fall arrest system or wind screens protect these employees. (Note: Windscreens should not be used unless the scaffold is secured against the anticipated wind forces imposed.)

**For Training:**

• Train employees involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting scaffolds to recognize associated work hazards.

**For Inspections:**

• Inspect scaffolds and scaffold components for visible defects before each work shift and after any occurrence which could affect the structural integrity and to authorize prompt corrective actions.

• Inspect ropes on suspended scaffolds prior to each workshift and after every occurrence. This could affect the structural integrity and to authorize prompt corrective actions.

• Inspect manila or plastic (or other synthetic) rope being used for toprails or midrails.

**For Inspections:**

• Evaluate direct connections to support the load.

• Evaluate the need to secure two-point and multi-point scaffolds to prevent swaying.

**For Erectors and Dismantlers:**

• Determine the feasibility and safety of providing fall protection and access.

• Train erectors and dismantlers to recognize associated work hazards.

**For Scaffold Components:**

• Determine if a scaffold will be structurally sound when intermixing components from different manufacturers.
• Determine if galvanic action has affected the capacity when using components of dissimilar metals.

**Competency = Training Plus Experience**

Many employer groups, vendors, apprenticeship programs, and labor organizations offer training on Subdivision 3/L scaffolding requirements. However, attending one of these programs does not necessarily make one competent (or a competent person). Competency should be demonstrated; it’s usually the result of many hours of in-class training and on-the-job experience.

**Qualified Person**

A qualified person has a recognized degree, certificate, or professional standing — or by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve problems related to the subject, the work, or the project.

Scaffolds should be designed by a qualified person but not necessarily by an engineer.

**Exceptions:** Connections for mason’s adjustable multipoint suspension scaffolds, pole scaffolds more than 60 feet high, coupler and fabricated-frame scaffolds more than 125 feet high, and outrigger scaffolds should be designed by a registered professional engineer.

**Qualified Person Duties**

**In General:**

• Design and load scaffolds in accordance with that design.

**For Training:**

• Train employees working on the scaffolds to recognize the associated hazards and understand procedures to control or minimize those hazards.

**For Suspension Scaffolds:**

• Design the rigging for single-point adjustable suspension scaffolds.

• Design platforms on two-point adjustable suspension types that are less than 36 inches (0.9 m) wide to prevent instability.

• Make swaged attachments or spliced eyes on wire suspension ropes.

**For Components and Design:**
• Design scaffold components construction in accordance with the design.

**Engineer Duties**

The standard requires a registered professional engineer to perform the following duties in the circumstances.

**For Suspension Scaffolds:**

• Design the direct connections of masons’ multi-point adjustable suspension scaffolds.

**For Design:**

• Design scaffolds that are to be moved when employees are on them.

• Design pole scaffolds more than 60 feet (18.3 meters) in height.

• Design tube and coupler scaffolds more than 125 feet (38 meters) in height.

• Design fabricated frame scaffolds more than 125 feet (38 meters) in height above their base plates.

• Design brackets on fabricated frame scaffolds used to support cantilevered loads in addition to workers.

• Design outrigger scaffolds and scaffold components.

**Qualifications for Inspecting Scaffolds**

For some types of scaffolds, a competent person should supervise the erection, installation or relocation of scaffolds. If an employee meets the requirements for a competent person for those purposes, that employee would also be qualified to periodically inspect those scaffolds.

**Scaffold Inspection Timeline**

There are periodic inspection requirements for a number of different types of scaffolds. "Periodic" means frequently enough so, in light of these factors and the amount of time expected for their detrimental effects to occur, there is a good likelihood problems will be found before they pose a hazard to employees.

For example, there are periodic inspection requirements for:

• welded frame scaffolds (910.28(d)(14))
• mason's adjustable multiple-point suspension scaffolds (1910.28(f)(11))

• two-point suspension scaffolds (1910.28(g)(8))

These standards do not specify how often a scaffold should be inspected to meet the "periodic" requirement. However, the company should have a clear policy regarding the frequency of periodic scaffold inspections. The frequency of periodic safety inspection should depend on factors such as:

• the type of scaffold

• site and weather conditions

• intensity of use

• age of the equipment

• how often sections or components are added, removed or changed

These factors will determine how quickly or slowly safety related faults, loose connections, degradation and other defects can be expected to develop.

Training for Scaffold Inspectors

For the employer to meet this obligation, the employee assigned to do the inspections should have sufficient knowledge to recognize unsafe scaffold conditions and to determine if the scaffold continues to meet the applicable scaffold standard requirements.

The employer may assign the periodic inspection task to one of its employees using the scaffold only if the employee has this level of knowledge. The employee should understand a cursory look at the scaffold prior to use would not constitute an inspection - an inspection requires a careful and critical examination.

Emergency Action Plan

In the company’s Emergency Action Plan (EAP) the employer should establish procedures to ensure a worker who falls from a scaffold receives immediate attention. Emergency procedures should be fully documented before workers begin work or use fall-arrest or restraint systems.

Emergency procedures within the EAP should identify key rescue and medical personnel, equipment available for rescue, communications procedures, retrieval methods, and first-aid
requirements. The following lists identify safe practice guidelines for developing emergency response planning procedures, responding to emergencies, and investigating accidents.

**EAP Actions**

**Before on-site work begins**

- Make the fire department or emergency responders aware of the job specifications at the site and any factors that may slow response time.
- Create one or more joint training sessions between key on-site personnel and emergency responders.
- Document the rescue plan and make sure it is posted at the worksite.
- Mark the job site with signs and note the easiest access routes into and out of the site.

**As on-site work progresses**

- Identify on-site equipment (examples: boomlifts, ladders, and forklifts) that can be used for rescue and retrieval.
- Maintain a current emergency equipment inventory at the site. Equipment may change frequently as the job progresses.
- Re-evaluate and update the emergency-response plan if on-site work tasks change.

**Emergency-response actions**

- Call 9-1-1 or other emergency numbers indicated on the emergency-response plan. Use 9-1-1 for ambulance service but remember that most 9-1-1 responders are not trained to rescue an injured worker suspended in a personal fall-arrest system. Rescue procedures should ensure prompt response to a suspended worker. The 9-1-1 number does not ensure prompt response. First responders should clear a path to the victim. Others should be sent to direct emergency personnel to the scene.
- Make sure only qualified personnel attempt a technical rescue.
- Prohibit all nonessential personnel from the rescue area.
- Talk to the victim; determine the victim’s condition, if possible.
• If the victim is accessible, comfort and check vital signs. If necessary, administer CPR and attempt to stop bleeding.

• Do not attempt a solo rescue if the victim is suspended. Wait for trained emergency responders.

**Accident investigation guidelines**

• Only trained and qualified persons should conduct accident investigations.

• Report fatalities and catastrophes to OSHA within eight hours.

• Report injuries requiring overnight hospitalization to OSHA within 24 hours.

• Identify all equipment associated with the accident and put it out of service until the accident investigation is complete.

• Document the scene, determine the sequence of events, and analyze the surface and root causes.

• Review the fall-protection plan; determine how the plan could be changed to prevent similar accidents; revise the plan accordingly.

• Have a qualified person examine equipment associated with the accident; if damaged, repair or replace it. If it contributed to the accident, determine how and why, then replace it.

• Do not disturb the scene of a fatality or catastrophe.

**A Word about “Common Sense”**

This topic may be a little controversial, and you may not agree, but in a word, there is no such thing as “common” sense. It’s easy for a supervisor to blame an accident on a worker’s - of common sense. You’ve all heard it: “He should have used common sense.” However, it’s never appropriate because a worker either has a "good" sense or "poor" sense about what is safe. The degree to which a worker has good sense can be based on personal genetics, experience, and the training the employee has or has not received.
Each worker is genetically different, has had a different life experience, and has had different training. It only makes “good” sense to conclude each worker has his or her own individual good sense or poor sense about safety on the job. It is important for managers to first analyze the safety management system to rule out system failures instead of placing blame on the workers.
Module 2 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

1. **An employer who erects a defective scaffold would be considered by OSHA to be the _____**.
   - a. exposing employer
   - b. creating employer
   - c. correcting employer
   - d. controlling employer

2. **The competent person, should meet which of the following criteria?**
   - a. have authority to promptly abate hazardous conditions
   - b. be able to hire and fire workers
   - c. have at least two-years experience
   - d. be assigned by the general contractor

3. **The scaffold competent person should be able to do which of the following?**
   - a. verify at least two-years of experience in scaffold work
   - b. restrict OSHA access to the work zone if required
   - c. direct the purchase of building materials for the project
   - d. evaluate the need to secure scaffolds to prevent swaying

4. **Factors listed that determine how often periodic scaffold inspections should be conducted include which of the following?**
   - a. EPA regulations
   - b. OSHA standards
   - c. intensity of use
   - d. union requirements
5. Which of the following scaffold emergency procedures should be included in the Emergency Action Plan (EAP)?

a. the nearest OSHA reporting agency
b. post-emergency recordkeeping
c. retrieval methods
d. incident command center
Module 3: Scaffold Training Requirements

Introduction

Each employee who performs work while on a scaffold should be trained by a person qualified in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards. The training should include the following areas, as applicable:

- General overview of scaffolding
  - regulations and standards
  - erection/dismantling
  - PPE and proper procedures
  - fall hazards and protective strategies
  - electrical hazards
  - materials handling
  - access and use of walkways and platform components
  - working platform load capacities
  - foundations
  - guys, ties and braces

- Learn the nature of any electrical hazards, fall hazards and falling object hazards in the work area.
• Know the correct procedures for dealing with electrical hazards and for erecting, maintaining, and disassembling the fall protection systems and falling object protection systems being used.

• Determine the proper use of the scaffold and the proper handling of materials on the scaffold.

• Know the maximum intended load and the load-carrying capacities of the scaffolds used.

**Competent Person**

Each employee who is involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold should be trained by a competent person to recognize any hazards associated with the work in question. The training should include the following topics, as applicable:

• the nature of scaffold hazards

• the correct procedures for erecting, disassembling, moving, operating, repairing, inspecting, and maintaining the type of scaffold in question

• the design criteria, maximum intended load-carrying capacity and intended use of the scaffold

• any other pertinent requirements of the employer's program

The competent person(s) should receive additional training regarding the selection of scaffolds, recognition of site conditions, scaffold hazard recognition, protection of exposed personnel and the public, repair and replacement options, and requirements of standards.

**Retraining**

Site management personnel should also be familiar with correct scaffolding procedures so they can better determine needs and identify deficiencies.

If the employer has reason to believe an employee lacks the skill or understanding needed for safe work involving the erection, use or dismantling of scaffolds, the employer should retrain each the employee so that the required proficiency is regained.
Retraining is required in at least the following situations:

- changes at the worksite present a hazard about which an employee has not been previously trained

- changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard about which an employee has not been previously trained

- inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency

### Summary of training requirements for scaffold users

<table>
<thead>
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<th>Critical scaffold issues</th>
<th>Those who work from scaffolds</th>
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<td>• how to use appropriate fall-protection systems</td>
<td>• any person who has training and experience in the critical scaffold issues (above) and who can teach the issues to scaffold users</td>
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<tr>
<td>• how to control scaffold hazards</td>
<td>• subdivision 3/L refers to a person with these skills as a <em>qualified person</em> (See Page 10 in this guide for more information on the qualified person)</td>
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<td>• how to use scaffold walkways, platform components, and access areas</td>
<td>• subdivision 3/L refers to a person with these skills as a <em>competent person</em> (See Page 12 in this guide for more information on the competent person)</td>
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<td>• maximum-intended and load-carrying capacities of scaffolds</td>
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<tr>
<th>Who can train them</th>
<th>How often to train them</th>
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<tbody>
<tr>
<td>• any person who has training and experience in the critical scaffold issues (above) and who can teach the issues to scaffold users</td>
<td>• before they begin a new job</td>
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<tr>
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<td>• whenever changes at the worksite present new hazards</td>
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<tr>
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<td>• hazards involved in erecting/ dismantling</td>
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<td>• erection/ dismantling planning procedures</td>
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<tr>
<td>• how to deal with electrical hazards</td>
<td>• whenever they fail to demonstrate skills related to any of the critical scaffold issues</td>
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Developing a Scaffold Training Plan

Effective training programs don’t just happen. They require careful planning, explicit goals and objectives, dedicated instructors, and motivated students. It doesn’t matter whether the activity is athletics, academics, or occupational safety and health. The underlying training concepts are similar:

1. Design a training program
2. Conduct training
3. Evaluate training effectiveness
4. Improve training through feedback

1. Design a Training Program

Determine if training is needed. Determine whether a worksite problem can be solved by training. Will training solve the problem or are hazards or engineering problems causing injuries?

Training is most effective when it focuses on what workers need to know to do their jobs safely. Training is especially helpful for inexperienced workers, new workers, and workers unfamiliar with special processes and equipment.

Identify training needs. Establish what the worker is expected to do and identify hazardous tasks. Analyze each task to determine what the worker should learn to do a job safely.

Design learning activities. Learning activities enable workers to demonstrate acquired desired skills and knowledge. The activities should simulate actual job tasks as closely as possible. Learning activities can be group-oriented, with lectures, role playing, and demonstrations. They can also be designed as self-paced activities for individual workers.

2. Conduct the Training

Plan the training structure and format. Consider the number, frequency, and length of sessions. Determine instructional techniques and who will do the training.

Make sure the training is well-organized and has clearly defined objectives. Give workers an overview of what they’ll learn. Relate training materials to tasks and jobs.
Include hands-on experience and role-playing activities, if possible. Reinforce learning by summarizing objectives and key concepts. Be sure to let workers participate in discussions and ask questions.

Click here to download a scaffold safety sample lesson plan.

3. Evaluate Training Effectiveness

How do you know training is accomplishing your objectives? Develop a plan to objectively evaluate training effectiveness. Ask workers what they’ve learned through training. Ask supervisors if workers are accomplishing training goals. Examine trends in your injury or illness statistics for changes that training may have influenced.

4. Improve Training through Feedback

Collect and evaluate feedback from workers, supervisors, and others affected by the training. When you’re sifting through what people had to say about the training, consider these questions:

• Did the training focus on critical elements of the job?
• Were major gaps in workers’ knowledge or skills covered?
• Were the training objectives presented clearly?
• Did the objectives state the performance levels expected of workers?
• Did learning activities simulate actual work tasks?
• Were the learning activities appropriate for the knowledge and skills the jobs required?
• Were the training materials organized and presented clearly?
• Were workers motivated to learn?
• Were workers encouraged to participate and to ask questions? Adjust the training program if the feedback warrants a change.
Module 3 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

1. Which of the following topics should be included in scaffold safety training?
   a. confined space entry
   b. materials handling
   c. exposure to bloodborne pathogens
   d. machine guarding principles

2. The competent person(s) should receive additional training regarding which of the following topics?
   a. scaffold planning
   b. disciplinary procedures
   c. confined space safety
   d. scaffold hazard recognition

3. The first step in designing a scaffold safety training program is to _____.
   a. locate training venue
   b. determine if training is needed
   c. design learning objectives
   d. identify training needs

4. Once you have determine that training is needed, the next step in designing the training program is to _____.
   a. locate training venue
   b. determine if training is needed
   c. design learning objectives
   d. identify training needs
5. **Make sure the scaffold training you design includes _____**.

a. hands-on practice  
b. videos  
c. power points  
d. lecture
Module 4: Fall Protection on Scaffolds

According to OSHA, falls are among the most common causes of serious work related injuries and deaths in the construction industry. Employers should set up the work place to prevent employees from falling off of overhead platforms, elevated work stations or into holes in the floor and walls.

Fall protection is more than the equipment you use. Fall protection is what you do to eliminate fall hazards, to prevent falls, and to ensure that workers who do fall don’t die. To do that:

- Ensure everyone has a role to play in preventing falls.
- Identify and evaluate fall hazards.
- Eliminate fall hazards, if possible.
- Train workers to recognize fall hazards.
- Use appropriate systems and methods to prevent falls and to protect workers if they do fall.
- Inspect and maintain fall-protection equipment before and after using it.
- Become familiar with the employer’s fall protection program.

Personal Protective Equipment (PPE)

Workers on scaffolds should wear hard hats when falling objects are a hazard, which is the case in most scaffold work. Unless company policy otherwise directs, there is no requirement to wear a hard hat if there is no hazard from falling objects.

Guardrails

Guardrails should be installed on all scaffold platforms in accordance with required standards if more than 10 feet above the ground or floor. Guardrails should at least consist of top rails, midrails and toeboards.
Guardrail height - The height of the toprail for scaffolds manufactured and placed in service after January 1, 2000 must be between 38 inches (0.9 meters) and 45 inches (1.2 meters). The height of the toprail for scaffolds manufactured and placed in service before January 1, 2000 can be between 36 inches (0.9 meters) and 45 inches (1.2 meters).

Crossbracing - When the crosspoint of crossbracing is used as a toprail, it must be between 38 inches (0.97 m) and 48 inches (1.3 meters) above the work platform.

Midrails - Midrails must be installed approximately halfway between the toprail and the platform surface. When a crosspoint of crossbracing is used as a midrail, it must be between 20 inches (0.5 meters) and 30 inches (0.8 m) above the work platform.

Release - To ensure adequate protection, install guardrails along all open sides and ends before releasing the scaffold for use by employees, other than the erection and dismantling crews.

Exceptions - Guardrails are not required, however, in the scenarios below.

- when the front end of all platforms are less than 14 inches (36 cm) from the face of the work
- when outrigger scaffolds are 3 inches (8 cm) or less from the front edge
- when employees are plastering and lathing 18 inches (46 cm) or less from the front edge

Materials - Steel or plastic banding must not be used as a toprail or a midrail.

Protection from Falling Objects

Hard hats should be worn to protect against falling objects. Mesh, screens, intermediate vertical members or solid panels should be used to safeguard employees and the public at lower levels. Ground-level safety can be further provided by erecting canopies; by prohibiting entry into the fall hazard area by policy, barricades and signs; and by the proper placement of materials, tools and equipment on scaffolding.
Personal Fall-Arrest Systems

Workers on suspended scaffolds should use a fall arrest system as protection against the failure of the scaffold or its components. This system will usually consist of a full body harness, lanyard, rope grab, independent vertical lifeline and an independent lifeline anchorage.

Harness: The full body harness is a belt system designed to distribute the impact energy of a fall over the shoulders, thighs and buttocks. A properly designed harness will permit prolonged worker suspension after a fall without restricting blood flow, which may cause internal injuries. Rescue is also aided because of the upright positioning of the worker.

Lanyards. Personal fall-arrest systems used on scaffolds should be attached by a lanyard to a vertical lifeline, horizontal lifeline, or structural member that will hold at least 5,000 pounds. A lanyard connects the safety harness to the rope grab on the lifeline. Materials should be made of 5/8-inch nylon rope or nylon webbing. Lanyards should be kept as short as possible to limit fall distance or rigged such that an employee can never free fall more than 6 feet. A competent person should decide the most appropriate connection.

Rope Grabs. Rope grabs contain a cam device that locks onto a lifeline when there is a hard tug or pull on the lanyard. Care should be taken to ensure that rope grabs are properly connected to lifelines so the cam will work correctly. Rope grabs should be placed at the highest point on the lifeline to reduce the fall distance and unintentional disengagement.

Lifelines. Retractable lifelines (single or dual) are wound on reels and automatically extend or retract to take up slack in the line as the worker moves about. A sudden extension in the line activates a locking mechanism that typically includes a deceleration device. Some self-retracting lanyards can be set to restrict the distance traveled and so can also function as part of a properly designed fall restraint system.

Double Self Retracting Lanyards/ Lifelines. Commonly known as 100% tie-off, "Y" type, twin leg, or double lanyards; these energy absorbing lanyards can be used to provide continuous fall protection while ascending, descending, or moving laterally. With one lanyard leg attached, the worker can move to a new location, attach unused lanyard leg, and disconnect attached leg. This procedure is repeated until a new location is reached. (DBI SALA)
Anchorage: It is important to remember that fall protection is only as good as its anchorage. The anchorage points are independent points on structures where lifelines are securely attached. These points should be able to support at least 5,000 pounds per employee and preferably 5,400 pounds for a fall of up to 6 feet or 3,000 pounds for a fall of 2 feet or less.

Scenario

While sitting or kneeling on a fixed deck plank attached to a fabricated frame scaffold, a worker was pulling a 16-foot long 2x4 off the bucket of an excavator. There were no guardrails at the working level. When the other end of the 2x4 slipped off the bucket, the employee did not let go of his end, and was pulled off the deck. He fell 16 feet to the ground, sustaining facial fractures and other injuries.
Module 4 Quiz

Use this quiz to self-check your understanding of the module content. You can also go online and take this quiz within the module. The online quiz provides the correct answer once submitted.

1. Which of the following actions should you take to help ensure an effective fall protection program?
   a. ensure everyone plays by the rules
   b. reduce all fall hazards no matter what the cost
   c. eliminate fall hazards, if possible
   d. make others comply with safety rules at all times

2. Workers on scaffolds should wear _____ when falling objects are a hazard, which is the case in most scaffold work.
   a. plastic hat protectors
   b. bump caps
   c. hard hats
   d. safety hats

3. Ground-level safety around scaffolds can be provided by which of the following methods?
   a. personal fall restraint systems
   b. personal fall arrest systems
   c. prohibiting entry into the fall hazard area
   d. hard hats and safety shoes

4. Anchorage points should be able to support at least _____ per employee.
   a. a safety factor of two
   b. 5,000 pounds
   c. 1,000 pounds
   d. a safety factor of four
5. Lanyards should be kept as short as possible to limit fall distance or rigged such that an employee can _____.

a. potentially fall a distance of only 2 feet
b. be restrained from a fall over the edge of a scaffold
c. fall up to five feet
d. never free fall more than 6 feet
Glossary

Adjustable suspension scaffold: A suspension scaffold with a hoist (or hoists) operated by workers on the scaffold.

Aerial Device: Any vehicle mounted, telescoping or articulating, or both, used to position personnel (workers).

Aerial Ladder: An aerial device consisting of a single or multiple-section extensible ladder.

Articulating Boom Platform: An aerial device with two or more hinged boom sections.

Anchorage: A secure point of attachment for lifelines, lanyard, deceleration devices or tiebacks.

Base Plate: A device used to distribute vertical load.

Bearer: A horizontal transverse scaffold member (which may be supported by ledgers or runners) upon which the scaffold platform rests and joins scaffold uprights, posts, poles and similar members.

Boatswains’ Chair: A suspended seat designed to accommodate one worker in a sitting position.

Body Harness, Full: Straps that are secured about an employee in a manner that distributes the arresting forces over at least the thighs, shoulders and pelvis with provisions for attaching a lanyard, lifeline or deceleration device.

Brace: A tie that holds one scaffold member in a fixed position with respect to another member. Brace also means a rigid type of connection holding a scaffold to a building or structure.

Bricklayer’s square scaffold: A supported scaffold made of framed squares that supports a platform.

Carpenter’s bracket scaffold: A supported scaffold consisting of a platform supported by brackets attached to a building or structural walls.

Catenary scaffold: A suspension scaffold consisting of a platform supported by two horizontal and parallel ropes attached to structural members of a building or other structure.

Chimney hoist: A multipoint adjustable suspension scaffold that provides access for working inside chimneys. See “Multipoint adjustable suspension scaffold.”
Cleat: A structural member used at the ends of platform units to prevent the units from slipping off their supports. Cleats are also used to provide footing on sloped surfaces such as crawling boards.

Come-along: A hand operated ratchet lever winch used to wind a rope or cable, while a ratchet is a mechanical brake that keeps the line from unwinding.

Competent Person: One who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous or dangerous to employees, and who has the authority to take prompt corrective measures to eliminate such hazards.

Continuous-run scaffold (run scaffold): A two-point or multipoint adjustable suspension scaffold made from braced scaffold members or supporting structures that form a continuous scaffold.

Coupler: A device for locking together the component tubes of a tube and coupler scaffold.

Crawling board (chicken ladder): A supported scaffold consisting of a plank with cleats spaced and secured to provide footing.

Crossbraces: Two diagonal scaffold members joined at their center to form an “X.” Used between frames or uprights or both.

Deceleration device: Any mechanism that dissipates energy during a fall arrest or limits the energy imposed on a worker during fall arrest.

Design Load: The maximum intended load; that is, the total of all loads including the worker(s), material and the equipment placed on the unit.

Double-pole (independent pole) scaffold: A supported scaffold consisting of a platform resting on bearers supported by ledgers and a double row of uprights not supported (except with ties, guys, braces) by any other structure.

Electrical Ground: A conducting connection between an electrical circuit or equipment and the area, or some conducting body that serves in place of the earth.

Equivalent: An alternative design, material or method that the employer can demonstrate will provide an equal or greater degree of safety for employees than the method or item specified in the standard.

Extensible Boom Platform: An aerial device (except ladders) with a telescopic or extensible boom. Telescopic derricks with personnel platform attachments are considered to be extensible boom platforms when used with a personnel platform.

Eye or eye splice: A loop with or without a thimble at the end of a wire rope.
Fabricated decking and planking: Manufactured platforms made of wood (including laminated wood and sawn-wood planks), metal, or other materials.

Fabricated-frame scaffold (welded tubular-frame scaffold): A scaffold consisting of a platform supported on fabricated end-frames with integral posts, horizontal bearers, and intermediate members.

Failure: Breakage or separation of component parts

Fall Protection: A system designed to prevent or arrest a person’s fall.

Float (ship) scaffold: A suspension scaffold consisting of a braced platform resting on two parallel bearers and hung from overhead supports by fixed-length ropes.

Form scaffold: A supported scaffold consisting of a platform supported by brackets attached to formwork.

Guardrail System: A rail system erected along the open sides and ends of platforms. The rail system consists of a top rail and mid rail and their supports.

Guy: A rope, chain or cable used to stabilize a vertical object.

Harness: A design of straps that is secured about the employee in a manner to distribute the arresting forces over at least the thighs, shoulders and pelvis, with provisions for attaching a lanyard, lifeline or deceleration device.

Hoist: A mechanical device to raise or lower a suspended scaffold. It can be mechanically powered or manually operated.

Horse scaffold: A supported scaffold consisting of a platform supported by construction horses (sawhorses). Horse scaffolds made of metal are also called trestle scaffolds.

Independent-pole scaffold: See “double-pole scaffold.”

Insulated Aerial Device: An aerial device designed for work on energized lines and apparatus.

Interior hung scaffold: A suspension scaffold consisting of a platform suspended from a ceiling or roof structure by fixed-length supports.

Joint: The location where vertical members of a scaffold are combined.

Ladder jack scaffold: A supported scaffold consisting of a platform resting on brackets attached to ladders.

Ladder Stand: A mobile, fixed-size, self-supporting ladder that appears as a wide flat tread ladder in the form of stairs.
Landing: A platform at the end of a flight of stairs.

Large area scaffold: A pole scaffold, tube-and-coupler scaffold, systems scaffold, or fabricated frame scaffold erected over an entire work area.

Lanyard: A flexible line to secure the wearer of a full body harness to a lifeline, trolley line or a fixed anchor.

Lean-to scaffold: A supported scaffold that is kept erect by tilting toward and resting against a building or structure.

Ledger: A horizontal scaffold member upon which bearers rest. It is the longitudinal member that joins scaffold uprights, posts, poles and similar members.

Lifeline: A flexible line that connects to an anchorage at one end and hangs vertically (vertical lifeline) or that connects to anchorages at both ends and stretches horizontally (horizontal lifeline); it connects other components of a personal fall-arrest system to the anchorage.

Lower levels: Areas below the working level. Examples: ground levels, floors, roofs, ramps, runways, excavations, pits, tanks, materials, water, and equipment.

Mason’s adjustable supported scaffold: See “Self-contained adjustable scaffold.”

Mason’s multipoint adjustable suspension scaffold: A continuous-run suspension scaffold designed and used for masonry work.

Maximum Intended Load: The total load of all employees, equipment, tools, materials, transmitted loads, wind loads, and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.

Mechanically Powered Hoist: A hoist that is powered by other than human energy.

Midrail: A rail approximately midway between the toprail and platform of a guardrail system.

Mobile scaffold: A portable caster or wheel-mounted supported scaffold.

Multilevel suspended scaffold: A two-point or multipoint adjustable suspension scaffold with platforms at various levels that rest on common stirrups.

Multipoint adjustable suspension scaffold: A suspension scaffold consisting of a platform suspended by more than two ropes from overhead supports that can be raised and lowered to desired work levels. Includes chimney hoists.

Needle-beam scaffold: A platform suspended from needle beams.
Open Sides and Ends: The edges of a platform that are more than 14 inches away from a sturdy, continuous, vertical surface (such as a building wall) or a sturdy, continuous, horizontal surface (such as a floor), or a point of access. Exception: For plastering and lathing operations, the horizontal distance is 18 inches.

Outrigger: The structural member of a supported scaffold used to increase the base width of a scaffold in order to provide greater stability for the scaffold.

Outrigger Beam (thrustout): The structural member of a suspension scaffold or outrigger scaffold that provides support for the scaffold by extending the scaffold point of attachment to a point out and away from the structure or building.

Outrigger scaffold: A supported scaffold consisting of a platform resting on outrigger beams projecting beyond the wall or face of a structure; the inboard ends are secured inside the structure.

Overhand bricklaying: Laying bricks and masonry units so that the surface of the wall to be jointed requires the mason to lean over the wall to complete the work.

Periodic: For scaffolds, “periodic means frequently enough so that, in light of these factors and the amount of time expected for their detrimental effects to occur, there is a good likelihood that problems will be found before they pose a hazard to employees.

Personal Fall Arrest System: A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline or suitable combinations of these. The use of a body belt for fall arrest is prohibited.

Plank: A wood board and fabricated component that serves as a platform unit.

Plank (Metal): A metal platform united sized to support one or more workers or uniformly distributed loads. Metal planks would be similar dimensions as wood planks.

Plank (Wood, Laminated): A platform unit of glue-laminated wood whose method of manufacture and assigned design values contemplate flat use in a scaffolding application.

Plank (Wood, Sawn): A board of sawn lumber whose grading rules and assigned design values contemplate flat use in a scaffolding application.

Platform: The horizontal working surface of a scaffold.

Platform: Any personnel-carrying device (basket or bucket) that is a component of an aerial device.
**Platform Unit:** The individual wood planks, fabricated planks, fabricated decks and fabricated platforms that compose the platforms and walkways of a scaffold.

**Pole scaffold:** See “Single-pole scaffold” and “Double (independent) pole scaffold.”

**Positioning Device System:** A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.

**Power-operated hoist:** A hoist powered by other than human energy.

**Pump jack scaffold:** A supported scaffold consisting of a platform supported by vertical poles and movable support brackets.

**Qualified Person:** One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training or experience has successfully demonstrated the ability to solve or resolve problems related to the subject matter, the work or the project.

**Rated Load:** The manufacturer’s recommended maximum load.

**Repair bracket scaffold:** A supported scaffold consisting of a platform supported by brackets secured around the circumference or perimeter of a chimney, stack, tank, or other supporting structure.

**Roof-bracket scaffold:** A rooftop-supported scaffold consisting of a platform resting on angular-shaped supports.

**Runner (ledger or ribbon):** The lengthwise horizontal bracing or bearing member that supports bearers on tube and coupler scaffolds.

**Safety Screen:** A wire or plastic screening that protects the workers and passers-by below from dropped items.

**Scaffold:** Any temporary elevated or suspended platform and its supporting structure used for supporting employees or materials or both, except this term does not include crane or derrick suspended personnel platforms.

**Scissor Lift:** A self-propelled or manually propelled lifting personnel platform (within wheel base) capable of vertical movement with onboard controls as defined by ANSI/SIA A92.6-1990.

**Self-contained adjustable scaffold:** A combination supported and suspension scaffold consisting of an adjustable platform mounted on an independent supporting frame not a part of the object worked on. Examples: rolling roof rigs, rolling outrigger systems, and some mason’s adjustable supported scaffolds.
Shore scaffold: A supported scaffold placed against a structure and held in place with props.

Sill: A footing (usually wood) which distributes the vertical loads to the ground or slab below.

Shore scaffold: A supported scaffold placed against a structure and held in place with props.

Single-point adjustable suspension scaffold: A suspension scaffold consisting of a platform suspended by one rope from an overhead support and equipped to move the platform to desired work levels.

Single-pole scaffold: A supported scaffold consisting of a platform resting on bearers. The outside ends are supported on runners secured to a single row of posts or uprights and the inner ends are supported by a structure.

Stair tower (scaffold stairway/tower): A tower that contains internal stairways and rest platforms. Used to provide access to scaffold platforms and other elevated points such as floors and roofs.

Stall load: The load at which a power-operated hoist stalls or the power is automatically disconnected.

Step, platform, and trestle ladder scaffold: A platform resting directly on the rungs of stepladders or trestle ladders.

Stilts: A pair of poles or supports with raised footrests, used to walk above the ground or working surface.

Stonesetter’s multipoint adjustable suspension scaffold: A continuous-run suspension scaffold designed and used for stonesetter’s work.

Supported scaffold: One or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames, or similar rigid support.

Suspension scaffold: One or more platforms suspended by ropes or other nonrigid means from an overhead structure(s).

System scaffold: A scaffold consisting of posts with fixed connection points that accept runners, bearers, and diagonals interconnected at predetermined levels.

Tank builder’s scaffold: A supported scaffold consisting of a platform resting on brackets directly attached to a cylindrical tank or attached to devices that are attached to a tank.

Tie: A device used between scaffold component and the building or structure to enhance lateral stability.
Toeboard: A barrier secured along the sides and the ends of a platform unit to guard against the falling of material, tools and other loose objects.

Top-plate bracket scaffold: A scaffold supported by brackets that hook over or are attached to the top of a wall. Similar to carpenter’s bracket scaffolds and form scaffolds and used in residential construction for setting trusses.

Toprail: The uppermost horizontal rail of a guardrail system.

Tube-and-coupler scaffold: A supported or suspended scaffold consisting of a platform or platforms supported by tubing, erected with coupling devices connecting uprights, braces, bearers, and runners.

Tubular welded-frame scaffold: See “Fabricated frame scaffold.”

Two-point suspension scaffold (swing stage): A suspension scaffold consisting of a platform supported by hangers (stirrups) suspended by two ropes from overhead supports and equipped to raise and lower the platform to desired work levels.

Unstable objects: Objects that could become dislocated, shift, and not support the loads imposed on them. Unstable objects do not constitute a safe base support for scaffolds, platforms, or workers. Examples: barrels, boxes, loose brick, and concrete blocks.

Uplift: Uplift is the separation of a scaffold frame from the frame below it.

Vertical Pickup: A rope used to support the horizontal rope in catenary scaffolds.

Walkway: A portion of a scaffold platform used only for access and is not a work level.

Window jack scaffold: A platform resting on a bracket or jack that projects through a window opening

Work Level: An elevated platform used for supporting employees and their materials where work activities are performed.

Working Load: Load imposed by persons, materials and equipment.
Endnotes

