University of Nevada, Reno

SCAFFOLDING SAFETY PROGRAM

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# SCAFFOLDING SAFETY PROGRAM

*UNIVERSITY OF NEVADA, RENO*

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1.0 INTRODUCTION

1.1 Policy
It is the policy of the University of Nevada, Reno (UNR) to ensure safe and healthy learning, research, work, entertainment and student living environments for faculty, staff, students and visitors. Implicit in this policy is a requirement to provide all individuals with pertinent information regarding Scaffolding Safety.

1.2 Purpose
The Scaffolding Safety Program has been developed for University employees that on or around scaffolding. This program will help ensure the health and safety of employees at the University of Nevada, Reno.

1.3 Scope
University employees who use, or work around scaffolding should be trained on the specific equipment.
2.0 RESPONSIBILITIES

2.1 Directors and Department Managers
Designate individuals who must participate in and who will be responsible for the preparation and implementation of the Scaffolding Safety Program.

Provide administrative and financial support for this program within individual departments.

Ensure the Scaffolding Safety Program is implemented and maintained within the department.

2.2 Supervisors
Implement all aspects of this program, including documentation of the inspections and training. The supervisor has been designated this responsibility, as he/she is involved with employees on a more frequent basis.

Conduct hazard assessments and ensure that employees are informed, trained, and provided with the appropriate training.

Ensure new employee complete Scaffolding Safety Program orientation/training.

2.3 Employees
Comply with this program and any further safety recommendations provided by supervisors and/or the Environmental Health & Safety Department regarding Scaffolding Safety.

Conduct all assigned tasks in a safe manner including following required Scaffolding Safety procedures.

Report any unsafe or unhealthy work conditions and job related injuries or illnesses to the supervisor immediately.

Attend required training sessions regarding the Scaffolding Safety Program.

2.4 Department of Environmental Health and Safety (EH&S)
Provide technical information and assist departments in implementing the Scaffolding Safety Program in their workplace.

Assist in providing Scaffolding Safety Program instruction, as needed.

Review and revise the Scaffolding Safety Program, as needed for compliance with applicable regulations.
Conduct Scaffolding Safety assessments to determine if engineering and controls are needed, and how they should be implemented.

Recommend appropriate engineering controls, administrative controls and personal protective equipment.
3.0 PLATFORMS & WALKWAYS

Planking
Except when used only as a walkway, the platform is the work area of scaffold. All scaffolds must be fully planked or decked between front uprights and guardrails supports. Scaffold and scaffold components, including platforms, must be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.

Planking
No gaps greater than 1 inch are permitted between adjacent planks or deck units, or between the platform and the uprights, unless the competent person can demonstrate that the wider space is necessary. On those occasions, the gap needs to be as small as possible and must not exceed 9½ inches.

Wooden planking must not be covered with opaque finishes, except for edges marked for identification. Platforms may be coated periodically with wood preservatives, fire retardants, and slip-resistant finishes, provided they do not obscure the top or bottom wood surfaces. Scaffold platforms and walkways must be at least 18-inches wide, unless they are used in areas the competent person deems to narrow and smaller planking must be used. On those occasions, the platforms must be as wide as feasible, and fall protection must be provided.

Nothing that could cause a slip, trip or fall (i.e. tools, scrap material, chemicals, snow, ice, etc.) is allowed to accumulate on the work platform.

Working Distance
No gaps greater than 14-inches are permitted between the structure being worked on and the scaffold platform, except when lathing and plastering. The gap may be 18 inches wide.

Overlaps
Platforms must be cleated, nailed or otherwise restrained at each end, or else overlap the centerline support at least 6-inches.

Unless it is designed and installed to support employees and materials without tipping, or designed to block employee access, each end of a platform must not extend over its support more than 12-inches, for platforms 10 feet or shorter in length. Platforms 10 feet or longer must not extend over supports more than 18 inches.

On scaffolds where platforms are overlapped to create a long platform, the overlap may only occur over supports, and may not be less than 12 inches, unless the platforms are restrained (i.e., nailed together) to prevent movement.
On scaffolds where platforms are abutted to create a long platform, each abutted end must rest on a separate support surface, with the exception of the use of shared support members such as "T" sections, and hook-on platforms that rest on common supports, etc.

When platforms must overlap because of changes in direction, such as turning a corner, platforms that rest on a bearer at an angle other than a right angle shall be laid first, and platforms that rest at right angles over the same bearer shall be laid second, on top of the first platform.

**Brackets**
When brackets are used to support cantilevered platforms, they must:

- Be seated with side-brackets parallel to the frames, and end-brackets at 90 degrees to the frame
- Be used only to support personnel, unless the scaffold has been designed for other loads by a qualified engineer and built to withstand the tipping forces caused by other loads.

**Capacity**
Scaffolds or their components must not be loaded beyond their maximum capacity, which is their own weight and 4:1 the maximum intended load. Some common ways scaffolds are overloaded include:

- Too many people being on the platform
- Too much material being stored on the platform
- Point loading, or concentrating too much of the load in one area
4.0 SCAFFOLDING ACCESS & LADDERS

4.1 Access
OSHA states that employees must be able to safely access any level of a scaffold that is 2 feet above or below an access point. Direct access to or from another surface is permitted only when the scaffold is not more than 14 inches horizontally and not more than 2-feet vertically from the other surface. Since OSHA forbids the use of cross braces as a means of access other provisions have to be made.

4.2 Ladders
Portable, hook-on, and attachable ladders are often used to safely access scaffolds; however, they must be positioned so as not to tip the scaffold.

Hook on Ladders
Hook-on and attachable ladders must be specifically designed for use with the type of scaffold on which they are used.

Ladder rungs must be positioned so that their bottom rung is not more than 24 inches (2 feet) above the scaffold’s supporting level and most incorporate the following:

- Rungs must have uniform spacing with a maximum in-between distance of 16 ¾ inches.
- Have minimum rung length of 11 ½ inches.
- Have rest platforms at a maximum of 35-foot vertical intervals.

Stairway ladders
Stairway-type ladders must have slip-resistant treads on all steps and landings. Steps and rungs of ladders must line up vertically with each other between rest platforms as well as the following:

- Be positioned so that their bottom step is not more than 2 feet above the scaffold supporting level.
- Have rest platforms at a maximum 12-foot vertical interval.
- Have a minimum step width of 16 inches, except for mobile scaffold stairway-type ladders, that must have a minimum step width of 11 ½ inches.

4.3 Integral (built-in)
Integral or built-in scaffold frames are often used as a means of access to scaffold units. On these occasions frames must be specifically designed and constructed for use as a ladder rung. Rungs are not be used as work platforms if they are less than 11 ½ inches in length, unless each affected employee uses fall protection. Rungs are required to be uniformly spaced and possess a length of
at least 8 inches, with a **maximum** space between rungs of 16 ¾ inches. Additionally, there must be rest platforms provided at a maximum of 35-foot vertical intervals when applicable.

### 4.4 Stair towers
Stair towers when used must have:

- A stair rail consisting of a toprail and a midrail on each side of the stairway.
- A toprail of each stair rail system capable of serving as a handrail, unless a separate handrail is provided.
- Sufficient space on handrails, and toprails serving as handrails, for employees grasping them to avoid falling.
- Stair rails and handrails surfaced to prevent punctures or lacerations to employees, and to prevent snagging of clothing.
- Ends of stair rails and handrails constructed so that they do not constitute a projection hazard.
- A space of at least 3 inches between handrails, or stair rails used as handrails, and other objects.
- A distance of no less than 28 inches and no more than 37 inches from the upper surface of the stair rail to the forward edge of the tread, in line with the face of the riser.
- A landing platform at least 18 inches wide by 18 inches long at each level, and scaffold stairway width of at least 18 inches between stair rails.
- Slip-resistant surfaces on treads and landings, and uniform tread depth, within ¼-inch, for each flight of stairs.

### 4.5 Ramps
Ramps and walkways 6 feet or more above lower levels must have guardrails. No ramp or walkway shall incline more than 1:3 (1 vertical to 3 horizontal, or 20 degrees above the horizontal). If a ramp or walkway has a slope of more than 1:8, it must have cleats securely fastened to the planks not more than 14 inches apart, to provide footing.
5.0 FALL PROTECTION

The number one scaffold hazard is worker falls. Fall protection consists of either personal fall-arrest systems or guardrail systems, and must be provided on any scaffold 10 feet or more above a lower level.

5.1 Fall Arrest Systems

Personal fall-arrest systems used on scaffolds are to be attached by lanyard to a vertical lifeline, horizontal lifeline, or scaffold structural member. Note: Vertical lifelines may not be used on two-point adjustable suspension scaffolds that have overhead components such as overhead protection or additional platform levels.

When vertical lifelines are used, they must be fastened to a fixed safe point of anchorage, independent of the scaffold, and be protected from sharp edges and abrasion. Safe points of anchorage include structural members of buildings, but not standpipes, vents, electrical conduit, etc., or anything that may give way under the force of a fall.

It is impermissible for two or more vertical lifelines to be attached to each other, or to the same point of anchorage. When horizontal lifelines are used, they are to be secured to two or more structural members of the scaffold.

When lanyards are connected to horizontal lifelines or structural members, the scaffold must have additional independent support lines and automatic locking devices capable of stopping the fall of the scaffold in case one or both of the suspension ropes fail. These independent support lines must be equal in number and strength to the suspension ropes. On suspended scaffolds with horizontal lifelines that may become vertical lifelines, the devices used to connect to the horizontal lifeline must be capable of locking in both directions.

5.2 Guardrails & Midrails

Guardrail systems must be installed along all open sides and ends of platforms, and must be in place before the scaffold is released for use with the exception of erectors & dismantlers.

Guardrails must be surfaced to prevent punctures or lacerations to employees, and to prevent snagging of clothing, which may cause employees to lose their balance.

Ends of rails may not extend beyond their terminal posts, unless they do not constitute a projection hazard to employees.

Each toprail or equivalent member of a guardrail system must be able to withstand a force of at least 200 pounds applied in any downward or horizontal direction, at any point along its top edge.
The top edge height of toprails on supported scaffolds must be between 36 and 45 inches. When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria.

Midrails, screens, mesh, intermediate vertical members, solid panels, etc., must be able to withstand a force of at least 150 pounds applied in any downward or horizontal direction, at any point along the midrail or other member.

When midrails are used, they must be installed at a height approximately midway between the top edge of the guardrail system and the platform surface.

When screens and mesh are used, they must extend from the top edge of the guardrail system to the scaffold platform, and along the entire opening between the supports.

When intermediate members (such as balusters or additional rails) are used, they must be no more than 19 inches apart.

In lieu of guardrails, cross bracing may serve as a toprail or midrail, providing the crossing point is:

- Between 20 and 30 inches above the work platform for a midrail, or
- Between 38 and 48 inches above the work platform for a toprail.

5.3 Erectors & Dismantlers
The competent person is responsible for determining the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds. Fall protection is required for scaffold erectors or dismantlers on supported scaffolds where feasible, and where installation and use does not create a greater hazard. Fall protection is required for employees installing suspension scaffold as well.

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<td>Scaffolding Type</td>
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<td>Single-point and two-point suspension scaffolds</td>
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6.0 TRAINING & ERECTING/DISMANTLING

Competent persons and trained workers are critical to scaffold safety. Therefore, assessing personnel abilities is a vital part of scaffold design, erection, maintenance, and use, and should not be overlooked in scaffold inspections.

6.1 Design & Erecting/Dismantling
Scaffolds must be designed by a qualified person, and be constructed and loaded in accordance with that design. Scaffolds are to be erected, moved, dismantled, or altered only under the supervision of the competent person.

6.2 Training
Scaffolds are to be erected, moved, dismantled, or altered only by experienced and trained employees who have been selected for that work. Employees who are involved in activities such as erecting, dismantling, repairing, and inspecting scaffolds must be trained to recognize hazards associated with those activities.

Training must include all pertinent requirements as well as:

- The nature of scaffold hazards
- Correct procedures for erecting, disassembling, etc; the type of scaffold in question
- The design criteria, maximum intended load capacity, and intended use of the scaffold

Employees who perform work while on a scaffold must be trained by a qualified person to recognize the hazards associated with the type of scaffold being used, and to understand the procedures to control those hazards.

Training must include all pertinent requirements as well as:

- The nature of any electrical hazard, fall hazard, and falling object hazard in the work area
- The correct procedures for dealing with those hazards
- The proper use of the scaffold, and the proper handling of materials on the scaffold
- The maximum intended load and the load-carrying capacity of the scaffold

Employees will be retrained if there is reason to believe that they lack the skills or understanding to safely erect, use, or dismantle a scaffold. Employees will also be retrained if the following situations occur:

- Where changes at the worksite present a hazard for which an employee has not previously been trained
- Where changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard for which an employee has not previously been trained.
- Where inadequacies in an affected employee's work indicate that the employee has not retained the necessary proficiency.
7.0 SUPPORT SCAFFOLDS

Currently the University uses five types of supported scaffolds. A detailed analysis with scaffold specific regulations and tips is located in the individual scaffold section, Appendix A. A supported scaffold is defined as a scaffold consisting of one or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames, or similar rigid support.

7.1 Base Section
Scaffolds must be built on a level foundation. In order to assure stability scaffolds must be built on base plates, mudsills, or a comparable adequate firm foundation.

Footings must be capable of supporting the loaded scaffold without settling or displacement. Unstable objects may not be used to support scaffold or platform unit.

Tractors, vehicles, or construction equipment cannot be used to support scaffolds unless they have been designed to do so. Forklifts shall not be used to support scaffold platforms unless, the entire platform is attached to the fork, and the forklift is not moved horizontally while the platform is occupied.

7.2 Support Structures
Support structures such as poles, frames, uprights, and etc. must be braced to prevent swaying and displacement.

7.3 Bracing
Frames and panels must be connected by cross, horizontal, or diagonal braces, alone or in combination, which secure vertical members together laterally.

As frames are stacked, cross braces must be of such length as will automatically keep the scaffold level, and square, and all brace connections must be secured to prevent dislodging.

7.4 Pinning
Frames and panels must be joined together vertically by coupling or stacking pins or a comparable equivalent means.

Frames and panels must be locked together to prevent separation of the panel from the frame below it.
7.5 Components
Scaffold components may not be intermixed unless they fit together without force, and a competent person has determined the structure is still sound.

7.6 Stability
When a supported scaffold reaches a height greater than four times its minimum base (4:1), it must be restrained from tipping by guys, ties, or braces. Guys, ties, and braces must be installed at locations where horizontal scaffold components support both inner and outer legs. Ties, guys, braces, or outriggers shall be used to prevent tipping of supported scaffolds bearing eccentric loads, such as cantilevered work platforms.

Guys, ties, and braces must be installed according to the manufacturer's recommendations or at the closest horizontal member and be repeated every 20 vertical feet for narrow scaffolds, 3 feet or less in width, and every 26 vertical feet for wider scaffolds, 3 feet or greater in width.

7.7 Inspection
The competent person must inspect scaffolds for visible defects before each shift, and after any occurrence that could affect a scaffold's structural integrity.

Any part of a scaffold damaged or weakened so that it no longer meets OSHA’s strength requirements must be repaired, replaced, braced, or removed from service.

7.8 Moving
Scaffolds may not be moved while employees are on them unless they have been designed for that purpose by a registered professional engineer.

7.9 Weather
Employees are not permitted to work on or from a scaffold during storms or high wind, unless a competent person has determined that it is safe, and those employees are protected by a personal fall arrest systems, or wind screens. When windscreens are used the scaffold must be secured against the anticipated wind forces.

7.10 Fall Protection
Each employee on a scaffold more than 10 feet above a lower level must be protected from falling to that lower level. Fall protection consists of either personal fall arrest systems or guardrail systems.

Employees performing overhand bricklaying operations from a supported scaffold must be protected from falling from all open sides and ends of the scaffold, except at the side next to the wall being laid.
8.0 SUSPENSION SCAFFOLDS

Suspension scaffolds, also known as swing-stage scaffolds, are suspended by ropes or cables connected to stirrups at each end of the platform. Currently the only supported scaffold the University uses is a boatswain chairs. However, two point suspension scaffolds are used on campus by contractors and the potential exists for University use. A detailed analysis with specific regulations and tips pertaining to the boatswain chairs and swing stage scaffolds is located in the individual scaffold section, Appendix A.

8.1 Anchorage

The safe use of a suspended scaffold begins with secure anchorage. The weight of the scaffold and its occupants must be supported by both the structure to which it is attached and by each of the scaffold components that make up the anchorage system.

Suspended scaffolds outrigger beams must be stabilized to the floor or deck by bolts, counterweights, or other direct connections.

Direct connections must be capable of resisting the greater of:

- At least 4 times the tipping moment imposed by the scaffold when it is operating at the rated load of the hoist.
- A minimum of 1-½ times the tipping moment imposed by the scaffold when it is operating at the stall load of the hoist.

8.2 Tiebacks

Tiebacks must be secured to a structurally sound anchorage on the building or structure, which may include structural members, but not include vents, electrical conduits, or standpipes and other piping systems.

Tiebacks must be installed perpendicular to the face of the building or structure, or opposing angle tiebacks must be installed. Single tiebacks installed at an angle are prohibited. Tiebacks must be equivalent in strength to the suspension ropes and hoisting rope.

8.3 Counterweights

Counterweights used to balance adjustable suspension scaffolds must be capable of resisting the greater of:

- At least 4 times the tipping moment imposed by the scaffold when it is operating at the rated load of the hoist.
- A minimum of 1-½ times the tipping moment imposed by the scaffold when it is operating at the stall load of the hoist.
Only items specifically designed as counter weights may be used as counterweights. Flowable materials such as sand, gravel and similar materials that can be easily dislocated are prohibited. Masonry units, rolls of roofing felt, and other similar construction materials may not be used as counterweights.

Counterweights must be secured by mechanical means to the outrigger beams to prevent accidental displacement.

Counterweights must remain attached to the outrigger beam until the scaffold is disassembled.

**8.4 Support**
Adjustable suspension scaffolds are designed to be raised and lowered while occupied by workers and materials, and must be capable of bearing their load whether stationary or in motion. Scaffold support devices such as cornice hooks, roof hooks, roof irons, parapet clamps, or similar devices must be made of steel, wrought iron, or materials of equivalent strength.

**8.5 Capacity**
Scaffold and scaffold components must be capable of supporting their own load and at least 4 times their maximum intended load.

Each suspension rope, including connecting hardware, must be capable of supporting, without failure, at least 6 times the maximum intended load applied to that rope while the scaffold is operating at the greater of either the load of the hoist or 2 times the stall load.

Suspension scaffolds support devices, such as outrigger beams, cornice hooks, and parapet clamps, must rest on surfaces capable of supporting at least 4 times the load imposed on them by the scaffold.

Suspension scaffolds must rest on bearing blocks.

Suspension scaffolds must be secured against movement by tiebacks installed at right angles to the face of the building or structure, or by opposing angle tiebacks installed and secured to a structurally sound point of anchorage. Sound anchorage includes but is not limited to structural members, but does not include vents, electrical conduits, or standpipes and other piping. No more than two people should occupy suspension scaffolds designed for a working load of 500 pounds.

No more than three people should occupy suspension scaffolds designed for a working load of 750 pounds.

Scaffolds can only be altered under the supervision of the competent person.
8.6 Outrigger beams
Outrigger beams must be made of structural metal, or other material of equivalent strength, and must be restrained to prevent movement. The inboard ends of outrigger beams must be stabilized by bolts or other direct connections to the floor or the roof deck, or restrained by counterweights. A competent person must evaluate direct connection of outrigger beams and confirm that the supporting surfaces are capable of bearing the load imposed on them.

When beams must be secured by tiebacks if they are not secured the floor or roof deck by bolts or other direct connections, outrigger beams must be placed perpendicular to their bearing support, normally the face of the building, except when the competent person can demonstrate that perpendicular placement is not possible because of obstructions. In those cases outrigger beams may be placed at some angle, given that opposing angle tiebacks are used.

Outrigger beams must be provided with stop bolts or shackles at both ends, and securely fastened together with the flanges turned out when channel iron beams are used instead of I-beams. Outrigger beams must be set and maintained with the web in a vertical position and attached to the scaffold ropes by a shackle or clevis placed directly over the stirrup.

All bearing supports must be installed perpendicular to the beam’s center line.

8.7 Suspension Rope
Suspension ropes supporting adjustable suspension scaffolds must have a diameter large enough to permit proper functioning of brake and hoist mechanisms.

The use of repaired wire rope as suspension rope is prohibited.

Wire suspension ropes must not be joined together except through the use of eye splice thimbles connected with shackles or cover plates and bolts.

The load end of wire suspension ropes must be equipped with proper-size thimbles, and secured by eye splicing or equivalent means.

The competent person must inspect ropes for defects prior to each work shift, and after every occurrence that could affect the rope's integrity.

Ropes are to be replaced when any of the following conditions exist:

- Any **physical damage** which impairs the function and strength of the rope
- **Kinks** that might impair the tracking or wrapping of the rope around the drum or sheave of the hoist
- If one rope has six randomly distributed **broken wires**, or has three broken wires in one strand
- Loss of more than one-third of the ropes original diameter due to abrasion, corrosion, scrubbing, flattening, or peening
- **Heat damage** caused by a torch, or any damage caused by contact with electrical wires
- Evidence that the secondary brake has been activated during an overspeed condition and has engaged the suspension rope.

Swaged attachments or spliced eyes on wire suspension ropes cannot be used unless they are made by the scaffolds manufacturer or by a qualified person.

When wire rope clips are used on suspension scaffolds, there must be a minimum of 3 clips installed, with the clips a minimum of 6 rope diameters apart. Clips must be installed according to the manufacturer's recommendations, and retightened to the manufacturer's recommendations after the initial loading clips are to be inspected and retightened at the start of each subsequent work shift.

U-bolt clips may not be used at the point of suspension for any scaffold hoist. When U-bolt clips are used, they must be placed over the dead end of the rope, and the saddle placed over the live end.

Suspension ropes are to be shielded from heat-producing processes. When acids or other corrosive substances are used on a scaffold, the ropes shall be shielded, treated to protect against the corrosive substances, or shall be of a material that will not be damaged by the substances.

### 8.8 Electrical Hazards
Suspended scaffolds are often made of metal and sometimes used in close proximity to overhead power lines. These factors introduce the risk of electrocution. However, proper clearance and maintenance reduce this risk.

Scaffolds must be far enough from overhead power lines to prevent any conductive materials (e.g. building materials, paint roller extensions, scaffold components) that may be handled on the scaffold, at a distance greater than 10 feet from the power line. Scaffolds are permitted to be within 3 feet of insulated power lines.

Scaffolds and scaffold materials may be closer to power lines than specified above when clearance is necessary to work on the power line. However, before workers are allowed close proximity the power company or electrical system operator must be notified and the line must be either de-energized or relocated, or after protective coverings have been placed to prevent accidental contact with the lines.

Because metal frame scaffolds are conductive, power tools, cords, etc. that suffer insulation failure can electrify the entire scaffold. Therefore, all portable electric equipment must be protected by GFCIs (ground-fault circuit interrupters) or an AEGCP (assured equipment grounding conductor program).
8.9 Fall Protection
Fall protection consists of either personal fall arrest systems or guardrail systems, and must be provided on any scaffold 10 feet or more above a lower level (two-point scaffolds require both PFAS and guardrail systems). This is especially critical with suspended scaffolds, because they often are operated at extreme elevations.
# GENERAL REQUIREMENTS

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Action (if no)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Is the scaffold being erected under the direction of a competent person?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Is the footing sound and rigid - not set on soft ground, frozen ground (that could melt), or resting on blocks?</td>
<td></td>
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<tr>
<td>3</td>
<td>Has the erection site been evaluated for hazards such as earth fills, ditches, debris, underground electric wires, unguarded openings, or conditions created by other trades?</td>
<td></td>
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<tr>
<td>4</td>
<td>Are wheels / castors locked?</td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>Is the scaffold able to hold four times its maximum intended load?</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6</td>
<td>Are guardrails and toeboards in place on all open sides?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Is the platform complete front to back and side to side (fully planked or decked, with no gaps greater than 1 inch)?</td>
<td></td>
<td></td>
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<tr>
<td>8</td>
<td>Is the lumber free of cracks, splits, knots, or damage?</td>
<td></td>
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</tr>
<tr>
<td>9</td>
<td>Is the scaffold level?</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>10</td>
<td>Have all compounds been inspected for defects such as broken welds, corroded members, and missing locks, bent or dented tubes?</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>11</td>
<td>Are all braces, bearer, and clamps secured all sections pinned or appropriately secured?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Is there a safe way to get on and off the scaffold, such as a ladder (without climbing on crossbraces)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Is the front of the scaffold within 14 inches of the work?</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>14</td>
<td>Does the scaffold meet electrical safety clearance distances?</td>
<td></td>
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<tr>
<td></td>
<td>Question</td>
<td></td>
<td></td>
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<tr>
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<td>--------------------------------------------------------------------------</td>
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<td></td>
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<tr>
<td>15</td>
<td>Is the scaffold less than 125 feet in height?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Is the &quot;X&quot; bracing installed on the ends of the scaffold and every third set of post horizontally and every fourth vertical runner?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Are severe weather provisions in place i.e. during high winds, rain, snow, or bad weather?</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>18</td>
<td>Have all planks been properly secured to the scaffold structure to prevent them blowing off in the event of high winds?</td>
<td></td>
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</tr>
<tr>
<td>19</td>
<td>Where persons work under scaffold, is a 1/2 inch mesh screen provided between toeboard and guard rail or has the area below the scaffold been cordoned off?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Are tag lines available for items to be loaded on to scaffold?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>When employees are working on suspended scaffolds, are lifelines firmly anchored to an overhead structure and not to the scaffold?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Is the scaffold over 10 feet high, (if yes) is personal fall protection available, or are guardrails in place?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Are guardrails 38 inches high?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Are toeboards in place and at least 4 inches high?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Are midrails or equivalent in place?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Does the scaffold have a height to base ratio of at least 4:1?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Job Competent Person: ____________________________________________

Inspected By: ___________________________________________________

Signature: ______________________ Date: ____________________
APPENDIX B: INDIVIDUAL SCAFFOLDS

Supported Tube & Clamp
Tube and coupler/clamp scaffolds are so named because they are built from tubing connected by coupling devices. Due to their strength, they are frequently used where heavy loads need to be carried, or where multiple platforms must reach several stories high. Their versatility which enables them to be assembled in multiple directions in a variety of settings, also makes them difficult to build correctly.

Requirements
when platforms are being moved to the next level, the existing platform must be left undisturbed until the new bearers have been set in place, and braced before receiving the new platform.

Couplers/clamps must be made of a structural metal, such as: drop-forged steel, malleable iron, or structural-grade aluminum.

The use of couplers made from gray cast iron is prohibited.

Tube and coupler scaffolds greater than 125 feet in height must be designed by a registered professional engineer, and constructed and loaded in accordance with that design.

Bracing
Transverse bracing forming an "X" across the width of the scaffold must be installed at the scaffold ends, and at least at every third set of posts horizontally (measured from only one end), and every fourth runner vertically.

Bracing must extend upward diagonally to opposite sides of the scaffold, such as from the inner posts or runners to the next outer posts or runners, or vice versa.

Building ties must be installed at the bearer levels between the transverse bracing.

On straight run scaffolds, longitudinal bracing across the inner and outer rows of posts must: be installed diagonally in both directions, and extend upward from the base of the end posts to the top of the scaffold at approximately a 45-degree angle.

On scaffolds whose length is greater than their height, longitudinal bracing must be repeated beginning at least at every fifth post. On scaffolds whose length is less than their height, longitudinal bracing must be installed from the base of the end posts upward to the opposite end posts, and then in alternating directions until reaching the top of the scaffold.

Bracing must be installed as close as possible to the intersection of the bearer and post or runner and post.
Where conditions do not permit the attachment of bracing to posts, bracing must be attached to the runners as close to the post as possible.

**Bearers**
Bearers must be installed transversely between posts. When bearers are coupled to posts, the inboard coupler must bear directly on the runner coupler, and be as close to the posts as possible.

Bearers must extend beyond the posts and runners, and provide full contact with the coupler. The bottom bearers must be located as close to the base as possible.

**Runners**
Runners must be installed along the length of the scaffold, located at level heights on both the inside and outside posts.

On outside posts, tube and coupler guardrails and midrails may be used in lieu of outside runners.

Runners on straight runs must be interlocked to form continuous lengths, and coupled to each post. The bottom runners must be located as close to the base as possible.

<table>
<thead>
<tr>
<th>Maximum Number of Planked Levels</th>
<th>Light Duty</th>
<th>Medium Duty</th>
<th>Heavy Duty</th>
<th>Maximum Height of Scaffold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Working Levels</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>16</td>
<td>11</td>
<td>6</td>
<td>125</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>1</td>
<td>0</td>
<td>125</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>125</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>125</td>
</tr>
</tbody>
</table>
## Guidelines

### Minimum Size of Members

<table>
<thead>
<tr>
<th></th>
<th>Light Duty</th>
<th>Medium Duty</th>
<th>Heavy Duty</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum Intended Load</strong></td>
<td>25 Pounds/foot²</td>
<td>50 pounds/foot²</td>
<td>75 pounds/foot²</td>
</tr>
<tr>
<td><strong>Posts, runners, and braces</strong></td>
<td>Nominal 2 inches (1.9 inches) OD steel tube or pipe</td>
<td>Nominal 2 inches (1.9 inches) OD steel tube or pipe</td>
<td>Nominal 2 inches (1.9 inches) OD steel tube or pipe</td>
</tr>
<tr>
<td><strong>Note:</strong> Longitudinal diagonal bracing must be installed at an angle of 45° (±5°)</td>
<td>Nominal 2 inches (1.9 inches) OD steel tube or pipe</td>
<td>Nominal 2 inches (1.9 inches) OD steel tube or pipe</td>
<td>Nominal 2 inches (1.9 inches) OD steel tube or pipe</td>
</tr>
<tr>
<td><strong>Bearers</strong></td>
<td>Nominal 2 inches (1.9 inches) OD steel tube or pipe and maximum post spacing of 4 feet X 10 feet</td>
<td>Nominal 2 inches (1.9 inches) OD steel tube or pipe and a maximum post spacing of 4 feet X 10 feet or Nominal 2½ inches (2.375 inches) OD steel tube or pipe and a maximum post spacing of 6 feet X 6 feet</td>
<td>Nominal 2½ inches (2.375 inches) OD steel tube or pipe and a maximum post spacing of 6 feet X 6 feet</td>
</tr>
<tr>
<td><strong>Note:</strong> Bearers must be installed in the direction of the shorter dimension.</td>
<td>Nominal 2 inches (1.9 inches) OD steel tube or pipe and maximum post spacing of 4 feet X 10 feet</td>
<td>Nominal 2 inches (1.9 inches) OD steel tube or pipe and a maximum post spacing of 4 feet X 10 feet or Nominal 2½ inches (2.375 inches) OD steel tube or pipe and a maximum post spacing of 6 feet X 6 feet</td>
<td>Nominal 2½ inches (2.375 inches) OD steel tube or pipe and a maximum post spacing of 6 feet X 6 feet</td>
</tr>
<tr>
<td><strong>Maximum runner spacing vertically</strong></td>
<td>6 feet 6 inches</td>
<td>6 feet 6 inches</td>
<td>6 feet 6 inches</td>
</tr>
</tbody>
</table>
Frame or Fabricated (Planked)

Fabricated frame scaffolds are the most common type of scaffold because they are versatile, economical, and easy to use. Many University personnel frequently use them in one or two tiers, but their modular frames can also be stacked several stories high for use in large-scale construction jobs.

**NOTE:** Sections 2 – 6 address Pre Fabricated Frame scaffolds.

Ladder Jacks

A ladder jack scaffold is a simple device consisting of a platform resting on brackets attached to a ladder. Ladder jacks are primarily used in light applications because of their portability.

**Support**

All ladders used to support ladder jack scaffolds **must comply with** 1926 Subpart X (Stairways and Ladders).

**Job-made ladders must not be used** to support ladder jack scaffolds.

Ladder jacks must be designed and constructed to bear on the side rails and ladder rungs, or the ladder rungs alone.

If ladder jacks bear on the ladder rungs alone, the bearing area must include a length of at least 10 inches on each rung.

Ladders used to support ladder jack scaffolds must be placed to prevent slipping, fastened to prevent slipping, or equipped with devices to prevent slipping.

Platforms should not be placed higher than 20 feet from the supported base, and platforms **must not** be bridged together.

**Recommended Guidelines**

- Ladder jack scaffolds have a **maximum intended load** of 25 pounds per square foot.
- No more than two individuals may occupy any platform at one time.
- The maximum span between supports is 8 feet.
**Boatswain Chair**

Boatswain's chair tackle must consist of:

- Correct-size ball bearings or bushed blocks containing safety hooks, and properly eye-spliced first-grade manila rope, or other rope of equivalent strength, durability, etc.

**Seat Slings**

Seat slings must pass through four corner holes in the seat, cross on the underside of the seat, be rigged to prevent slippage which could cause the chair to be out-of-level, and be at least 5/8-inch diameter fiber, synthetic, or other first-grade manila rope of equivalent criteria (strength, slip resistance, durability, etc.).

**Non-cross-laminated** wood chairs must be reinforced on the underside with cleats to keep the board from splitting.

**Wood seats** for boatswain's chairs must not be less than 1 inch thick (if made of non-laminated wood), or 5/8-inch thick (if made of marine-quality plywood).

**Roof Brackets**

Scaffold brackets must be constructed to fit the pitch of the roof and provide a level of support for the platform.

Brackets must be anchored in place by nails unless it is impractical to use nails. When nails are not used, brackets must be secured with first-grade manila rope of at least ¾-inch diameter, or equivalent.
**Horse Scaffold**

Scaffolds must not be more than 10 feet or two tiers in height, whichever is less.

When horses are arranged in tiers each horse must be placed directly over the horse in the tier below. The legs of each horse must be nailed down or otherwise secured to prevent displacement and each tier must be crossbraced.

<table>
<thead>
<tr>
<th><strong>Guidelines</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum intended load - Light duty</strong></td>
</tr>
<tr>
<td><strong>Maximum intended load - Medium duty</strong></td>
</tr>
<tr>
<td><strong>Bearers - Light duty</strong></td>
</tr>
<tr>
<td><strong>Bearers - Medium duty</strong></td>
</tr>
<tr>
<td><strong>Legs</strong></td>
</tr>
<tr>
<td><strong>Longitudinal Braces Between the legs</strong></td>
</tr>
<tr>
<td><strong>Gusset braces at the top of the legs</strong></td>
</tr>
<tr>
<td><strong>Half diagonal braces</strong></td>
</tr>
</tbody>
</table>

Horses must not be spaced more than 8 feet apart for the light-duty loads, and not more than 5 feet apart for medium-duty loads.
Step Platform, and Trestle Ladder Scaffolds

Scaffold platforms must be placed no higher than the second-highest rung or step of the ladder supporting the platform.

All ladders used in step, platform and trestle ladder scaffolds must meet the requirements of 1926 Subpart X (Stairways and Ladders), except that job-made ladders are not permitted. All ladders must be prevented from slipping by how they are placed, fastened, or equipped. Scaffolds must not be bridged one to another.

Rolling Scaffolds

- Height of the tower must not exceed four (4) times the minimum base dimension. Outrigger frames or outrigger units may be used to increase base width dimension when necessary.

- All casters must be secured to frame legs or screwjacks with a nut and bolt or other secure means. Weight of tower should not exceed the capacity of the casters.

- Screwjacks must not be extended more than 12 inches above caster base. Tower must be kept level and plumb at all times.

- Horizontal/diagonal bracing must be used at the bottom and top of tower and at intermediate levels of 20 feet. Fabricated planks with hooks can be used to replace the top diagonal brace.

- All frames must be fully cross-braced

- Only prefabricated plank or cleated plank should be used

- Casters must be locked at all times, except when the scaffold is in motion