



Ladder Safety

Seeing a construction worker use a ladder on a jobsite is just as common as seeing a cup of coffee in someone's hand in an office setting. Ladders are a staple within the construction industry and are essential in most industrial settings. They are found in many households as well, and used for a number of tasks. However, ladders can be very dangerous if not used properly.

According to [CPWR](#), the number of deaths caused by falling from ladders account for 24% of all fatal falls in the construction industry.¹ Many of these fatalities were caused either by using the wrong ladder for the job (including damaged ladders or ladders that cannot hold the weight capacity), improper setup, or poor use practices. Therefore, some of the key factors to consider when working with ladders are proper ladder selection, setup, use, and maintenance.

Ladder Selection

Type

There are various ladder design choices to choose from. The most common options are step ladders and extension ladders. Each of these are designed for certain tasks due to varying abilities and limitations, and using the wrong ladder for the task at hand could result in serious injury.

Height

A common mistake is choosing a ladder that is too short for the job. Workers using step ladders should be able to reach at least four feet above the ladder while standing on the second step from the top. The total length of an extension ladder should be 7-10 feet greater than the vertical distance the worker is intending to reach.

Performance and Load Capacity

Consider the demands and load capacity of the ladder. A ladder with the appropriate performance level and duty rating should be selected. For example, a worker using a ladder on a regular basis while carrying or wearing heavy equipment should choose a ladder with a higher duty rating versus someone using a ladder on a less frequent basis for small tasks.

Composition

When working around electrical power lines or any task where an electricity hazard may be present, a fiberglass ladder should be utilized rather than aluminum.

1. Xiuwen Sue Dong, DrPH et al., "Fall Injuries and Prevention in the Construction Industry," *CPWR Quarterly Data Report*. 2017, <https://politics.ucsc.edu/undergraduate/chicago%20style%20guide.pdf> (accessed May 1, 2020).

Ladder Setup

Pre-use Inspection

Inspecting ladders prior to use is essential. If any of the following characteristics are observed, the ladder should be taken out of service and “red tagged” so that no other personnel attempt to use it: missing or loose steps or rungs, damaged or worn out feet/shoes, loose nails/screws/bolts, cracks in either the fiberglass or metal (including the rails, braces and rungs), and corrosion, rust, oxidization and excessive wear. In addition, step ladders should not have loose, bent, or broken hinge spreaders. Extension ladders should not have loose, broken, or missing extension locks.

The 4:1 Rule

When setting up an extension ladder, always use the 4:1 rule. For every four feet of height you have to climb, move the base one foot away from the wall. NIOSH recognized that setting up ladders at the appropriate angles is a significant risk factor for falls, so they designed a Ladder Safety App. The app has an angle of inclination indicator which uses visual and audible signals making it easier for workers and other users to set up an extension ladder at the proper angle of 75.5 degrees. The app can be used to help workers prevent falls and is also a tool for employers to ensure a safe workplace. The app is available through the [NIOSH website](#), the [Apple Store](#), and [Google Play](#).

Other Setup Guidelines

Do not place anything under the foot/shoe of the ladder. Be sure that the foot/shoe of the ladder is on a stable surface, free from debris that could cause the ladder to slip. Set up warning cones/tape to prevent foot or vehicle traffic from entering the work area. When possible, have a co-worker assist as a spotter to help secure the ladder. Extension/straight ladders should extend three feet/rungs above the landing and be tied off whenever possible.

Proper Use

Three Points of Contact Rule

When using a ladder, three points of contact should be maintained at all times (two hands and a foot, or two feet and a hand).

The Belt Buckle Rule

Your body should be centered to the ladder, keeping your belt buckle area between the rungs and rails.

Maintenance

Storing your ladders indoors in a controlled environment when not in use is a best practice. Leaving ladders exposed to the elements when not in use can deteriorate parts of the ladder in an expedited timeline. Ladders should be maintained or replaced as needed in response to the findings during regular pre-use inspections.

For other best practices and ladder safety guidelines, please refer to the ladder manufacturer's instructions. Acadia's Virtual Loss Control team can answer any additional questions and provide supplemental resources and checklists. Please send any questions or resource requests to virtuallc@acadia-ins.com or call 207-874-5701.

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05/01/2020