

## *Potential Hazard Review*

### Physical Hazards

- Slips/fall: Bruise, contusion, sprain, strain, fracture from fall and impact

### Ergonomic Hazards

- Forceful exertions: Back strain, cumulative trauma disorder, physical stress

## *Related Safe Work Practices*

- Aerial Lifts
- Fall Protection
- Lifting, Body Mechanics and Ergonomics
- Pruning

## *Authority*

- CCR Title 8 Sections 1675, 3276-3278

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Accidents from ladders are very common. Falls are the most common cause of worker injury associated with ladder use, and they are mostly caused by the use of faulty ladders, improper set up or incorrect use.

Consequences of the accidents from portable ladders include disabling injuries and fatalities:

- As per the Center to Protect Workers' Rights, each year, about 50 construction workers are killed by falls from ladders. More than half of the deaths occur to people working from ladders. Twice as many falls occur stepping down compared to going up ladders. The main causes of falls from portable ladders are sliding of the ladder base and tipping sideways. A lot of workers carrying ladders hurt their backs, too.
- According to The Centers for Disease Control, 43 percent of fatal falls in the last decade have involved a ladder.

- The U.S. Consumer Product Safety Commission estimates that there are more than 164,000 emergency room-treated injuries in the U.S. relating to ladders every year.

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

- A. Portable Ladders
- B. Fixed Ladders

Extension and orchard ladders are covered under portable ladders.

This SWP is dedicated to helping you avoid an injury or illness from known hazards. 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.
  - 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. PORTABLE LADDERS

1. Before an employee uses a ladder, the employee shall be provided training in the which may not be safe use of ladders. Supervisors of employees who routinely use ladders shall also be provided ladder safety training. The training shall address the following topics:
  - a. Importance of using ladders safely, including: frequency and severity of injuries related to falls from ladders.

- b. Selection, including: types of ladders, proper length, maximum working loads, and electrical hazards.
  - c. Maintenance, inspection, and removal of damaged ladders from service.
  - d. Erecting ladders, including: footing support, top support, securing, and angle of inclination.
  - e. Climbing and working on ladders, including: user's position and points of contact with the ladder.
  - f. Factors contributing to falls, including: haste, sudden movement, lack of attention, footwear, and user's physical condition.
  - g. Prohibited uses, including: uses other than designed, climbing on cross bracing, maximum lengths, and minimum overlap of extension ladder sections.
2. Portable ladders shall meet the design and construction requirements of the applicable American National Standards Institute (ANSI) standard.
- a. Ladder type step stools shall be designed and constructed such that the rungs, cleats, and steps are not less than 8 inches apart, or more than 12 inches apart, as measured between center lines of the rungs, cleats, and steps.
3. Ladders shall be selected and their use restricted to the purpose for which the ladder is designed.
- a. Single-rail ladders shall not be used.
  - b. Scaffolds or other worker positioning equipment shall be used when work cannot be safely done from ladders (see Scaffolds SWP).
  - c. Portable ladders are generally designed for one-person use to meet the requirements of the person, the task, and the environment. When selecting a ladder for use, consideration shall be given to the ladder length or height required, the working load, the duty rating, worker position to the task to be performed, and the frequency of use to which the ladder will be subjected.
  - d. Ladders shall be used according to the following duty classifications):

<i>Duty Rating</i>	<i>Ladder Type</i>	<i>Working Load (Pounds)</i>
Special Duty	IAA	375
Extra Heavy-Duty	IA	300
Heavy-Duty	I	250
Medium-Duty	II	225
Light-Duty	III	200

4. Ladders shall be maintained in good condition at all times:

- a. the joint between the steps and side rails shall be tight
  - b. all hardware and fittings securely attached
  - c. the movable parts shall operate freely without binding or undue play.
5. Metal ladders shall not be exposed to acid or alkali materials that are capable of corroding the ladder and reducing the ladder's strength, unless the employer obtains and follows the recommendations of the ladder manufacturer or a qualified person regarding exposure to corrosive materials.
6. Ladders shall be inspected by a qualified person for visible defects frequently and after any occurrence that could affect their safe use (for purposes of this SWP, a qualified person is one who has been trained in this SWP).
  - a. Check for the following:
    - i. Absence of oil, grease, or slippery materials.
    - ii. Proper rung to side rail connections. Check for corrosion inside rungs of metal ladders.
    - iii. Damaged, bent, missing or loose rungs, or side-rails.
    - iv. Working parts (on extension ladders).
    - v. Working hinges, bolts and ropes.
  - b. Ladders that have developed defects shall be withdrawn from service for repair or destruction; and tagged or marked as "Dangerous, Do Not Use" or with similar language.
  - c. Ladders with broken or missing steps, rungs, cleats, safety feet, side rails, or other defects shall not be used.
7. The top of non-self-supporting ladders such as single and extension ladders shall be placed with the two rails supported equally, unless a single support attachment is provided and used.
  - a. The top rest for portable rung and cleat ladders shall be reasonably rigid and shall have ample strength to support the applied load.
8. The ladder base section of surface supported ladders shall be placed on a secure and level footing.
  - a. When necessary, ladder levelers shall be used to achieve equal rail support on uneven surfaces.
  - b. Ladders shall not be placed on boxes, barrels or other unstable bases to obtain additional height.
  - c. Ladders shall not be used on ice, snow or slippery surfaces unless suitable means to prevent slippage have been employed.
9. Portable ladders shall not be overloaded when used.
10. In addition to the other limitations listed in the manufacturer's documentation and in this SWP, the following uses are prohibited:

- a. Ladders shall not be used as a brace, skid, guy or gin pole, gang-way, or for other uses than that for which they were intended, unless specifically recommended for use by the manufacturer.
- b. Planks shall not be used on the top step or topcap of step ladders.
- c. Step ladders shall not be used as single ladders or in the partially closed position.
- d. Ladders that exceed the following maximum lengths shall not be used:

<i>Ladder Type</i>	<i>Maximum Length (Feet)</i>
Step ladder	20
Two-section extension ladder (wood)	60
Two-section extension ladder (metal)	48
Three-section extension ladder (metal)	60
Two-section extension ladder (reinforced plastic)	72
Trestle ladder	20
Extension trestle ladder base section	20
Extension trestle ladder extension section	20
Painter's step ladder	12
Mason's ladder	40
Cleat ladder	30
Trolley ladder or side-rolling ladder	20
Single ladder	30

- e. Two section extension ladders shall not be used when the overlap between the sections is less than the following minimum overlap:

<i>Ladder Size (Feet)</i>	<i>Minimum Overlap (Inches)</i>
Up to and including 32	36
Over 32, up to and including 36	46
Over 36, up to and including 48	58
Over 48, up to and including 60	70

- f. Wood ladders shall not be painted with other than a transparent material
11. Ladders shall be set up as follows:
- a. Non-self-supporting ladders such as single ladders and extension ladders shall, where possible, be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is one-quarter of the working length of the ladder (the length along the ladder between the foot and the top support).
  - b. The ladder shall be so placed as to prevent slipping, or it shall be tied, blocked, held, or otherwise secured to prevent slipping.
  - c. Ladders shall not be used in a horizontal position as platforms, runways, or scaffolds unless designed for such use.
  - d. When portable ladders are used for access to an upper landing surface, the side rails shall extend not less than 36 inches above the upper landing surface to which the ladder is used to gain access; or when such an extension is not possible, then the ladder shall be secured at its top to a rigid support that will not deflect, and a grasping device, such as a grab-rail, shall be provided to assist employees in mounting and dismounting the ladder.
    - i. In no case shall the extension be such that ladder deflection under a load would, by itself, cause the ladder to slip off its support.
    - ii. A grasping device such as a grab-rail is not required where the employee is protected by personal fall protection system in accordance with the Fall Protection SWP.
    - iii. This does not apply to emergency rescue and emergency rescue training operations where it is not practical to extend a portable ladder 36 inches or more above the landing surface.
12. The top of non-self-supporting ladders such as single and extension ladders shall be placed with the two rails supported equally, unless a single support attachment is provided and used.
- a. The top rest for portable rung and cleat ladders shall be reasonably rigid and shall have ample strength to support the applied load.
13. Except when portable ladders are used to gain access to fixed ladders (such as those on utility towers, billboards, and other structures where the bottom of the fixed ladder is elevated to limit access), when two or more separate ladders are used to reach an elevated work area, the ladders shall be offset with a platform or landing between the ladders.
14. Ladders shall not be tied or fastened together to provide longer sections unless the ladders are designed for such use and equipped with the necessary hardware fittings.

15. Portable rung ladders with reinforced rails shall be used only with the metal reinforcement on the under side.
16. Non-conductive ladders shall be used in locations where the ladder or user may contact unprotected energized electrical conductors or equipment. Conductive ladders shall be legibly marked with signs reading "CAUTION - Do Not Use Around Electrical Equipment," or equivalent wording.
17. Extension ladders shall always be erected so that the top section (fly section) is above and resting on the bottom section (base section) with the rung locks engaged
18. When climbing a ladder:
  - a. The employee shall climb or work with the body near the middle of the step or rung and shall not overreach from this position.
    - i. When necessary to avoid overreaching, the employee shall descend and reposition the ladder.
    - ii. When it is not practical to work with the body near the middle of the step or rung, the ladder shall be secured to the top support, and the employee shall be protected by a personal fall protection system in accordance with the Fall Protection SWP.
  - b. Employees shall be prohibited from carrying equipment or materials which prevent the safe use of ladders.
  - c. When ascending or descending a ladder, the user shall face the ladder and maintain contact with the ladder at three-points at all times. Contact with the ladder at three points means two feet and one hand, or two hands and one foot which is safely supporting the user's weight.
  - d. An employee shall not be permitted to stand and work on the top 3 rungs of a single or extension ladder unless there are members of the structure that provide a firm handhold or the employee is protected by a personal fall protection system in accordance with the Fall Protection SWP.
  - e. Employees shall not sit, kneel, step or stand on the pail shelf, topcap or the step below the topcap of a step ladder.
    - i. Employees may stand on the step below the topcap provided it is located 18 inches under the topcap.
  - f. Cross-bracing on the rear section of step ladders shall not be used for climbing unless the ladders are designed and provided with steps for climbing on both front and rear sections.
  - g. Ladders shall not be moved, shifted, or extended while occupied, unless the ladder is designed and recommended for this purpose by the manufacturer.
19. An orchard ladder is designed for orchard and landscaping maintenance use only, and must be used as follows:
  - a. Ensure all three points are on ground or turf, and not on hard surface (e.g. concrete, hard packed dirt). If it needs to be used on hard surface, ensure

the ladder is fitted with a “Hard Surface Kit” available from the manufacturer.

- b. For proper placement of ladders in the tree/hedge:
  - i. Take the ladder by the second and fourth rung.
  - ii. Place the bottom firmly on the ground and raise it to vertical.
  - iii. Turn the ladder sideways, and ease into the tree.
  - iv. Place straight ladders so that if a limb breaks, it will fall into the tree.
  - v. Ensure that the third leg of the ladder is in good working condition, and is not bent or otherwise damaged. If it is damaged, do not use it and remove that ladder from service.
- c. The ladder should be erected so that:
  - i. The step treads are level from left to right, and front to back, with the third leg in a stable position straight away from the centerline of the ladder.
  - ii. If the ladder is to be used on a sloped landscape, the third leg must be adjustable to maintain the ladder at level.
  - iii. The third leg does not get support from the tree. The third leg can pass through the center of a tree or straddle a limb, but must not be supported by the tree.
- d. Do not:
  - i. Stand higher than three feet from the top of the ladder.
  - ii. Overreach and lose your balance. Move ladder closer to your work if you can not keep your belt buckle area between rails. If you still cannot reach, then you may need to use an aerial lift (see Aerial Lift SWP) or use the Arborists. Speak with your supervisor.
  - iii. Bounce the ladder to move it.
  - iv. Ladders left against a tree should be easily seen by anyone driving a vehicle in your area.
  - v. Ladders left lying on the ground tend to acquire a permanent twist. Keep them hung or upright when storing.

## **B. FIXED LADDERS**

20. Project managers, or other persons responsible for capital or maintenance projects which might include installing or replacing fixed ladders, should consult and comply with CCR Title 8, Sections 3277 and 3278 to determine requirements for the ladders, appurtenances and fastenings.

21. Employees shall:

- a. be prohibited from carrying equipment or materials which prevent the safe use of ladders
- b. be required to face the ladder when ascending and descending
- c. always use both hands when climbing up or down the ladder



- d. be prohibited from using single-rail ladders

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References:

1. Cal OSHA Portable Ladders Safety eTool: <https://www.dir.ca.gov/dosh/etools/08-001/index.htm>