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**Construction Safety and Health
Outreach Program**

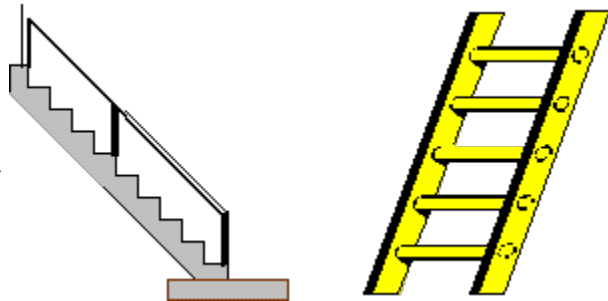
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Stairways and Ladders

INTRODUCTION

Stairways and ladders are a major source of injuries and fatalities among construction workers.

OSHA estimates that there are 24,882 injuries and as many as 36 fatalities per year due to falls from stairways and ladders used in construction. Nearly half of these injuries are serious enough to require time off the job--11,570 lost workday injuries and 13,312 non-lost workday injuries occur annually due to falls from stairways and ladders used in construction. These data demonstrate that work on and around ladders and stairways is hazardous. More importantly, they show that compliance with OSHA's requirements for the safe use of ladders and stairways could have prevented many of these injuries.



This discussion serves as a quick and easy reference for use on job sites. The requirements of OSHA safety regulations for the safe use of ladders and stairs (Subpart X, Title 29 Code of Federal Regulations, Part 1926.1050 through 1926.1060) are explained in this discussion.

SCOPE AND APPLICATION

The OSHA rules apply to all stairways and ladders used in construction, alteration, repair (including painting and decorating), and demolition of work sites covered by OSHA's construction safety and health standards. They also specify when stairways and ladders must be provided. They do not apply to ladders that are specifically manufactured for scaffold access and egress, but do apply to job-made and manufactured portable ladders intended for general purpose use and which are then used for scaffold access and egress.

GENERAL REQUIREMENTS

- A stairway or ladder must be provided at all worker 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.
- When there is only one point of access between levels, it must be kept clear to permit free passage by workers. If free passage becomes restricted, a second point of access must be provided and used.
- When there are more than two points of access between levels, at least one point of access must be kept clear.
- All stairway and ladder fall protection systems required by these rules must be installed and all duties required by the stairway and ladder rules must be performed before employees begin work that requires them to use stairways or ladders and their respective fall protection systems.

STAIRWAYS

The following general requirements apply to all stairways used during the process of construction, as indicated:

- Stairways that will not be a permanent part of the structure on which construction work is performed must have landings at least 30 inches deep and 22 inches wide (76 x 56 cm) at every 12 feet (3.7 m) or less of vertical rise.
- 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.
- Where doors or gates open directly onto a stairway, a platform must be provided that is at least 20 inches (51 cm) in width beyond the swing of the door.
- Metal pan landings and metal pan treads must be secured in place before filling.
- All stairway parts must be free of dangerous projections such as protruding nails.
- Slippery conditions on stairways must be corrected.
- Spiral stairways that will not be a permanent part of the structure may not be used by workers.

The following requirements apply to stairs in temporary service during construction:

- Except during construction of the actual stairway, stairways with metal pan landings and treads must not be used where the treads and/or landings have not been filled in with concrete or other material, unless the pans of the stairs and/or landings are temporarily filled in with wood or other material. All treads and landings must be replaced when worn below the top edge of the pan.
- Except during construction of the actual stairway, skeleton metal frame structures and steps must not be used (where treads and/or landings are to be installed at a later date) unless the stairs are fitted with secured temporary treads and landings.
- Temporary treads must be made of wood or other solid material and installed the full width and depth of the stair.

STAIRRAILS AND HANDRAILS

The following general requirements apply to all stairrails and handrails:

- Stairways having four or more risers, or rising more than 30 inches (76 cm) in height, whichever is less, must have at least one handrail. A stairrail also must be installed along each unprotected side or edge. When the top edge of a stairrail system also serves as a handrail, the height of the top edge must not be more than 37 inches (94 cm) nor less than 36 inches (91.5 cm) from the upper surface of the stairrail to the surface of the tread.
- Winding or spiral stairways must be equipped with a handrail to prevent using areas where the tread width is less than 6 inches (15 cm).
- Stairrails installed after March 15, 1991, must not be less than 36 inches (91.5 cm) in height.
- Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members must be provided between the top rail and stairway steps of the stairrail system.

- Midrails, when used, must be located midway between the top of the stairrail system and the stairway steps.
- Screens or mesh, when used, must extend from the top rail to the stairway step, and along the opening between top rail supports.
- Intermediate vertical members, such as balusters, when used, must not be more than 19 inches (48 cm) apart.
- Other intermediate structural members, when used, must be installed so that there are no openings of more than 19 inches (48 cm) wide.
- Handrails and the top rails of the stairrail systems must be capable of withstanding, without failure, at least 200 pounds (890 n) of weight applied within 2 inches (5 cm) of the top edge in any downward or outward direction, at any point along the top edge.
- The height of handrails must not be more than 37 inches (94 cm) nor less than 30 inches (76 cm) from the upper surface of the handrail to the surface of the tread.
- The height of the top edge of a stairrail system used as a handrail must not be more than 37 inches (94 cm) nor less than 36 inches (91.5 cm)⁽¹⁾ from the upper surface of the stairrail system to the surface of the tread.
- Stairrail systems and handrails must be surfaced to prevent injuries such as punctures or lacerations and to keep clothing from snagging.
- Handrails must provide an adequate handhold for employees to grasp to prevent falls.
- The ends of stairrail systems and handrails must be constructed to prevent dangerous projections such as rails protruding beyond the end posts of the system.
- Temporary handrails must have a minimum clearance of 3 inches (8 cm) between the handrail and walls, stairrails systems, and other objects.
- Unprotected sides and edges of stairway landings must be provided with standard 42-inch (1.1 m) guardrail systems.