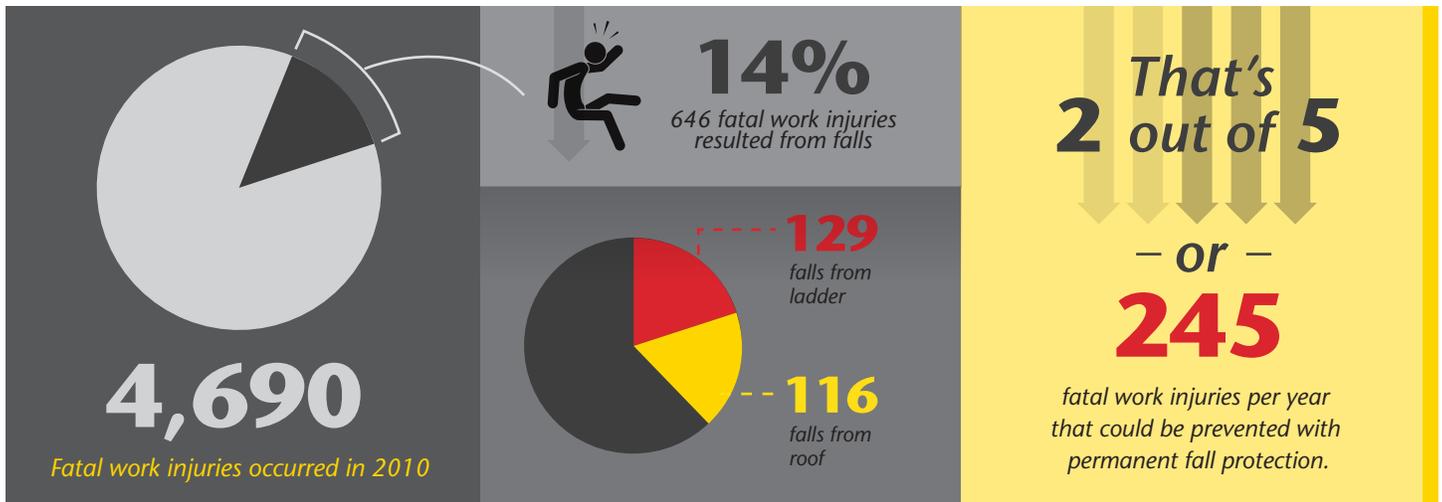




The Importance of **Permanent Fall Protection Systems**



Bureau of Labor Statistics, U.S. Department of Labor

As a building owner or an employer, it's your duty to provide fall protection to individuals whenever there is an exposure. Fall protection systems are an important part of rooftop safety. Implementing countermeasures and installing fall protection systems to protect employees and contractors as they traverse the roof not only provides a safer working environment, but also demonstrates compliance with the Occupational Health & Safety Administration (OSHA) regulations.

OSHA has standards for both General Industry (1910.23) and Construction (1926.500-1926.503) that mandate and direct the requirements and use of fall protection. Failure to comply with OSHA regulations increases the likelihood of both fines and fatalities.

Consider that every time someone steps on your roof – whether it is an employee, contractor, or anyone else – the chance for falls and damage claims against your company increases. With a permanent system in place, you can feel secure that exposed workers and your company, have protection against the potential loss associated with the negative consequences of a fall.

There are many fall hazard exposures associated with rooftop activities, including the roof perimeter, skylights, weak decking, roof hatches, and steep slope roofing.

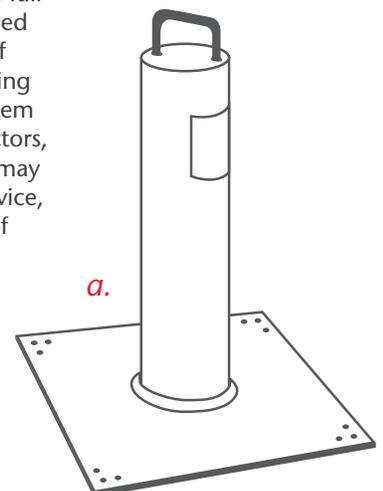
A fall hazard survey can help you identify risks and exposures by evaluating which areas of the roof are accessed most frequently, and the areas and roof elements most likely to pose a risk.

Types of Permanent Fall Protection

Permanent fall protection either minimizes injury by stopping a person who is falling or prevents the fall from happening. There are multiple systems that when installed and used properly can provide a safer working environment for individuals on the roof.

a. Permanent Fall Arrest Anchors

Fall arrest anchors (think steel posts) are secured to a roof's substructure and/or roof deck or counterweighted. Eyelets on top serve as easily accessible personal fall arrest tie-off points. OSHA standards require personal fall arrest system lifelines to be secured to an anchorage point capable of supporting 5,000 pounds. According to OSHA, a personal fall arrest system consists of "an anchorage, connectors, a body belt or body harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these." Whether it is an individual tie-off point, or a component of a horizontal lifeline system, fall arrest anchors are an effective, sound option.





b. Horizontal Lifeline

A horizontal lifeline system is a fall arrest system comprised of roof anchors and a cable lifeline to which individuals wearing body harnesses connect. While this won't always prevent a fall, it will reduce the likelihood of an injury or fatality.

If the determination is made to install fall arrest anchors, a horizontal lifeline is an option. A horizontal lifeline is a stainless steel cable that runs through the eyelets of the permanent fall arrest anchors. A worker can tie-off to the cable and use it as an anchor in a personal fall arrest system. A benefit of the system is that it allows for the connector to trail the worker thus maintaining continuous anchor connection, and decreasing the chance of a pendulum swing fall, which can produce an equal amount of energy as the initial free fall itself.

c. Guardrails or a Roof Walk

Guardrails provide a physical barrier around roof hatches, perimeter edge, and skylights. A guardrail system is a passive form of fall protection which allows workers to perform most tasks without further fall protection equipment and interference. Guardrails can be secured permanently to the roof's substructure, usually at the roof edge, or can be a self-supporting modular system that can be placed at a roof edge, skylight, roof hatch, or other areas where fall prevention is necessary. OSHA requires that the height of guardrails be 42 inches, plus or minus 3 inches, above the walking/working level.

While roof walk solutions are most commonly employed to prevent foot-traffic damage to the roof, when used with safety rails, roof walk can be an effective solution for preventing falls, because:

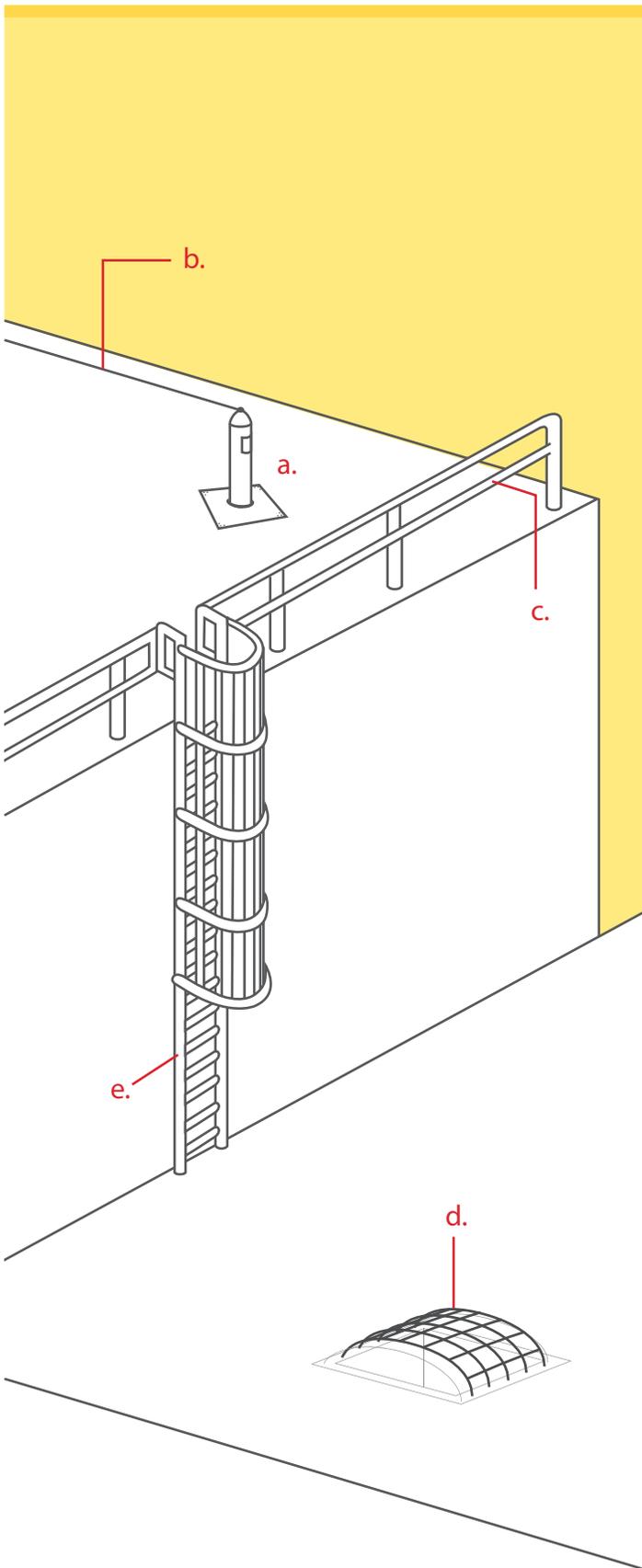
- Similar to guardrails, the roof walk safety rails provide a barrier blocking individuals from falling through hatches or sky walks and off the roof.
- The surface is slip-resistant.
- The roof walk can be designed to only allow access to specified points on the roof.

d. Skylight Screens or Nets

Skylight screens or nets are other passive fall protection products and can prevent individuals from falling through to the level below. According to OSHA 1910.23(a)(4), every skylight floor opening and hole shall be guarded by a standard skylight screen or a fixed standard railing on all exposed sides.

e. Permanent/Fixed Ladder Protection

Providing permanent ladders at worker points of access and ensuring that they meet OSHA regulations (e.g. ladders with safety cages, wells, etc.) can reduce the likelihood of injuries and fatalities. Additionally, guardrails can be erected in conjunction with the fixed ladders to provide protection when individuals first step onto the roof.





Permanent Fall Protection at Your Facility

Clever design of the structure can remove a lot of fall exposures, but where the inclusion of fall protection anchorages is unavoidable, specialist installers should be consulted. Who you hire is important.

A qualified installer will design the system so it is user friendly. If an anchorage system is too complex, the user is unlikely to use it correctly, if at all.

Incorrect design and improper installation can be fatal. Effective design is crucial to the performance of fall protection systems, especially in regards to horizontal lifelines. It considers the following:

- **Access.** This considers how a worker gets to the permanent fall protection system.
- **The type of work being done on the roof.** The activities being performed and their frequency will influence the best option(s) for protection.
- **Work area.** Areas of the roof being trafficked and populated most impact the fall protection system that is chosen, as well as its placement and effectiveness.
- **Number of workers exposed.** The number of individuals in a work area can impact which system to install. It is also a critical consideration for load calculations when a horizontal lifeline system is being employed.

When hiring a contractor to recommend and install permanent fall protection, make sure the company you hire has a qualified person in fall protection and horizontal lifeline design on staff and that this individual, or others employed there, have been trained by the horizontal lifeline manufacturer in both installation and inspection of the system.

Once permanent fall protection is installed at your facility, proper signage is necessary. At each access point to the lifeline, a sign with the following information must be visible:

- Maximum number of users.
- The installer's name.
- The date of site acceptance.
- The date of the next inspection.
- The equipment authorized for use on the lifeline.

On-site personnel should be trained in the use of the system. Ask the installer you hire if they are qualified to perform this responsibility. Users should learn the following during training:

- How to properly put on a body harness, PPE, lanyards, connectors, carabiners, and snap hooks.
- The basics of the installed system(s).
- Descent and rescue.

Individuals that will be using the permanent fall protection system should also be warned about improper use of the equipment (for example, the lifeline should never be used as a suspension system or anchorage point for lifting materials or equipment).

In order for the system to perform as intended and continue to reduce exposure at your facility, annual inspection is also necessary.



Poorly designed or improperly installed permanent fall protection can be fatal. Check the qualifications, experience, and capabilities of companies before you hire someone.