Scaffolds

Potential Hazard Review

Physical Hazards

- Slips/fall
- Striking against
- Caught in/on/between; pinch points

Ergonomic Hazards

- Forceful exertions

Related Safe Work Practices

- Fall Protection
- Housekeeping
- Ladders

Authority

- CCR Title 8 Section 1637, 1646

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This Safe Work Practice (SWP) addresses the hazards related to using scaffolds and is organized into the following areas:

A. General Requirements for All Scaffolds
B. Tower Scaffolds and Rolling Scaffolds, Wood or Metal

This SWP is dedicated to helping you avoid an injury or illness from known hazards and their consequences – abrasion, amputation, bruise, contusion, crush, fracture or fatality from fall and impact, laceration, puncture, sprain, and strain, cumulative trauma disorder, or physical stress from forceful exertions.

You are advised to follow these recommendations, read and follow this SWP and any related SWPs, complete any required or recommended training, and to obtain advice from a Qualified Person if you have any questions.

A Qualified Person is a person **designated** by the employer; and by reason of **training**, experience, or instruction who has demonstrated the ability to perform safely all assigned duties; and, when required is properly licensed in accordance with federal, state, or local laws and regulations.

All tasks require that you:

- Use the equipment in accordance with the guidelines set forth by the manufacturer. This includes following all signs and labels, and reviewing any manufacturer's operating manuals.
  1. If the instructions provided in the operating manual conflict with this SWP, then follow the instructions in the manual. The manufacturer's instructions prevail over this SWP.
- Review the safety data sheets (SDSs) for each chemical.
- Be trained on this SWP and those listed above as related. Training on SWPs must be completed before initial assignment. It is also recommended that you complete refresher training every two years.

A. General Requirements for all Scaffolds

1. Erection and placement of scaffolding intended to be more than 36 feet in height when completed requires either an annual or project permit from Cal OSHA.

2. Scaffolds shall be provided for all work that cannot be done safely by employees standing on permanent or solid construction at least 20 inches wide, except where such work can be safely done from ladders. Exceptions include:
   a. Work of a limited nature and of short duration when the permanent or solid construction is less than 20 inches in width and the fall distance does not exceed 15 feet in height and provided adequate risk control is recognized and maintained under competent supervision.
   b. Work of a short duration from joists or similar members at 2 feet or closer centers, planks resting on these members forming a plank platform 12 inches wide or equivalent protection.

3. Scaffolds should be designed and constructed as follows:
   a. Scaffolds shall be constructed of wood or other suitable materials such as steel or aluminum members of known strength characteristics.
   b. Where materials other than wood are used, or where scaffold designs differ from those specified in the regulations, the scaffold and its parts must provide a degree of strength, rigidity and safety equivalent to that provided by the described scaffold in the regulations that it replaces.

c. Each scaffold shall be designed and constructed using a dead load safety factor that will ensure the scaffold supports, without failure, its own weight and 4 times the maximum intended working (live) load applied or transmitted to it.
   i. Light-duty scaffolds: 25 pounds per square foot of work platform.
      1. Exception: For light-duty interior scaffolds the imposed load on the platform area shall not apply more than 1,500 pounds to any 1 ledger or a single upright, and the total load on the whole platform area shall not average more than 15 pounds per square foot.
   ii. Medium-duty scaffolds: 50 pounds per square foot of work platform.
   iii. Heavy-duty scaffolds: 75 pounds per square foot of work platform.
   iv. Special-duty scaffolds: exceeding 75 pounds per square foot of work platform as determined by a qualified person or a Civil Engineer currently registered in the State of California and experienced in scaffold design.
   v. Engineered scaffolds: as determined by a Civil Engineer currently registered in the State of California and experienced in scaffold design.

d. A scaffold shall not be subjected to loads greater than its maximum intended working load

e. Manufactured scaffolds shall be used in accordance with the manufacturer's recommendations. Where specific requirements that address riding on a rolling may conflict with the manufacturer's recommendations, the regulatory requirement will take precedence.

f. A qualified person shall determine the maximum intended working loads for scaffolds that are neither manufactured nor engineered.

g. The maximum intended working load for each scaffold shall be posted at a conspicuous location at each jobsite or be provided to each supervisory employee who shall have it readily available at the jobsite.

4. Anchorage and bracing shall be such that scaffolds and falsework will be prevented from swaying, tipping, or collapsing.

5. Scaffold lumber, except for planks, used on suspended or ladder-jack scaffolds, shall be the equivalent of “selected lumber,” free from damage that affects its strength.

6. Extension planning shall conform to the following:
   a. Extension planking of the finger type shall be made with at least 5 fingers on each side. These fingers shall be at least 1-inch by 2 1/8-inch selected straight-grained Douglas fir or material of equal strength. All metal fittings shall be adequate to maintain the structural qualities of the device.
   b. The length of the extended planking shall not exceed 12 feet 6 inches, and the actual mechanical overlap between the 2 halves shall be not less than 1/8 of the length of the extended planking. A substantial stop shall be provided to maintain this overlap.

c. Not more than one employee shall be permitted at one time on any extension planking that is more than 3 feet in height.
d. Extension planking shall not be used as a platform on ladder-jack, suspended, or other unstable scaffolds.

7. The minimum labeling, design and construction requirements for scaffold planking, such as solid sawn planks, manufactured platforms of wood (including laminated planks), metal planking, and planking manufactured from other materials are as follows:
   a. All solid sawn planking shall be at least equivalent to 2-inch x 10-inch (nominal) lumber selected for scaffold grade plank.
      i. The maximum permissible spans for Douglas Fir and Southern Pine planking for 2 x 10-inch (nominal) or 2 x 9-inch (rough) planks shall be as shown in the following table:

Working (Live) Load (psf)	25	50	75
Permissible Span (ft)	10	8	7

      ii. The maximum permissible spans allowed for other wood species of scaffold planking shall not exceed 10 feet and shall be determined by a licensed professional engineer.
   b. All manufactured scaffold planking including, but not limited to, engineered wood products, laminated veneer lumber, metal, composite, plastic, or any other manufactured planks shall be capable of supporting, without failure, its own weight and 4 times the maximum intended working (live) load.
      i. Manufactured planks with spans in excess of 10 feet shall be labeled to indicate the maximum intended working (live) load.
      ii. Manufactured scaffold planks shall be used in accordance with the manufacturer's specifications.
   c. Prior to being placed in service, all laminated veneer lumber scaffold planks, shall be labeled with the seal of an independent, nationally recognized, inspection agency approved by the International Accreditation Services (IAS) certifying compliance with ASTM D 5456-09a and ANSI/ASSE A10.8-2001, Section 5.2.10.
   d. Prior to being placed into service, all solid sawn wood scaffold planks shall be certified by, or bear the grade stamp of, a grading agency approved by the American Lumber Standards Committee.
   e. All scaffold planks shall be visually inspected for defects before use each day.
   f. Defective or damaged scaffold planks shall not be used and shall be removed from service.

8. A scaffold plank shall not overhang its support by more than 18 inches, unless access to this overhanging portion is prevented by a guardrail, or other barrier, or unless the other plank end is securely anchored.

9. All scaffold lumber shall be visually inspected for defects before and during use. Defective lumber shall not be used.

10. Lean-to or jack scaffolds, shore scaffolds, nailed brackets, loose tile, loose brick, loose blocks, stilts, or other similar unstable objects shall not be used as working platforms, or for the support of such platforms.

11. The erection and dismantling of scaffolds or falsework shall be performed under the supervision and direction of a Qualified Person.
    a. Erection and dismantling of scaffolds shall be performed in accordance with good engineering practice. Where engineering design is required by these orders, the engineering drawings shall be made available at the job site during erection.
    b. All required ties to the structure shall be installed as soon as the scaffold has been completed to the tie-in area during erection.
    c. Ties shall only be removed during dismantling as the work progresses downward unless other methods are used to prevent the scaffold from falling over.
    d. No structural members shall be removed from scaffolds during dismantling operations below the level being dismantled.
    e. Where work platforms are proposed, guardrails shall be installed before other work not directly related to scaffold erection is permitted to begin.
    f. These requirements may be temporarily suspended for short durations, provided adequate risk control is recognized and maintained under immediate, competent supervision

12. Scaffolds or falsework installations shall not be altered by removing uprights, braces, or supports unless other members providing equivalent strength are substituted.

13. Scaffolds shall not be overloaded. Material shall not be allowed to accumulate to the extent that a scaffold is subjected to loading it is not designed to support.

14. A safe and unobstructed means of access, such as a walkway, stair, or ladder shall be provided to all scaffold platforms.

15. Climbing ladders or stairways on scaffolds used for access and egress shall be affixed or built into the scaffold by proper design and engineering, and shall be so located that their use will not disturb the stability of the scaffold.
    a. Manufactured hook-on and attachable ladders shall be securely attached to the scaffold and shall conform to the following:
        i. Shall be specifically designed for the type of scaffold used;
        ii. Shall have a minimum rung length of 11-1/2 inches (29 cm);

iii. Shall have uniform spaced rungs with a maximum spacing between rungs of 16-3/4 inches;
iv. Shall be positioned so that their bottom rung is not more than 24 inches (61 cm) above the scaffold supporting level; and
v. When hook-on and attachable ladders are used on a supported scaffold more than 35 feet (10.7 m) high, they shall have rest platforms at 35-foot (10.7 m) maximum vertical intervals.

b. If a ladder is used as a means of access to the scaffold, it shall be securely attached and shall comply with the Ladder SWP.
c. Horizontal members of end frames may be designed and used as a climbing device provided that the steps are:
   i. Reasonably parallel and level.
   ii. Arranged to form a continuous ladder.
   iii. Provided with sufficient clearance to provide a good handhold and foot space.

16. Platforms shall not be sloped more than 2 feet vertically to 10 feet horizontally and shall be positively secured against slipping from supports.

17. No worker shall be permitted to work on a scaffold platform where slippery conditions exist unless such conditions are a necessary part of the work.

18. Workers on scaffolds who are exposed to overhead hazards shall be provided with overhead protection or other means that will effectively eliminate the hazard.

19. Bolts used in the construction of scaffolds shall be of a size and in sufficient numbers at each connection to develop the designed strength of the scaffold.

20. Where materials are line-hoisted onto a scaffold, a tag line shall be used where necessary to control the load.

21. When a scaffold materially changes its direction, the platform planks shall be laid to prevent tipping.
    a. The planks that meet the corner ledger at an angle shall be laid first, extending over the diagonally placed ledger far enough to have a good safe bearing, but not far enough to involve any danger from tipping.
    b. The planking running in the opposite direction at an angle shall be laid so as to extend over and rest on the first layer of planking.

22. Work on or from scaffolds is prohibited during storms or high winds unless a Qualified Person has determined that it is safe for employees to be on the scaffold and those employees are protected by a personal fall arrest system (see the Fall Protection SWP), or wind screens.

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

23. Wood platforms shall not be covered with opaque finishes, except that platform edges may be covered or marked for identification. Platforms may be coated periodically with wood preservatives, fire-retardant finishes, and slip-resistant finishes; however, the coating may not obscure the top or bottom wood surfaces.

24. Platforms, including, but not limited to, those consisting of solid sawn wood planks, engineered wood products, laminated veneer lumber, metal, composite, plastic, or any other manufactured planks, shall not deflect more than 1/60 of the span when loaded to the manufacturer's recommended maximum load.

B. Tower Scaffolds and Rolling Scaffolds, Wood or Metal

25. The minimum dimension of the base of any free-standing tower or rolling scaffold shall not be less than 1/3 the height of the scaffold unless such scaffold is securely guyed or tied.

26. Construction and erection shall be as follows:
    a. Railings are required if the platform is 7-1/2 feet or more above grade.
    b. Securely attached railings as provided by the scaffold manufacturer, or other material equivalent in strength to the standard 2- by 4-inch wood railing made from selected lumber shall be installed on open sides and ends of work platforms 7 1/2 feet or more above grade.
    c. The top rail shall be located at a height of not less than 42 inches nor more than 45 inches measured from the upper surface of the top rail to the platform level.
        i. A midrail shall be provided approximately halfway between the top rail and the platform.
        ii. "X" bracing is acceptable as a toprail if the intersection of the "X" occurs at 45 inches (plus or minus 3 inches) above the work platform, provided a horizontal rail is installed as a midrail between 19 and 25 inches above the work platform. The maximum vertical distance between the "X" brace members at the uprights shall not exceed 48 inches.
        iii. "X" bracing is acceptable as a midrail if the intersection of the "X" falls between 20 inches and 30 inches above the work platform.
        iv. For end rail openings less than 3 feet, double wrapped iron wire at least No. 12 gauge in thickness, or wire rope at least 1/4 inch minimum diameter is permitted, provided the wire or wire rope is securely fastened.
    d. Toeboards shall be provided on all open sides and ends of railed scaffolds at locations where persons are required to work or pass under the scaffold and at all interior floor, roof, and shaft openings.

i. A standard toeboard shall be 4 inches (nominal) minimum in vertical height from its top edge to the level of the floor, platform, runway, or ramp.
ii. It shall be securely fastened in place and have not more than 1/4-inch clearance above floor level. It may be made of any substantial material, either solid, or with openings not over one inch i greatest dimension.

e. The screw jack shall extend into its leg tube at least 1/3 its length, but in no case shall the exposed thread exceed 12 inches.
f. The uprights (legs of rolling scaffolds) shall not exceed 24 inches without being braced according to the manufacturer's specifications.

27. Wheels or casters of rolling scaffolds shall be provided with an effective locking device, and kept locked when workers are climbing or working on the scaffold. At least 2 of the 4 casters or wheels shall be a swivel type. All wheels or casters shall be properly designed for strength and dimension to support at least 4 times the maximum intended load.

28. Joints of metal scaffolds shall be locked together with lock pins, bolts or equivalent fastening, including caster joints. Lock pins used must be of a locking type (except for screw jacks and guardrail posts).

29. Platform planks on rolling or tower scaffolds shall not project farther than 18 inches past supports at the edges of the scaffold. An effective method of preventing platform planks on rolling scaffolds from slipping off must be provided. The nailing of cleats of 1-inch material on the underside of each projecting end, or other equivalent means, will be acceptable. Platforms shall be tightly planked for the full width of the scaffold except for any necessary entrance openings.

30. Ladders or other unstable objects shall not be placed on top of rolling scaffolds to gain greater height.

31. Employees may ride on rolling scaffolds moved by others below if the following conditions exist:
    a. The floor or surface is within 3 degrees of level, and free from pits, holes, or obstructions;
    b. The minimum dimension of the scaffold base, when ready for rolling, is at least 1/2 of the height. Outriggers, if used, shall be installed on both sides of staging;
    c. The wheels are equipped with rubber or similar resilient tires. For towers 50 feet or over, metal wheels may be used;
    d. The manual force used to move the scaffold shall be applied as close to the base as practicable, but not more than 5 feet (1.5 meters) above the supporting surface of the scaffold;
    e. Before a scaffold is moved, each employee on the scaffold shall be made aware of the move; and,

f. No employee shall be on any part of the scaffold which extends outward beyond the wheels, casters, or other supports.

32. One employee may ride on and move a rolling scaffold while on the platform without assistance from others below provided the following conditions are met:
    a. All of the provisions above are met, except that the scaffold need not be moved by others below.
    b. The scaffold platform shall not be more than 4 feet above the floor level.
    c. The working platform shall be no less than 20 inches in width with a maximum 1 inch space between platform planks.
    d. Wheels or casters of rolling scaffolds shall be provided with an effective locking device; or rolling scaffolds shall be provided with an effective device that is used to prevent movement of the scaffold when workers are climbing or working on the scaffold.
    e. The use of power systems such as motor vehicles, add-on motors, or battery powered equipment to propel a rolling scaffold is prohibited.

For any questions, please contact EHS at 415-831-2780.