

SUPPORTED SCAFFOLDING SAFETY IN INDUSTRIAL AND CONSTRUCTION ENVIRONMENTS

Structure and Organization

Information in this program is presented in a specific order so that employees will see the relationships between the various concepts and can retain them more easily. The sections included in the program are:

- Supported scaffolds and OSHA regulations.
- Building a firm foundation.
- Assembling a secure platform.
- Accessing a scaffold safely.
- Fall protection.

Each of the sections covers important information in one topic area, providing employees with general knowledge about how to work safely with supported scaffolds.

Background

Every day, millions of people reach the work they do by using a supported scaffold. These structures provide employees with a walking and working surface up off the ground, and give them a place to store tools, equipment and the materials that they need; however, scaffolds can also be hazardous. Thousands of workers are injured every year and more than 50 are killed while using scaffolds, often by falls.

To work safely with supported scaffolds, employees need to understand the hazards that are associated with them and the OSHA regulations that have been established to mitigate those hazards. They also need to know how supported scaffolds should be constructed to make them strong and secure, and what procedures they should follow to prevent mishaps and injuries.

Objectives

This education and training program is designed to present information on constructing and using supported scaffolding safely. Upon completion of the program, employees should:

- Understand the hazards that are associated with working on a supported scaffold.
- Understand the OSHA regulations that have been established to mitigate these hazards.
- Understand the duties and responsibilities of the "competent person".
- Know work procedures they should follow in building a safe and secure framework for a supported scaffold.
- Know the materials and work practices that should be used in assembling a scaffold platform.
- Know how to get onto and off of a scaffold's work platform safely.
- Know the equipment and safe work practices that they should follow to work safely on supported scaffolds.
- Understand how guardrails and Personal Fall Arrest systems (PFAs) can help reduce fall hazards.
- Understand how toeboards, screens and debris nets can prevent injuries caused by objects that fall off a scaffold platform.

OUTLINE OF MAJOR PROGRAM POINTS

SUPPORTED SCAFFOLD DEFINITION

- **Every day, millions of workers use different scaffolds to "reach" the work that they are doing.**
- **More often than not a supported scaffold is what they choose.**
 - These are scaffolds that are held up by a framework of support beams.
 - They enable work to be performed safely when people have to be up off the ground.
- **Scaffolding provides employees with a walking and working surface and gives them a place to store tools, equipment and the materials that they need.**
- **Scaffolds can also be hazardous.**
 - Thousands of workers are injured every year and more than 50 are killed using scaffolds, often by falls.
- **Supported scaffolds consist of one or more work platforms that are held up by rigid supports, poles, legs, posts and frames, that are connected to the ground.**

THE COMPETENT PERSON'S RESPONSIBILITIES

- **The Occupational Safety and Health Administration (OSHA) has established a number of regulations for constructing and using scaffolds safely.**
 - OSHA regulations require that a "competent person" be present on a scaffold worksite at all times.
 - This person is an employer's designated scaffolding "expert" and the person who is responsible for the scaffold's use on the job.
- **Specifically, the competent person's responsibilities include:**
 - Designing the scaffold.
 - Supervising its construction.
 - Ensuring that all safety requirements are met.
 - Resolving any issues that arise with the scaffolding during the project.
- **For example, before a scaffold is built the competent person must identify any electrical hazards that exist in the work area.**
 - A scaffold that is constructed too close to electrical equipment such as power lines could expose workers to an electric shock, which could result in a serious injury or even death.
- **A competent person will design the scaffold structure to ensure that equipment and employees are kept at a safe distance from any electrical hazards, as specified in the OSHA regulations.**

KEEPING CLUTTER TO A MINIMUM

- **The OSHA regulations also require that workers should be trained regarding the proper placement, assembly and disassembly of a supported scaffold.**
 - They must receive training on the safe work procedures and equipment they should use when they are on a scaffold as well, including fall protection.
- **For instance, it's important to keep clutter to a minimum when you are working on a supported scaffold.**
 - A platform that is covered with tools, materials and debris can create serious slip, trip and fall hazards.
- **Clutter can also slide or be kicked off a scaffold platform and fall on someone who is working or passing below.**
- **Extra materials or equipment on a scaffold can tempt workers to use them as make-shift ladders or stools to extend their reach, too.**
 - Since they are not really stable, they are likely to slip or tip, which can result in you losing your balance.

- **To prevent mishaps and injuries when you're working on a scaffold you should:**

- Put tools and equipment away when you're finished with them.
- Avoid bringing excessive amounts of materials onto the platform.
- Clear away all trash and debris as quickly as possible, at least at the end of your shift.

BUILDING A FIRM FOUNDATION

- **For a supported scaffold to be stable and safe, it has to rest on a solid foundation.**
 - OSHA requires them to be built on surfaces that are "sound, rigid, and capable of carrying the maximum intended load without settling or displacement".
- **OSHA defines the "maximum intended load" as the combined weight of the people, equipment, tools, materials and "all other weight that could be reasonably anticipated to be applied to a scaffold".**
- **Once the competent person has calculated what this weight will be, and determined that the ground on the worksite will support it, the surface will often have to be cleared and leveled.**
 - Any obstacles, such as construction materials, machinery, and bushes or shrubs that could interfere with the placement of the legs of the scaffold should be removed.
 - The ground may also have high and low spots that will need to be smoothed out.
- **In the process, any loose earth should be compacted to prevent it from settling under the weight of the scaffold.**
 - But even then, in many situations it's a good idea to place wood or metal "mud sills" under the bases of the scaffold's legs.
 - These large, flat plates help prevent the legs from sinking into the ground.
- **Never use make-shift supports such as cinder blocks for this.**
 - They could slip or break, and cause the scaffold to collapse.
 - Only components that have been specifically manufactured for use with the scaffold should be used in its construction.
- **"Screw jacks" are another device that can help to level out a scaffold.**
 - They allow each leg on the scaffold to be raised or lowered independently, in order to fine-tune the levelling process.

ASSEMBLING A SECURE PLATFORM

- **Once a safe, solid base has been established, the scaffold's framework can be assembled.**
- **To ensure that it will be as strong and safe as possible, all of the components that are used in the scaffold's construction should be made by the same manufacturer.**
 - Parts from different manufacturers should only be combined if the competent person has determined that they are compatible.
- **Parts that are made of different types of metal should not be used together either.**
 - When a hard metal rests on a softer metal, the softer metal can bend, making the scaffold unstable, and unsafe.
- **Never use any scaffold parts that must be forced together, or that don't fit firmly, either.**
- **The purpose of any scaffold is to provide a safe and secure platform at a location where work must be done off the ground.**
 - The platform portion of a supported scaffold is usually assembled from multiple planks that are made of wood, plastic or a combination of materials.

- **The condition of the planks should be inspected as the scaffold is first being built, and at the beginning of each work shift thereafter.**
 - If damage such as cracks or splits is found, the planks should be removed and replaced.
- **The planks on a scaffold platform can come in a variety of shapes, sizes and types.**
 - Some pre-fabricated planks hook directly onto the scaffold frame.
- **Some planks need to be "seated" securely by overlapping the frame supports, called "putlogs", at both ends.**
 - The ends of the planks should extend over the putlogs from 6 to 12 inches.
 - Planks that overlap more than 12 inches could tempt someone to step on the extension, which could cause the plank to tip and the worker to fall.
 - If the planks extend less than 6 inches past the putlog, the vibration of people working on the platform could gradually shift them, and they could eventually fall off.
- **When you're placing multiple sets of planks lengthwise to create an extended scaffold platform, the ends of the planks should normally overlap by at least 12 inches.**
 - Planks can also be "abutted", or laid end to end without overlapping.
 - In that case both ends of every plank must rest on their own supporting "putlogs".
- **For the best stability, the planks in a scaffold's platform should lie across the putlogs at right angles.**
 - When this isn't possible, such as when the scaffold changes direction or turns a corner, planks that have to cross the putlogs at a different angle should be laid down first.
 - Then any planks that will cross the supports at right angles should be laid on top to "anchor" the others.
- **OSHA safety regulations also address the width of the platforms on scaffolds.**
 - Most platforms should be at least 18 inches wide.
 - Where space is limited, the competent person can allow 12-inch platforms to be used.
- **When these narrower platforms are located more than 6 feet above the ground, OSHA requires that guard rails be installed.**
 - Workers must wear personal fall protection gear, as well.
- **Guardrails and personal fall protection must also be used anytime a scaffold platform is positioned more than 14 inches away from the surface that is being worked on.**
- **The only exception to this rule is for plastering and lathing operations.**
 - For this type of work, the distance between the scaffold and the work surface can be as much as 18 inches, and guardrails and personal fall protection are not required.

ACCESSING A SCAFFOLD SAFELY

- **Once a strong and stable scaffold has been constructed, it's important to make sure that people can get onto and off of it safely.**
 - Doing this the wrong way is not only hazardous for workers, but can also affect the scaffold structure itself.
- **For instance, you should never use the cross braces of a supported scaffold to climb up to the platform.**
 - The angles of the braces make it easy for your hands and feet to slip, and you could hit the ground hard.
 - While "X" braces look sturdy, they weren't designed to handle the stresses that result from climbing on them, which can weaken the scaffold or even cause it to tip.
- **To get to a scaffold platform safely, you should use some type of ladder.**
 - In fact, some ladders are built specifically to hook onto a scaffold's frame.

- **Portable ladders that lean against the scaffold can be used as well, but must be secured to the scaffold to prevent them from being knocked loose.**
 - Ladders should extend at least 3 feet above the surface of the platform, to give climbers something to hold onto so they can keep their balance when they reach the top.
- **To climb any ladder safely, remember to keep both hands free to hold onto the ladder as you go up.**
 - You shouldn't try to hold anything such as tools or buckets in your hands as you climb.
- **Stairway towers can be the safest way to access a scaffold platform, because they are built right onto the scaffold's frame.**
- **OSHA requires stairway towers to have hand rails attached to both sides of their steps.**
 - You should always keep a hand free to hold onto one of the railings.
 - Both rails must have at least 3 inches of clearance on all sides, so that your hands can easily slide along them, even with gloves on.
 - The railings must also be strong enough to support the weight of any worker who slips, trips or falls while holding onto them.
- **Ramps and walkways can also provide access to supported scaffolds.**
 - OSHA requires most scaffold ramps to have a slope of 20 degrees or less.
 - The gentle angle allows workers to use them easily and safely.
 - A steeper slope may be used only if the surface of the walkway or ramp is equipped with "cleats" that provide extra traction for workers' feet.
- **Scaffold ramps and walkways that are 6 or more feet above the ground must be equipped with guardrails as well.**

FALL PROTECTION

- **Falls are the leading cause of fatalities in construction, and result in almost 20% of disabling injuries that occur in general industry.**
 - Fall protection is especially important when you work on a supported scaffold.
 - OSHA has established specific scaffold-related fall protection requirements that you need to know about.
- **If the platform of a supported scaffold is ten feet or more above the ground, the workers on it must be protected from falling either by guardrails or by wearing Personal Fall Arrest systems (PFAs).**
- **The guardrails on scaffolds should be installed 39 to 45 inches above the scaffold's working surface, and must be able to support the weight of an average worker falling against them.**
- **Personal Fall Arrest systems are designed to prevent injury if a worker falls, by slowing and stopping them safely.**
 - They usually consist of a full-body harness that is connected to a lanyard.
 - In some situations the lanyard can be anchored to a structural member of the scaffold.
- **In other situations, the harness can be connected to a lifeline or deceleration device.**
 - If a deceleration device is used it should be secured directly to an anchor point or to a vertical lifeline that is connected to the anchor point.
- **To safely support the weight of a falling worker, OSHA requires deceleration devices and vertical lifelines to be anchored to a substantial part of the structure that is being worked on, such as a girder or I-beam.**
- **Standpipes, piping systems, vents or electrical conduit should never be used as attachment points.**
 - They are typically too weak to stop a fall.

- **There are several other important requirements for lifelines as well.**
 - They must provide freedom of movement for the workers that they protect.
 - They should be able to swing clear of tools, materials and other people who are on the platform, too.
- **While PFAs can provide important protection for workers when they are using a scaffold, when they are assembling or disassembling a scaffold the PFAs can actually create hazards for them.**
 - In these situations, the competent person will determine whether it will be safe for any type of PFAs to be used.

FALLING OBJECT HAZARDS

- **Another hazard to be aware of is materials that fall off a scaffold.**
 - Objects such as tools, building materials or debris can create serious struck-by hazards for anyone working or passing underneath.
- **Signs should be posted below the scaffold, warning people about the falling object hazards and advising them to wear a hard hat.**
- **To help prevent these problems, the scaffold itself should be equipped with toeboards, screens and debris nets.**
 - Toeboards form a protective lip around the edge of a scaffold platform that helps to prevent objects from sliding, rolling or being kicked overboard.
 - Screens and debris nets hang beneath scaffold platforms to safely catch falling objects before they can do any damage.
- **When toeboards, screens and netting can't provide enough protection, the area below should be roped off or barricaded to keep people safely out from under the scaffold.**

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Review Quiz

Employee Name: _____ **Training Date:** _____

1. True or False?... Tools, materials and debris that accumulate on a supported scaffold platform can create serious slip, trip and fall hazards.
 True False
2. True or False?... The "maximum intended load" for a scaffold will be calculated by the competent person before the scaffold is constructed.
 True False
3. True or False?... According to OSHA, it is acceptable to use cinder blocks as supports for the frame of a supported scaffold.
 True False
4. True or False?... Using components that are made from different metals in a scaffold's framework could cause it to become unstable.
 True False
5. True or False?... For best stability, the planks in a scaffold's platform should lie across the putlogs at an angle other than 90 degrees.
 True False
6. True or False?... Pre-fabricated planks that hook directly onto a scaffold frame are called "putlogs".
 True False
7. True or False?... When you are climbing a ladder to a scaffold you should always have one hand that can hold onto the ladder as you go up.
 True False
8. True or False?... The hand rails in stairway towers are not required to support the entire weight of a worker who falls.
 True False
9. True or False?... Portable ladders that are used to access the platform of a scaffold should be secured to the scaffold to prevent them from being knocked loose.
 True False
10. True or False?... Falls are the leading cause of fatalities in construction, and result in almost 20% of disabling injuries that occur in general industry.
 True False

**SUPPORTED SCAFFOLDING SAFETY IN
INDUSTRIAL AND CONSTRUCTION ENVIRONMENTS**
ANSWERS to Review Quiz

1. True or False?... Tools, materials and debris that accumulate on a supported scaffold platform can create serious slip, trip and fall hazards.
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