

MAJOR PROGRAM POINTS

"SUPPORTED SCAFFOLDING SAFETY IN CONSTRUCTION ENVIRONMENTS"

Part of the "CONSTRUCTION SAFETY KIT" Series

"Quality Safety and Health Products, for Today...and Tomorrow"

OUTLINE OF MAJOR PROGRAM POINTS

The following outline summarizes the major points of information presented in the program. The outline can be used to review the program before conducting a classroom session, as well as in preparing to lead a class discussion about the program.

- **Construction is all around us, every day. It seems that no matter where you look:**
 - New construction is under way.
 - Existing structures are getting a facelift.

- **As the need to reach new heights continues, workers must also "rise" to the occasion.**
 - This is where scaffolding comes in.

- **Scaffolds are an integral part of the construction process.**
 - Without them workers would have a difficult time completing jobs in elevated areas.

- **While ladders can also reach high places, scaffolds provide an area of support that:**
 - Allows workers room to move around.
 - Keeps supplies nearby.

- **Scaffolds are really just another tool that we can use to make our jobs easier.**
 - Like all tools, it's important to know how to use them correctly.
 - Otherwise, serious accidents can occur.

- **In fact, OSHA is so concerned about this that they have developed training and safety regulations specifically for working on scaffolds.**
 - These regulations are aimed at stopping the estimated 10,000 scaffold-related injuries that occur each year.

- **While there are many kinds of scaffolds covered by OSHA's regulations, this program will concentrate on "supported scaffolds."**
- **Supported scaffolds consist of one or more platforms held up by some type of rigid supports that are linked to the ground for stability. These can include:**
 - Poles.
 - Legs.
 - Uprights.
 - Posts.
 - Frames.
- **OSHA requires that workers who use supported scaffolds be trained in the following areas:**
 - Assembly and disassembly.
 - The proper use and placement of scaffolds.
 - How to safely handle materials.
 - How to prevent falls.
- **Even though workers must undergo this thorough training, OSHA also requires that a "scaffold expert" be on site whenever a scaffold is erected or used. This expert is responsible for:**
 - Designing each scaffold that is erected.
 - Supervising the construction of all scaffolds.
 - Enforcement of scaffold safety regulations.
 - Resolution of any problems or questions that relate to scaffolds.
- **One of the first steps to take when constructing a scaffold should be to create a firm foundation.**
 - OSHA requires that the surface the scaffold rests on be " ... sound, rigid and capable of carrying the 'maximum intended load' without settling or displacement."
- **The "maximum intended load" is defined as " ...the total weight of all workers, including their equipment, tools and materials on the scaffold."**
 - This includes any force that is applied to the scaffold by ladders or other items that lean against it.

- **Once a scaffold expert determines that the ground will handle the load, preparations need to be made to create a level foundation.**
 - Unfortunately, on most job sites the ground will not be perfectly level.

- **"Prep work" to create a level foundation can include:**
 - Smoothing out any hills or valleys.
 - Filling surface holes.
 - Compacting the ground.

- **As the area is being leveled, all obstacles that could interfere with the placement of the scaffold's legs should be removed. These include:**
 - Machinery.
 - Construction supplies.
 - Bushes or shrubs

- **Even with this preparation, it is possible that a scaffold may not be completely level when it is erected.**
 - To further level the scaffold, all legs should be connected to adjustable "screw jacks."
 - These allow each leg to be raised or lowered independently, and provide maximum control in leveling the scaffold.

- **In many situations it is also a good idea to use "mud sills."**
 - These are flat wood or metal plates that form a barrier between the soil and the scaffold legs.
 - This prevents the legs from sinking into the ground.

- **Remember, only true scaffold components should be used to support a scaffold.**
 - Never build a scaffold with anything that is not specifically designed to support it.
 - Makeshift supports like construction equipment... or materials such as cinder blocks... can slip, break or even collapse.

- **Once a safe, solid base for the scaffold has been constructed, the frame can be assembled. This consists of:**
 - Backs.
 - Sides.
 - Cross-braces.
- **To make the scaffold's frame as strong as possible, be sure that all of the components you are using are from the same manufacturer.**
 - You can use parts from different manufacturers only if your scaffold expert determines that they are compatible.
 - Never use parts that must be forced together, or fit so poorly that the structure becomes unstable.
- **You should also avoid intermixing parts made of different metals, such as aluminum and iron.**
 - Some metals are stronger than others.
 - If a scaffold part made of a "hard" metal is resting on a part made of a "softer" metal, the softer part could bend.
 - This can make the scaffold wobbly and unsafe.
- **As each level of the scaffold is built, you will need to lay down platforms to support the workers who will be using the scaffold as they do their jobs.**
 - Platforms can be constructed from individual wood planks or other materials, such as metal or plastic boards that have been designed specifically for platform use.
- **If planks are used, gaps may form between them... or between a plank and one of the scaffold's uprights.**
 - It is important to keep these gaps as small as possible, to prevent workers from tripping and debris from falling through.

- **In most cases, planks should be no more than one inch from each other or any uprights.**
 - In special situations, where the last plank can not fill in the bulk of the space, your employer may authorize leaving a gap of up to 9½ inches between the platform and an upright (if it is determined that this won't create a safety hazard).
 - No matter what size planks you are using, its important to "seat" them securely by extending each one 6-12 inches over the end support of the scaffold (unless you are using prefabricated planks, which hook onto the scaffold frame for support).
- **But it's important not to exceed a twelve inch overlap as well.**
 - Workers can be tempted to step on the extensions to increase their reach.
 - With overly long extensions, this could result in the planks tipping... and the worker falling.
- **Underextended planks can also be a problem.**
 - Planks that extend less then six inches beyond the end of a scaffold are often easy to knock loose.
 - Vibrations from people walking and working on the scaffold can cause the planks to slip, and eventually fall between the scaffold supports.
- **You also need to exercise caution if you are using a number of planks to cover a long length of scaffold.**
 - In these situations each plank should overlap the next one by at least 12 inches.
 - This will create a firm surface for workers and their equipment.

- **On scaffolds where planks are laid end to end (or abutted) without overlapping, each end must rest on its own support, known as a "putlog."**
 - Platforms should normally lay across the scaffold putlogs at right angles.
 - Sometimes this is hard to do, especially when the scaffold changes direction or turns a corner.
 - In these situations, the planks that bridge the two scaffolds will not be at right angles to the putlogs.
 - To anchor these planks they should be laid first, so both ends are overlapped by the planks from the other scaffolds.

- **The width of the platform is also important. It must be wide enough to:**
 - Provide workers with room to do their jobs.
 - Hold materials.
 - Allow enough space for workers to pass by each other when necessary.

- **In most cases, this means platforms should be at least 18 inches wide.**
 - Where space is limited, the scaffold expert can allow 12-inch platforms to be used... if he feels this can be done safely.

- **When these narrower platforms are used more than six feet above the ground, extra precautions must be utilized, such as:**
 - Guardrails.
 - Personal fall protection.

- **No matter how wide the platform:**
 - It should be positioned no more than 14 inches from the work surface, unless workers are protected by guardrails or other forms of fall protection.
 - For work that requires extra room, such as lathing or plastering operations, the distance between the scaffold and the work surface can be expanded to 18 inches if the onsite scaffold expert feels this can be done safely.

- **It is important to inspect individual planks for damage as the scaffold is being built, as well as at the start of each shift.**
 - Never use a platform or a plank that has a painted walking surface.
 - Paint can hide damage like cracks and splits.
 - Painted surfaces can also become slippery in cold or wet weather.
- **However, materials other than paint may be used on all parts of platforms and planks as long as they do not interfere with the integrity of the platform. These include:**
 - Preservatives.
 - Fire retardants.
 - Traction finishes.
- **In addition to structural problems, there are other hazards to watch out for when working with scaffolds.**
- **One of the most commonly encountered hazards is high voltage power lines.**
 - You should always know the location of any nearby power lines when you are erecting or working on a scaffold.
 - Make sure that people and scaffold parts are far enough away from electrical sources that they can not come into contact with them.
 - The general rule of thumb is that the higher the voltage of the power lines, the further away you should be.
 - Ask your supervisor about the distance you should maintain from any sources of electricity that you are working near.
- **After a scaffold is in its final position, you need to make sure it is being accessed safely.**
 - Never climb up the cross-braces.
 - Their "X-like" shape does not provide a safe area of support for your hands and feet.
 - Climbing cross-braces also puts a strain on the scaffold, and can cause it to weaken or even tip.

- **You can properly access a scaffold by using:**
 - Ladders
 - Stairway towers.
 - Ramps.
 - Walkways.

- **Ladders lean against the scaffold and are secured in place by a chain.**
 - To provide enough support for workers accessing and exiting the scaffold, the ladder should extend three feet above the top of the platform it is leaning against.
 - Remember, you need to have both hands free to grab onto the rungs of a ladder.
 - This limits the amount of materials that can be carried.

- **Another type of scaffold access is stairway towers.**
 - These are stair columns that connect to the scaffold frame.
 - Stairs make it easier to climb to different levels while carrying equipment (although you need to keep one hand on a safety railing at all times).

- **OSHA requires that safety rails be installed on all stairway towers.**
 - Rails must be attached to each side of the steps.
 - Also, there should be both a top and middle rail.
 - The top rail should be able to be used as a hand rail... unless a separate hand rail is installed.
 - All hand rails must have three inches of clearance from any other object (in order to allow gloved hands enough room to slide along the rail without interference).
 - Hand rails must also be strong enough to support the force generated by an average falling person.

- **Another way to get to different areas on a scaffold is by using ramps or walkways.**
 - OSHA requires most scaffold ramps to have a slope of less than 20 degrees.
 - This is an angle that workers can easily walk on safely and without much difficulty.
 - A steeper slope may be used if "cleats" (metal or wooden strips that provide extra traction) are attached to the ramp.
 - If a ramp or walkway is six or more feet above the ground, a guardrail must also be installed.

- **It's important to inspect ramps, walkways and platforms every day.**
 - Make sure they are in good working condition.
 - Ensure that they have not been overloaded with materials or equipment.
 - If you discover any damage, report it to your supervisor immediately.

- **Another type of platform hazard to watch out for is the build-up of debris.**
 - This means anything from work materials to trash.
 - Debris can be kept to a minimum by removing tools and equipment as soon as you are finished with them, and throwing trash away at the end of the workday.
 - In addition to making it easier to work and move around on the scaffold, this will reduce the potential for slips, trips and falls.

- **If piles of material such as barrels or bricks build up on your scaffold, avoid the temptation to use them as makeshift ladders or stools.**
 - Items like these can easily tip over and cause you to lose your balance.
 - To work on an area that is out of reach, a ladder can be used in some situations.
 - But be sure to check with your supervisor for the proper way to secure the ladder to the scaffold platform.

- **OSHA feels that any time someone is more than six feet above the ground they should be protected from fall hazards in some way.**
 - Since much of the work done on scaffolds is above this height, OSHA has developed specific rules about scaffold fall protection above six feet.
 - Most of these rules focus on the use of guardrails and "personal fall arrest" (PFA) Systems.

- **These regulations require that guardrails be installed between 39 and 45 inches above the walking surface of the scaffold.**
 - The rails must be able to support the force of an average falling worker.

- **On scaffolds where more protection is needed, personal fall arrest systems are required.**
 - They slow and eventually stop workers from falling, by using harnesses and lifelines.

- **A personal fall arrest system consists of:**
 - An anchoring device.
 - A lifeline.
 - A deceleration device.
 - A body harness, which may include a lanyard.

- **Lifelines for PFA systems can be vertical or horizontal.**
 - Lifelines that support a PFA system should not be attached to the scaffold.
 - If the scaffold itself begins to tip over, a worker could be pulled down with it.
 - Also, if a worker falls, the scaffold could fall with them.

- **Instead, workers must attach the lifeline to a structural member of a building... like a support beam... which is strong enough to hold the weight of a worker during a fall.**
 - The lifelines should be able to swing freely without getting tangled in tools, debris or other objects... including people who are on the scaffold.

- **PFA systems should also be used by workers who erect or dismantle scaffolds, as long as the PFA's do not create a safety hazard themselves.**
 - OSHA acknowledges that lifelines can get tangled in Scaffold components during assembly or removal, which could cause problems.
 - It is up to the scaffold expert to determine whether or not it is safe for erectors and dismantlers to use PFA systems.

- **In addition to thinking about the effects of gravity on themselves, workers also have to be aware of objects that can fall from a scaffold.**
 - This is where "falling object protection" is needed.

- **Everyone on the job site needs to take an active role in making sure that nothing falls from the scaffolds they are working with.**
 - This can be done by using preventative measures such as toe-boards, screens and debris nets.
 - Toe-boards form a protective lip around the edge of a platform and help to prevent objects from sliding or being kicked off a scaffold.
 - Screens and debris nets hang beneath platforms and walkways, to catch falling objects before they hit the ground.

- **If there is the potential for extremely heavy objects to fall, screens and netting will not be sufficient.**
 - In these cases, the area below the danger zone should be roped off to protect workers from potential injuries.
 - Remember, you can also help to protect yourself from many falling objects by wearing a hard hat.

*****SUMMARY*****

- **Protecting yourself while working on scaffolds comes down to two things:**
 - Using common sense.
 - Remembering your training.
- **Make sure you know how to fill and level the ground where your scaffold will stand.**
- **Remember that the scaffold's legs must be straight in order to keep the scaffold level and sturdy.**
- **Use planks and platforms that are the correct length and width for the job you are doing.**
- **Inspect any scaffold before you use it.**
- **Use guardrails and PFA systems when necessary.**
- **Keep debris to a minimum.**
- **Always follow safe work practices.**
- **Scaffolds make it easier to reach high places.**
 - But it's up to you to keep yourself safe when you get there.
- **The next time you use a scaffold make sure that it is set up correctly... and that you are following safe work practices while you are on it.**
 - This is one time you don't want to fall "head over heels" for your job!