

Lesson: Stairways and Ladders

- Lesson Objectives:**
- Describe the four general OSHA requirements for using stairways and ladders
 - Discuss the safe use of stairways
 - Define the different types of ladders, including portable ladders vs. fixed ladders, straight ladders vs. stepladders, and single ladders vs. extension ladders
 - Discuss the safe use of portable ladders including straight ladders, stepladders, and extension ladders
 - Summarize the proper care and inspection of ladders

- Topics**
- General Information
 - Stairway Safety
 - Ladder Overview
 - Portable Ladder Safety
 - Care, Storage, and Inspection of Ladders

Topic: General Information

The use of differing methods to access a higher or lower level has been around since the beginning of man. Over time, these means and methods have developed into our current stairway and ladder systems.

Stairways and ladders are two of the easiest-to-use tools in the construction industry. However, they are often misused or used in a careless manner and, therefore, cause many injuries. This topic addressed the coverage of OSHA standards on stairways and ladders, the general requirements of using stairways and ladders, and OSHA's training requirements. Having completed this topic, you should be able to:

- List the four general requirements for using stairways and ladders
- Describe OSHA training requirements

Topic summary:

Please take a moment to review these major points before you continue with the next topic.

- OSHA's construction safety and health standards apply to almost all stairways and ladders used in construction.
- A stairway or ladder must be provided at all points of access where there is a break in elevation of 19 inches (48 cm) or more, and no ramp, runway, embankment, or personnel hoist is provided.

- All stairway and ladder fall protection systems required by OSHA standards must be installed, and all duties required by the standards must be performed before employees begin to use stairways, ladders, and their respective fall protection systems.
- Under OSHA provisions, employers must provide a training program to employees on using stairways and ladders. The training must enable each employee to recognize hazards related to stairways and ladders, and to use proper procedures to minimize them. A competent person must conduct this training.
- Before purchasing or putting into use stairway or ladder systems, employers should obtain comprehensive instructions from the supplier as to the system's proper use and application.

Topic: Stairway Safety

Stairways, both permanent parts of the structure and those for temporary use, are a common means of access to other elevations on the construction site.

This topic addressed safe stairway use in detail. Having completed this topic, you should be able to:

- Restate four general requirements of using stairways taught in this topic
- List eight requirements for stair rails and handrails taught in this topic

Topic summary:

Please take a moment to review these key points before you continue with the next topic.

- If a stairway is not going to be a part of the permanent structure on which the construction work is being performed, it must have landings every 12 feet of rise or less. These landings must be at least 30 inches deep and 22 inches wide.
- Stairways must be installed at least 30 degrees and no more than 50 degrees from the horizontal.
- Variations in riser height or stair tread depth must not exceed 1/4 inch in any stairway system, including any foundation structure used as one or more treads of the stairs.
- A platform must be provided wherever there are doors or gates that open directly onto a stairway. The platform must extend at least 20 inches beyond the swing of the door.
- Stairways having four or more risers, or rising more than 30 inches, whichever is less, must have at least one handrail. A stair rail also must be installed along each unprotected side or edge.
- The height of handrails must not be more than 37 inches nor less than 30 inches from the upper surface of the handrail to the surface of the tread.
- Handrails and the top rails of the stair rail systems must be capable of withstanding, without failure, at least 200 pounds of weight applied within 2 inches of the top edge in any downward or outward direction, at any point along the top edge.
- Stair rail systems and handrails must be surfaced to prevent injuries such as punctures or lacerations and to keep clothing from snagging.
- Temporary handrails must have a minimum clearance of 3 inches between the handrail and walls, stair rail system, and other objects.
- In addition to handrails, midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members must be provided between the top rail and stairway steps of the stair rail system.

Topic: Ladder Overview

Ladders come in all shapes, sizes, and material types. They are useful in many different industries for a variety of applications. Unfortunately, they have also become one of the major causes of fall-related fatalities. No matter what type of ladder you use or what you use it for, it pays to take some extra

precautions. Any fall can be serious, and a fall from the height of even a low ladder can mean a painful and incapacitating injury.

This topic reviewed the uses of ladders on construction sites, addresses the hazards associated with using ladders, and introduces the types and classifications of ladders.

Having completed this topic, you should be able to:

- Describe the common situations where ladders are used on a construction site
- List the hazards associated with using ladders
- Differentiate Type 1A, I, II, and III ladders
- Describe the common ladder classifications

Topic summary:

Please take a moment to review these key points before you continue with the next topic:

- Some of the common hazards involving ladders are instability, electrical shock, and falls.
- A ladder's duty rating tells you its maximum weight capacity.
 - **Type IA** ladders have a duty rating of 300 pounds.
 - **Type I** ladders have a duty rating of 250 pounds.
 - **Type II** ladders have a duty rating of 225 pounds.
 - **Type III** ladders have a duty rating of 200 pounds.
- Type IA and Type I ladders are the only acceptable ladders on a construction job site.

Topic: Portable Ladder Safety

Portable ladders are common and convenient on a construction site. Both straight ladders and stepladders are used extensively. This topic reviewed the safe use of both straight ladders and stepladders.

Having completed this topic, you should be able to:

- State the five safety rules that apply to both stepladders and straight ladders
- Describe the special rules that apply to stepladders
- Describe the special rules that apply to straight ladders
- Explain the proper angles when setting up straight ladders
- List at least five don'ts of ladder use

Topic summary:

Please take a moment to review these key points before you continue with the next topic:

- There are five general rules for ladder safety:
 - Rule 1: Select the right ladder for the job.
 - Rule 2: Inspect the ladder before you use it.
 - Rule 3: Set up the ladder with care.
 - Rule 4: Climb and descend ladders cautiously.
 - Rule 5: Use common sense when working on a ladder.
- Additional special safety rules for stepladders and single or extension ladders exist.
- The technically proper angle for a non-self-supporting ladder is about 75 degrees above horizontal. This means that the ladder base should be about 1 foot away from the vertical support for every 4 feet of ladder height between the foot and the top support.

Topic: Care, Storage, and Inspection of Ladders

This topic reviewed the proper care, storage, and inspection of ladders.

Having completed this topic, you should be able to:

- Describe the proper care for ladders
- Describe the proper storage of ladders
- Describe the proper inspection of ladders
- Discuss what to do with structurally defective ladders

Topic summary:

Please take a moment to review these key points before you continue with the next topic:

- A comprehensive and coordinated housekeeping program on job sites, including around ladders, will eliminate slip, trip, and fall hazards significantly.
- Be sure that ladders are properly supported and secured when in transit. Vibration and bumping against other objects can damage them.
- Ladders should be stored in well-ventilated areas and in a manner that will prevent sagging and warping.
- A ladder must be inspected regularly for visible defects by a competent person. You should check your ladder for damage before each use.
- If a ladder is damaged, label it, **do not use it**, and take it away until it is fixed.
- Portable ladders with structural defects must immediately be marked defective, or tagged with "Do Not Use" or similar language and withdrawn from service until repaired.
- Fixed ladders with structural defects must be withdrawn from service until repaired.