

SEALANT, WATERPROOFING & RESTORATION INSTITUTE

AMERICAN ANCHOR

One Line, Many Hands.. The Shared Science of Safe Rigging

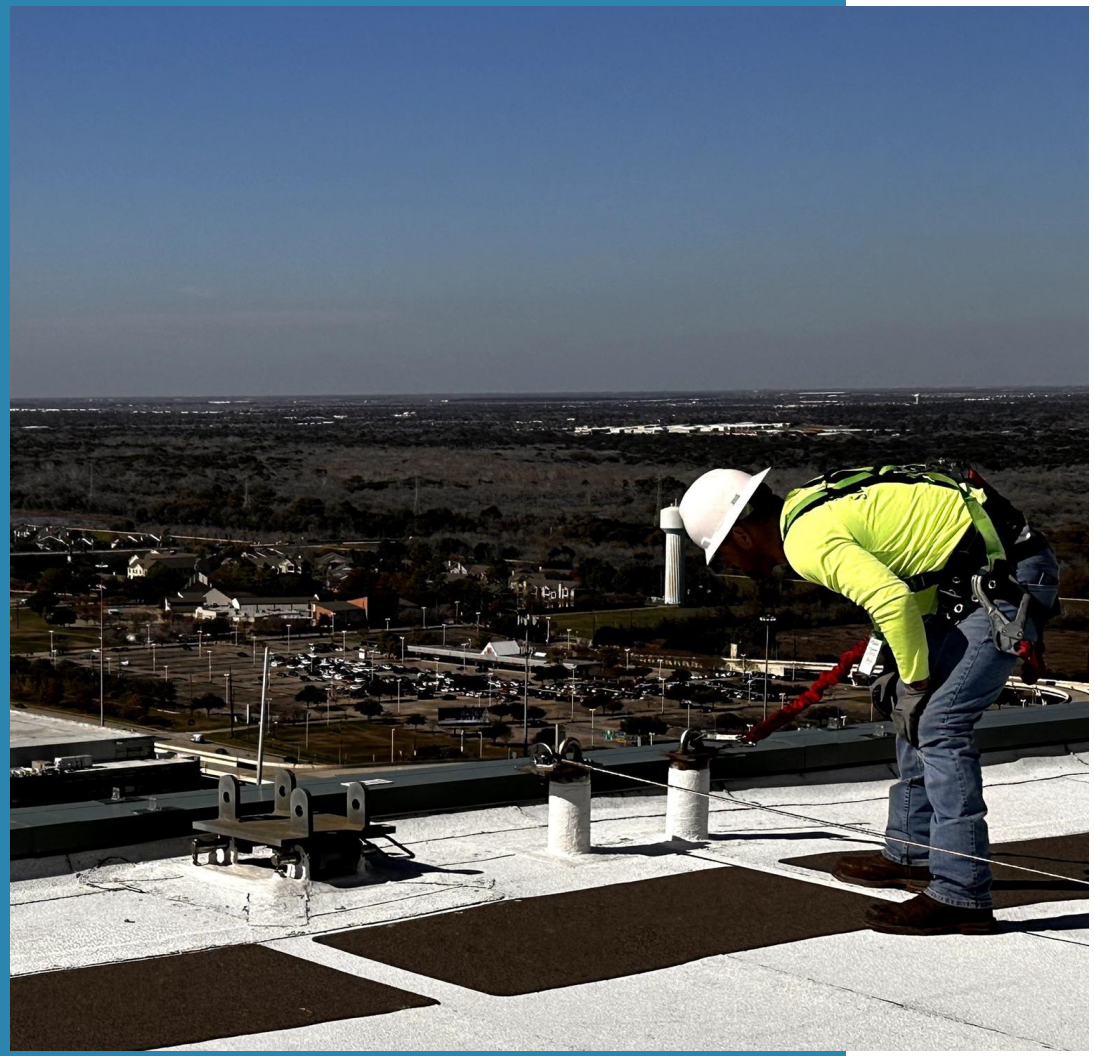
Bobby Zeolla – Vice President

Kevin Todd – Senior Project Manager

Ian Warwick – Project Manager

- Specialized in fall protection for over 30 years.
- High quality USA made products.
- Active in committees that develop safety standards for workers at height.
- Local offices nationwide.
- Our goal is to protect workers of all industries from preventable fall hazards.

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Presentation Overview

- Why is Fall Protection a Necessity?
- Types of Fall Protection
- Fall Restraint vs Fall Arrest
- Anchor Certification / Verification responsibilities
- What is NOT an Anchor Point and common anchor point misuses
- Site assessment and Work plan Responsibilities
- Swing fall hazard

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Why is fall protection necessary?

- **Falls are the #1 cause of DEATH in the construction industry.**
- Scaffold-related work falls under the #1 cause of death in construction—falls—and contributes to thousands of injuries and a significant portion of fatalities every year."
- **<u>Safety is the number one priority.</u>**
- OSHA requires workers within 6' of any leading edge over 4' for general industry and over 6' for construction to utilize fall protection.

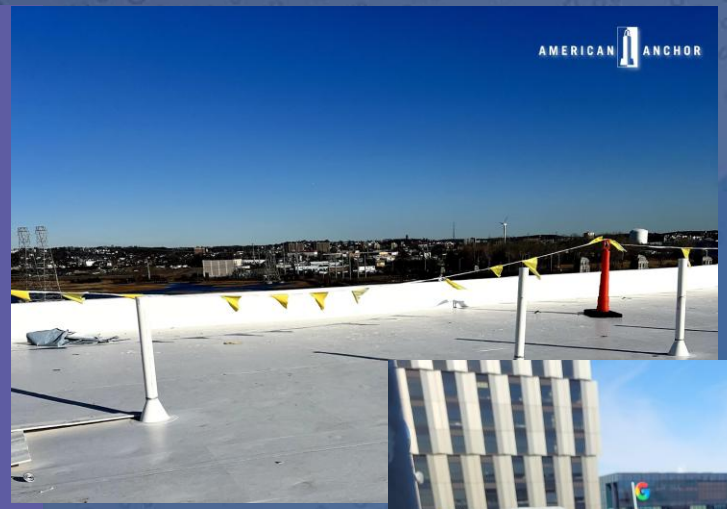


Types of Fall Protection

Passive Fall Protection

Does not require additional measures to utilize

- Collective Protection
- Warning Line
- Guardrail
- Parapet Height of at least 42”
- Training Required





Active Fall Protection

Requires the user to actively use a PFAS combined with the following

- Certified Anchor Point
- Competent Person Selected Anchor Point
- Temp/Transportable Anchor Point
- Horizontal Life Line (HLL)
- Training Required

Passive fall protection - Active fall protection





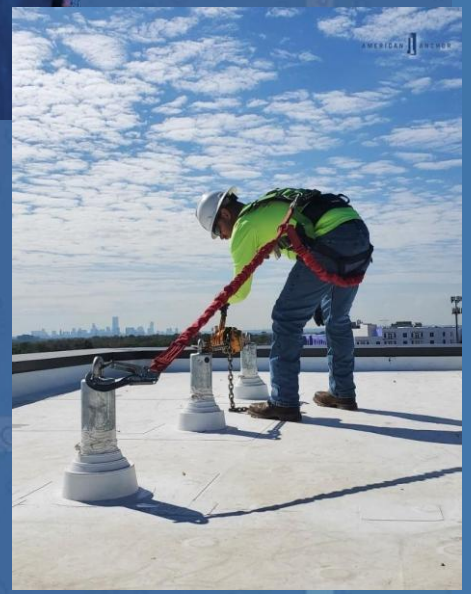
Fall Restraint vs Fall Arrest

Know Your Anchors

Fall Restraint

- Can be a reduced ultimate load
- Restricts users range of motion
- Eliminates the possibility of a worker falling over the edge
- Predetermined lanyard length
- Predetermined distance from leading edge





Fall Arrest

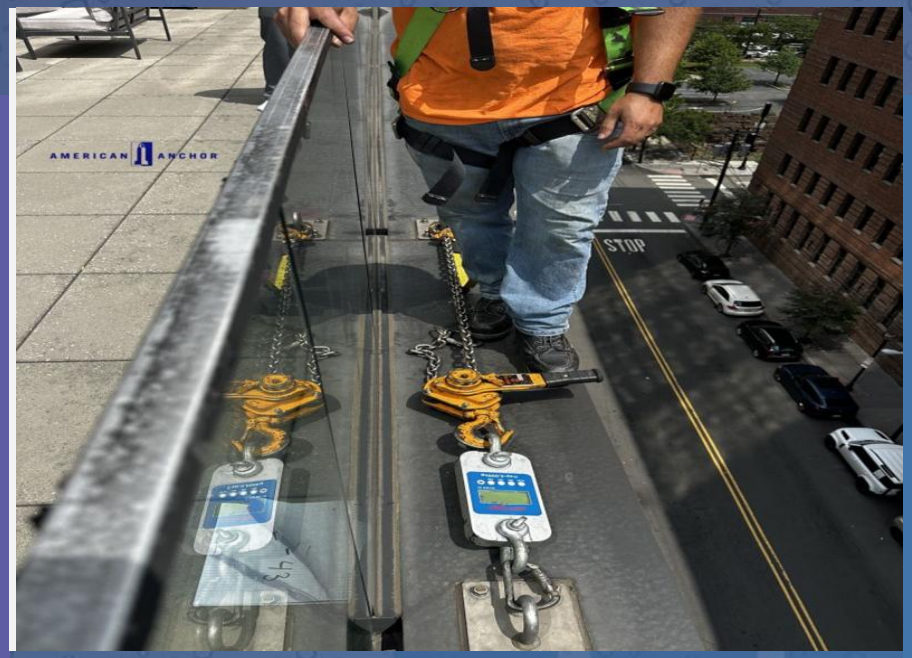
- Assumes the anchor point will see a load
- Needs to be a 5,000 lbs. ultimate load
- Used in conjunction with a shock absorbing lanyard
- One user per anchor (typ)
- Requires load testing and annual inspection
- Used for suspended access work

Key responsibilities in Anchor testing / Verification

OSHA — Sets the Minimum Performance Target (Legal Floor)

OSHA tells you **what** the anchor must achieve, not exactly how to prove it. Their legal minimum is the 5,000 lb per employee or 2:1 safety factor requirement.

That's the legal minimum — but the industry widely considers it insufficient on its own, which is where the next layers come in.



The Qualified Person / Professional Engineer — Sets the Site-Specific Testing Plan

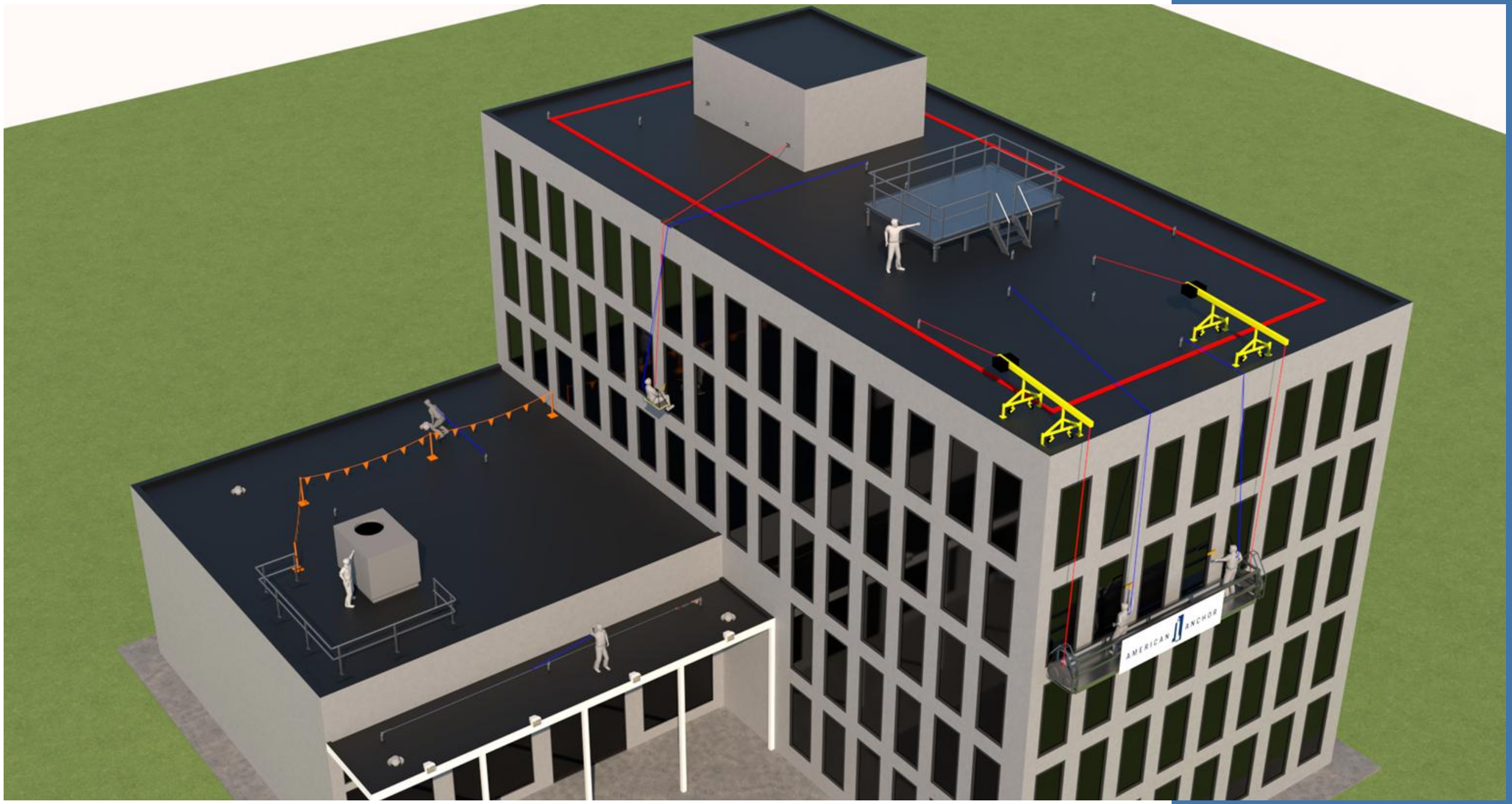
This is the most important and often overlooked layer. Ultimately, a licensed engineer or qualified person takes the standards above and applies them to the specific anchor, substrate, and conditions at hand.

All anchor equipment dedicated to a specific building/site shall be certified by load testing under supervision of a registered Professional Engineer

ANSI/IWCA — Sets the Detailed Testing Methodology (Industry Standard)

This is the primary body that actually defines **how** anchors are tested. The Z359 "Fall Protection Code" is a family of standards

Anchorages targeted for post-installation testing shall be tested by applying a minimum static load of twice the design load in each primary direction that a load may be applied. For example, an anchorage with an ultimate capacity of 5,000 pounds has a four to one safety factor — therefore the anchor's design load is 1,250 pounds and it shall be tested at 2,500 pounds.


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Unsafe practice and what is NOT to be used as an anchor point



Improper rigging to I-Beams creates choke points dramatically reduces rope strength (Upto 60% loss)



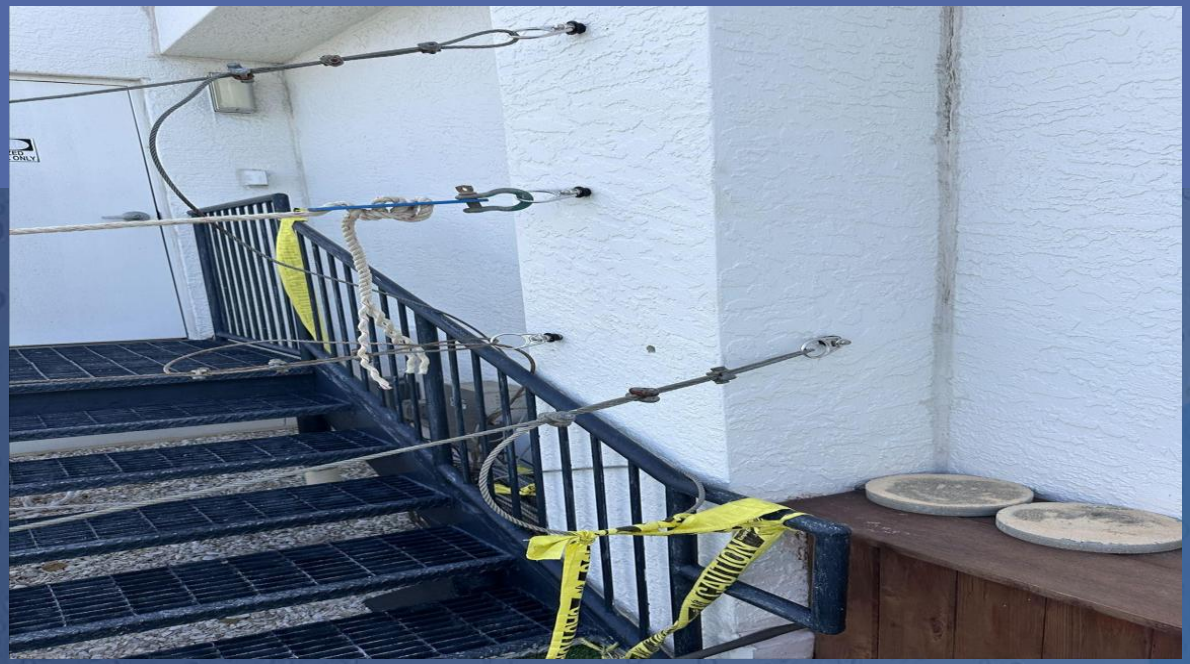
Never tie off from a corroded anchorage



Tying off to a handrail, guardrail or fixed ladder

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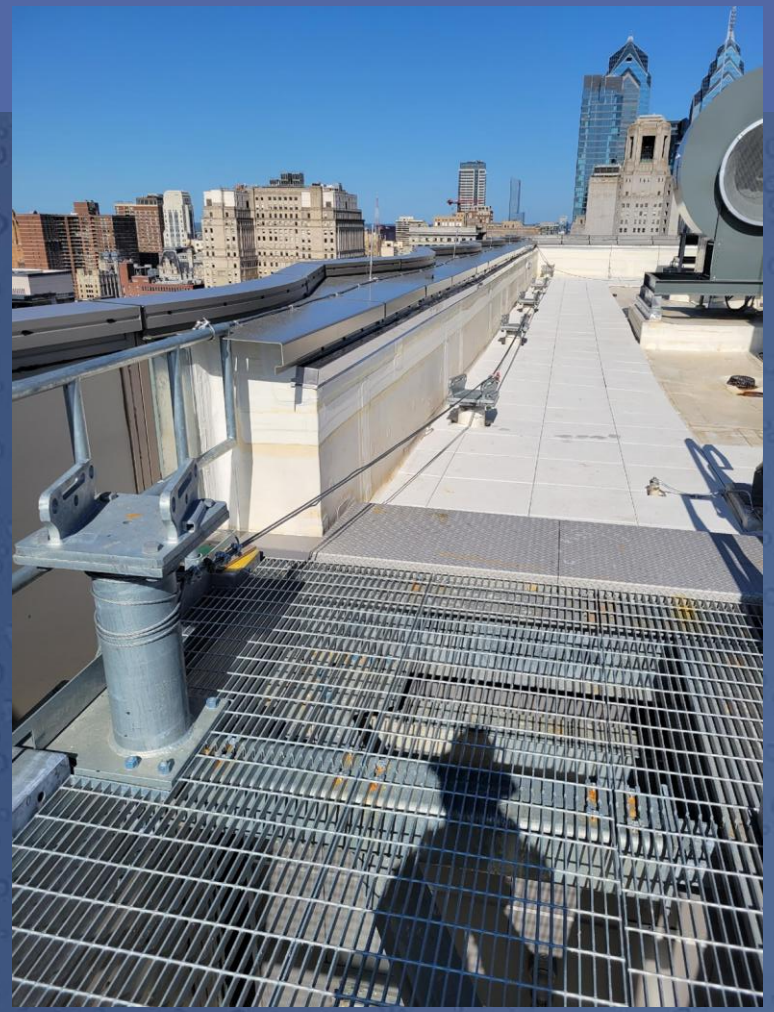
Unsafe practice and what is NOT to be used as an anchor point





Temporary concrete anchors are convenient if the structure is verified. However, installing these anchors too close together or too close to the edge may result in the concrete failing in a fall arrest event.

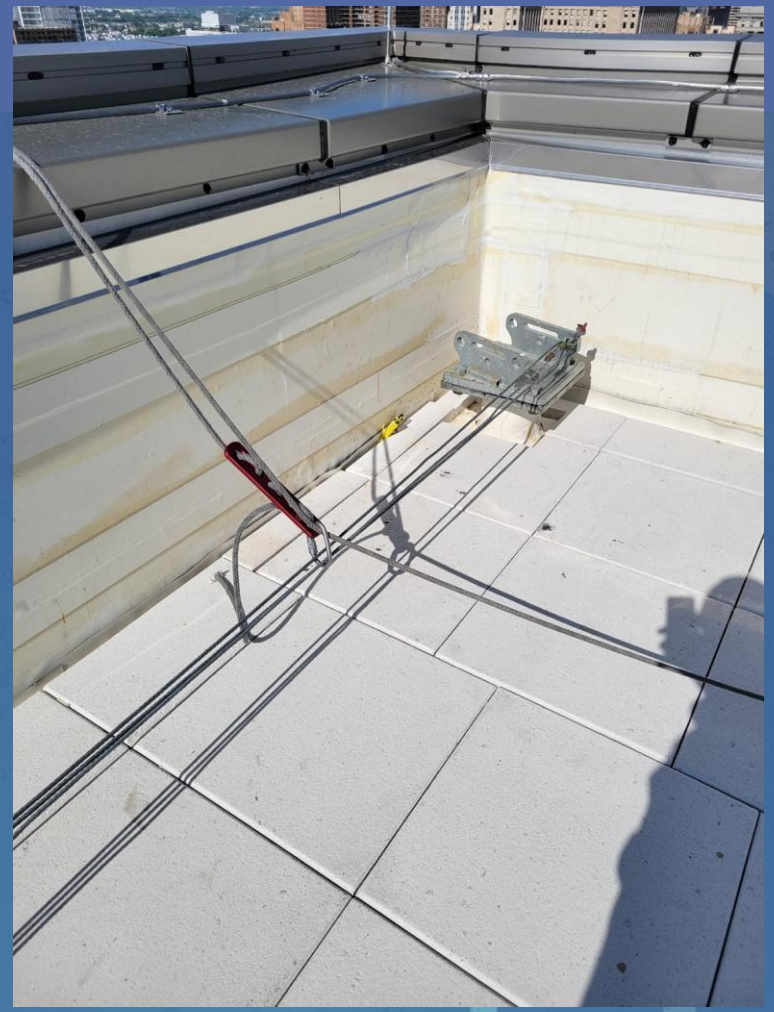
What is NOT to be used as an anchor point



User Installed HLL

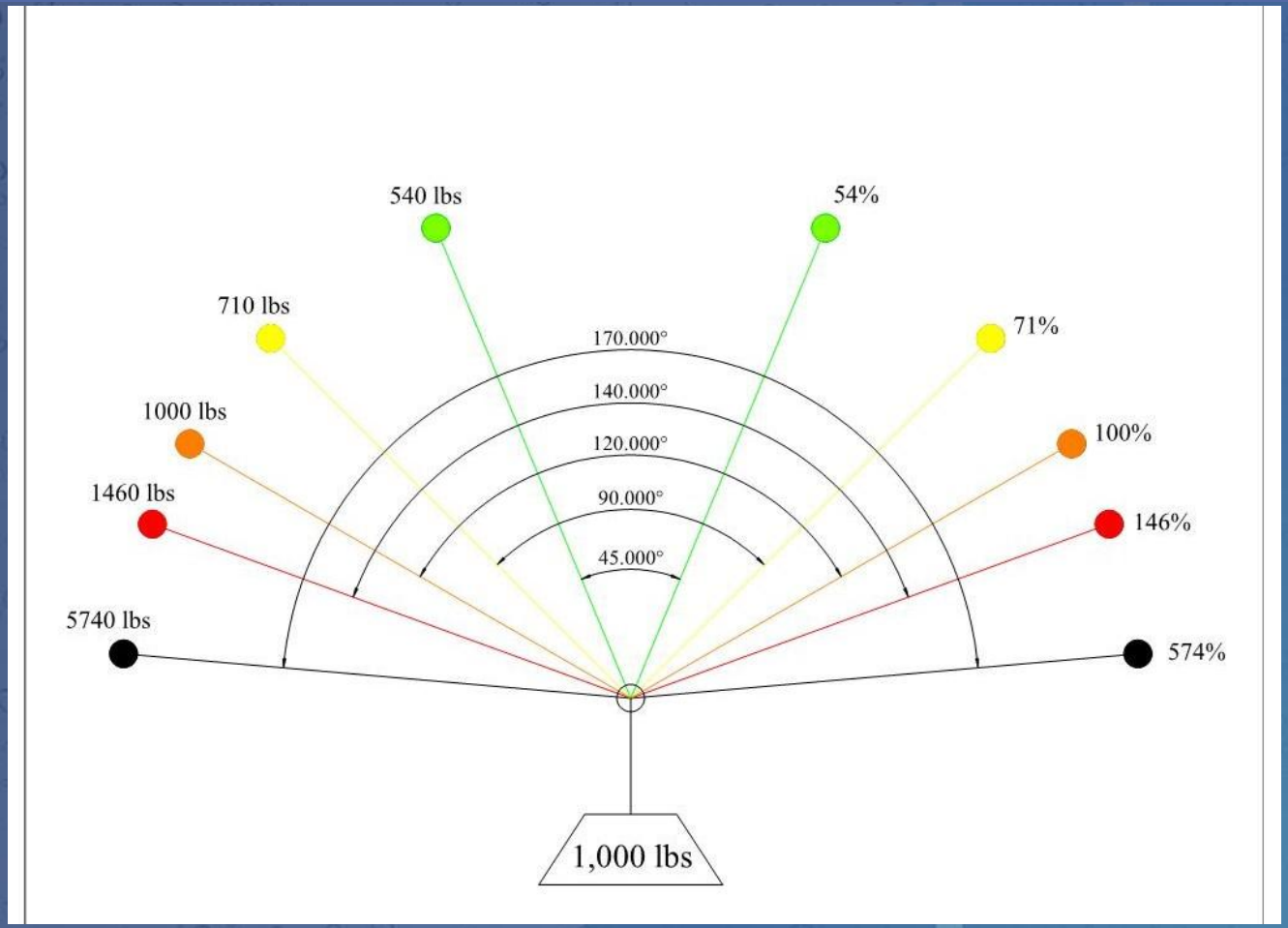
Using a horizontal lifeline (HLL) without a shock absorber is extremely dangerous, potentially leading to anchor failure, severe worker injury, or death. Without a shock absorber,

- Anchorage and System Failure: The high tension generated by a fall without energy absorption can cause the cable to fail.
- Excessive Force on User: Lack of absorption means the worker absorbs the full impact of the fall, increasing the risk of serious bodily injury.



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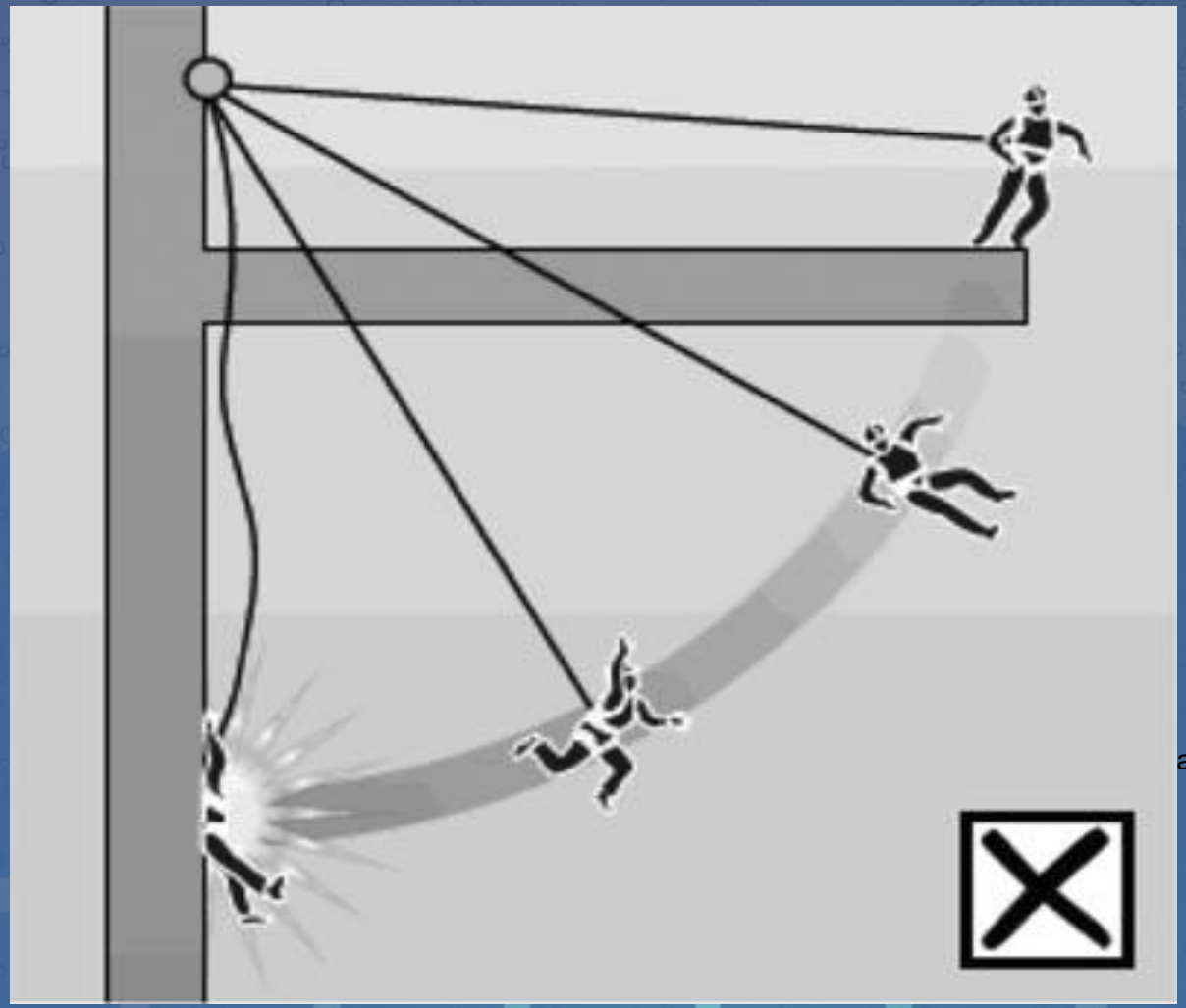
How an HLL can multiply a load



Swing Fall

What is a swing fall?

A swing fall occurs when a worker falls and their lifeline or lanyard is not anchored directly above them. Instead of dropping straight down, they swing like a pendulum in a wide arc — sideways and downward — before the rope goes taut. The worker can strike walls, columns, equipment, scaffolding, or the ground at high speed, often with far more force than a straight vertical fall would produce.



How does it happen?

When your anchor is positioned directly overhead, your lifeline hangs perfectly vertical. This is 0 degrees of offset. If you fall straight down, the rope arrests you immediately with no lateral movement

The moment you take a step sideways — along a scaffold, across a roof, or down a beam — your anchor is no longer above you. Your lifeline is now pulling at an angle. That angle is the problem. Here is what changes as you move:

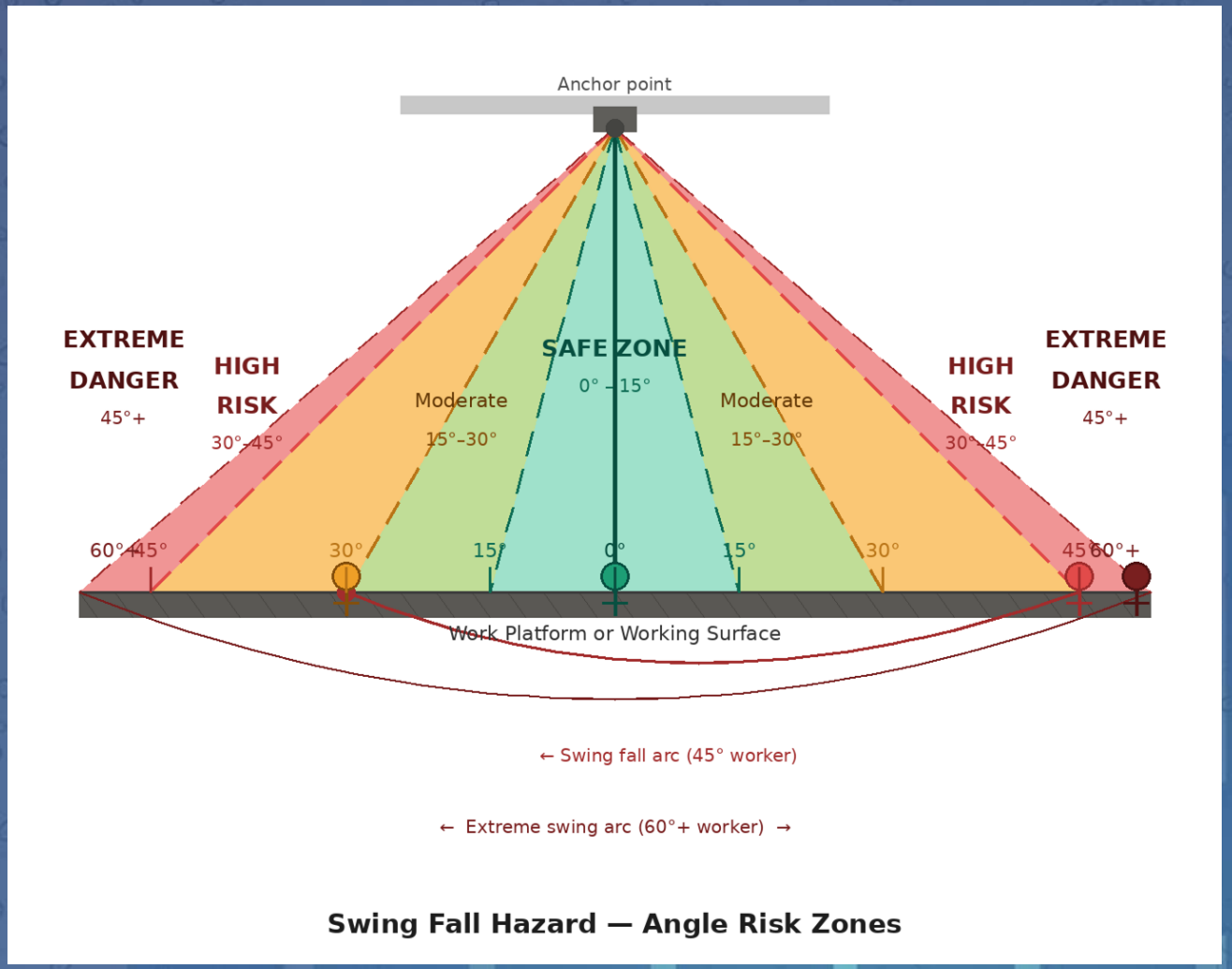
The **horizontal offset** between you and your anchor grows

The **angle of your lifeline** from vertical increases

The **arc length of your swing** if you fall gets longer

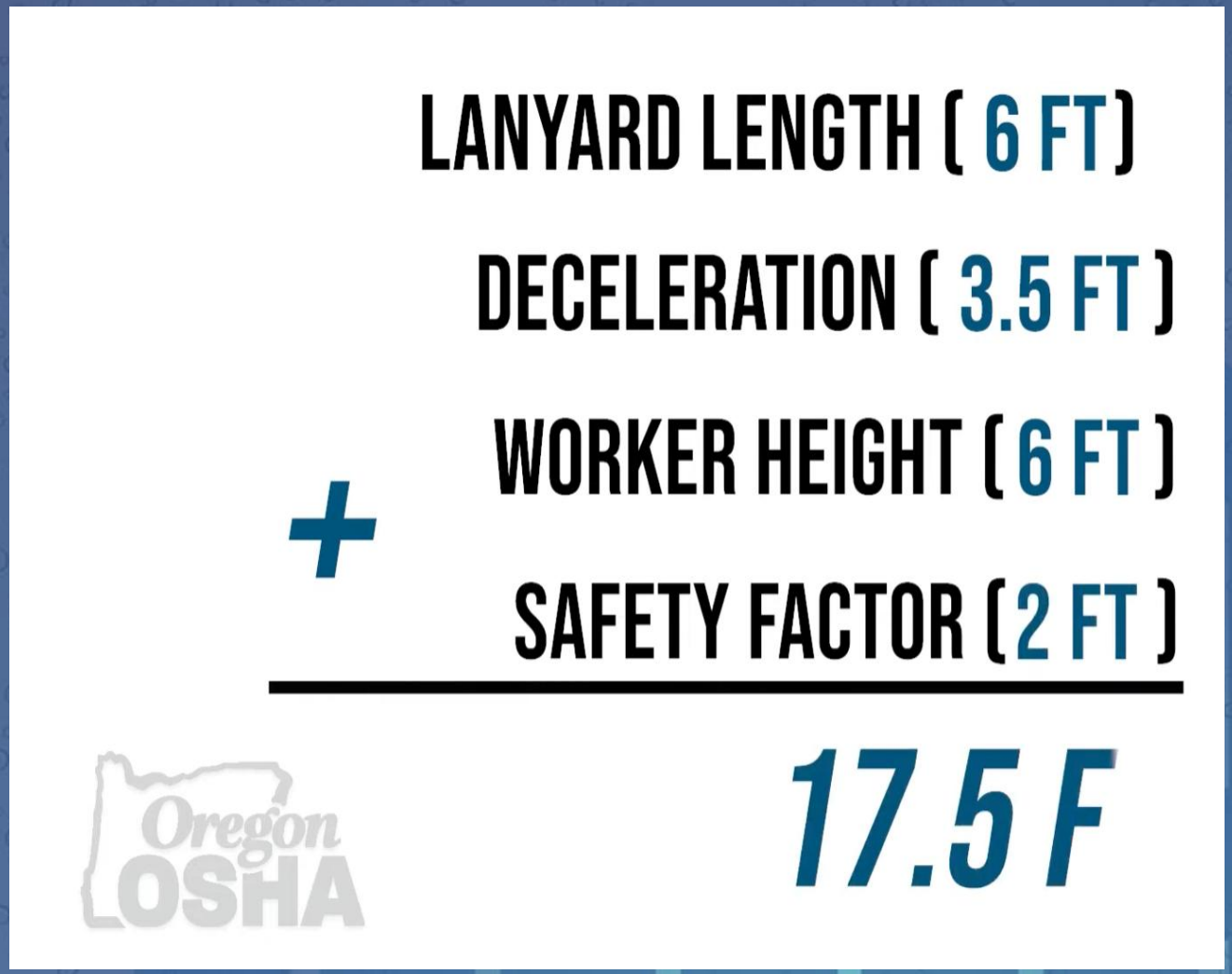
Your **impact velocity** into whatever you hit increases

The **point where you land** gets lower and further from where you started



Importance of Site assessment and planning

Prior to commencing any work at height, a thorough site assessment must be conducted to identify and mitigate swing fall hazards. The assessor should begin by mapping the anchor point location relative to the work area, establishing the potential arc of travel a worker would follow in the event of a fall. Any obstacles within that arc — including structural steel, concrete columns, machinery, scaffolding, piping, or wall edges — must be identified, as impact with these objects during a swing fall can cause serious injury independent of the fall arrest itself.



Steps to prevent Swing fall

Keep your anchor directly overhead — if you have to look up at an angle to see it, you're already at risk

Prevent traveling outside 30° from your anchor — the further you walk, the worse the swing .

Plan anchor points before work starts - Anchor points are **required** to be identified before work starts, Know exactly where you'll anchor for every part of the job.



Qualified person Vs Competent person.

Qualified Person

Is defined as one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, work, or project.

No anchor point may be used unless it has been reviewed and identified by the Qualified person (Professional engineer)

Competent person

Is someone who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate those hazards.

The competent person walks the site to identify the hazards, evaluates field conditions and verifies that anchor points in use are appropraite as per the work plan



Responsibilities

Building is responsible to provide

- Stamped drawing
- Certificate for use
- Proof of testing
- Inspection report
- Rigging notes
- Log book

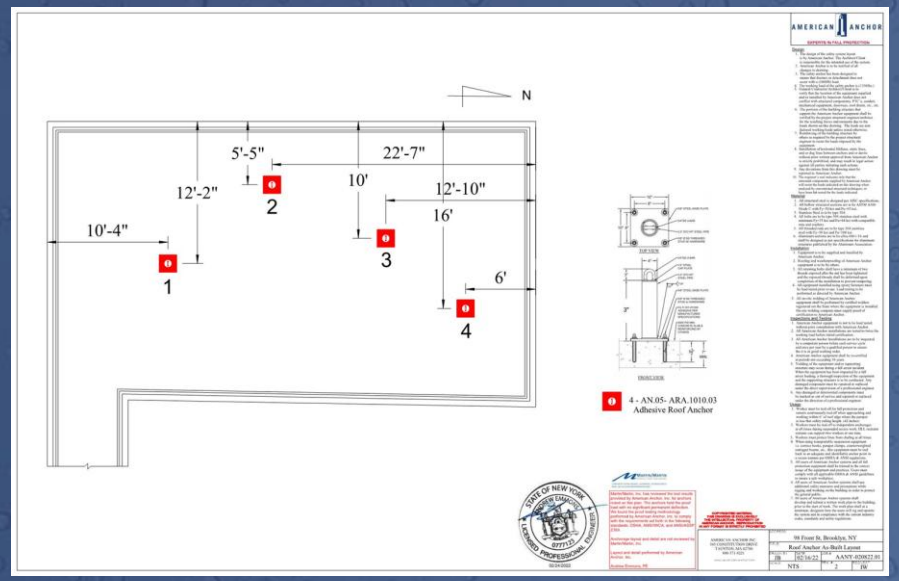


User is responsible to provide

- Training for all employees
- Review of all documents
- Inspection of all fall protection equipment and anchors
- Follow OSHA fall protection codes
- Written work plan

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American Anchor Services



Design & Engineering



Manufacture & Install



Testing, Inspections & Certifications

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Work Safe, Stay Anchored.