

Stairways & Ladders

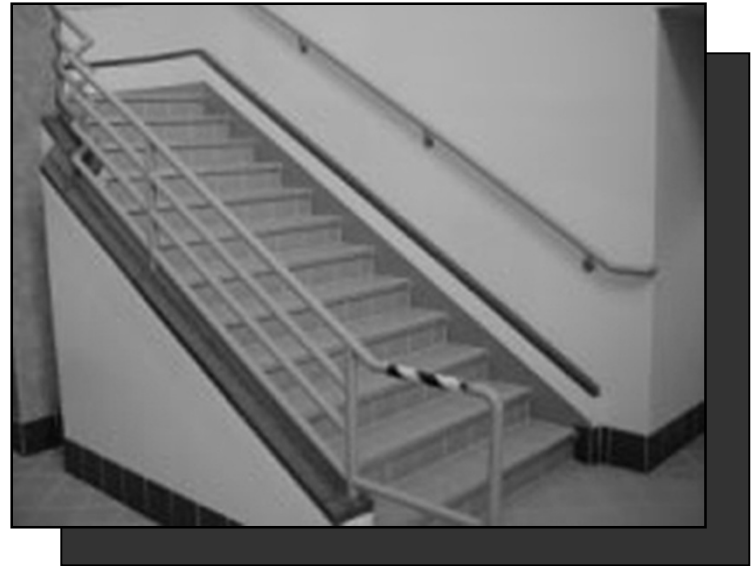
Introduction to Stairways and Ladders



- One of the biggest safety concerns related to stairways and ladders is fall prevention.
- Falls in the workplace are often caused by the hazards resulting from poor housekeeping or elevated surfaces, such as the stairways and ladders

Elevated Surfaces

- Fixed Industrial Stairs
 - Stairs must be free from hazards that could cause a fall
 - Handrails must be sturdy and in the right place
 - Tread width, rise, platform, and overhead clearance must meet OSHA stair construction guidelines.



Elevated Surfaces



Portable Ladders

- Movable ladder parts must operate freely, yet with stability
- Ropes cannot be frayed or badly worn
- Rungs must be free from grease, oil, or other slippery materials
- Ladders that present a potential hazard should be discarded

Elevated Surfaces

Fixed Ladders

- Fixed ladders must have specific load requirements
- Rungs and side rails must be positioned appropriately
- Only specific materials may be used when constructing fixed ladders
- Some fixed ladders may require additional fall protection, such as cages, platforms, or safety harnesses



Ladder Types

- There are five types of portable ladders.
 - Extension Ladders: Consists of two or more sections that travel in guides or brackets, allowing adjustable lengths. The sections must be assembled so that the sliding upper section is on top of the lower section. Each section must overlap its adjacent section by a minimum length, which is based on the overall length of the ladder.
 - Step Ladder: Has flat steps and a hinged back. It is self-supporting and non-adjustable.
 - Straight Ladder: Is non self-supporting, has one section, and has a fixed length, which is determined by the length of the side rails.

Ladder Types

- Portable Ladders cont'd
 - Two-Way Ladder: Similar to an industrial step ladder, however, each side of the two-way ladder has steps.
 - Platform Ladder: A special-purpose ladder that has a large, stable platform from which you can work at the highest standing level.

Ladder Types

- A fixed ladder is any ladder that is permanently attached to a structure, building, or piece of equipment.
 - Any fixed ladder with a climbing distance of 20 feet or more must be equipped with a cage to help ensure the safety of the climber
 - When a climbing distance is 30 feet or more, landing platforms must be in place every 30 feet. Platforms will be offset from the adjacent section of ladder to help break the distance of a free fall.
 - Fixed ladders will be constructed with a pitch of 90 degrees to 75 degrees, measure from the backside of the ladder.
 - Never use a fixed ladder with a pitch greater than 90 degrees from the horizon.

Ladder Safety

The four main points of ladder maintenance.

- Always check to make sure your ladder isn't missing any rungs—if it is, you could potentially injure yourself by falling.
- Always make sure that your ladder is clean and ready to be used before you climb it, or else you might slip and fall.
- Always check to make sure none of the rungs on your ladder are cracked or otherwise weakened. If they are weak, they could break while you are standing on them.
- Always check to make sure the treading on the steps of your ladder is intact. Otherwise, you could slip and fall.

Ladder Safety

- Step Ladders:
 - The hinge is in good working condition
 - The ladder opens easily and smoothly
 - The hinge has a working lock mechanism to ensure the ladder does not collapse on itself while in use
- Extension Ladders:
 - All moveable and extendable parts are in good working condition
 - Moveable and extendable parts are loose enough to easily slide
 - The locking mechanism is working to ensure that the ladder stays in position while in use

Ladder Safety

To protect yourself and others when using ladders in the workplace:

- Only use a ladder for its intended purpose
- Never exceed the maximum load rating of a ladder
- Do not carry items up the ladder that may affect your balance and cause you to fall
- Keep at least one hand on the ladder at all times while climbing
- Always face the ladder when climbing up or down
- Never use the top of a stepladder as a step
- Do not use a ladder on unstable or uneven ground
- Never use a ladder that is obviously damaged or marked as “Do Not Use.”
- When using an extension ladder to reach an upper level, the length of the ladder must extend 3 feet or more past the walking surface above.

Stairway Types

OSHA has specific regulations to help you stay safe while using them. The main things you need to know are that the stairs must be free from hazards that could cause a fall and that they must have handrails that are sturdy and in the right place.

Stairway Types

There are two types of stairways: fixed industrial stairs and temporary stairs.

- Fixed Stairs: Any area of work where it is necessary to travel between two or more levels on a regular basis must be equipped with fixed industrial stairs to provide a permanent point of access for workers.
- Temporary Stairs: Stairs where permanent treads and/or landings are to be filled in at a later date.
 - Pan Stairs: A type of temporary stairway that serves as a form to be filled in with concrete after the stairs have been set in place.

Stairway Types

In addition to the construction of the stairs themselves, it is also important that stairways be properly guarded by either a stair rail or a handrail.

- Stair Rail - A vertical barrier erected along the unprotected sides and edges of a stairway to prevent employees from falling to lower levels.
- Hand Rail - A rail used to provide employees with a handhold for support.

Stairway Safety

When constructing stairways, the following must be considered:

- Stairways must be installed at a point of access when there is an elevation break of 19 inches or more
- Stairways must be installed at a uniform angle between 30 and 50 degrees
- Stairways must have uniform riser height and tread depth, with less than a ¼ inch variation.
- Stairway landings must be at least 30 inches deep and 22 inches wide at every 12 feet or less of vertical rise
- Unprotected sides of landings must have standard 42-inch guardrail systems
- Where doors or gates open directly onto a stairway, a platform must be provided that extends at least 20 inches beyond the swing of the door.

Stairway Safety

- When inspecting treads you should check for:
 - Improper design
 - Traction
 - Structural strength
 - Level surface
 - Items protruding from the walking surface, such as nails or screws
- When inspecting stair railing and hand rails, check for:
 - Structural integrity
 - Proper placement and number of rails
 - Clearance between other objects
 - Smoothness of railing