



SEPARATING PEOPLE FROM HAZARDS

The Cost of Doing Nothing

THE TRUE RISK AND LIABILITY OF AN UNPROTECTED ROOFTOP



An Investment in Compliance

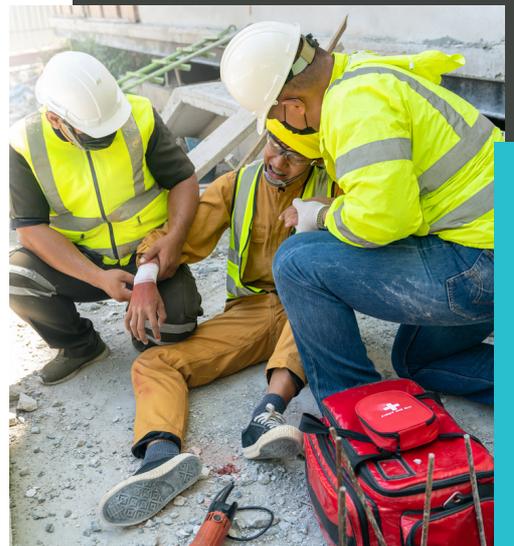
The True Risk and Liability of an Unprotected Rooftop

Falls from height are among the most common of all serious workplace injuries. The Association of Workers' Compensation Boards of Canada (AWCBC) reported 45,468 lost-time claims in 2021 due to falls, with 57 workplace fatalities resulting from falling to a lower level (such as from a rooftop). The direct and indirect costs associated with a fall can quickly add up for the individual and an organization.

The impact of a fall is devastating for the victim and family. At worst, the loss of life. A non-fatal fall to a lower level is harrowing and can result in a serious, possibly debilitating injury. This will affect the quality of the victim's life and the worker's income.

The costs to the company can be financially, operationally, and legally overwhelming:

- Regulatory agency fines
- Disability claims
- Hospitalization expenses
- Insurance premiums
- Repair or replace damaged equipment
- Time lost on the job
- Disruption of workflow
- Hire and train replacement workers
- Drop in employee morale
- Legal fees
- Possible criminal prosecution



According to a study by Parachute for the Government of Canada, preventable injuries cost the Canadian economy \$29.4 billion in 2018, with falls being the leading cause (35%) at \$10.3 billion. To help insure against on-the-job injuries, WorkplaceNL assesses employers \$1.69 per \$100 payroll to cover expected work-related injury and illness costs, return-to-work programs, prevention initiatives, and administration. In addition, the Occupational Health & Safety Act calls for fines of up to \$1.5 million for a corporation and a director or officer of a company for violations and/or imprisonment of up to one year.

Develop a Culture of Safety

Make fall protection an organizational priority. Don't wait for a fall to occur before taking action to update your fall protection plan.

When identifying a fall hazard, analyze the likelihood of severe or fatal injury and how long employees will be exposed to the hazard. You will want to eliminate the chance of a fall and remove the risk of liability by changing the work process or the environment.



Costs Due to Falls

- **\$10.3 Billion to the Canadian Economy**
- **45,468 Lost Time Claims**
- **Up to \$1.5 Million Penalty**
- **\$1.69 per \$100 Payroll Assessment**
- **57 Workplace Fatalities**

AWBBC, OHS, Parachute, WorkplaceNL

How to Protect Workers and Mitigate Risk

The Canadian Centre for Occupational Health & Safety (CCOHS) provides guidance on fall protection codes and the definitions for compliance. The safety industry has responded with increasingly sophisticated fall protection products and systems. Yet, falls from working at height remain a serious occupational safety challenge in commercial, institutional, and industrial (CII) workplaces, especially rooftops.

According to CCOHS, fall protection is usually required when working at 3 meters (10 feet) or higher. The initial step to mitigate risk and reduce liability is to conduct a hazard assessment of the rooftop environment.



- Can the hazard be eliminated? Relocating HVAC systems to ground level or removing skylights that require high maintenance are examples.
- What controls need to be in place to reduce the risk of falls?
- Is fall protection equipment required, available, inspected, and maintained so that it is in good condition?
- Are workers trained to use the equipment, to work at heights, and to recognize and report fall hazards?
- Should the work be delayed until proper safety measures are taken?



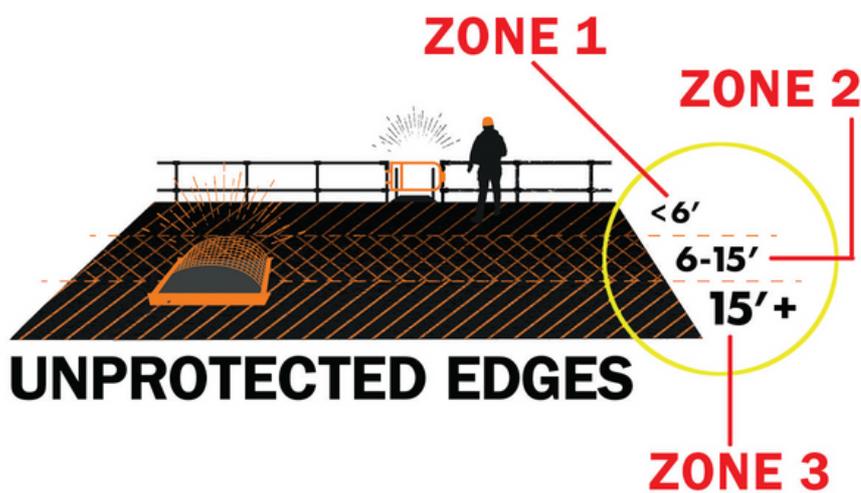
The next step is to develop a comprehensive fall protection plan specific to the site location, work area, and tasks.

- Consult legislation and regulatory standards in your jurisdiction for the requirements when working at heights.
- Assess all possible fall hazards before the work begins on the roof (e.g., maximum heights, roof slope, proximity to power lines, ground cover) to help manage exposure to danger and focus on prevention efforts.
- Determine and procure the type of fall protection systems and equipment needed.
- Provide equipment inspections and worker training.
- Include other requirements (e.g., first aid kit, fall containment safety nets).
- Develop rescue procedures.

Falls are among the most common causes of serious work-related injuries and deaths. Employers must take workplace measures to prevent employees from falling off the roof, overhead platforms, elevated workstations, or into holes in the floor and walls.

How to Play Zone Defense on Your Rooftop

The edge of the roof is the most visible hazard and typically what most people look to protect first. Since proximity to the roof edge is a significant factor in identifying the likelihood of an accident occurring, regulatory agencies and safety professionals delineate three zones for working specific distances from the roof edge.



What is Meant by Infrequent and Temporary?

Infrequent means that the work is performed occasionally, usually quarterly, or no more than once per month. Daily, regular, or routine tasks are not infrequent.

Temporary means that the work is brief or short. Temporary tasks should take less than two hours to complete and not be complicated.

Zone 1:

When work is performed less than 1.8 meters (6 feet) from the roof edge, employees must be protected from falling at the roof edge by a guardrail system, or a travel restraint system or a personal fall arrest system.

Zone 2:

Working between 1.8 and 4.6 meters (6 to 15 feet) from the roof edge, employees must be protected with the same systems as Zone 1; however, a designated area may be implemented when rooftop work is both infrequent and temporary.

Zone 3:

Working 4.6 meters (15 feet) or more from the roof edge has the same criteria as Zone 1 and Zone 2; however, implementation, training, and enforcement of a work rule that prohibits access within 15 feet of the roof edge without using fall protection is permitted.

In some situations, acceptable protection can include demarcation warning lines, designated areas, control zones, and similar systems. Protection can also be provided by limiting the number of workers exposed on the rooftop and setting up safe work methods and procedures.

This applies only if the work is both infrequent and temporary.



The Advantages of Doing Something

1. Develop a Compliant Rooftop Fall Protection Plan

Consult the professionals—within your organization or outside experts—who know the federal, provincial/territorial, and local fall protection regulations, can identify the hazards on your rooftop that need to be addressed, evaluate the systems and equipment that can be installed to protect your workers, and recommend the proper training for working at height.

2. Secure the Roof Perimeter

The Zone Defense provides options for compliant rooftop safety systems depending on the distance from the edge that personnel are to work. A collective system—such as guardrails—is the most obvious solution to protecting the roof's perimeter. This solution “collectively” protects everyone with minimal training to maintain safety compliance. Guardrails provide a barrier to prevent falls so everyone on the roof is protected.



3. Fall Restraint and Fall Arrest

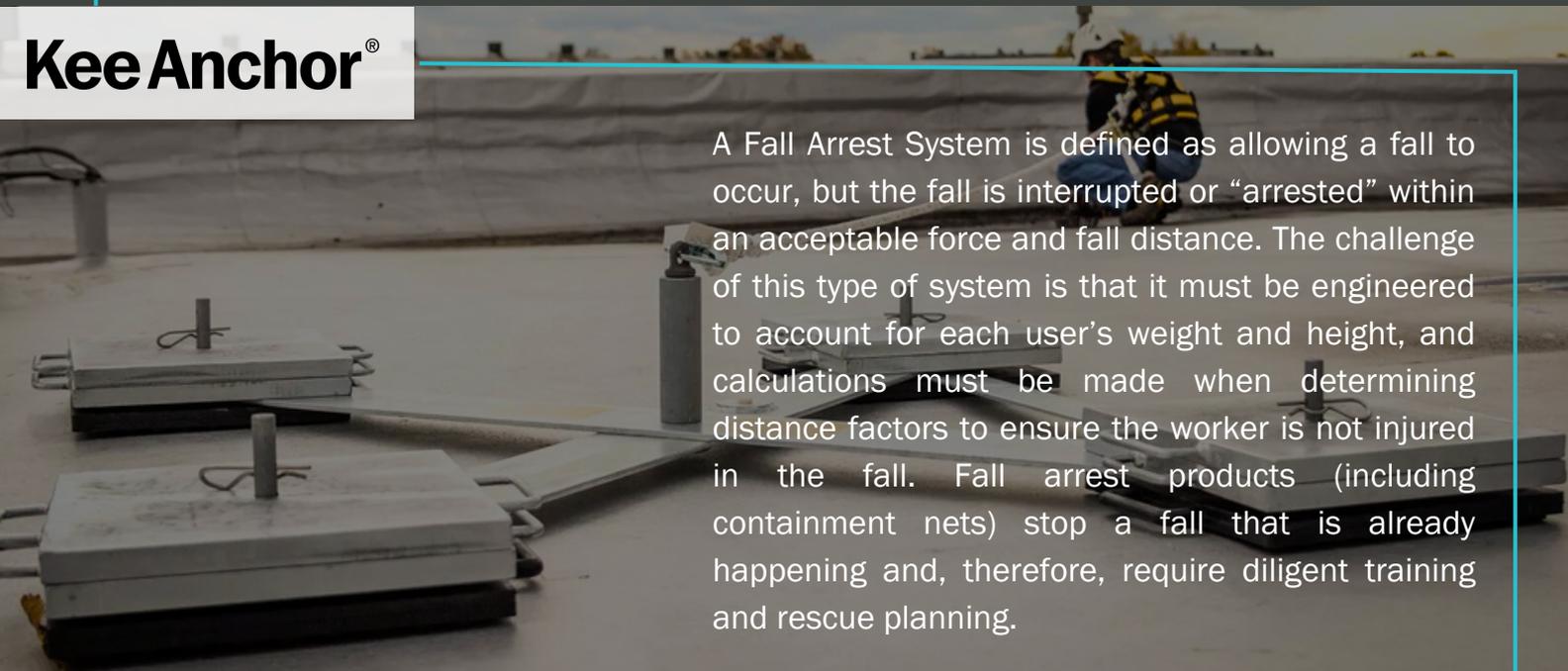
A Fall Restraint System prevents a fall from occurring by using personal fall restraint equipment prohibiting the user from reaching the roof edge. A personal fall restraint system uses three key components: an anchorage system or anchor point, a connector line with a connecting device, and a suitable safety harness. The roof anchor and lifeline will not permit the harnessed user to move more than the safe length of the line. A vertical lifeline protects one user. An engineered horizontal lifeline can protect up to three users.



KeeLine®

KeeAnchor®

A Fall Arrest System is defined as allowing a fall to occur, but the fall is interrupted or “arrested” within an acceptable force and fall distance. The challenge of this type of system is that it must be engineered to account for each user’s weight and height, and calculations must be made when determining distance factors to ensure the worker is not injured in the fall. Fall arrest products (including containment nets) stop a fall that is already happening and, therefore, require diligent training and rescue planning.



When personal fall protection systems are used, particular attention should be given to identifying secure attachment points and ensuring that everyone knows how to properly don, doff, and inspect the equipment. High-performance anchorages are another crucial consideration when choosing a fall restraint or arrest system. The best harness with the best lanyard or lifeline cannot stop a fall if insufficient anchor points are selected. An anchorage must support 22.2 kilonewtons (5,000 pounds) for one individual's tie-off point.



KeePost®

4. The Dark Side of Skylights

Statistically, more people fall through skylights than over the open edge of a roof, and CCOHS considers skylights to be a hole in the roof. As a worker traverses the middle of the rooftop, they have a false sense of security. Operating far from the roof edge, carrying equipment, or focused on the job, it is easy to misstep and fall through an unprotected skylight opening. Rooftop openings are the most often overlooked hazard, so they are extremely critical to protect. Skylight screens covering the skylight or guardrails surrounding the skylight are effective protective measures.



5. Safe Access Comes First and Last

Special attention should be given to access points and understanding how workers enter and exit the roof to perform tasks. Access points are the most frequented hazard on any rooftop. A safety assessment would protect ladderways and hatches with compliant guardrails and self-closing gates.



6. Clear the Rooftop Obstacle Course

As building services become increasingly complex, rooftops are filled with more equipment and corresponding obstacles, such as piping, ductwork, and cables. Crossover steps and platforms enable workers to navigate over these trip hazards.

Raised anti-slip walkways—which can also be equipped with guardrails—set forth a predetermined, safe path along the roof. Demarcation warning lines can be used to cordon off restricted areas and designate proper routes to follow.



7. Elevated Platforms at Elevated Heights

As if accessing a rooftop was not high enough, large HVAC systems, cooling towers, storage tanks, and other apparatus can require additional scaling to service the equipment. For infrequent and temporary tasks, a ladder might be sufficient. For regular maintenance and service, a work platform with compliant guardrails, anti-slip steps, and an anti-slip platform floor provides a safer and more productive solution.

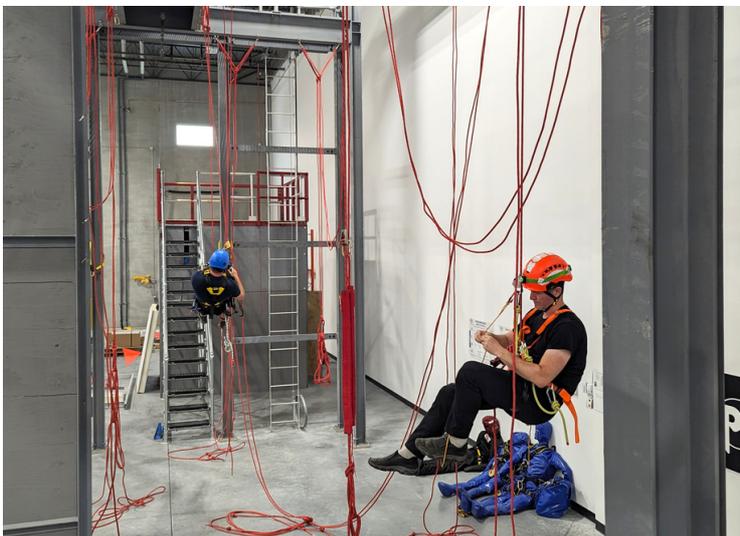
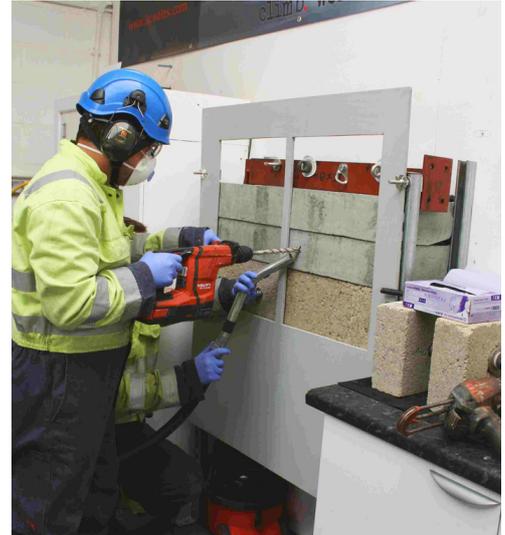


Training is Key

Even a well-planned fall protection program will fail if personnel on the job do not use the equipment provided—or do not use it correctly. Training all workers on the proper use of safety products and systems is imperative to a successful fall protection strategy.

An internal safety program or an outside agency can conduct training. Often, the fall protection expert is the company that manufactures and installs the rooftop system, and they will provide training on how to use their products with safety and proficiency. Specialized training classes to consider include:

- » IRATA Rope Access
- » SPRAT
- » Working at Height Course
- » PFPE Competent Inspector Training
- » Harness & Lanyard Course
- » Anchor Bolt Installation & Testing
- » Horizontal Lifeline Installation & Testing
- » Rescue After Fall Training



Protect All Your Assets

According to the Association of Workers' Compensation Boards of Canada, National Work Injury/Disease Statistics Program (NWISP), slips, trips, and falls caused nearly 17% of all job-related injuries in 2021. Rooftop falls are among the most common causes of serious workplace injury and death. It is essential to assess your rooftop with a leading expert in fall protection to safeguard your most valuable company assets: your employees.

The regulatory fines associated with non-compliance are costly; entire rooftops could be shut down while violations are addressed and hazards are remedied. This lost time affects important MRO (maintenance, repair, and operations), which is essential to any company where manufacturing or engineering systems are involved. Claims, premiums, and legal fees also reflect a company's reputation and, ultimately, impact on its bottom line.

Separating people from hazards with compliant fall protection solutions will create a culture of safety and trust for your employees and preserve your company from risk and liability in the future.



Safety At The Highest Level

Kee Safety is a leading manufacturer of fall prevention and safety equipment with a global focus on separating people from hazards.

Since its founding in 1934, Kee Safety has a long history of building solid partnerships, providing top-notch customer service, and pioneering innovative product development. You already know Kee Safety as your trustworthy material supplier; therefore, we ask that you also think of us as your business partner, totally dedicated to the success of your company.

Contact one of our qualified Fall Protection Experts and schedule a rooftop safety assessment today!



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