

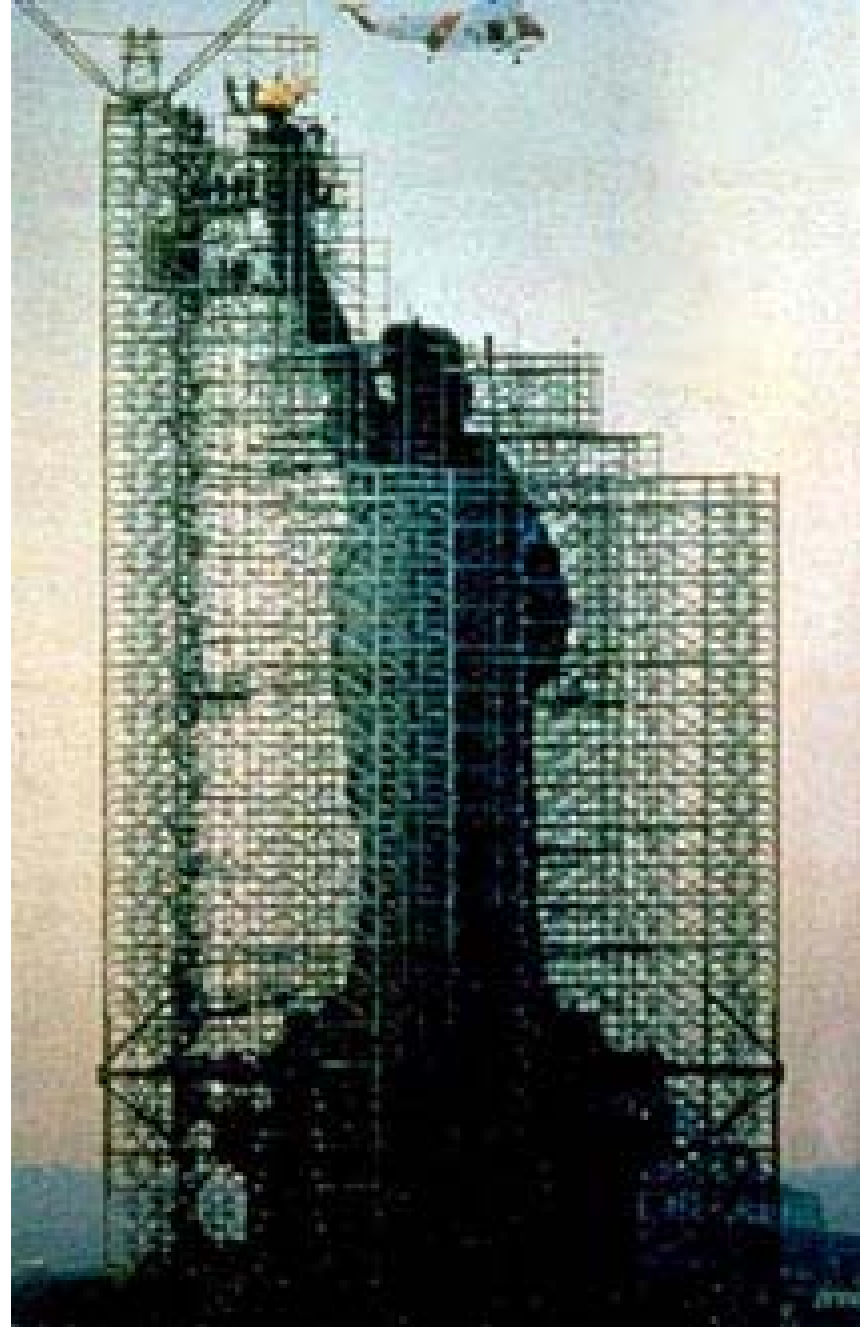


Scaffold User Safety

MSS S&MA,

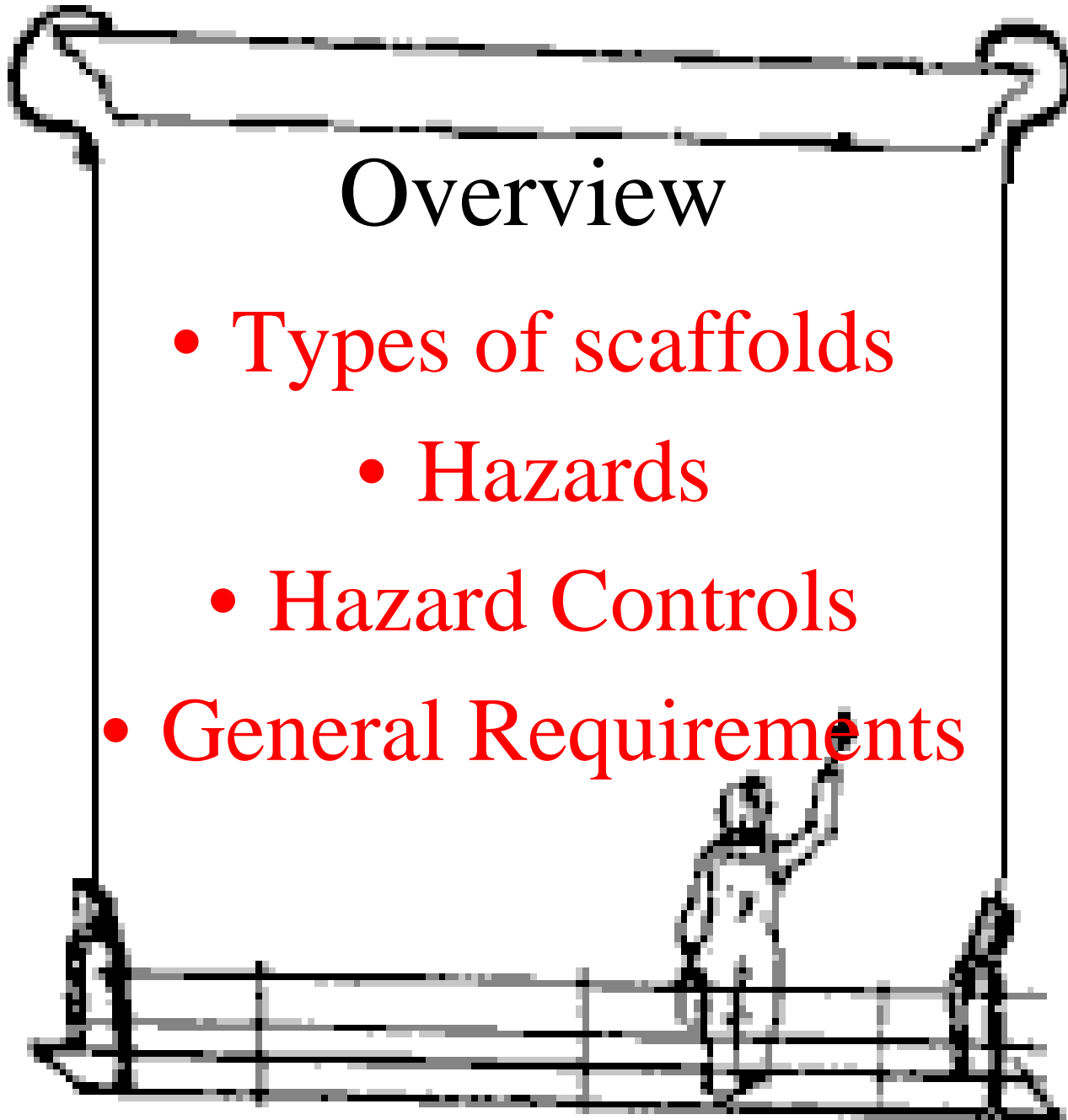
Frank Hartman - Instructor

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Overview

- Types of scaffolds
 - Hazards
 - Hazard Controls
- General Requirements





Awareness Training



- Anyone using or accessing any type of scaffold must have awareness level training on the basic requirements and hazards.



Competent Person

- A “Competent Person” is one who is appointed by the company capable of identifying existing and predictable hazards, and has the authority to take prompt corrective measures to eliminate them.





Scaffold Competent Person

The scaffold “Competent Person” will have additional training in OSHA requirements. They will also have responsibility for:

- supervising the erection, moving, dismantlement and alteration activities
- determining fall protection for erection and dismantling activities
- **inspecting the scaffold**
- rectifying unsafe scaffold conditions
- **determining OSHA fall protection requirements of scaffolding**

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Types of Scaffolds

- Supported Scaffolds
 - One or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames, or similar rigid support.
 - Built from the ground up.



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Types of Scaffolds

- Mobile Scaffolds
 - A powered or unpowered, portable, caster or wheel-mounted supported scaffold.
 - Built from the ground up.





Types of Scaffolds

- Suspension Scaffolds
 - One or more platforms suspended by ropes or other non-rigid means from an overhead structure.

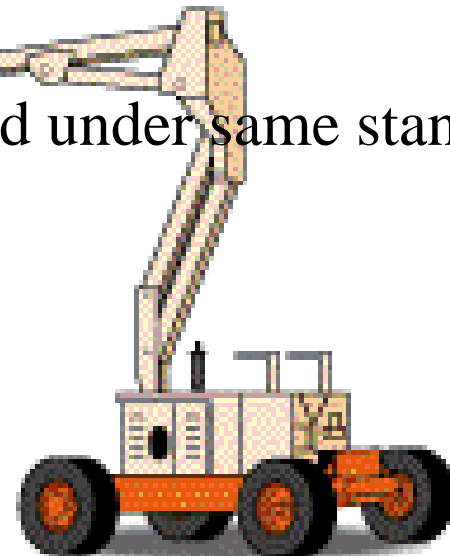
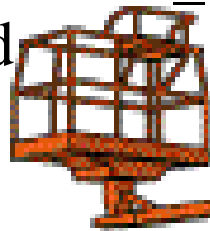




Hazard Analysis

Scaffolding vs. Aerial Lift

- Scaffolds are fairly safe and useful when they are erected and used correctly.
 - User training required
 - Scaffold Competent Person required
- Aerial lifts can be a **safer and less complicated** alternative to scaffolds.
 - Operator training and certification is required for all users.
 - Covered under same standard

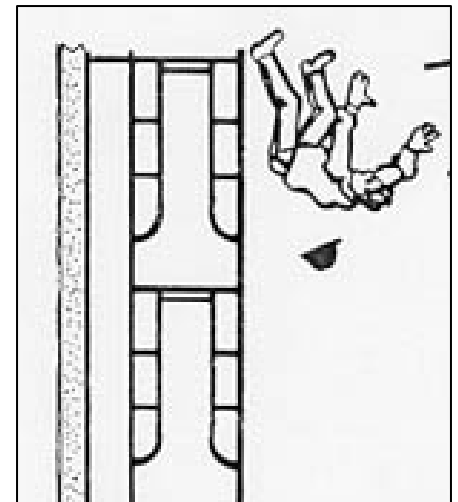




Fall Hazards

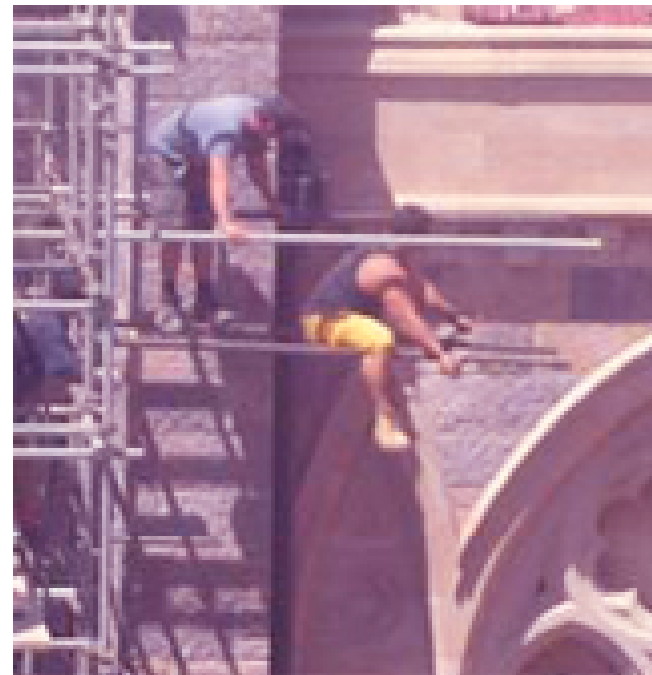
- The following activities pose the most significant fall hazards on scaffolds:
 - climbing onto, or off of, the ladder from the platform
 - working beyond the guardrail system
 - erecting the scaffold
 - dismantling the scaffold

The Scaffold Competent Person will determine fall protection requirements for these activities, if necessary.





Working Outside the Rails?



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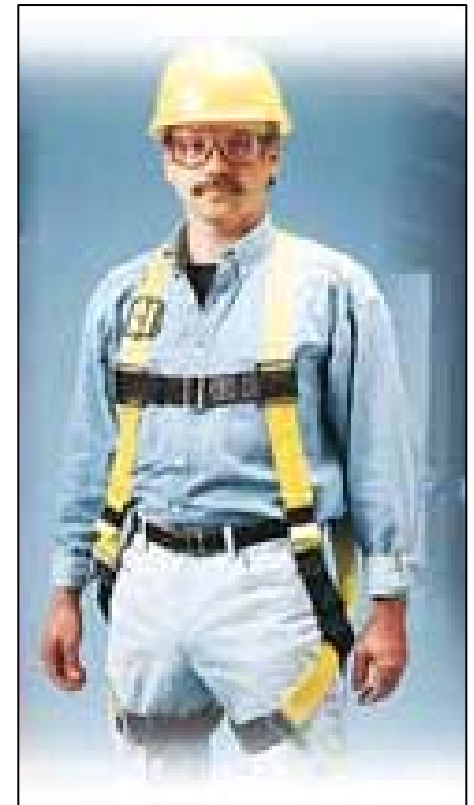


Personal Fall Arrest Systems (PFAS)

- A Personal Fall Arrest System consists of:
 - a full body harness
 - a connecting device
 - an appropriate anchor point*

(* Anchoring to scaffolds – gray area)

Note: Additional training is required for personal fall arrest users.





Impact Hazards

- Consider impacts from the following:
 - nearby structures
 - objects dropped
 - from above you, or
 - onto people below you

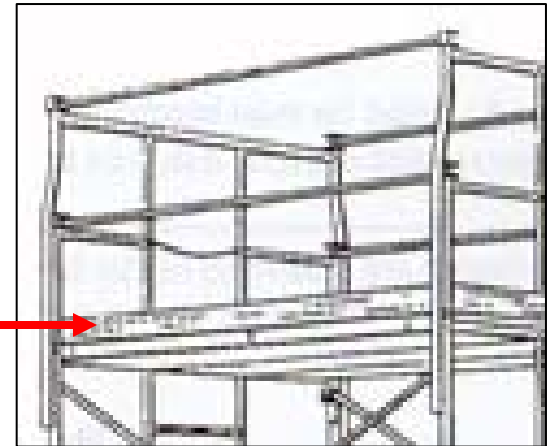
The wall that this scaffold was located next to collapsed onto the scaffold!





Impact Protection

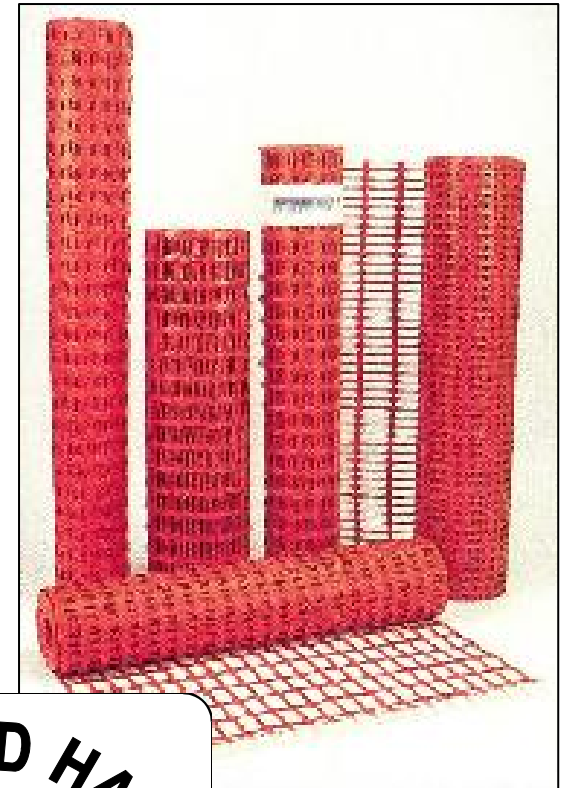
- Barricade the area below, or
- install a **toeboard** along the circumference of the work platform.
 - at least 3 1/2 inches high
 - maximum 1/4-inch from work level
 - able to withstand 50 lbs. of force applied in a downward or horizontal direction





Impact Protection

- Wire mesh may be required if stacked materials will be on the platform.
- Nets can be used to catch falling objects.
- **Hard hats shall be worn by each employee on a scaffold.**



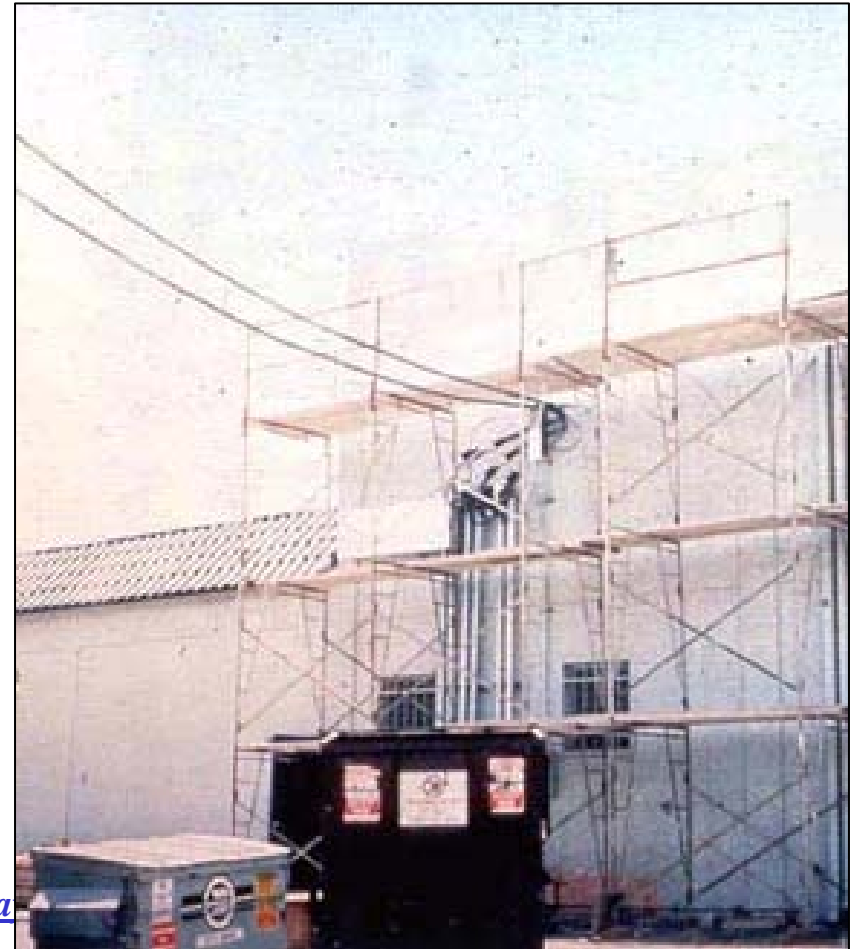
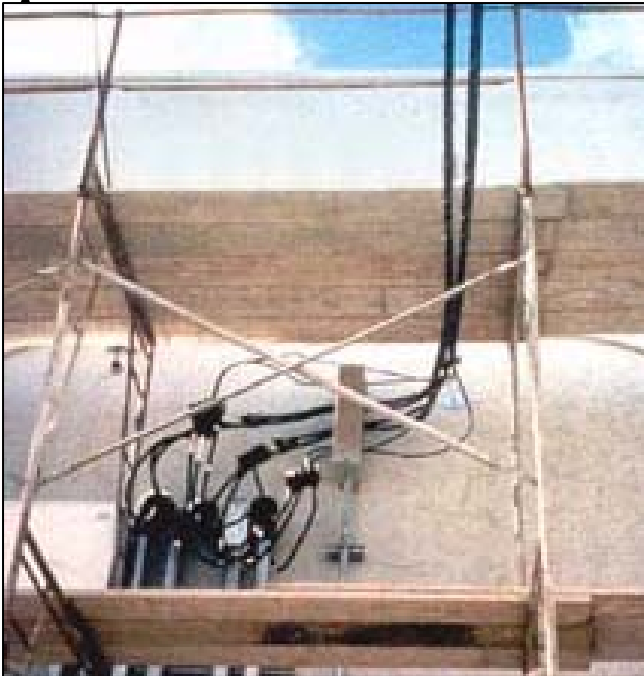
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Electrical Hazards

- This scaffold was actually built around an incoming energized power line!

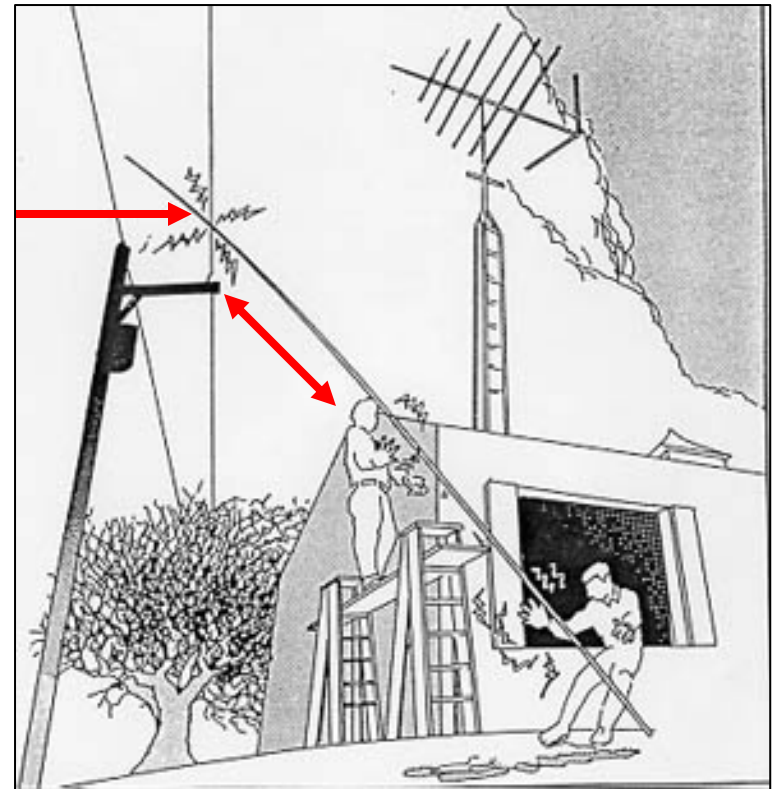


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Safe Clearance

- A safe distance of **10 feet** between the scaffolding, you, any materials or equipment you're handling, etc. and energized power lines (50,000 volts or less) must be maintained at all times.





Scaffold Failure

- Scaffold failure can occur due to any of the following:
 - poor foundation
 - improper assembly
 - defective materials
 - overloading
 - not secured



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Proper Assembly

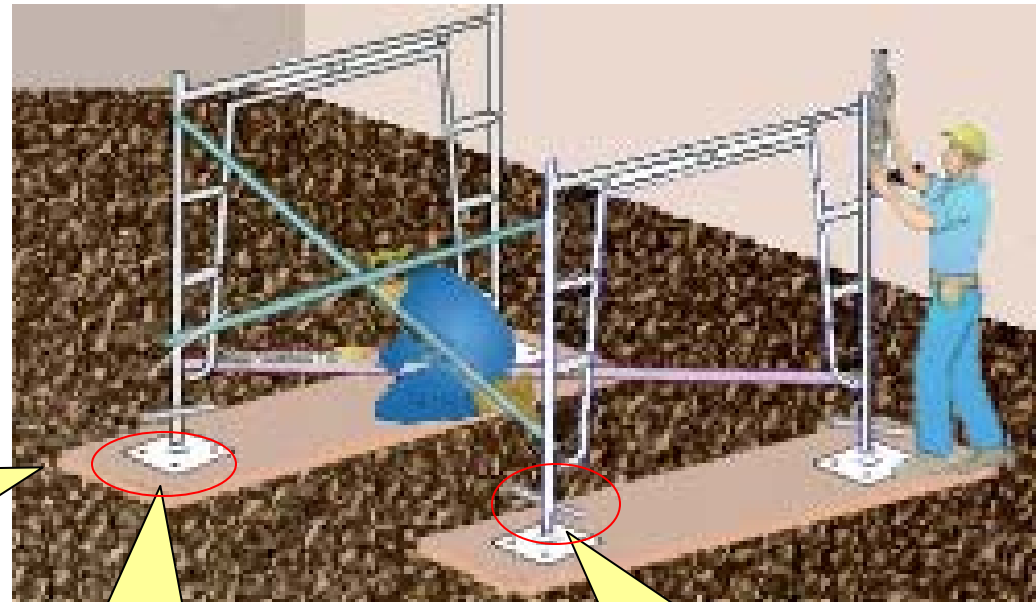
- To reduce the risk of scaffolding failure, visually inspect the scaffolding before accessing it.
- Start with the foundation and work your way up, making sure that the following general requirements are being met.



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Base/Footing

- firm foundation
 - hard, solid ground
 - concrete, grating, etc.
 - proper footing



Distribute the weight of the scaffold on **wooden mud sills.**

Base plates should be secured to the mud sill.

Screw jacks should be used to level the scaffold.



Base/Footing

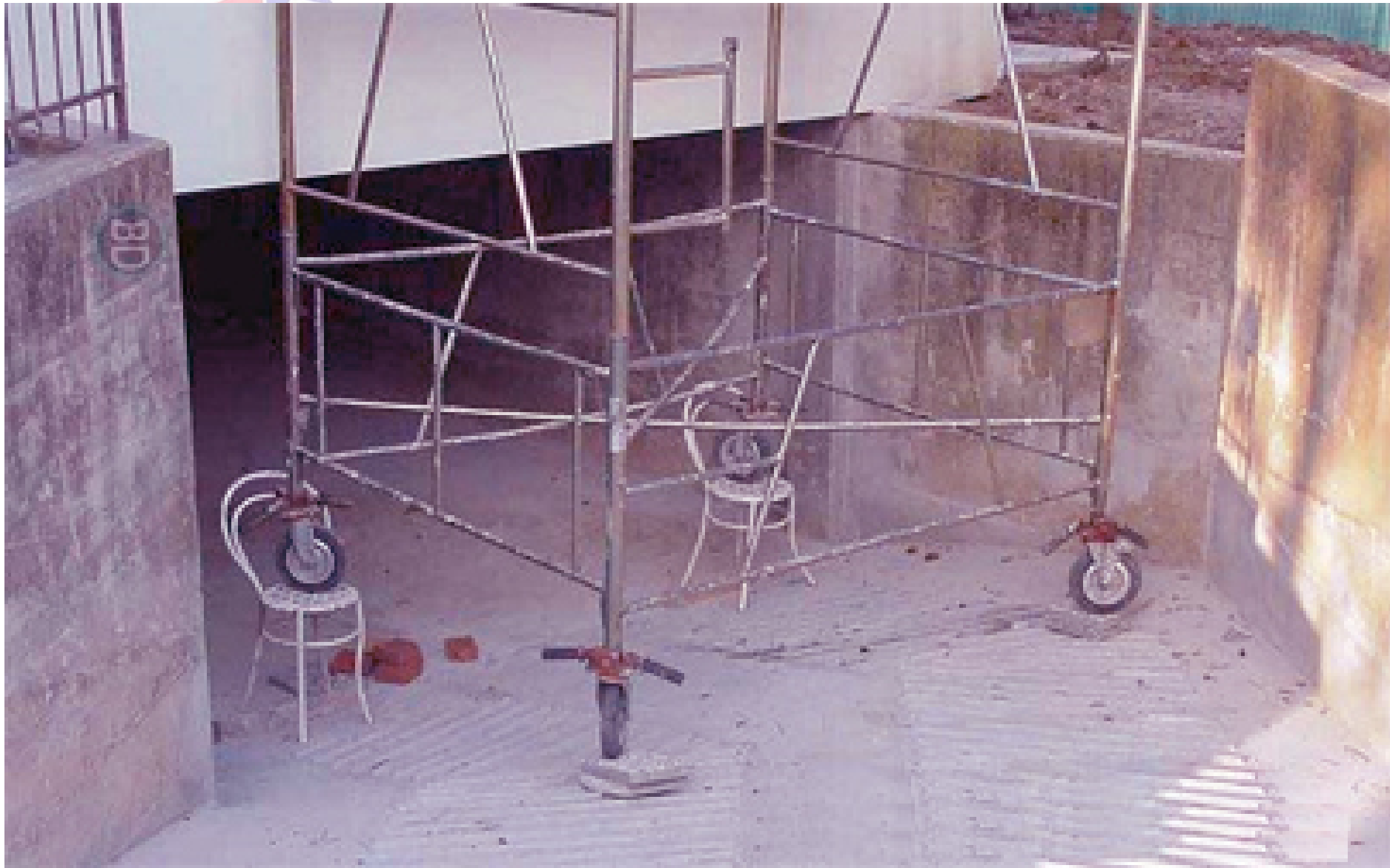
- Unstable objects shall not be used to support scaffolds, such as bricks, blocks, scrap lumber, etc. **Screw jacks should be used instead.**



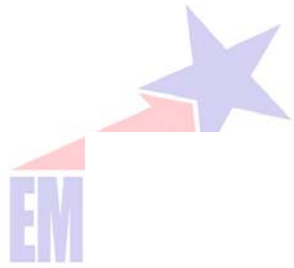
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Scaffolding Gone Bad





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Plumb and Level

- Scaffolds must be perfectly vertical.





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Crossbracing

- Crossbraces must:
 - be installed on front side and back side on all scaffold frames for stability.
 - **not be used for access - no climbing!**
- Crossbraces cannot be used as a guardrail system **unless...**





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Crossbracing as Guardrails

- IF the cross-point is between 38 - 48 inches above the platform, it can be used as a toprail.
- IF the cross-point is between 20 - 30 inches above the platform, it can be used as a midrail.
- Crossbraces **CANNOT** be use *for both* top and mid rail at the same time!



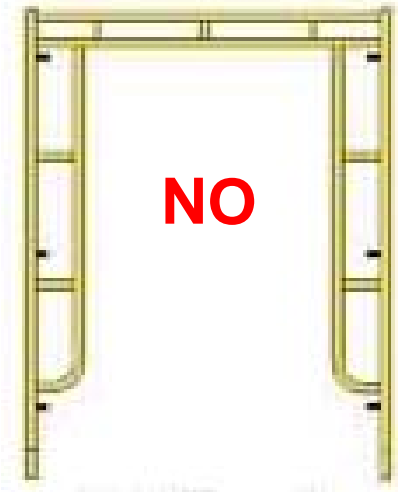
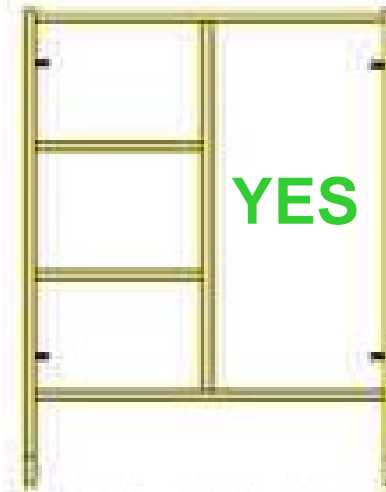
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Proper Access

- Proper access must be provided when more than 2 feet above or below a point of access, such as:
 - portable ladders
 - hook-on ladders
 - attachable ladders
 - stair towers
 - ramps/walkways
- Ladders must meet OSHA design & use requirements.
- Ladders must be secured.
- Frame scaffolding designed by the manufacturer to incorporate a ladder may be used.
(rung length \geq 8 inches & max spacing of 16 $\frac{3}{4}$ inches)

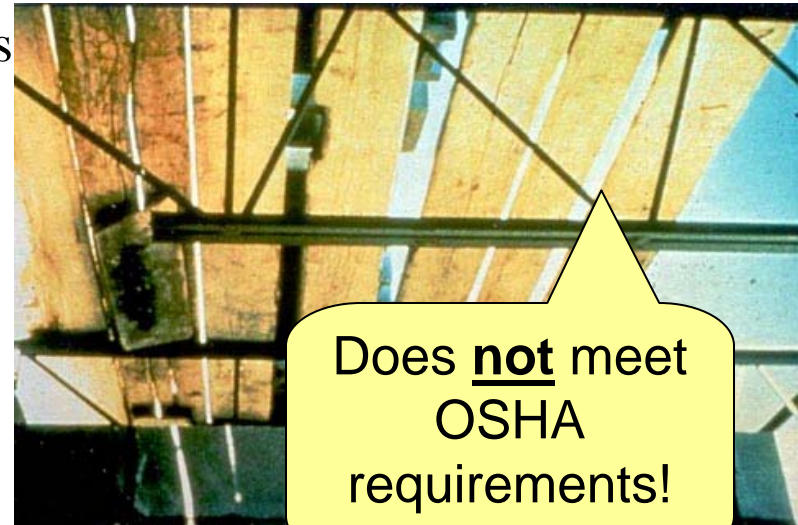
You are not allowed to climb the frame of most scaffolds unless it is designed by the manufacturer for this purpose.





Decking/Working Platform

- The work platform (planks) must be:
 - complete (no missing planks) with a **maximum space between planks of 1-inch**.
 - of approved types and materials (stamped by recognized lumber grading agency).
 - secured to the frame and if last plank will not fit, the **space between the last plank and the vertical post will not be greater than 9 1/2 -inches**.
 - clean and clear of mud, snow, ice, or debris
 - overlapped by at least 12-inches, unless nailed or otherwise restrained.



Does **not** meet
OSHA
requirements!

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Guardrail Systems

- Guardrail systems are required for fall protection at:
 - 10 feet (per OSHA)
 - 4 - 6 feet when work platform is less than 45 inches in length or width (per SSC)
- Open sides and ends are allowed **ONLY** when work platform is 14-inches or less horizontally away from a sturdy, continuous, vertical surface (wall, tank, building, etc.) or a sturdy, continuous horizontal surface (floor) or point of access.

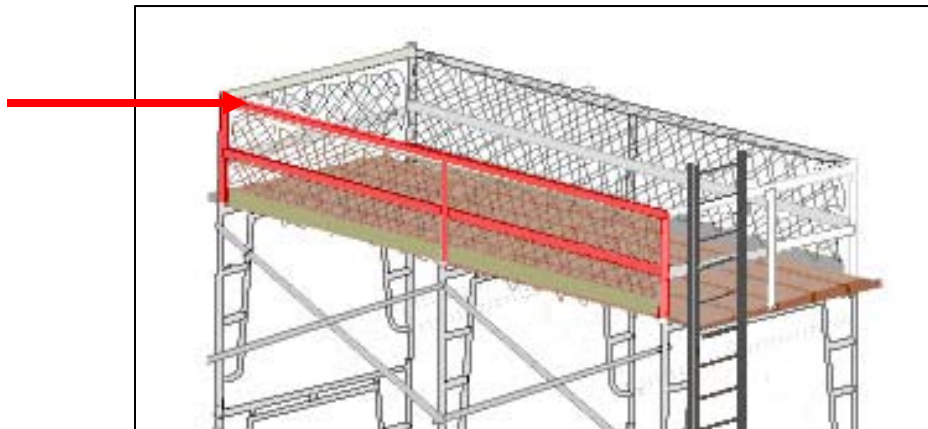
Note: Always build the scaffold as complete as possible. *safety Al*





Guardrail Systems

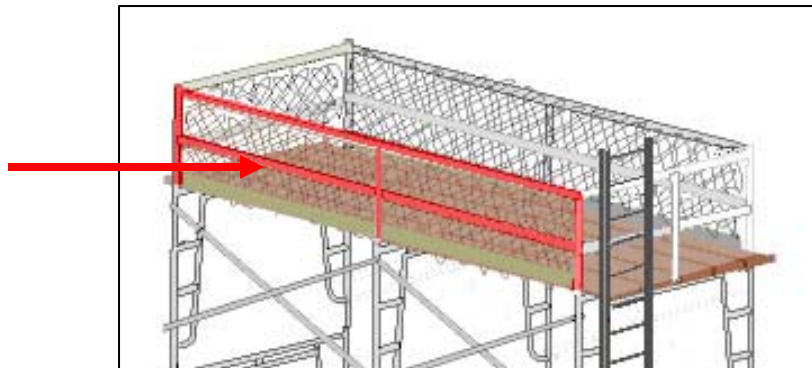
- As of January 1, 2000, a guardrail system consists of the following:
 - A **toprail** 38-48 inches above the platform capable of supporting 200 lbs. of force in a downward or horizontal direction.





Guardrail Systems

- As of January 1, 2000, a guardrail system consists of the following:
 - A **midrail** approximately midway between the toprail and platform capable of supporting 150 lbs. of force applied in a downward or horizontal direction.





Guard Rails/Platforms?



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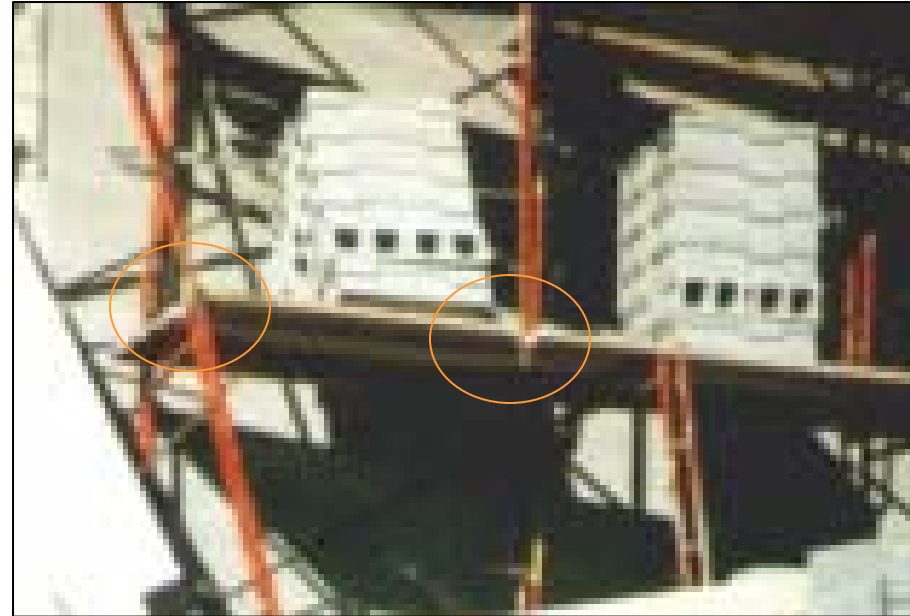




Maximum Capacity

- Scaffolds and scaffold components must be capable of supporting, without failure, **their own weight and at least 4 times the maximum intended load.**
- Light Duty – 25 lbs./square foot
- Medium Duty – 50 lbs./square foot
- Heavy Duty – 75 lbs./square foot.

Example: Heavy Duty rated scaffold platform surface is 7' x 5'. Max intended load must not exceed 2,625 lbs. ($7 \times 5 \times 75 = 2,625$)



Maximum Intended Load = total load of all persons, equipment, tools, materials, and other loads anticipated.



General Requirements

- Work on or from scaffolds is prohibited during storms or high winds, unless the competent person determines it is safe, and they are protected by a personal fall arrest system or wind screens.



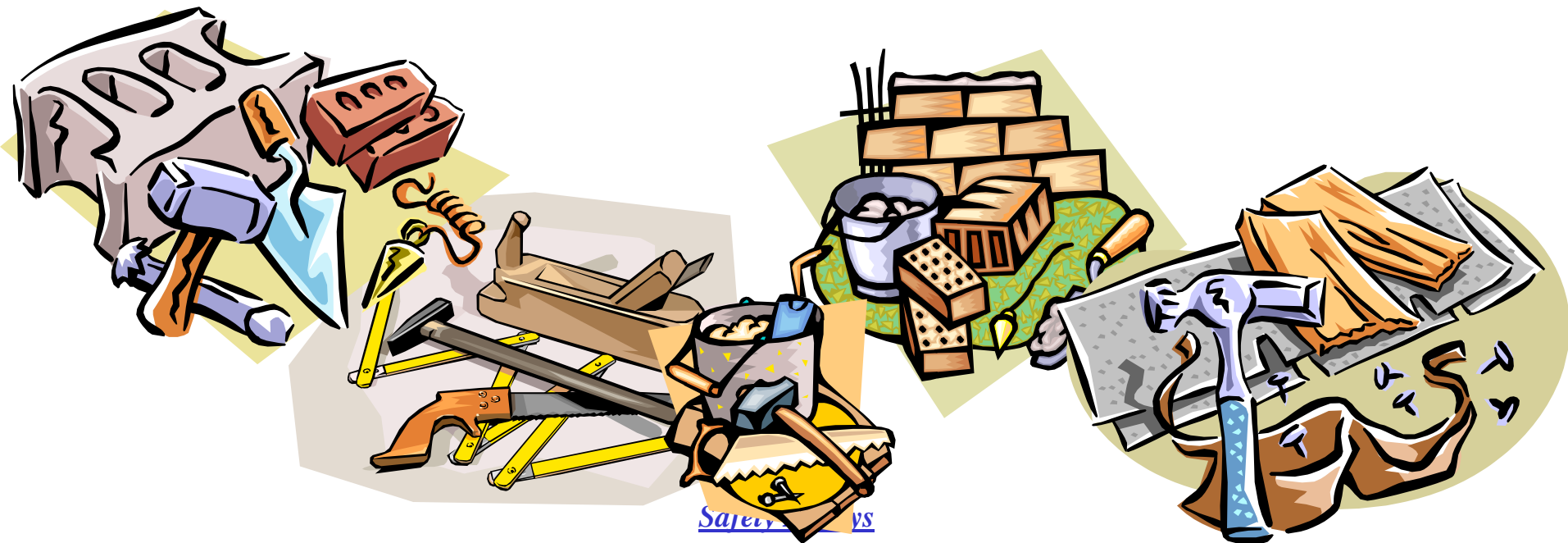
Note: Wind screens shall not be used unless the scaffold is secured against the anticipated wind forces imposed.

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General Requirements

- Debris shall not be allowed to accumulate on platforms.





General Requirements

- The working height of the scaffold should not be extended by using objects (ladders, etc.) to provide access to the work area.
- **Always stand on the scaffold decking!**





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Mobile Scaffolds

- Mobile scaffold requirements are basically the same as for supported scaffolds, except that:
 - the base plate is replaced with a wheel or caster with a brake pedal,
 - mud sills are not used.





Mobile Scaffolds

- Wheels must be locked to prevent movement while the scaffold is in use.

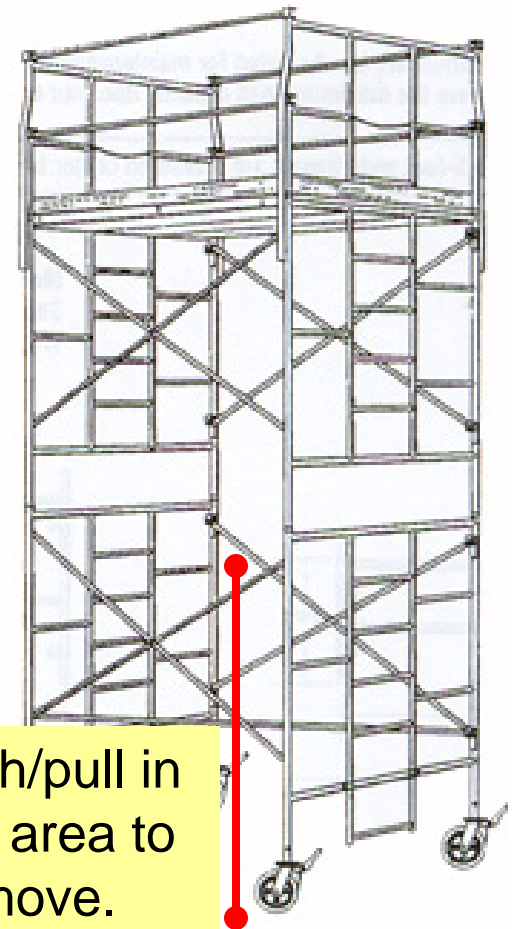


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Mobile Scaffolds

- When moving the scaffold, apply manual force as close to the base as possible (no higher than 5 feet).
- In general, **do not move the scaffold with people on it** (there are a **few exceptions**).



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Safety Always



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Review

- Scaffold ‘Competent Person’ on site.
- Build per OSHA regulations!
- Use proper accesses to work platforms.
- Use additional personal fall arrest systems where required by the competent person.
- Keep the work platform clean and clear of debris and other slipping/tripping hazards.
- Inspect the scaffold before you access it!