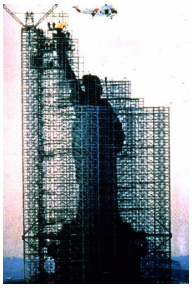
Scaffolds



What is a Scaffold

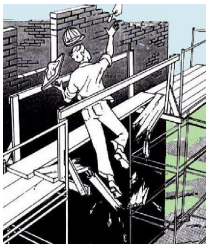
An elevated, temporary work platform

Three basic types:

- **Supported scaffolds** -- platforms supported by rigid, load bearing members, such as poles, legs, frames, & outriggers
- **Suspended scaffolds** -- platforms suspended by ropes or other non-rigid, overhead support
- **Aerial Lifts** -- such as "cherry pickers" or "boom trucks"

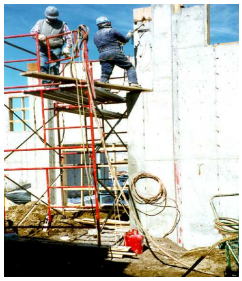
Hazards

- Employees working on scaffolds are exposed to these hazards:
- **Falls from elevation** – caused by slipping, unsafe access, and the lack of fall protection
- **Struck by** falling tools / debris
- **Electrocution** – from overhead power lines
- **Scaffold collapse** - caused by instability or overloading
- **Bad planking** giving way



Fall Hazards

- Falls may occur:
- While climbing on or off the scaffold
- Working on unguarded scaffold platforms
- When scaffold platforms or planks fail



Protecting Workers From Falls

- If a worker on a scaffold can fall more than 10 feet, protect them by:
- Guardrails, and/or
- Personal Fall Arrest Systems (PFAS)

Guardrails

- **Install along open sides & ends**
- **Front edge of platforms not more than 14 inches from the work, unless using guardrails and/or PFAS**
- **Top rails - 38 to 45 inches tall**
- **Midrails halfway between toprail and platform**
- **Toeboards at least 3-1/2 inches high**

Anything Missing?

Personal Fall Arrest System (PFAS)

You must be trained how to properly use PFAS
PFAS include anchorage, lifeline and body harness.

Fall Protection Requirements

- Can use PFAS instead of guardrails on some scaffolds
- Use PFAS & guardrails on suspension scaffolds
- Use PFAS on erectors and dismantlers where feasible

Anything missing in the picture?

Falling Object Protection

- Wear hardhats
- Barricade area below scaffold to forbid entry into that area
- Use panels or screens if material is stacked higher than the toeboard
- Build a canopy or erect a net below the scaffold that will contain or deflect falling objects

Overhead Power Lines

The possibility of electrocution is a serious consideration when working near overhead power lines

Check the clearance distances listed in the standard

Scaffold Support Examples

Essential Elements of Safe Scaffold Construction

- Use appropriate scaffold construction methods
- Proper scaffold access
- Properly use a competent person

Scaffold Platform Construction

Platforms must:

- **be fully planked or decked with no more than 1 inch gaps**
- **be able to support its weight & 4 times maximum load**
- **be at least 18 inches wide**

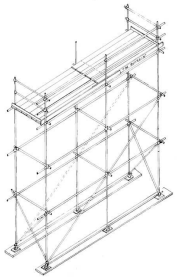
Scaffold Platform Construction

- **No large gaps in front edge of platforms**
- **Each abutted end of plank must rest on a separate support surface**
- **Overlap platforms at least 12 inches over supports, unless restrained to prevent movement**

Scaffold Platform Construction

- **No paint on wood platforms**
- **Use scaffold grade wood**
- **Fully planked between front upright and guardrail support**
- **Component pieces used must match and be of the same type**
- **Erect on stable and level ground**
- **Lock wheels and braces**

Scaffold Height



The height of the scaffold should not be more than four times its minimum base dimension unless guys, ties, or braces are used

Platform Ends

Each end of a platform, unless cleated or otherwise restrained by hooks, must extend over its support by at least 6 inches

Supported Scaffolds

Platforms supported by legs, outrigger beams, brackets, poles, uprights, posts, & frames

Restrain from tipping by guys, ties, or braces

Scaffold poles, legs, posts, frames, and uprights must be on base plates and mud sills or other firm foundation

Proper Scaffold Access

Provide access when scaffold platforms are more than 2 feet above or below a point of access

Permitted types of access:

Ladders, such as portable, hook-on, attachable, stairway type, and built-ins

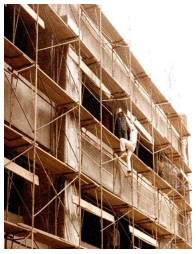
Stair towers

Ramps and walkways

May use building stairs and come out window

Scaffold Access

- **No access by crossbraces**
- **When using ladders, bottom rung no more than 24 inches high**
- **Can use some end frames**
- **Can access from another scaffold, structure or hoist**



Suspension Scaffolds

- Platforms suspended by ropes or wires. Rope must be capable of supporting 6 times the load

Train employees to recognize hazards

Secure/tie to prevent swaying

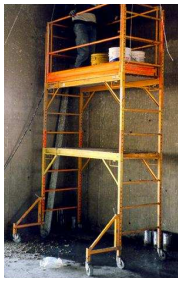
Support devices must rest on surfaces that can support four times the load

Competent person:
- ➢ evaluate connections to ensure the supporting surfaces can support load
- ➢ inspect ropes for defects before shift

PFAS must have anchors independent of the scaffold support system

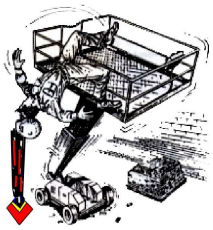
Moving Scaffolds

- Employees can't be on a moving scaffold unless:
  - Surface is level
  - Height to base ratio is 2 to 1
  - Outriggers are installed on both sides of scaffolds
- Employees can't be on scaffold part beyond the wheels
- Competent person must be on site to supervise



Fatal Fact- Moving a Lift

- **Employee was operating an aerial lift, with an extendable boom rotating work platform**
- **The boom was fully extended and the machine apparently ran over some bricks, causing the boom to flex or spring, throwing the employee from the basket**
- **The employee fell 37 feet to a concrete surface**



Don't Use Shore or Lean-to Scaffolds

- **Shore scaffold** supported scaffold which is placed against a building or structure and held in place with props
- **Lean-to scaffold** supported scaffold which is kept erect by tilting it toward and resting it against a building or structure

Using Scaffolds

- **Don't work on snow or ice covered platforms or during storms or high winds**
- **Use tag lines on swinging loads**
- **Protect suspension ropes from heat & acid**

A covered scaffold has special wind load considerations

Fatal Fact- Ice & No Guardrails

- **Laborer was working on the third level of a tubular welded frame scaffold which was covered with ice and snow**
- **The scaffold was not fully decked, there was no guardrail and no access ladder**
- **The worker slipped and fell head first 20 feet to the pavement below**

Competent Person

Person capable of identifying and promptly correcting hazards

Determines if it's safe to work on a scaffold during storms or high winds

Trains workers to recognize hazards

Selects qualified workers to conduct work

Scaffold Inspection

Competent person inspects scaffolds for visible defects before each shift and after any alterations

Defective parts must be immediately repaired

Scaffold Erection

Scaffolds can only be erected, moved, dismantled or altered under the supervision of a competent person

Competent person selects & directs these workers and determines the feasibility of fall protection

Training Requirements

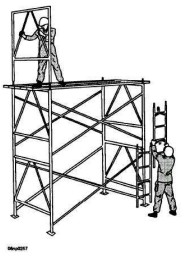
Train employees on scaffold hazards and procedures to control the hazards

The training must include:
- **Nature of electrical, fall, and falling object hazards**
- **How to deal with electrical hazards and fall protection systems**
- **Proper use of the scaffold**
- **Scaffold load capacities**

Retrain as necessary

Training Erectors

- **Train employees involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold to recognize its hazards and the correct procedures to use**



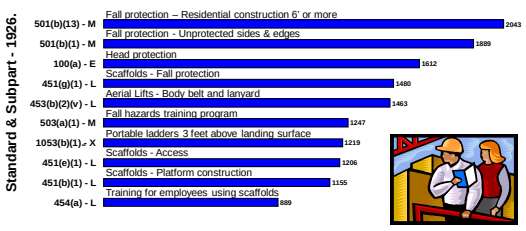
Avoid the Main Hazards of Scaffolds

- Falls From Elevation
- Bad Planking
- Scaffold Collapse
- Getting Struck by Falling Tools or Debris
- Electrocution

Summary

- Remember to:
  - Use appropriate scaffold construction methods
    - Erect, move, or alter scaffold properly
    - Protect from falling objects or tools
  - Ensure stable access
  - Use a competent person
    - Train on scaffold construction and the hazards involved with scaffolds
    - Inspect scaffold before each shift and after alterations
    - Determine fall protection requirements

Most Frequently Cited Serious Violations in Construction – FY 2007



There were also 359 Section 5(a)(1) violations cited in construction SIC codes (1500 – 1799) during this period.

Subpart L - Scaffolds (1926.450 - 454)