

# Fall Protection

## Fall Protection - Anchors

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## What is an anchor in a fall protection system?

An anchor is a very important part of any fall protection system. The anchor is usually a device that has been purposefully manufactured and installed and is used to connect to and fully support a fall protection system. When a worker is using a fall protection system, they will connect their lanyard or lifeline to an anchor. Anchorage means a secure connection point for a fall protection system.

Anchors must be of the right type for the work and must be installed correctly. They are part of a fall protection system designed to stop a person from hitting the ground if there is a fall from a height.

In all cases, check the legislation in your [jurisdiction](#) for specific requirements.

More information about fall protection is available in the following OSH Answers documents:

- [Fall Protection- Fall Protection Plan \(General\)](#)
- [Fall Protection – Guardrails](#)
- [Fall Protection – Legislation](#)
- [Fall Protection – Legislation for Anchor Strength](#)
- [Fall Protection - Safety Net Systems](#)
- [Fall Protection – Toe Boards](#)

- [Fall Protection - Travel Restraint System](#)
  - [Body Belts, Harnesses, and Lanyards](#)
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## What are the different types of anchors available for fall protection?

There are different anchors available and they can vary by industry, job, building type, type of installation, and structure. Basic types of anchor systems for fall protection include:

- Permanent anchors - These anchors are designed according to a specific load and design parameters. They are permanently installed for fall protection as an integral part of the building or structure (e.g., roof anchors on high-rise buildings).
- Temporary or moveable anchors –These anchors are designed to be connected to a structure using specific installation instructions (e.g., nail-on anchors used by roofers, wire rope slings, synthetic webbing slings, I beam sliders, I beam clamps, etc.).

In some cases, improvised anchors may be considered. These anchors are not manufactured to any specific standard, but rather may include using a beam or other structures. Preferably, a professional engineer or competent person should verify these anchors as having adequate capacity to serve as anchor points. When evaluating an improvised anchor, do not rely on tugging or pulling on the anchor as a test to see if it will hold. When a person falls, they exert a much larger force. Generally, choose an anchor capable of supporting the weight of a mid-sized car (about 16 kN or 3600 lbs or more).

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## What should you know about the strength requirements of anchors?

The actual strength of an anchor is dependent on the anchor's:

- Design
- Condition
- Orientation relative to the direction of loading
- Connection to the supporting structure, and
- The adequacy of the structure to resist the imposed loading

The load applied to the anchor depends on the fall protection system used, such as fall restraint versus fall arrest systems. For example, in British Columbia, a temporary fall restraint system's anchor must be designed to hold a load in every direction of at least 3.5 kN (800 lbs) or four times the weight of the worker to be connected to the system. For a temporary fall arrest system, the anchor must be designed to hold a load in every direction of at least 22 kN (5 000 lbs) or two times the maximum arrest force. A permanent anchor for a personal fall protection system must have a load capacity in any direction of at least 22 kN (5,000 lbs). (From BC OHS Regulation Part 11: Fall Protection, Section 11.6)

The strength required may also depend on whether an energy-absorbing device is used.

For details that apply to your jurisdiction, please see [Fall Protection – Legislation for Anchor Strength](#).

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## What should be examined when inspecting anchor points?

Visually inspect anchors for damage, corrosion, and suitability before connecting the fall protection equipment.

Permanent anchors should be inspected by a competent person at least once a year or according to the manufacturer's instructions. Keep records of the inspections, including the date of inspection, name, and signature of the person who did the inspection and any modifications or repairs made to the anchor point.

Always have anchors tested after a fall for their stability and strength by a professional engineer competent in fall protection systems or the manufacturer.

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## What are tips to follow when using anchors?

- Identify the location of anchor points and include which anchor points are to be used during the current work in the fall protection plan.
- Make sure that the anchor(s) used are appropriate in terms of strength, stability, and location for the type of work being done.
- Make sure any permanent anchor points used in travel restraint are permanently marked as being for travel restraint only.
- Use the shortest length lanyard that still allows the worker to perform their work safely. The lanyard should be attached to an anchor that is not lower than the worker's shoulder height (unless an anchor at shoulder height is not possible).

- Consider the swing-fall distance and free-fall distance when selecting the location of the anchor. Always try to select the anchor point that is directly above the worker to reduce the distance of the swing when a worker falls. The further a worker is away from this ideal position, the greater the potential for the worker to swing like a pendulum into objects or the building itself during a fall. The CSA Standard Z259.16:21 Design of Active Fall-Protection Systems recommends establishing the anchor point so that the swing-drop distance is limited to 1.2 metres, or less when there are obstacles present.
- Select an anchor so the lifeline attached to it does not travel over a guardrail, parapet wall, or other parts of the structure. This contact with other structures will limit the effectiveness of the lifeline.
- Make sure the anchor loop used for the fall protection system is not used to support or suspend a platform at the same time. Independent anchors are necessary so that the worker does not fall if the platform fails.
- Make sure that workers are trained in fall protection, including the correct use of anchors and be able to assess the strength, stability, and location of the anchor.
- Inspect the anchor before tying off the personal fall arrest or travel restraint system.
- Use an anchorage connector (e.g., carabiners, quick links, snap hooks, and soft loops) appropriate to the work.
- Use temporary anchors when permanent anchor points are not available.
- When using temporary anchors, install, use, and remove them according to the manufacturer's specifications or specifications certified by a professional engineer.
- Always remove the temporary anchor after completing the work as directed by the manufacturer's instructions or a professional engineer.
- When using a vehicle, crane, or structure as an improvised anchor, make sure it is stable and will not topple over in the event of a fall.
- Always have anchors tested after a fall for their stability and strength by a professional engineer competent in fall protection systems or the manufacturer.
- Do not allow a worker to use a damaged anchor until the anchor is repaired, replaced, or re-certified by the manufacturer or a professional engineer.

- Do not tie your fall protection equipment to:
    - Roof hatches
    - Roof vents
    - Metal chimneys
    - TV antennas
    - Small pipe and ducts
    - Stair or balcony railings
    - Permanent access ladders
    - Air-condition units
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