Kee Safety

SEPARATING PEOPLE FROM HAZARDS

SAFETY BY DESIGN: COMPLYING WITH OSHA'S FALL PROTECTION STANDARDS

ELEVATING WORKPLACE SAFETY

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General Manager: Kee Safety, Inc.

DAN HUNTINGTON

FALL PROTECTION INDUSTRY EXPERT

In Fall Protection Industry for Over a Decade
- Spends the majority of time on roofs assessing hazards

Training:
- OSHA Fall Protection Competent Person
- OSHA 30 Hour
- Level III Award in Training and Education
- IOSH Certifications:
    - Work at Height Risk Assessment
    - Work at Height Rescue

Publications:
- Written articles for OH&S Magazine
- Professional Development Webinar for EHS Today
- Speaker at 2019 International Society for Fall Protection Symposium
- Fall Protection Expert Witness
- 2023 OH&S SafetyPod Guest

Upcoming Presenter:
- Western Roofing Expo (Las Vegas)

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SEPARATING PEOPLE FROM HAZARDS

OVERVIEW

What are the 3 most common rooftop Hazards?

- Applicable OSHA codes

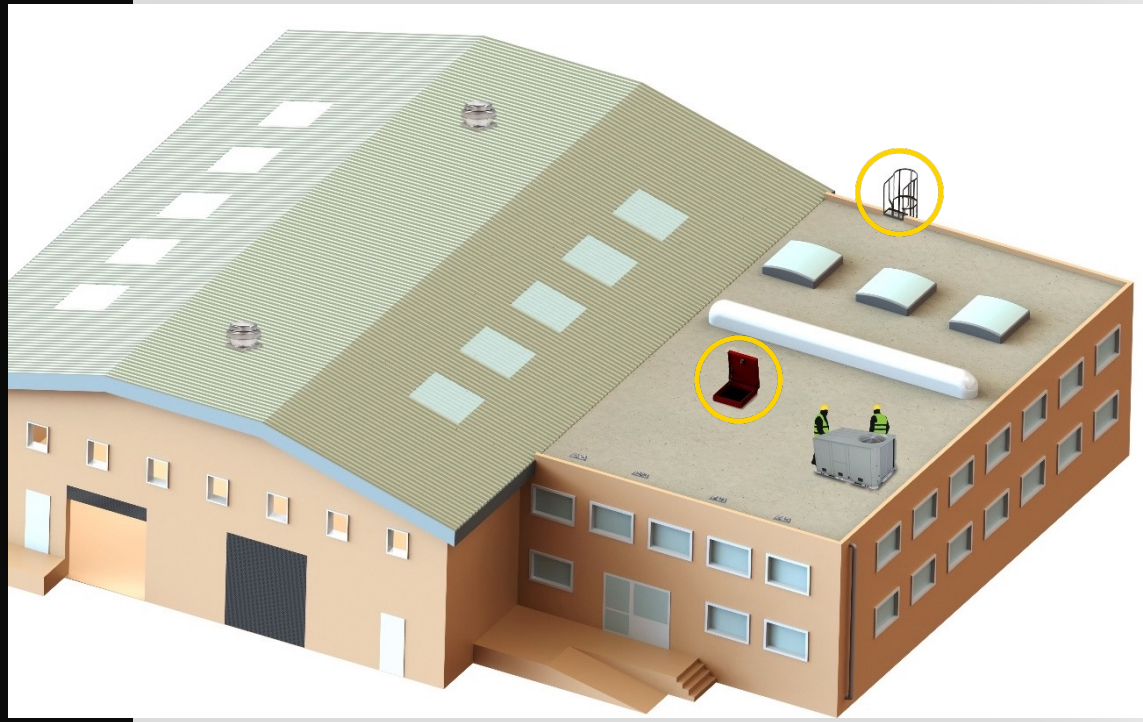
How should I protect these hazards?

- Fall Protection Solutions

HAZARD OVERVIEW: ACCESS POINTS

OSHA Code **Addressing Hazard:**
1910.28(b)(3)(iv)

Each employee is protected from falling into a ladderway floor hole or ladderway platform hole by a guardrail system and toeboards erected on all exposed sides, except at the entrance to the hole, where a ***self-closing gate or an offset must be used. ****



1910.28(b)(13) – Risk Assessment Matrix

SEPARATING PEOPLE FROM **HAZARDS**

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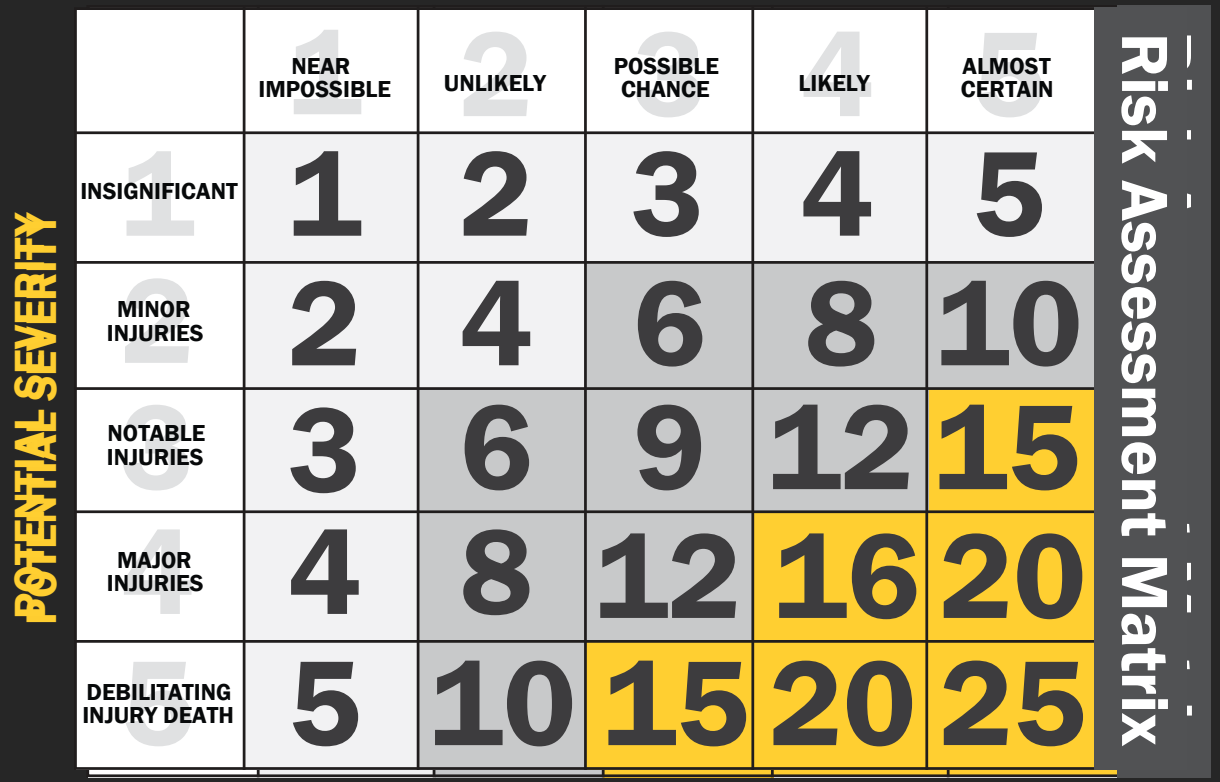

	1 NEAR IMPOSSIBLE	2 UNLIKELY	3 POSSIBLE CHANCE	4 LIKELY	5 ALMOST CERTAIN
1 INSIGNIFICANT	1	2	3	4	5
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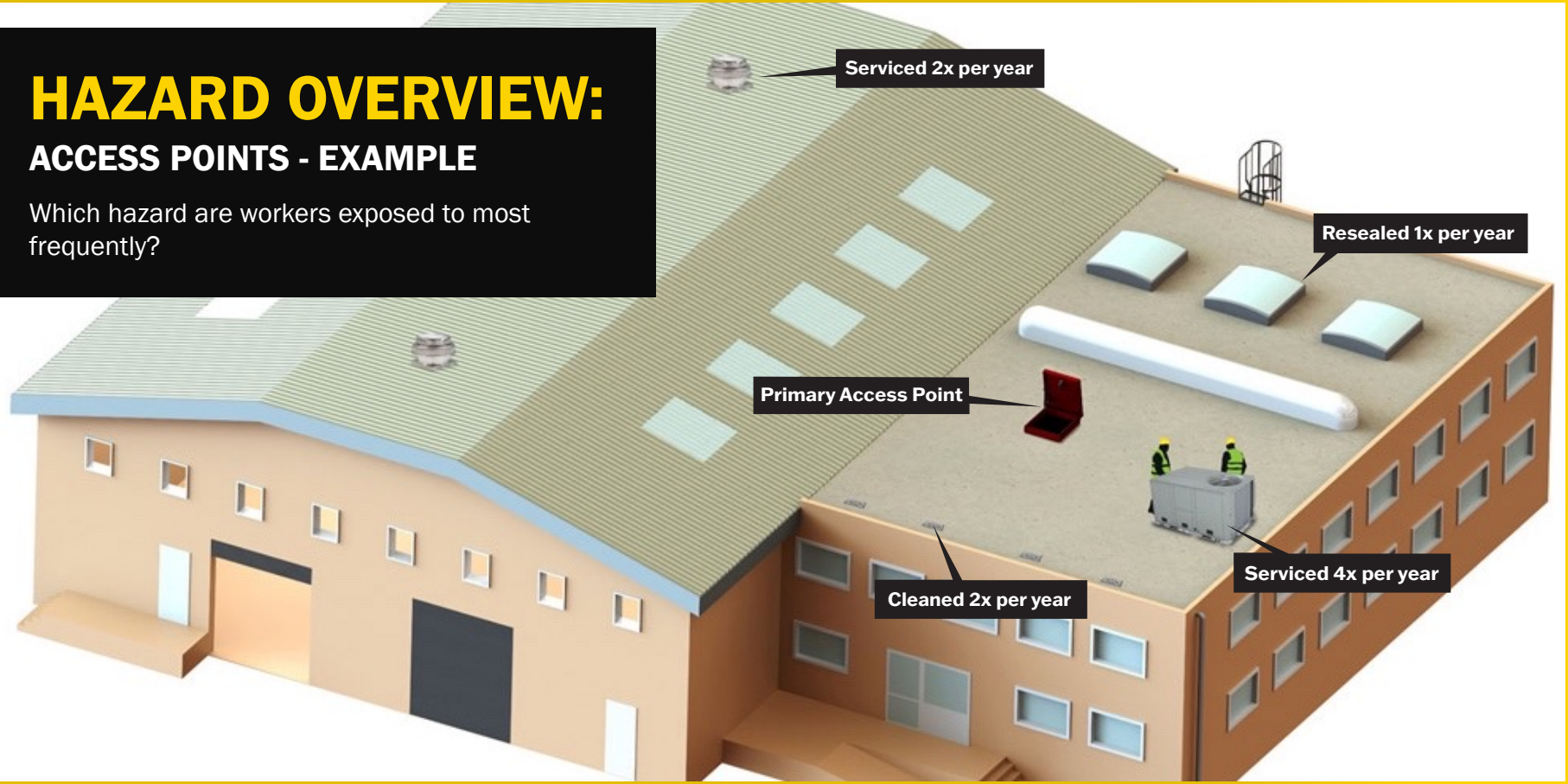
3 NOTABLE INJURIES	3	6	9	12	15
4 MAJOR INJURIES	4	8	12	16	20
5 DEBILITATING INJURY DEATH	5	10	15	20	25

HAZARD OVERVIEW:

ACCESS POINTS - EXAMPLE

Which hazard are workers exposed to most frequently?



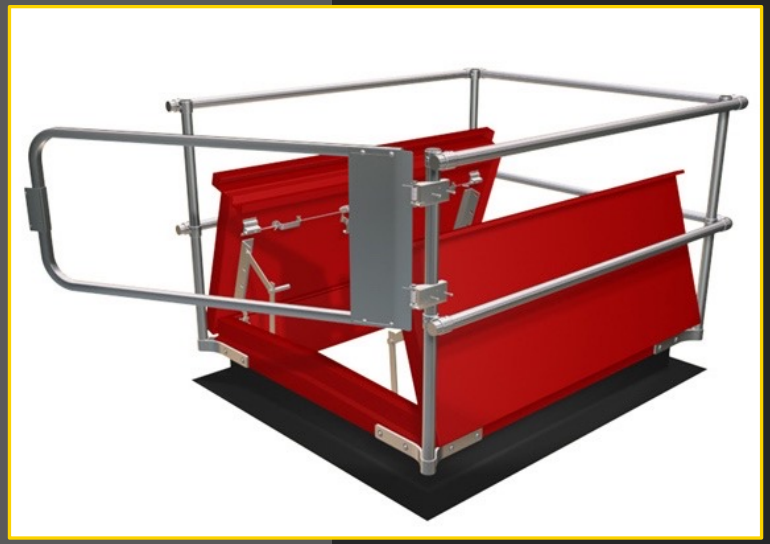
ACCESS POINTS: FAQ

Can I use chains instead of a self-closing gate?

Using a chain as ladder protection is not recommended or compliant with OSHA regulations. Chains cannot close themselves, and relying on someone else to reattach the chain poses safety hazards. Reattaching the chain while descending the ladder puts the worker in a precarious position. A self-closing gate always provides reliable protection, eliminating user error. OSHA mandates the use of guardrails, toe-boards, self-closing gates, or offsets at ladderway entrances to prevent falls. Replace chains with compliant gates on ladders and ensure OSHA-compliant equipment. Seek professional assistance for assessments and compliance.

When do I need a vertical climbing device on my ladder?

Fixed ladder systems are prevalent in various industries such as cell phone towers, oil platforms, storage silos, water towers, and wind turbines. However, workers climbing these permanently fixed ladders often have a false sense of security. OSHA regulations require the use of a vertical lifeline or a ladder equipped with a cage system for fixed ladders over 24 feet. It is recommended to use vertical lifelines instead of ladder cages as cages do not prevent vertical falls. If a worker slips on a ladder rung with a cage system, they can fall to the ground or collide with the cage, making rescue challenging.



HAZARD SOLUTION:
HATCH GUARDRAILS

- Fully OHSA compliant
- Specially designed for safe egress and ingress through roof hatches
- Provides protection to the roof opening when the hatch is open
- Suitable for all roof hatches
- Easily integrates with existing openings and ladderways
- Hatch Guardrails is a safe and reliable solution for rooftop access and fall protection.

HAZARD SOLUTION:

GUARDRAIL AND SELF CLOSING SAFETY GATE FOR LADDER

- Uses ladder Clamps to mounts to all ladder types
- Offset mounted gate for easy roof access
- Will not penetrate roof, void warranties, or cause roof leaks
- Simple to install
- Cost effective, simple, OSHA compliant Solution

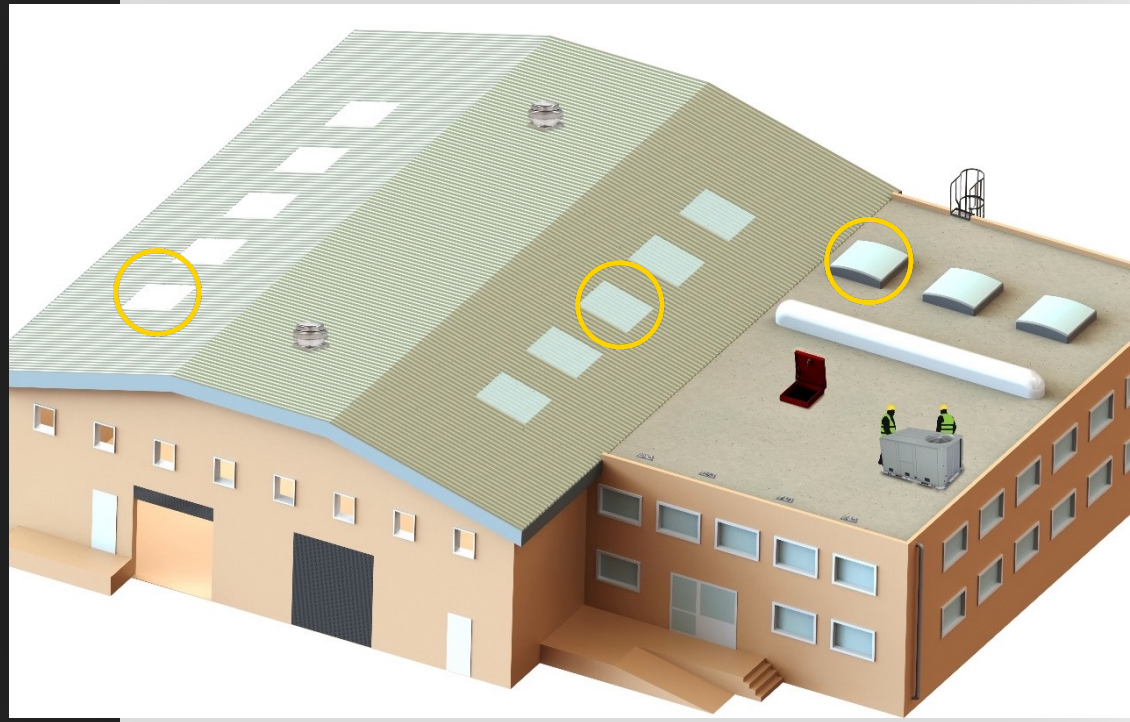
HAZARD OVERVIEW:

Unprotected Skylights

OSHA Code Addressing Hazard: 1910.28(b)(3)(i)

Each employee is protected from falling through any hole (including skylights) that is 4 feet (1.2 m) or more above a lower level by one or more of the following:

- *Covers*
- *Guardrail Systems*
- *Travel Restraint Systems; or*
- *Personal Fall Arrest System*



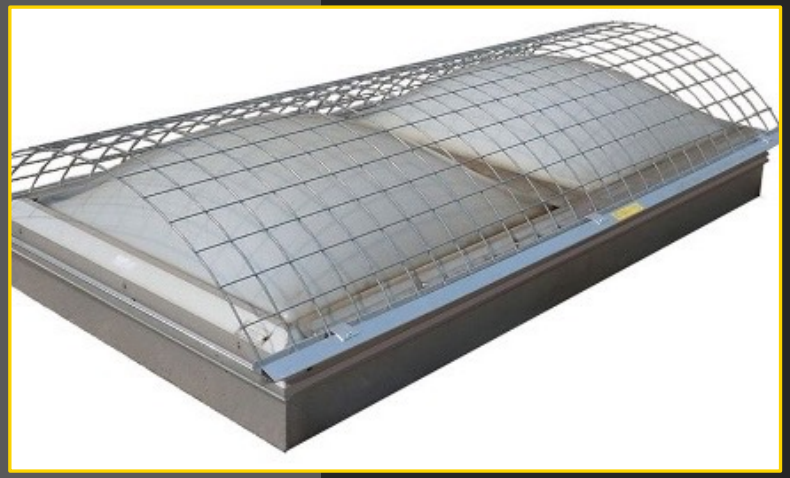
OPENINGS: FAQ

Is my skylight fall protection rated?

Skylights are typically manufactured out of a polymer or plastic dome. Over time, UV degradation breaks down the strength of that dome, much like plastic deck furniture starts to breakdown in the sunlight over the years. As time passes, the dome becomes brittle, making the falls through skylights one of the top causes of rooftop falls. Many skylights have stickers on the side that state "danger risk of fall" However, if you do not see that warning sticker on the curb of your skylight you are not necessarily safe, it is very likely the sticker may be completely sun-faded.

I have bars under my skylight, do I need to protect the dome?

Bars welded under a skylight are typically referred to as "burglar bars" and are designed to keep would-be thieves from breaking the skylight to access the facility and steal the equipment. OSHA requires that all skylight "covers" are required to be able to take twice the intended load, and the bars or wiring under the skylight may not be able to withstand the loadings. Additionally, bars below the dome do not eliminate all hazards associated with a fall. In the event of a fall, the dome will break and potentially cause lacerations on the injured party. Furthermore, debris and biological containments will fall into the people or process below the skylight.



HAZARD SOLUTION:
SKYLIGHT COVER

- Skylight Screens provide protection from falling through fragile roof lights
- Specifically designed to cover unprotected roof lights
- Does not block out the light that the roof lights are supposed to let into a building
- Offers an effective solution for fragile roof light protection
- Helps to prevent falls from height and comply with safety regulations
- Skylight Screens are a reliable and cost-effective way to enhance roof light safety.

HAZARD SOLUTION:
GUARDRAIL AROUND SKYLIGHT

- A modular system designed to prevent falls through skylights, roof lights, and dome lights
- Offers effective protection for workers accessing rooftops for repair and maintenance work
- Specifically designed to reduce the risk of falls through glazed areas
- Easy to install and compatible with a range of glazing systems
- Modular design can make it suitable for a wide range of applications and configurations

HAZARD OVERVIEW:
UNPROTECTED EDGES

OSHA 1910.28 (b)(13) - Work on low-slope roofs.

(i) When work is performed **less than 6 feet** from the roof edge, the employer must ensure each employee is protected from falling by a guardrail system, safety net system, travel restraint system, or personal fall arrest system.

(ii) When work is performed **at least 6 feet but less than 15 feet from the roof edge**, the employer must ensure each employee is protected from falling by using a guardrail system, safety net system, travel restraint system, or personal fall arrest system. The employer may use a designated area when performing work that is both **infrequent and temporary**.

(iii) When work is performed **15 feet or more from the roof edge**, the employer must:

(A) Protect each employee from falling by a guardrail system, safety net system, travel restraint system, or personal fall arrest system or a designated area. The employer is not required to provide any fall protection, provided the work is both **infrequent and temporary**; and

(B) Implement and enforce a work rule prohibiting employees from going within 15 feet (4.6 m) of the roof edge without using fall protection in accordance with paragraphs (b)(13)(i) and (ii) of this section.

1910.28(b)(13) – Graphic

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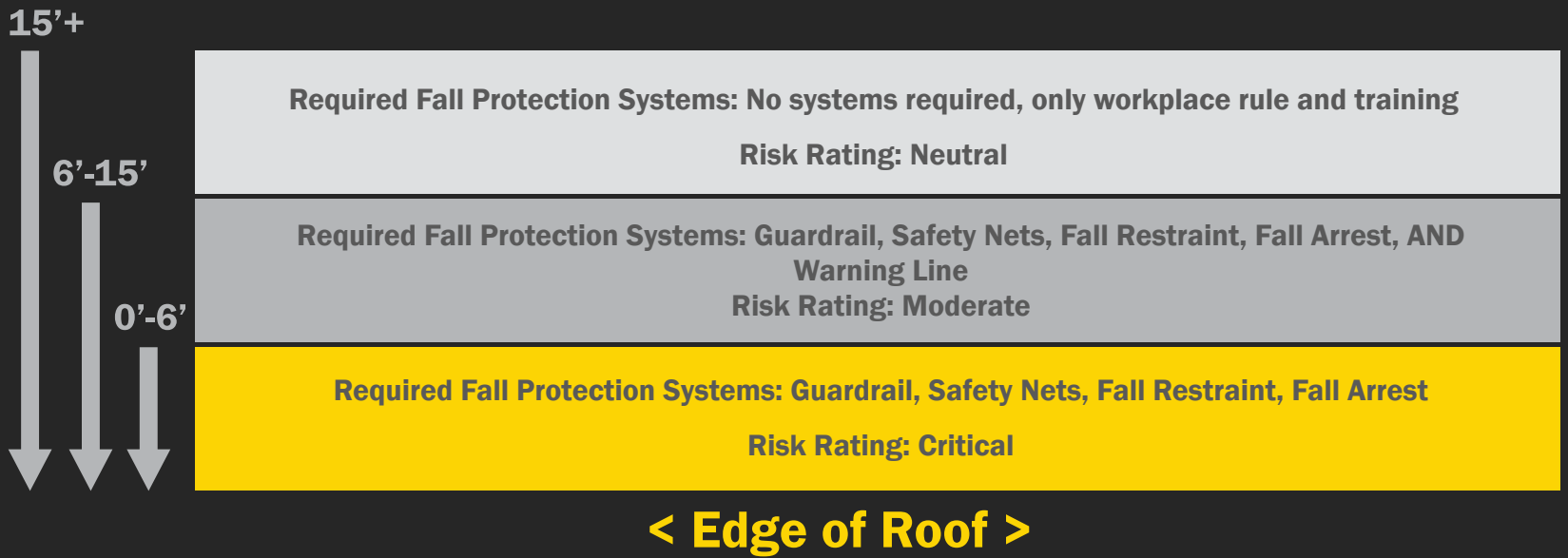

1910.28(b)(13) – Risk Assessment Matrix

SEPARATING PEOPLE FROM **HAZARDS**

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Distance from Roof Edge

15'+ | 15'- 6' | 6' - 0'

POTENTIAL SEVERITY	1 NEAR IMPOSSIBLE	2 UNLIKELY	3 POSSIBLE CHANCE	4 LIKELY	5 ALMOST CERTAIN
1 INSIGNIFICANT	1	2	3	4	5
2 MINOR INJURIES	2	4	6	8	10
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Risk Assessment Matrix

ROOF EDGES: FAQ

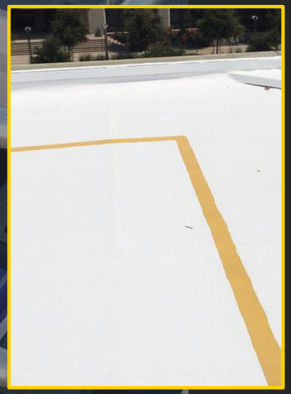
How does OSHA define temporary or infrequent rooftop access?

Infrequent access: The work must involve occasional or sporadic access to the surface rather than regular or routine access. Infrequent access is typically in response to a breakdown. Federal OSHA has cited access more than once per month as frequent, but safety experts tend to agree with CAL-OSHA that infrequent should be once per quarter or less. This will limit the number of hits through the access point to below 8 per year.

Temporary work: The work must be of short duration, typically lasting no longer than a "an hour or 2" according to Federal OSHA. The key with temporary work is that the task is simple and can be done in a single trip to the work area, no diagnostic or assessment process and then return with the tools required to complete the work. This reduces exposure to the access point hazards and leading edge hazards by half.

Can I use a painted line as a “Designated Area?

Simply put: No. OSHA safety guidelines do not permit the use of painted lines for "Designated Areas." Instead, OSHA requires a physical barrier between the worker and the leading edge. This decision was made after careful consideration, prioritizing worker safety and the visibility of warning lines at a height between 34 to 39 inches. This height ensures effective warning for workers approaching designated areas, even when equipment or objects are nearby, minimizing potential hazards and promoting a secure work environment. The primary issue with painted lines is that they disappear when covered with now, dust, or debris.



HAZARD SOLUTION:
ROOFTOP GUARDRAIL

- OSHA compliant and suitable for virtually any flat roof up to a 5° slope
- Provides superior rooftop fall protection and keeps your workforce safe
- A cost-effective and reliable solution for enhancing rooftop safety and protecting workers from falls.

HAZARD SOLUTION:
WARNING LINE

- Usually, non-penetrating
- Designed for permanent use
- Meets OSHA requirements for demarcation
- Cost effective component of an OSHA compliant rooftop

HAZARD OVERVIEW:

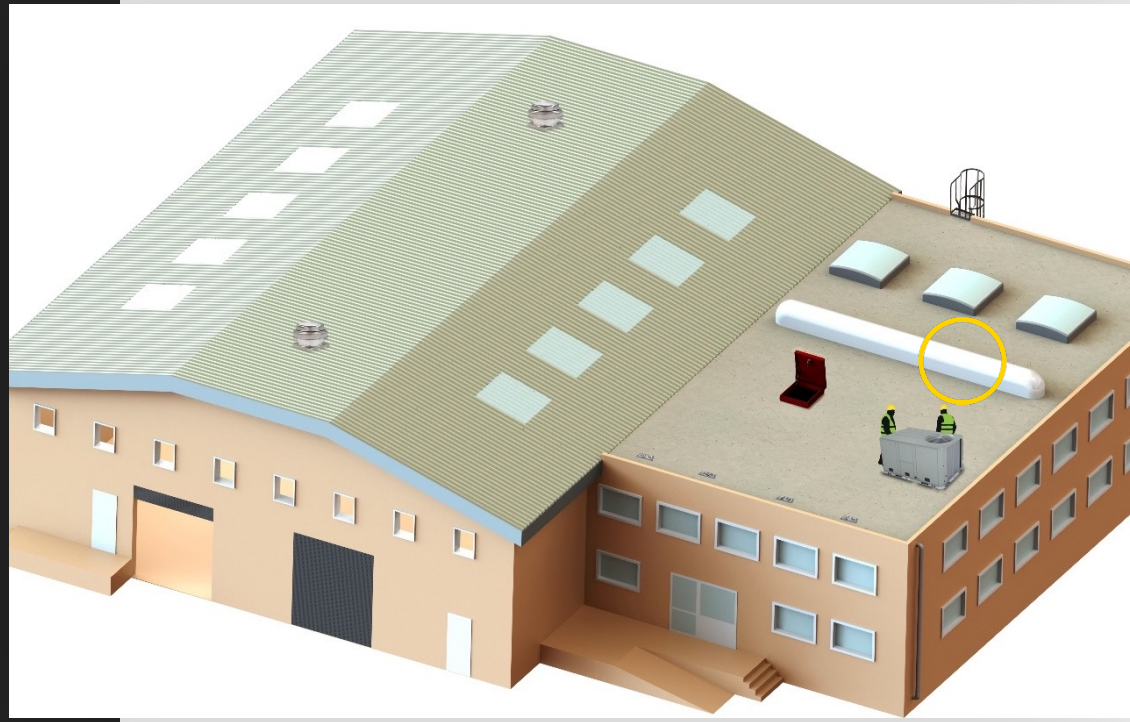
Obstacles On The Roof

OSHA Code Addressing Hazard: Section 5(a)(1)

Each employer must furnish to each of its employees a workplace that is free from recognized hazards that are causing or likely to cause death or serious physical harm.

According to a 2018 US Department of Labor report:

- Slips, trips & falls make up majority of general industry accidents.
- 15% of all accidental deaths are the result of slips, trips and falls.
- They are the 2nd leading cause of death at 12,000 per year



OBSTACALES: FAQ

How are crossover stairs integrated into a fall protection plan?

Crossover stairs create a safe walking path in the middle of the roof, where employees may have previously been forced to walk near the roof edge to navigate around obstacles. By providing a designated pathway, these stairs significantly reduce the likelihood of falls and accidents. With anti-slip features and handrails, workers can safely move across elevated areas, ensuring a safe walking path across the roof. By eliminating the need to climb over equipment, you eliminate the possibility of a slip-and-fall hazard on the roof.

What are the most common slip hazard found on commercial roofs?

Common slip hazards on commercial roofs include wet surfaces from rain or condensation, debris accumulation, algae growth, uneven surfaces, poor drainage, steep slopes, and inadequate lighting. Regular inspections, maintenance, and proper safety measures are essential to mitigate these hazards and ensure a safe working environment. In our experience, sloped metal roofs with snow, white PVC, water, or ice present are particularly dangerous slip hazards.

HAZARD SOLUTION:
ROOFTOP CROSSOVER PLATFORM

- Safe Passage
- Easily Configured
- Standard Kit Formats
- No Welding Needed
- Long Lasting
- Slip Resistant
- Suitable for All Roof Types

HAZARD SOLUTION:
ROOFTOP WALKWAY

- Clear Walkways
- All Types of Roofs
- Roof Angles up to 35 degrees
- Non-slip Treads
- High Fire Rating
- No Welding Needed
- Long Lasting

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HIERARCHY OF FALL PROTECTION

Maximizing Rooftop Safety: A Four-Level Hierarchy of Fall Protection Solution

A truly comprehensive rooftop solution follows the Hierarchy of Fall Protection, the gold-standard of safety procedures. An expert starts by inspecting the roof site for potential fall hazards. From there, a complete system solution and recommendations that descend down the four levels of the hierarchy—from simple, sensible approaches for eliminating risks all the way down to lifesaving personal protection systems.

Collective Systems require no additional training to use. Work Restraint and Fall Arrest Systems both require a high level of user competency, training and additional inspection to be used effectively.

LOW SEVERITY

HIGH SEVERITY

1 ELIMINATE HAZARDS

The preferred solution to all fall hazards is elimination of the danger.

ROOFTOP EXAMPLE: SKYLIGHT PROTECTION

Remove skylight and roof over it.

2 COLLECTIVE

This solution “collectively” protects everyone. Rooftop perimeter guardrail is the most common example of collective fall protection.

Put a screen over or railing around the skylight

3 WORK RESTRAINT

Prevents a fall from occurring by using personal fall arrest equipment so that the user cannot reach the roof edge.

Anchor Point designed to keep user 2 feet away from skylight

4 FALL ARREST SYSTEM

A fall is possible, but the fall is “arrested” or interrupted within an acceptable force and fall distance.

Anchor point designed to allow user to fall through the light but not impact lower level.

For specifications and product details:

ARCAT

MasterSpec®

a product of The American Institute of Architects

THANK YOU FOR YOUR TIME

SAFETY WITHOUT COMPROMISE:

KEE SAFETY'S COMMITMENT TO SEPARATING PEOPLE FROM HAZARDS

We take immense pride in engineering, manufacturing, and supplying trusted fall protection solutions, safety railing systems, and safe access equipment for working at height.

KeeSafety.com