



ILLINOIS STATE UNIVERSITY SCAFFOLDING PROCEDURE

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1. PURPOSE AND SCOPE

The purpose of Illinois State University's (ISU) Scaffolding Procedure is to protect employees from the hazards associated with falls from scaffolds. This program applies to employees who, while performing their duties, are required to erect, and/or use scaffolding. The Occupational Safety and Health Administration's (OSHA) requires Illinois State University to develop and implement procedures for safe erecting and use of scaffolds. All Facilities Management departments are required to implement the practices and procedures outlined in this procedure.

2. RESPONSIBILITIES

Everyone involved with scaffolding has certain responsibilities. It is very important that every individual is familiar with his/her responsibilities.

a. Environmental Health and Safety

- Review and update the Illinois State University Hot Work Procedure to conform to current CFR standards.
- Monitor compliance with standards set forth in the program through periodic worksite inspections.
- Assist supervisors by providing training as set forth in procedure.
- Provide guidance for the proper selection and use of appropriate scaffolding equipment and personnel protective equipment to meet the requirements of this program.

b. Project Managers

- Oversee contractor work activities.

c. Supervisors

- Ensure that all employees required to erect and/or use scaffolding have received the appropriate level of training.
- Provide necessary personal protective equipment.
- Ensure that all employees perform their assigned duties as outlined in this procedure.
- Take appropriate action whenever an employee under his/her direction fails to follow safety precautions outlined in this procedure.

d. Scaffold Users

- Receive scaffold user training and shall work on scaffolds accordingly.
- Inspect each scaffold before each shift and report any defects or concerns to their Supervisor immediately.
- Use any required personal fall protection according to training received.
- Never attempt to alter or repair any scaffold without proper training and authorization.

e. Scaffold Erectors

- Scaffolding Erectors are responsible for installing scaffolding and performing inspections prior to initial use and after any occurrence which may affect the structural integrity of the scaffold.

f. Qualified Person

- A registered professional engineer is responsible for scaffolding design erected over 125 feet high, and pole scaffolds erected over 60 feet high.

3. DEFINITIONS

Brace - A rigid connection that holds one scaffold member in a fixed position with respect to another member, or to a building or structure

Cleat - A structural block used at the end of a platform to prevent the platform from slipping off its supports. Cleats are also used to provide footing on sloped surfaces such as crawling boards

Competent Person - One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to Employees, and who has authorization to take prompt corrective measures to eliminate them

Coupler - A device for locking together the tubes of a tube and coupler scaffold

Guardrail - A vertical barrier, consisting of, but not limited to, top rails, midrails, and posts, erected to prevent Employees from falling off a scaffold platform or walkway to lower levels

Lifeline - A component consisting of a flexible line that connects to an anchorage at one end to hang vertically (vertical lifeline), which serves as a means for connecting other components of a personal fall arrest system to the anchorage

Maximum Intended Load - The total load of all persons, equipment, tools materials, transmitted loads, and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time

Outrigger - The structural member of a supported scaffold used to increase the base width of a scaffold in order to provide support for and increased stability of the scaffold

Qualified Person - One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and demonstrated his/her ability to solve or resolve problems related to the subject matter, the work or the project

Rated Load- The manufacturer's specified maximum load to be lifted by a hoist or to be applied to a scaffold or scaffold component

Scaffold - Any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage), used for supporting Employees or materials or both

Single Pole Scaffold - A supported scaffold consisting of a platform(s) resting on bearers, the outside ends of which are supported on runners secured to a single row of posts or uprights, and the inner ends of which are supported on or in a structure or building wall

Three Points of Contact - Term used for a method of safe ladder climbing where between a climber's two hands and two feet, at least three of them are in contact with the ladder rungs/rails at all times while ascending or descending the ladder

Tube and Coupler Scaffold - A supported or suspended scaffold consisting of a platform(s) supported by tubing, erected with coupling devices connecting uprights, braces, bearers, and runners

4. TRAINING

a. Training Requirements for Scaffold Erectors

- Training requirements apply to all employees who are involved in erecting, altering, disassembling, moving, repairing or inspecting scaffolds.
- Training shall be performed by a Qualified Person.
- The training shall include the following topics as applicable:
 - The nature of scaffold hazards
 - The correct procedures for erecting altering, disassembling, moving, repairing, and inspecting, the type(s) of scaffold intended to be utilized.
 - The design requirements, as well as the maximum intended load-carrying capacity and intended use of the scaffold.
 - The proper use of personal fall protection equipment and fall protection systems.

b. Training Requirements for Scaffold Users

- Training requirements apply to all employees who perform work while on a scaffold.
- Scaffold user training shall be performed by a Qualified Person.
- The training shall include the following topics as applicable:
 - The proper use of the scaffold, and the proper handling of materials on the scaffold.
 - The maximum intended load and load carrying capacities of the scaffolds used.
 - The nature of any overhead work/falling objects, personal fall protection, and electrical hazards in the work area.
 - The correct procedures for dealing with electrical hazards.
 - The proper use of personal fall protection equipment, and fall protection systems.
 - The overhead work/falling object protection systems being used.
 - The requirements of this procedure.

c. Retraining

- There are changes in the types of scaffolds, fall protection, falling object protection or other equipment or procedures related to the hazards associated with site scaffolding.
- Changes in the worksite that could present new hazards to which the employee has not been previously trained.
- Retraining shall be conducted every 3 years for scaffold users or when an employee demonstrates a lack of skill, understanding or where inadequacies in an affected employees work involving scaffolds indicates that the employee has not retained proficiency.

5. INSPECTION AND STORAGE

a. Inspection

- The first inspection will be conducted by the scaffold erector immediately after scaffold has been completed.

- Scaffolds and scaffold components shall be inspected for visible defects by the scaffold user prior to initial use, before each work shift, and after any occurrence which could affect a scaffold's structural integrity.
- If scaffold is used over an extended period of time (1 week), the scaffold should be inspected at least once by a scaffold erector.
- Scaffold users shall read scaffold tags prior to using any scaffold. The instructions or warnings outlined on the tag must be followed.
- Before erecting and during dismantling, trained scaffold craftsmen shall inspect all scaffold components. Those found with defects must be repaired or replaced immediately.
 - Handrails, midrails, cross bracing, and steel tubing shall be inspected for nicks, especially near center span, and indications where a welding arc has struck.
 - Scaffold components shall be straight and free from bends, kinks dents, and severe rusting.
 - Scaffold frame weld zones shall be inspected for cracks and ends of tubing for splitting or cracking.
 - Manufactured decking shall be inspected for loose bolt or rivet connections and bent, kinked, or dented frames. Plywood surfaces should be checked for softening due to rot or wear, and peeling or delaminated layers at the edges. Scaffold boards should be inspected for rot, cracks, notches, and other damage. Also, inspect cleats if used.
 - Each quick-connecting device, whether spring, threaded connection, or toggle pin arrangement, should be inspected to see that it operates properly.
 - Casters, if used, should be inspected for smooth rolling surfaces, free turning, free acting swivel, and to be sure that the locking mechanism is in good working order.

6. PROCEDURES

a. General Requirements

- All scaffolds shall be designed by a Qualified Person or manufacturer, and shall be erected, loaded and used in accordance with that design or manufacturer's specifications.
- Scaffolds shall be erected, altered, moved, or dismantled by trained scaffold erectors. See Section 6.0: Training Requirements.

- Employees required to perform work on scaffold platforms shall be trained in recognition and the control measures for the hazards associated with the type(s) of scaffold being used. See Section 4.0: Training Requirements.
- Scaffolds shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load.
- Scaffolds with work platforms of 6 feet or more above the ground or next lower level should have a complete guardrail system. Toeboards are required when there is a risk of material, tools, equipment being incidentally kicked, bumped or otherwise dislodged off the scaffold deck onto personnel below. See also Section 7.0: Fall Prevention and Fall Protection
- All scaffold work platforms must be completely decked between the uprights and/or guardrail supports.
- Scaffold platforms shall be a minimum of 18 inches wide.
- All scaffold decking shall be Scaffold Grade or equivalent.
- The footing or anchorage for all scaffolds shall be sound, rigid, and capable of supporting the loaded scaffold without settling or displacement. Unstable objects such as barrels, boxes, loose bricks, or concrete blocks will not be used to support scaffolds. Mud sill's 8" X 8" and base plates are required when scaffolds are supported on the ground surface. When using leveling jacks, 3/4 of its length must remain inside the scaffold leg.
- The poles, legs, or uprights of scaffolds shall be plumb and securely braced to prevent swaying and displacement.
- Manufactured scaffold components shall not be modified. Scaffold components manufactured by different manufacturers or of dissimilar metals shall not be intermixed unless the components fit together without force, modification and the scaffolds structural integrity is maintained as determined by a Competent Person.
- Supported scaffolds with a height to base width ratio of more than four to one (4:1) shall be restrained from tipping by guying, tying, bracing, or equivalent means.
 - Guys, ties, and braces shall be installed according to the scaffold manufacturer's recommendations or at the closest horizontal member to the 4:1 height and be repeated vertically at locations of horizontal members every 20 feet or less for scaffolds 3 feet wide or less; and every 26 feet or less thereafter for scaffolds greater than 3 feet wide.
 - The top guy, tie or brace of completed scaffolds shall be placed no further than 4:1 height from the top. Such guys, ties and braces shall be installed at each end of the scaffold and at horizontal intervals not to exceed 30 feet.

- Design drawings must be made prior to erection and kept on site for any scaffold over 125' high. They must be made by a licensed professional engineer competent in this field.

b. Scaffolding Decking (Boards)

- Scaffold Grade 2" X 10" or 2" x 12" board material only will be used.
- No paint or material which would affect proper visual board inspection or work surface safety may be applied to scaffold boards. Scaffold boards may be painted 10 to 12 inches on each end to denote use for scaffold decking only.
- Scaffold boards are not to extend over their end supports more than 12" or less than 6".
- All decking on platforms shall be overlapped (minimum 12") or secured from movement.
- Do not use cleated boards with cleats turned up.

c. Scaffolding Tags

The most effective means of communication between the scaffold builder and the scaffold user is a scaffold tag.

- The crew that erects the scaffold will complete and attach the scaffold tag. (See Attachment 1)
- The tag should be placed at eye level on or near the access ladder so it is easy to locate and plainly visible.
- A scaffold erector shall ensure that the scaffold is erected properly and the tag attached is properly and completely filled out.
- If the scaffold needs to be altered in any way, a scaffold erector must be contacted to authorize the change and a new inspection conducted.
- An untagged scaffold must not be used.
- If a scaffold is to be used for an extended period of time it should be inspected before each shift by the scaffold user. See Section 5: Inspection. The scaffold should be inspected at least once a week by a scaffold erector.

d. Tagging Systems

- A three tag system can be used which includes a red or "Danger" tag in conjunction with the yellow and green tags. Again, any scaffold that is not tagged shall not be used.
 - A red tag means the scaffold is being dismantled, not yet completely erected, or for some reason not safe and shall not be used.

- A yellow tag is completed and attached to scaffolds which cannot be erected with all components complete. A yellow tag also informs the user that a fall protection device is required while on a scaffold with incomplete guardrails or deck openings.
- A green tag is completed and attached by the erecting crew to scaffolds which have complete handrails, midrails, toeboards, and decking. A green tag informs all users that the scaffold is safe to use.

a. Access to Scaffolding Platforms

- When scaffold platforms are more than 2 feet above or below a point of access, an attached ladder or other approved ladder/stair system must be used by scaffold users to reach the platform.
- Hook-on and attachable ladders shall be positioned so that their bottom rung is not more than 24 inches above the scaffold supporting level.
- Access ladders must extend 36" above the platform being accessed, or equivalent safe access shall be provided.
- Scaffold bracing shall not be used for access or climbing. Integral prefabricated scaffold access frames must be specifically designed and constructed for use as ladder rungs and may be used for access to platforms.
- Hook-on and attachable ladders shall be broken with rest platforms at 35-foot maximum vertical intervals.
- Hook-on and attachable ladders shall be specifically designed for use with the type of scaffold being used.
- Rungs must be uniformly sized and spaced with a maximum interval between rungs of 16 3/4 inches.
- Rungs must be at least 11 1/2 inches long.

b. Scaffold Use

- Scaffolds shall not be loaded in excess of their maximum intended loads or rated capacities.
- Debris shall not be allowed to accumulate on platforms.
- Do not stack brick, tile, block, or similar material higher than 24" on the scaffold deck.

- Makeshift devices, such as boxes and barrels shall not be used on top of scaffold platforms to increase the working level height.
- Ladders shall not be used to increase the working level height.
- Where swinging loads are being hoisted onto or near scaffolds such that the loads might contact the scaffold, tag lines or equivalent measures to control the loads shall be used.
- Scaffolds shall never be altered or moved while they are in use or occupied.
- Scaffolds shall not be moved or dismantled without first removing all loose tools, materials, and equipment resting on the scaffold deck.
- Employees shall not work on scaffolds during storms or high winds.
- Employees shall not work on scaffolds which are covered with ice or snow, unless involved in removing ice or snow from scaffold.
- The clearance between scaffolds and power lines shall be as follows: Scaffolds shall not be erected, used, dismantled, altered, or moved such that they or any conductive material handled on them might get closer to exposed and energized lines than as follows:

Insulated Lines (VOLTAGE)	MINIMUM DISTANCE
Less than 300 Volts	3 Feet
330 Volts to 50 KV	10 Feet
More than 50 KV	10 Feet Plus 4 Inches for each 1 KV over 50 KV <i>or</i> 2 times the length of the line insulator but never less than 10 feet

Uninsulated Lines (VOLTAGE)	MINIMUM DISTANCE
Less than 50 KV	10 Feet
More than 50 KV	10 Feet plus 4 inches for each 1 KV over 50 KV <i>or</i> 2 times the length of the line insulator, but never less than 10 feet

7. FALL PROTECTION AND PERSONAL FALL PROTECTION

Each employee on a scaffold more than 6 feet above the ground or next lower level shall be protected from falling to that lower level by means of a complete guardrail system (*fall prevention*) or approved *personal fall protection*. This requirement applies to both scaffold users and scaffold erectors/dismantles. Also see the Fall Protection Procedure.

a. Fall Protection

- All scaffold guardrail systems must meet the design/performance requirements set forth in this Section and by OSHA standards.
- Guardrail systems shall be installed along all open sides and ends of platforms.
- Guardrail systems shall be completely installed before the scaffold is released for use other than erection and dismantling crews.
- Guardrail systems shall be surfaced to prevent injury to employees such as punctures or lacerations.
- Top edge height of top rails or equivalent member shall be installed between 39 and 45 inches.
- Each top rail or equivalent member shall be capable of withstanding, without failure, a force applied in any downward or outward direction of at least 200 pounds.
- Rope, No. 9 wire, banding material, etc., shall not be used as a top rail or midrail.
- Midrails shall be installed at a height approximately midway between the top edge of the guardrail system and the platform surface. When intermediate members are used as a midrail, they shall not be more than 19 inches apart.
- Each midrail or equivalent member shall be capable of withstanding, without failure, a force applied in any downward or outward direction of at least 150 pounds.
- Where guardrail systems are incomplete, missing, or moved to allow access for work, personal fall protection shall be used on the affected platform(s).
- In some cases a building, structure, equipment, or piping may prevent the proper installation of a complete scaffold guardrail, a Competent Person can determine whether these obstructions meet or exceed the applicable guardrail requirements; to be used instead of the scaffold guardrail system. The Competent Person should use the Scaffold Tag to indicate when these conditions are acceptable.

b. Personal Fall Protection

- Approved personal fall protection is required any time employees work on, or erect a scaffold:
 - Which is not protected by a complete deck and guardrails, and 6 feet or more above the ground or next lower level
 - Anytime on a suspended scaffold platform.
 - Working as stated above, means while traveling, stationary, or at anytime exposed to a fall hazard.
- Personal fall protection used on scaffolds shall be attached by a lanyard to a vertical lifeline, horizontal lifeline or approved scaffold structural member.
- Personal fall protection is not required while using a designed ladder or access system, provided “three points of contact” are maintained when ascending or descending a scaffold ladder (access way), and the requirements of this procedure and applicable OSHA standards for ladders and stairways are met.
- Employees may not climb any ladder with anything in their hands. Tools and materials may be carried on their person, hoisted up/down by rope or other devices.

c. Falling Object Protections

- If a falling object hazard is present each employee working in the area shall be provided with a hard hat. Additional protection from falling hand tools, materials, debris and other small objects through the installation of toeboards, barricades, mesh/screens, debris nets, or catch platforms/canopies shall be provided as warranted.
- Where there is a hazard of tools, materials, or small objects falling from the surface of scaffold platforms and striking pedestrians below, the area below the scaffold to which objects can fall shall:
 - Be barricaded at an appropriate distance with tape identifying the area a “*Hazard Area*”. Where the job is in short duration, a second employee stationed on the ground directing individuals away from the hazard can serve as an acceptable alternative.
 - Have a 2” X 4” (nominal) toeboard shall be erected along all edges of scaffold platforms more than 6 feet above lower levels.
 - Where tools and materials are stacked above the height of the toeboard, the following additional protective measures should be considered:
 - Higher toeboards, or

- Mesh/screen put up against the guardrail with openings small enough to contain materials on the platform.
- In some cases, due to the nature or configuration of the scaffold/work area, debris nets, catch platforms or canopy structures may be erected to protect pedestrians from falling objects, rather than the protective mechanisms listed above.
 - If used these structures must be strong enough to withstand the impact forces of the potential falling objects, and shall be erected over the pedestrians below.
- When potential falling objects are too large, heavy or massive to be contained by any of the above listed measures, those materials shall be placed away from edges and further secured from falling.

d. Mobile (Rolling) Scaffolds

- Mobile scaffolds shall be used only on level, smooth surfaces free of major defects.
- Mobile scaffolds shall be braced by cross, horizontal, or diagonal braces, or a combination thereof, to prevent racking or collapse of the scaffold and to ensure scaffolds remain plumb, level and squared at all times. All brace connections shall be secured.
- Out-rigger frames, when used, are installed on both sides of the scaffold, and would be included in the base/height limit calculations.
- No one is to ride on any part of a scaffold that is being moved.
- All casters used with mobile scaffolding shall be provided with a positive locking device to hold the scaffold in position when the scaffold is stationary or while Employees are on the scaffold.
- Caster stems and wheel stems shall be pinned or otherwise secured in scaffold legs or adjustment screws.
- Manual force used to propel the scaffold shall be applied as close to the base as possible, and never more than 5 feet above the supporting surface.
- Power systems used to propel mobile scaffolds shall be designed for such use. Forklifts, trucks or other similar motorized vehicles shall not be used to move scaffolds, unless the scaffold is specifically designed to be moved in this manner.

ATTACHMENT 1



RED

YELLOW

GREEN