

METAL BUILDINGS INSTITUTE™

Training Module: **CONTROLLED DECKING ZONE PROCEDURES**



CERTIFIED
APPRENTICESHIP
PROGRAM
RAPIDS CODE: 0877
O*NET/SOC CODE:
47-2221.00



AC478
Compliant

Disclaimer



The information provided in this training module has been established in good faith by the MBI in order to assist with compliance regarding OSHA's Controlled Decking Zone regulations. It does not alter or determine compliance responsibilities in the standard or the Occupational Safety and Health Act of 1970. Since interpretations and enforcement policy may change over time, the reader should consult current OSHA interpretations and decisions by the Occupational Safety and Health Review Commission and the courts for additional guidance on OSHA compliance requirements. The ultimate responsibility for verification of compliance and the accuracy of information presented herein rests with the individual employer. Note that some states have additional requirements beyond existing Federal standards. Users agree to hold the MBI harmless from any claims resulting from the use of this material.

Instructor Introduction

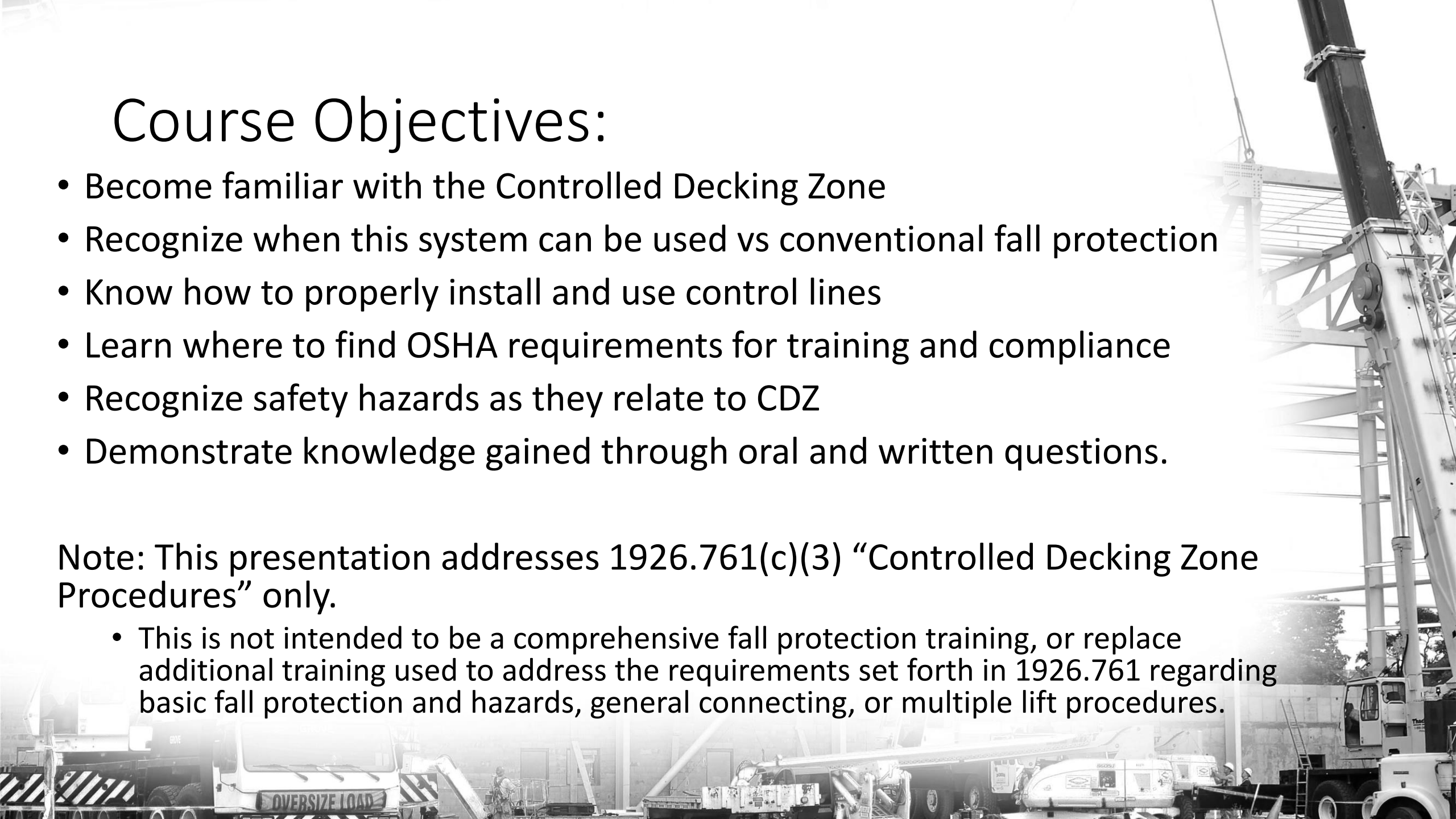


Course Objectives:

- Become familiar with the Controlled Decking Zone
- Recognize when this system can be used vs conventional fall protection
- Know how to properly install and use control lines
- Learn where to find OSHA requirements for training and compliance
- Recognize safety hazards as they relate to CDZ
- Demonstrate knowledge gained through oral and written questions.

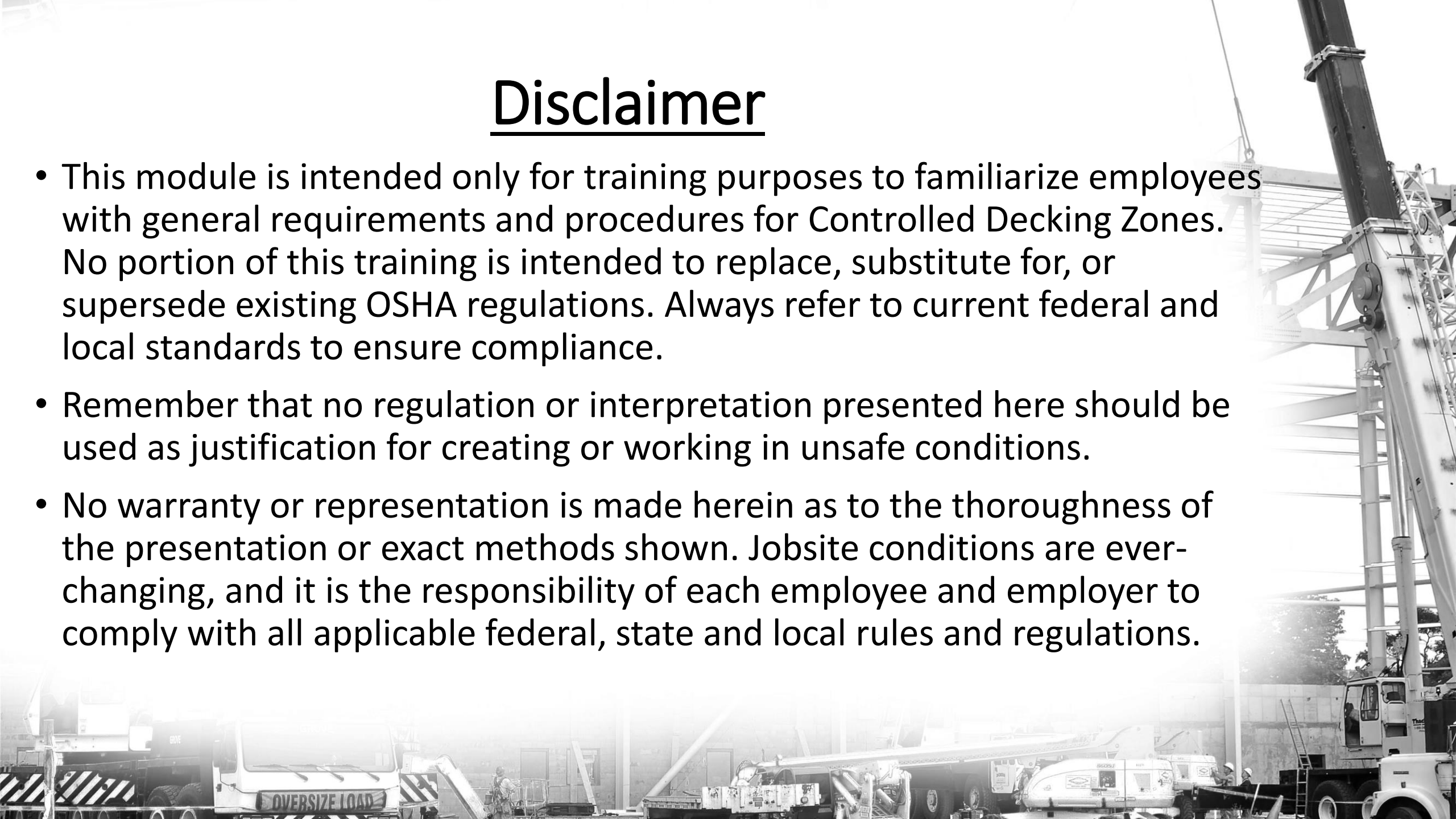
Note: This presentation addresses 1926.761(c)(3) “Controlled Decking Zone Procedures” only.

- This is not intended to be a comprehensive fall protection training, or replace additional training used to address the requirements set forth in 1926.761 regarding basic fall protection and hazards, general connecting, or multiple lift procedures.



Disclaimer

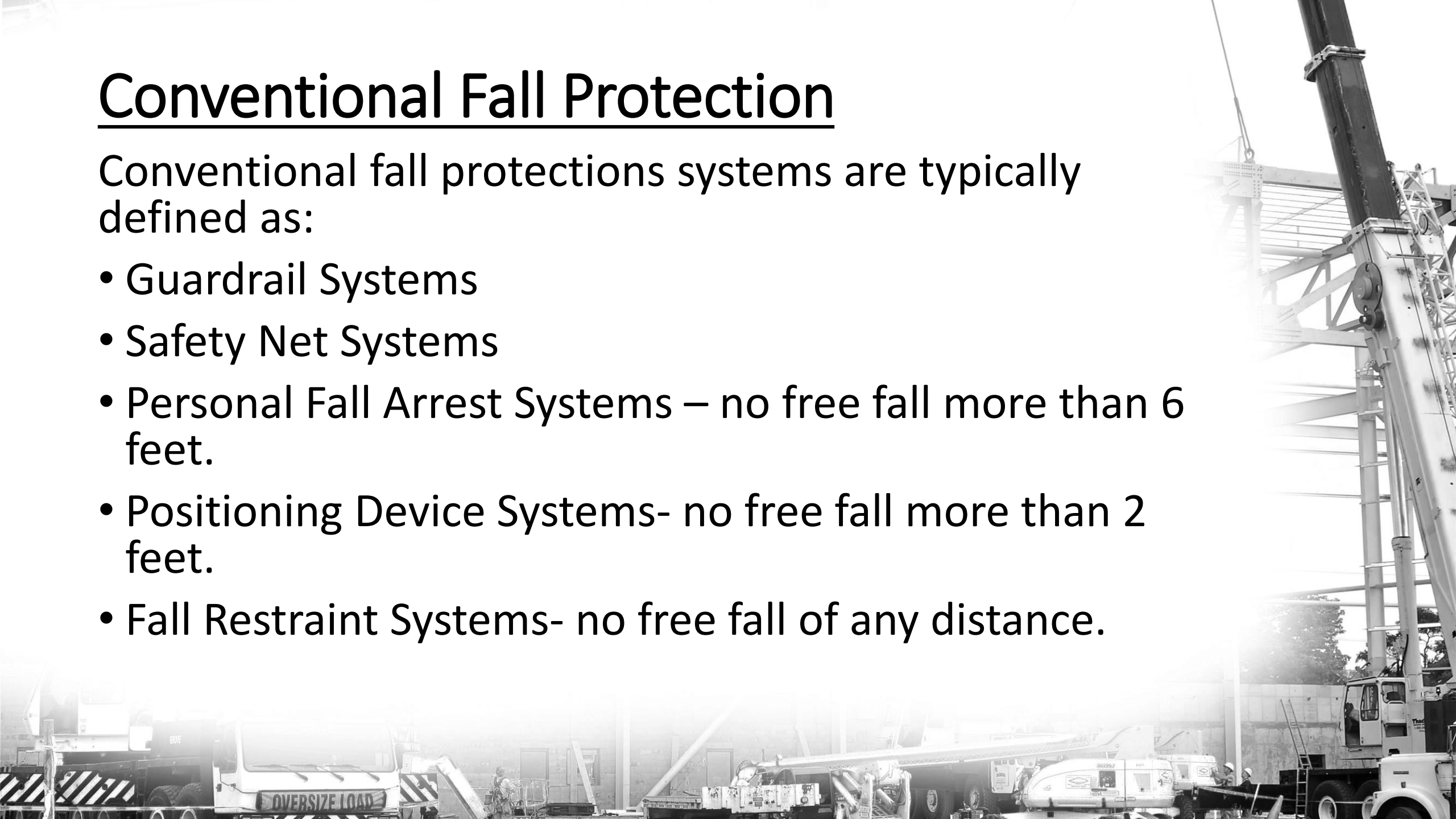
- This module is intended only for training purposes to familiarize employees with general requirements and procedures for Controlled Decking Zones. No portion of this training is intended to replace, substitute for, or supersede existing OSHA regulations. Always refer to current federal and local standards to ensure compliance.
- Remember that no regulation or interpretation presented here should be used as justification for creating or working in unsafe conditions.
- No warranty or representation is made herein as to the thoroughness of the presentation or exact methods shown. Jobsite conditions are ever-changing, and it is the responsibility of each employee and employer to comply with all applicable federal, state and local rules and regulations.



Conventional Fall Protection

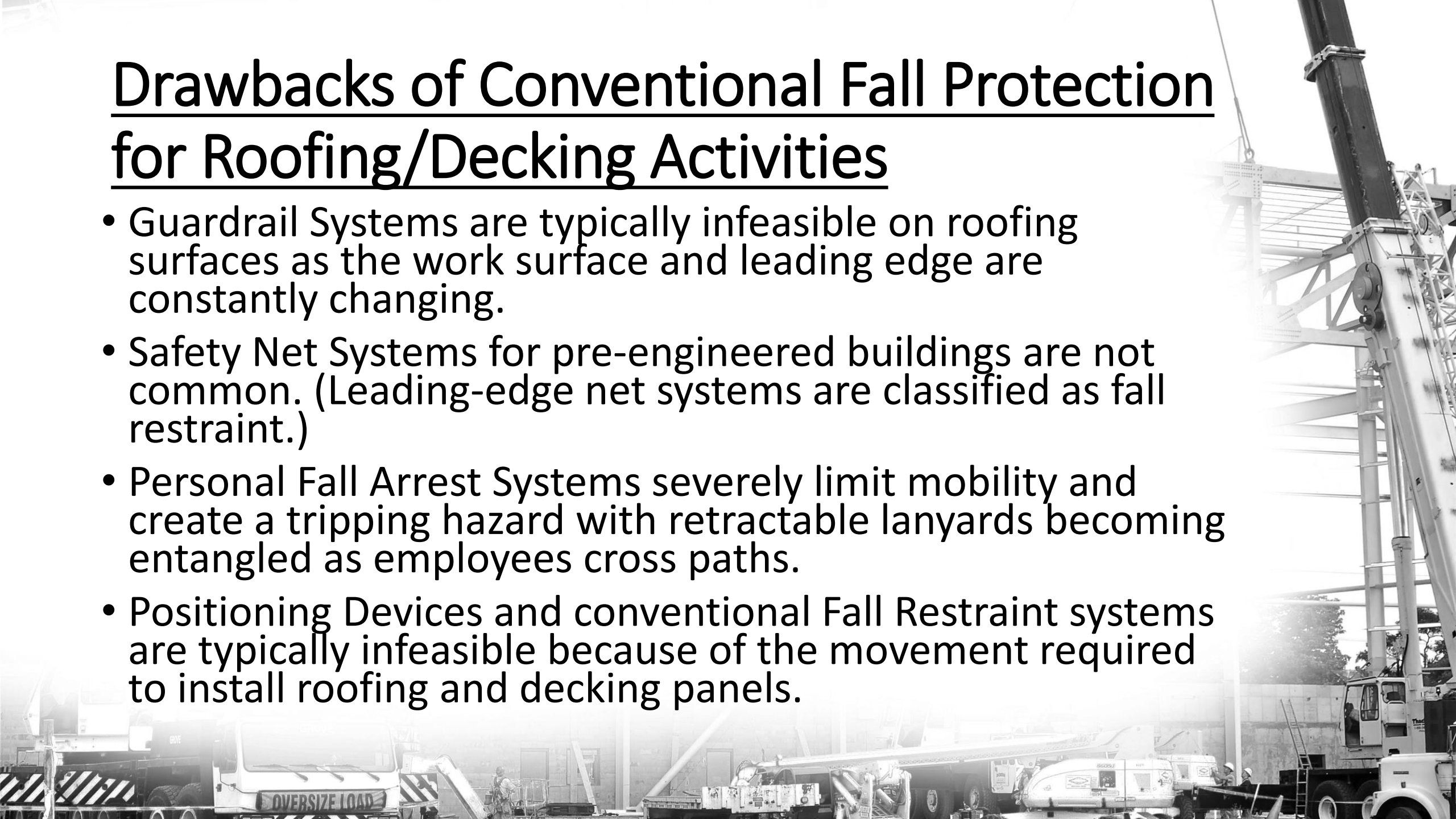
Conventional fall protections systems are typically defined as:

- Guardrail Systems
- Safety Net Systems
- Personal Fall Arrest Systems – no free fall more than 6 feet.
- Positioning Device Systems- no free fall more than 2 feet.
- Fall Restraint Systems- no free fall of any distance.



Drawbacks of Conventional Fall Protection for Roofing/Decking Activities

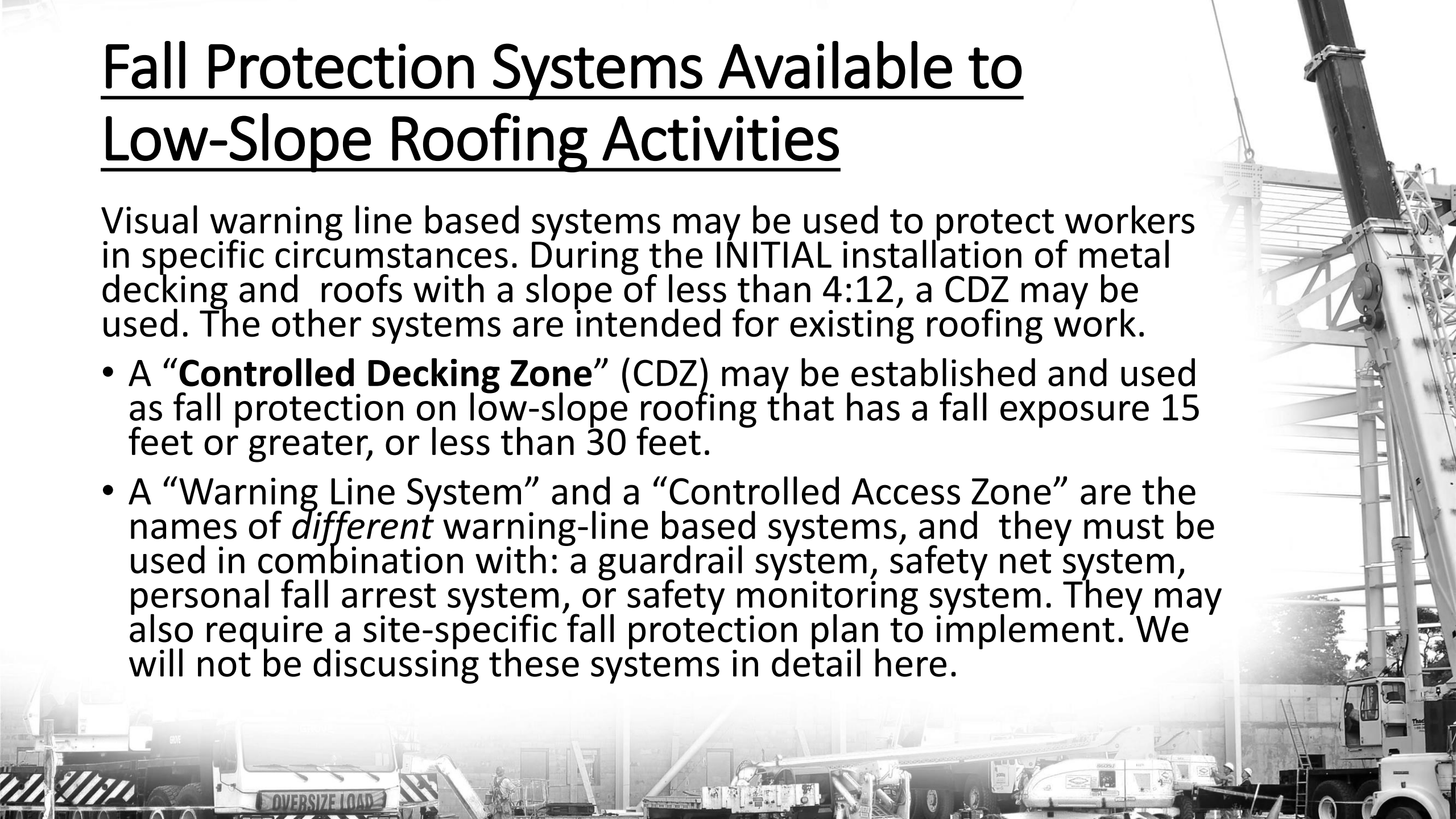
- Guardrail Systems are typically infeasible on roofing surfaces as the work surface and leading edge are constantly changing.
- Safety Net Systems for pre-engineered buildings are not common. (Leading-edge net systems are classified as fall restraint.)
- Personal Fall Arrest Systems severely limit mobility and create a tripping hazard with retractable lanyards becoming entangled as employees cross paths.
- Positioning Devices and conventional Fall Restraint systems are typically infeasible because of the movement required to install roofing and decking panels.



Fall Protection Systems Available to Low-Slope Roofing Activities

Visual warning line based systems may be used to protect workers in specific circumstances. During the INITIAL installation of metal decking and roofs with a slope of less than 4:12, a CDZ may be used. The other systems are intended for existing roofing work.

- A “**Controlled Decking Zone**” (CDZ) may be established and used as fall protection on low-slope roofing that has a fall exposure 15 feet or greater, or less than 30 feet.
- A “Warning Line System” and a “Controlled Access Zone” are the names of *different* warning-line based systems, and they must be used in combination with: a guardrail system, safety net system, personal fall arrest system, or safety monitoring system. They may also require a site-specific fall protection plan to implement. We will not be discussing these systems in detail here.



CDZ Illustration

**Perimeter Warning Control Line
(Minimum 6' from unprotected edges)**

**Elaminator Platform
(leading-edge fall protection)
(not necessary for CDZ)**

Ridge

**Low
Eave**

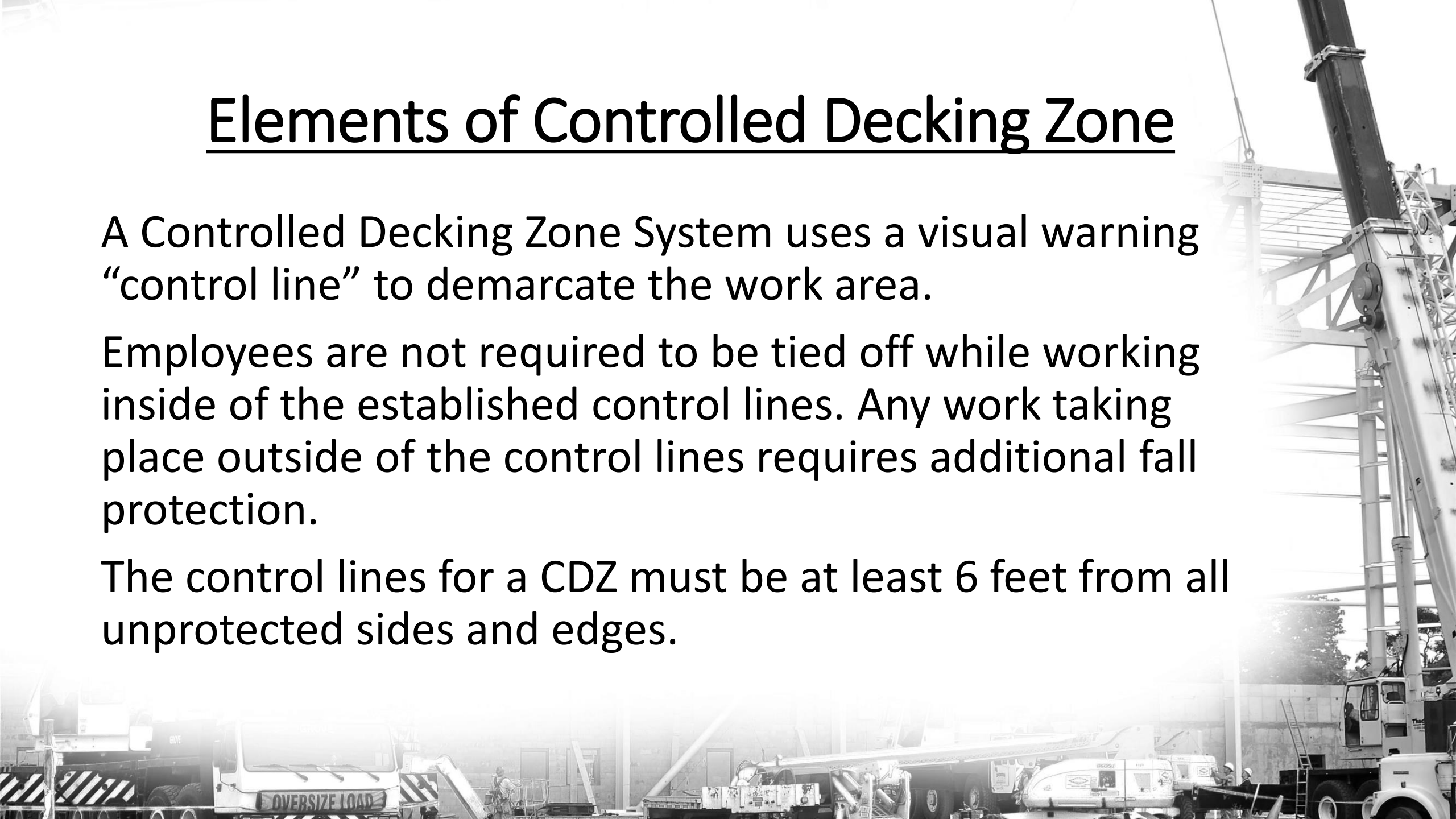


Elements of Controlled Decking Zone

A Controlled Decking Zone System uses a visual warning “control line” to demarcate the work area.

Employees are not required to be tied off while working inside of the established control lines. Any work taking place outside of the control lines requires additional fall protection.

The control lines for a CDZ must be at least 6 feet from all unprotected sides and edges.



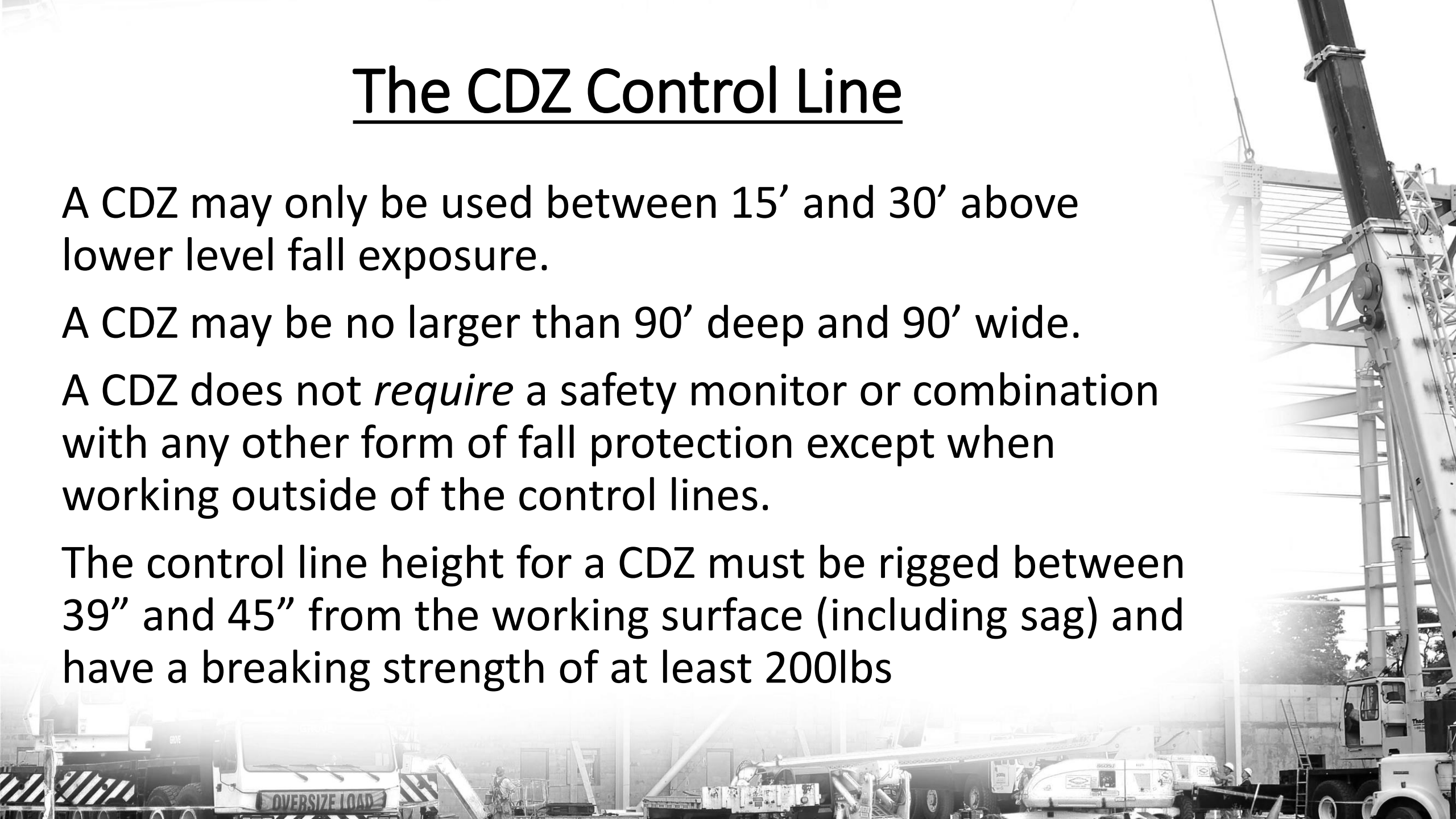
The CDZ Control Line

A CDZ may only be used between 15' and 30' above lower level fall exposure.

A CDZ may be no larger than 90' deep and 90' wide.

A CDZ does not *require* a safety monitor or combination with any other form of fall protection except when working outside of the control lines.

The control line height for a CDZ must be rigged between 39" and 45" from the working surface (including sag) and have a breaking strength of at least 200lbs



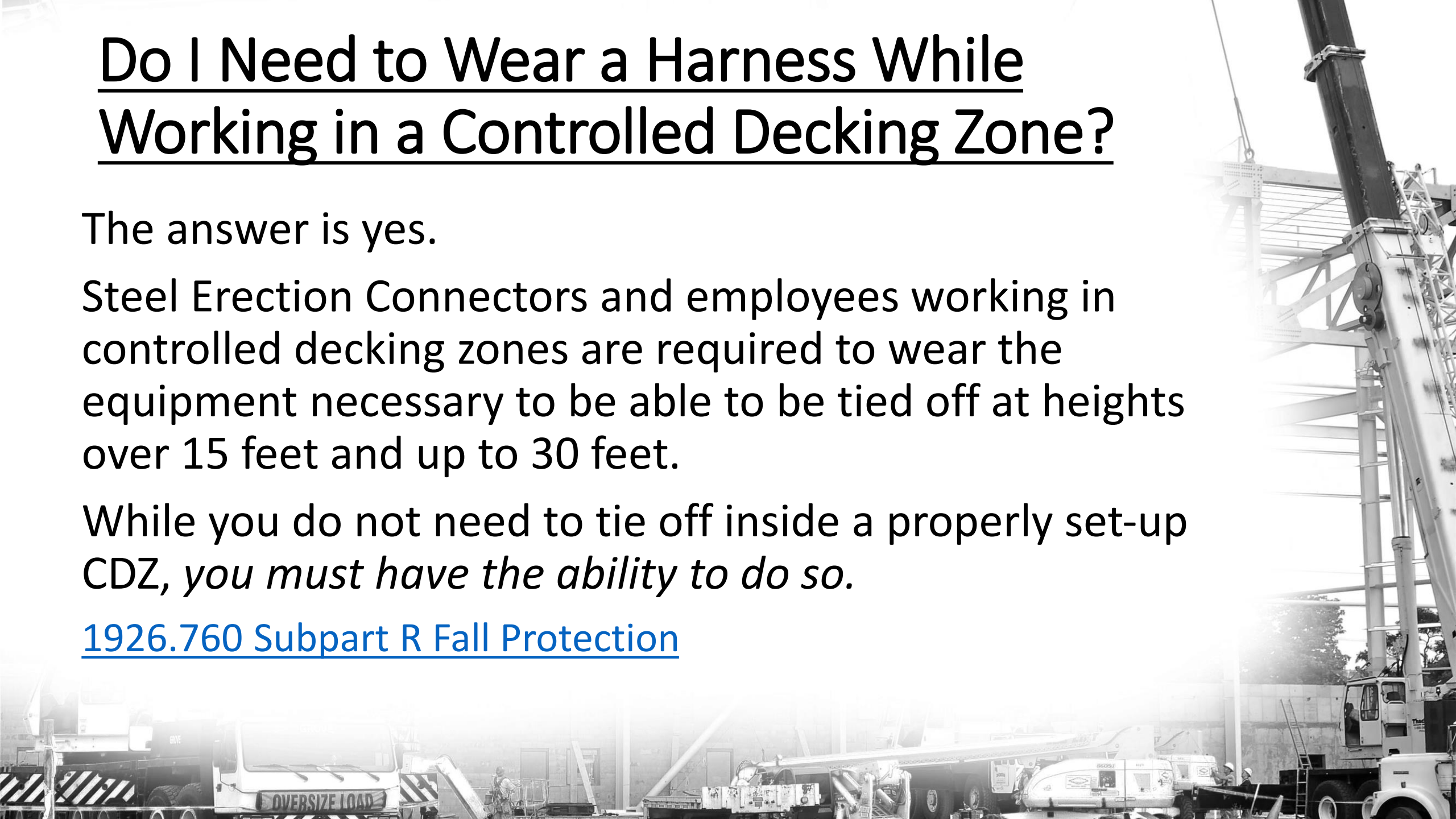
Do I Need to Wear a Harness While Working in a Controlled Decking Zone?

The answer is yes.

Steel Erection Connectors and employees working in controlled decking zones are required to wear the equipment necessary to be able to be tied off at heights over 15 feet and up to 30 feet.

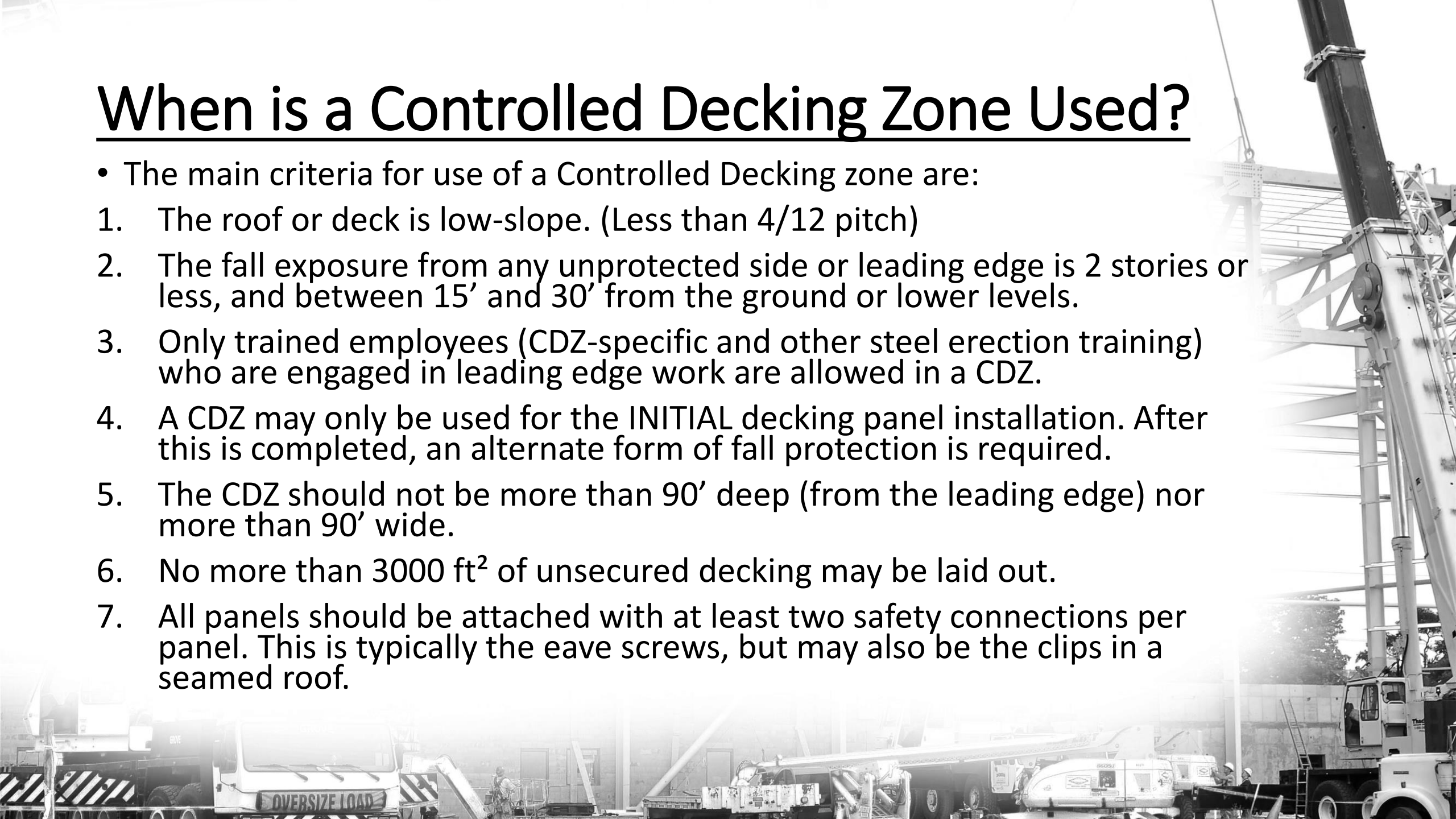
While you do not need to tie off inside a properly set-up CDZ, *you must have the ability to do so.*

[1926.760 Subpart R Fall Protection](#)



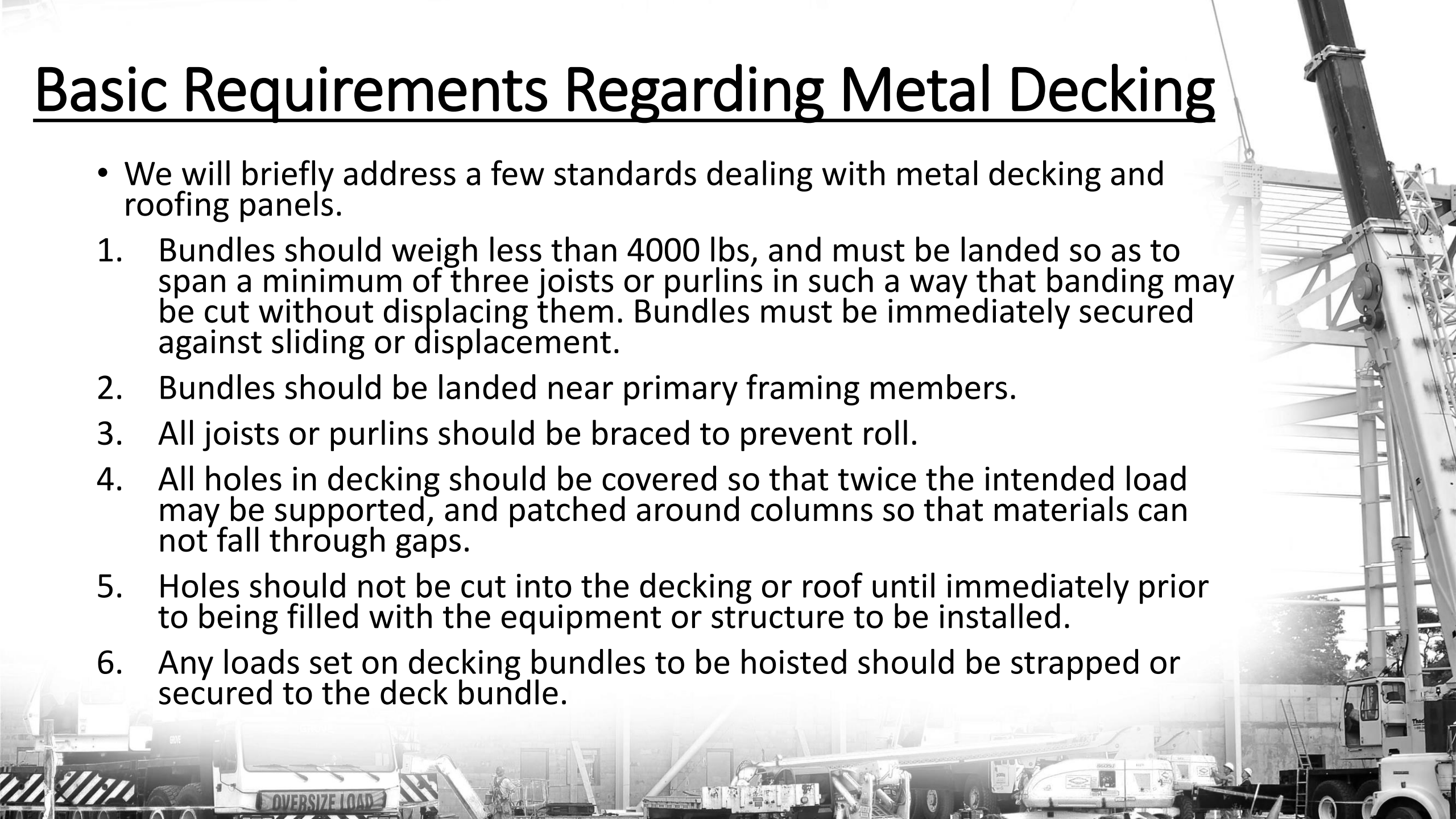
When is a Controlled Decking Zone Used?

- The main criteria for use of a Controlled Decking zone are:
 1. The roof or deck is low-slope. (Less than 4/12 pitch)
 2. The fall exposure from any unprotected side or leading edge is 2 stories or less, and between 15' and 30' from the ground or lower levels.
 3. Only trained employees (CDZ-specific and other steel erection training) who are engaged in leading edge work are allowed in a CDZ.
 4. A CDZ may only be used for the INITIAL decking panel installation. After this is completed, an alternate form of fall protection is required.
 5. The CDZ should not be more than 90' deep (from the leading edge) nor more than 90' wide.
 6. No more than 3000 ft² of unsecured decking may be laid out.
 7. All panels should be attached with at least two safety connections per panel. This is typically the eave screws, but may also be the clips in a seamed roof.



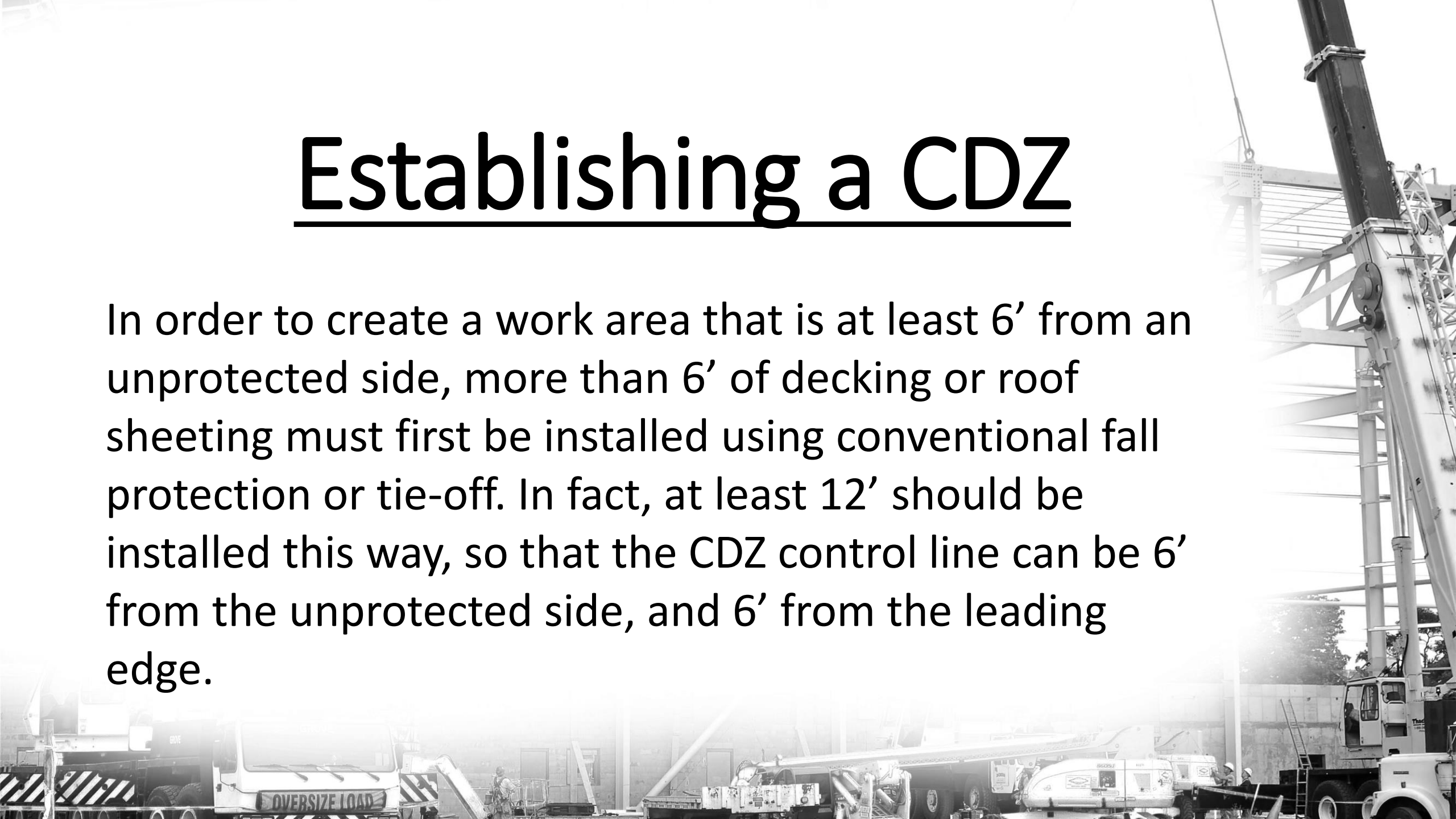
Basic Requirements Regarding Metal Decking

- We will briefly address a few standards dealing with metal decking and roofing panels.
1. Bundles should weigh less than 4000 lbs, and must be landed so as to span a minimum of three joists or purlins in such a way that banding may be cut without displacing them. Bundles must be immediately secured against sliding or displacement.
 2. Bundles should be landed near primary framing members.
 3. All joists or purlins should be braced to prevent roll.
 4. All holes in decking should be covered so that twice the intended load may be supported, and patched around columns so that materials can not fall through gaps.
 5. Holes should not be cut into the decking or roof until immediately prior to being filled with the equipment or structure to be installed.
 6. Any loads set on decking bundles to be hoisted should be strapped or secured to the deck bundle.



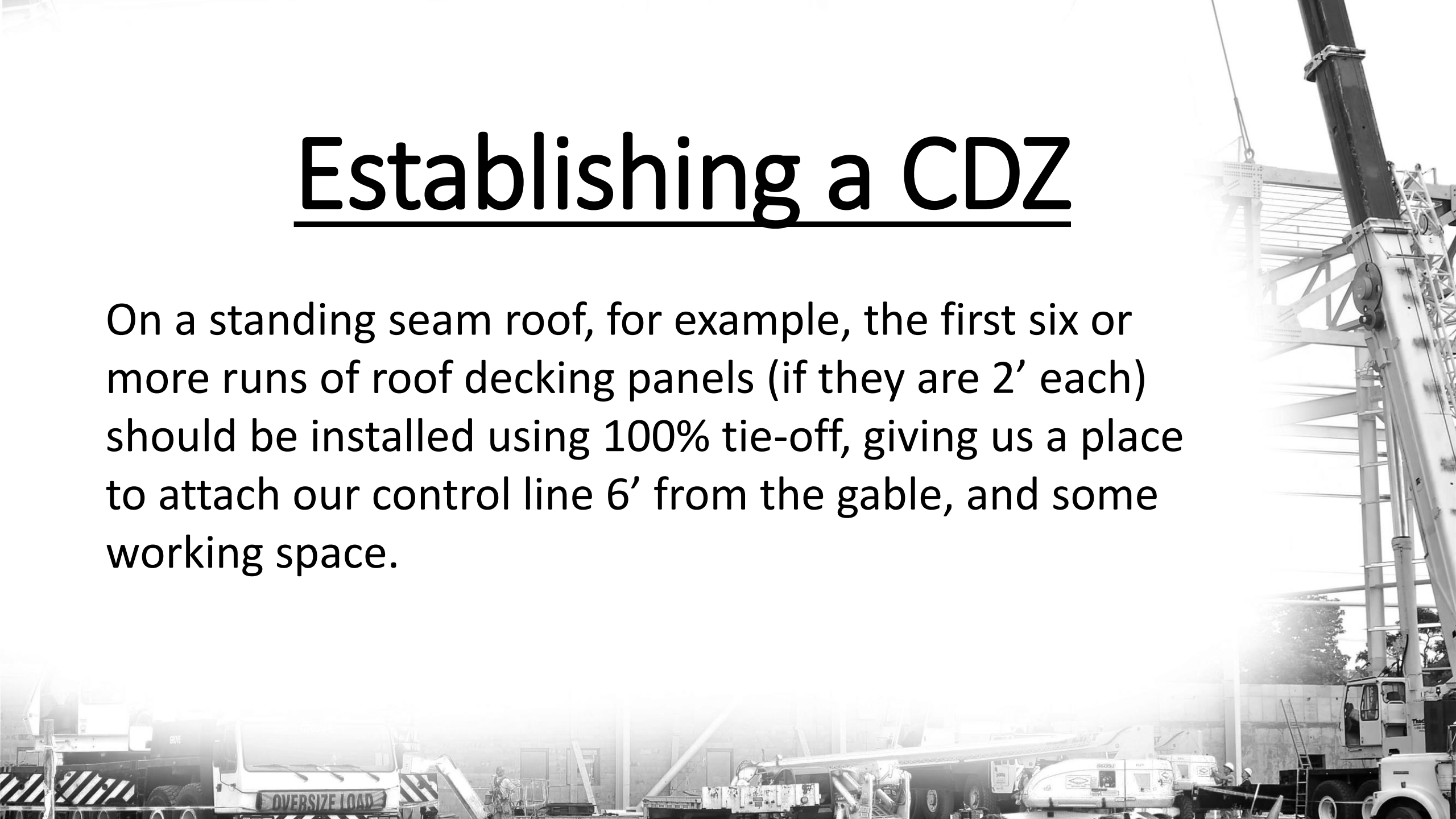
Establishing a CDZ

In order to create a work area that is at least 6' from an unprotected side, more than 6' of decking or roof sheeting must first be installed using conventional fall protection or tie-off. In fact, at least 12' should be installed this way, so that the CDZ control line can be 6' from the unprotected side, and 6' from the leading edge.



Establishing a CDZ

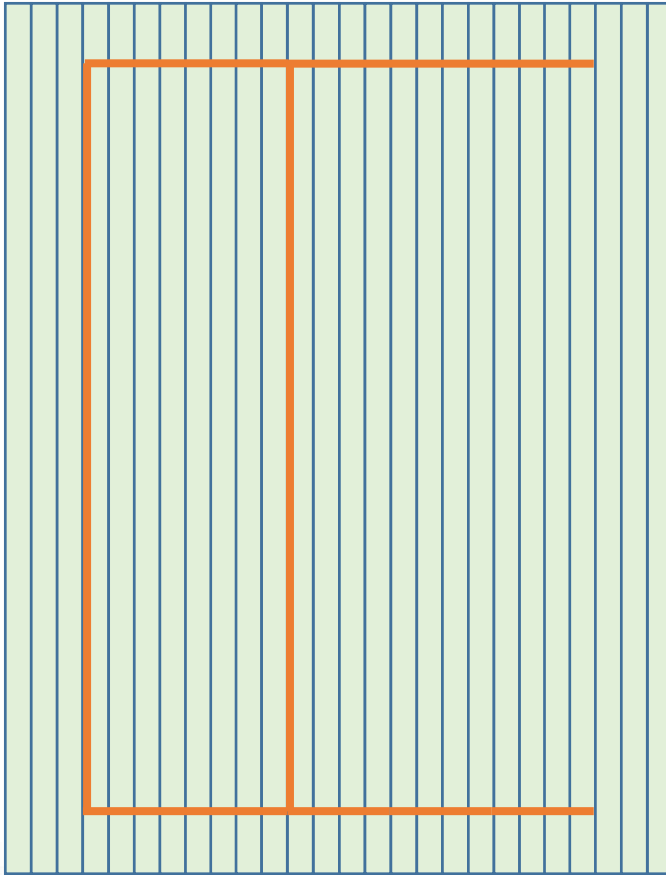
On a standing seam roof, for example, the first six or more runs of roof decking panels (if they are 2' each) should be installed using 100% tie-off, giving us a place to attach our control line 6' from the gable, and some working space.



Example CDZ

Eave

Gable

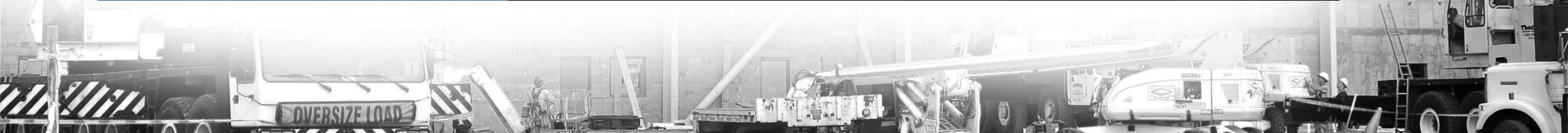


Install first runs using conventional fall protection

Establish CDZ control line parallel with leading edge at least 6' from the gable.

Continue installing roof panels and maintain control lines at least 6' from the unprotected sides.

Remember that the control line must never be farther than 90' from the leading edge. This means that it should be moved closer if necessary as the roofing progresses.



Attaching control lines in a CDZ

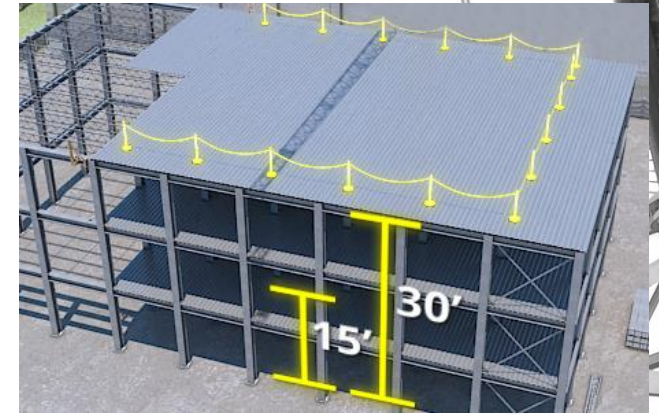
Control lines for a CDZ must consist of rope, wires, tapes, or equivalent materials with a minimum breaking strength of 200lbs.

The control lines must be attached on each side to a guardrail system, wall, stanchion, or other suitable anchorage, and rigged so that they are between 39 and 45 inches above the surface (including sag)

The stanchions should be able to support the control line at the required height without blowing over or being displaced by weather or wind.

The line and stanchions must be rigged so that pushing one section of the line does not take up slack in a neighboring section.

Commercially-available or shop-made stanchions will work, as long as they support the control line to the above specifications.



OSHA Standards for CDZ

The current OSHA standards for a controlled decking zone may be found at the federal OSHA site.

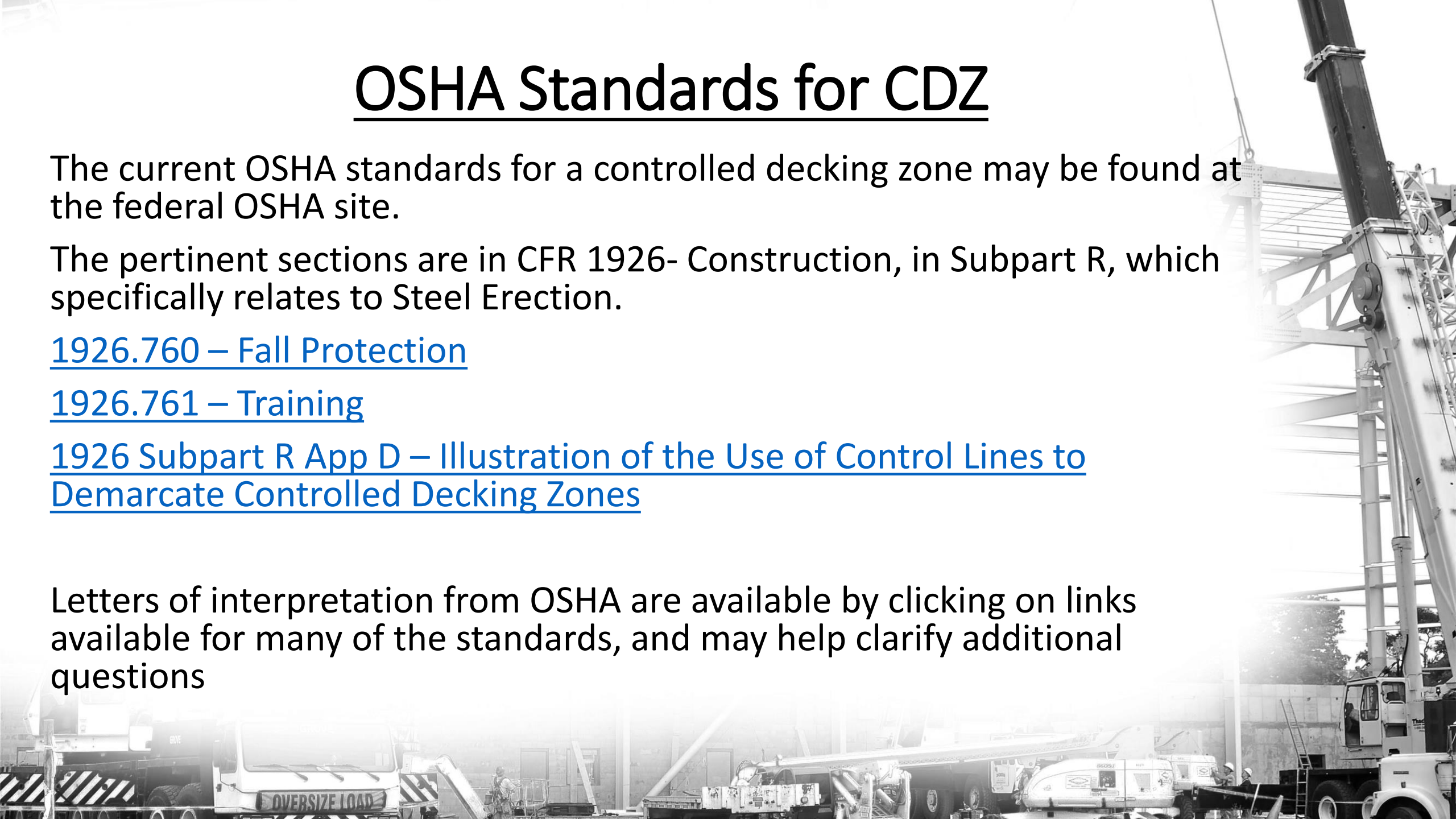
The pertinent sections are in CFR 1926- Construction, in Subpart R, which specifically relates to Steel Erection.

[1926.760 – Fall Protection](#)

[1926.761 – Training](#)

[1926 Subpart R App D – Illustration of the Use of Control Lines to Demarcate Controlled Decking Zones](#)

Letters of interpretation from OSHA are available by clicking on links available for many of the standards, and may help clarify additional questions

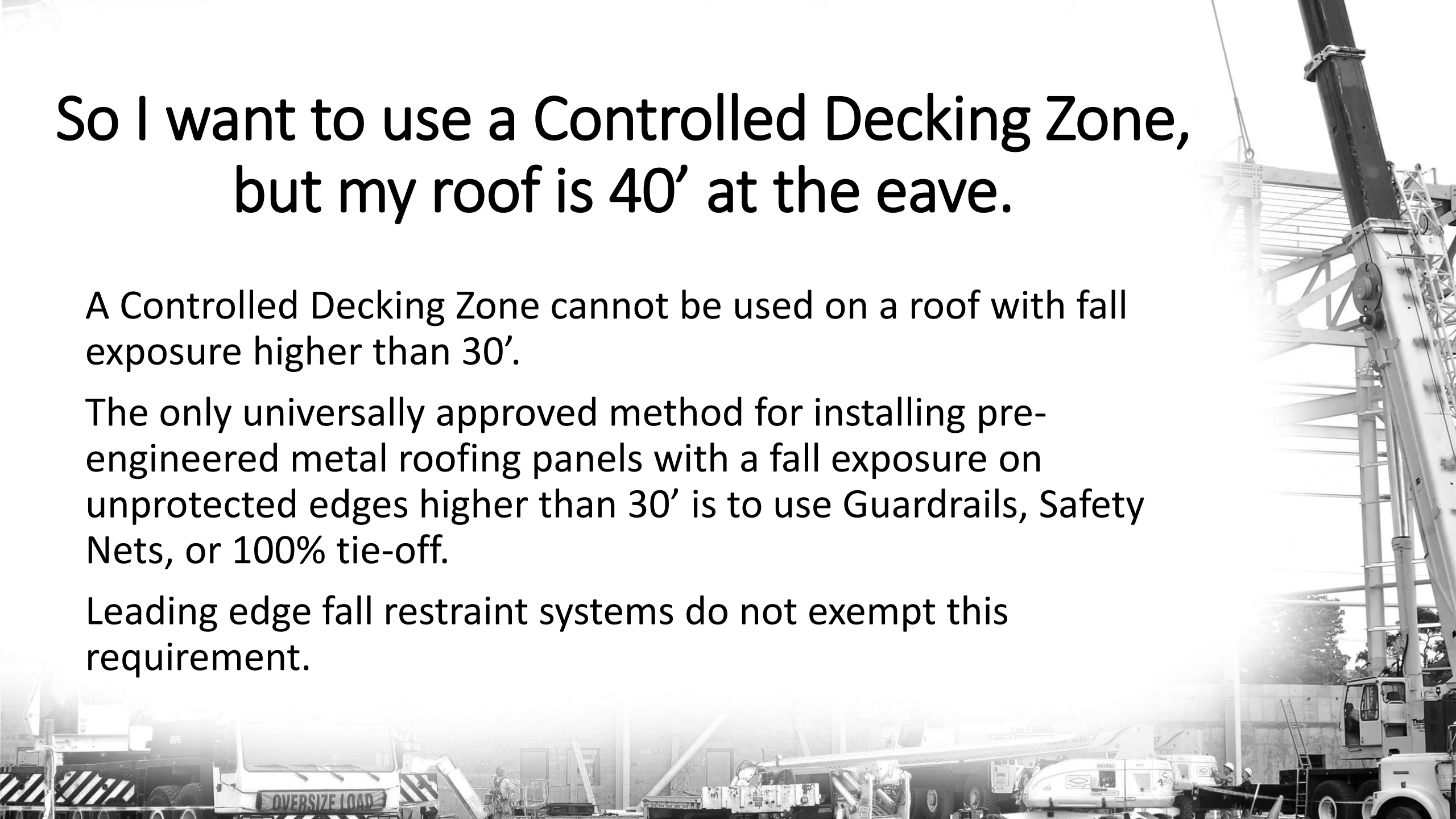


So I want to use a Controlled Decking Zone, but my roof is 40' at the eave.

A Controlled Decking Zone cannot be used on a roof with fall exposure higher than 30'.

The only universally approved method for installing pre-engineered metal roofing panels with a fall exposure on unprotected edges higher than 30' is to use Guardrails, Safety Nets, or 100% tie-off.

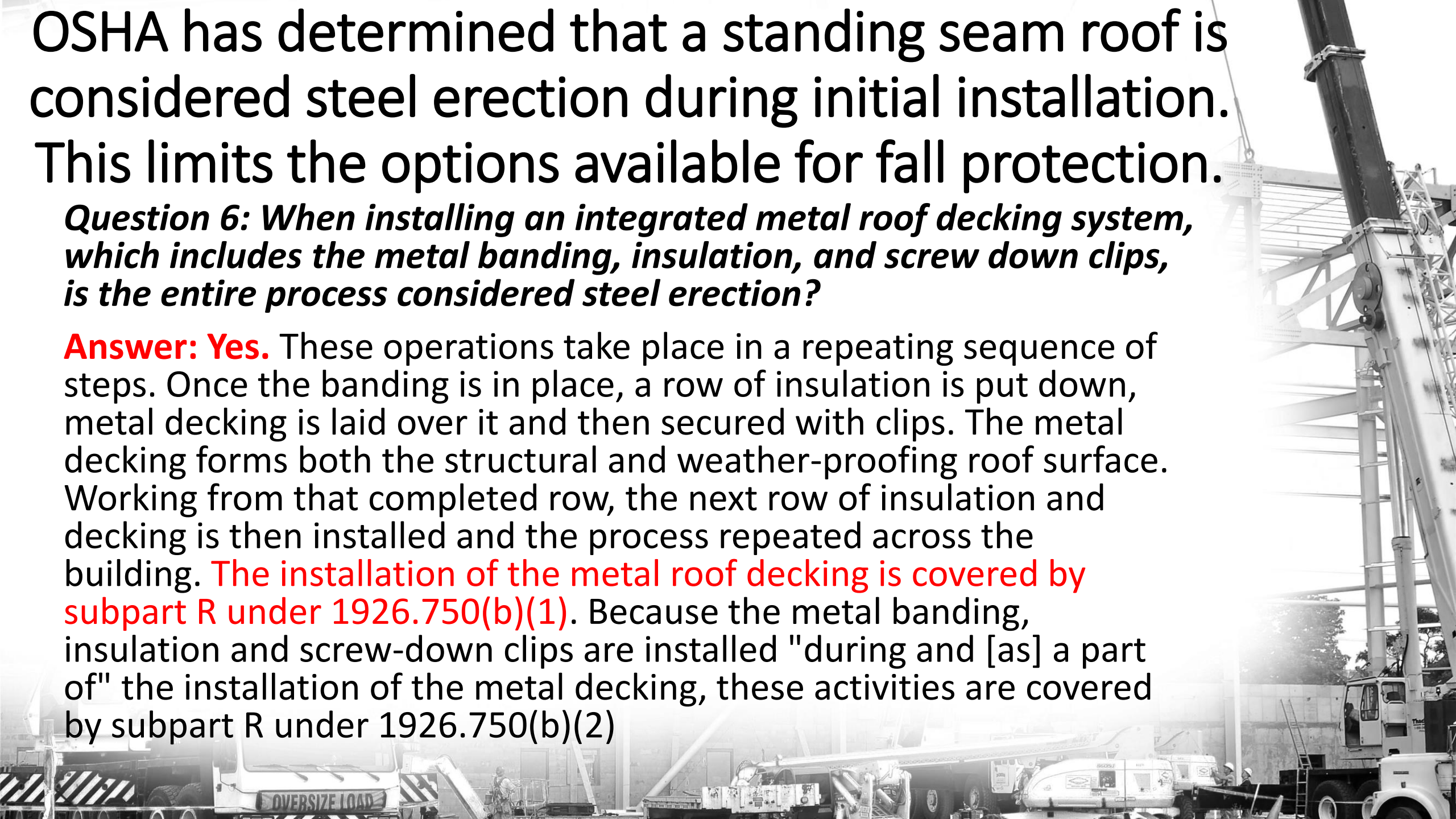
Leading edge fall restraint systems do not exempt this requirement.



OSHA has determined that a standing seam roof is considered steel erection during initial installation. This limits the options available for fall protection.

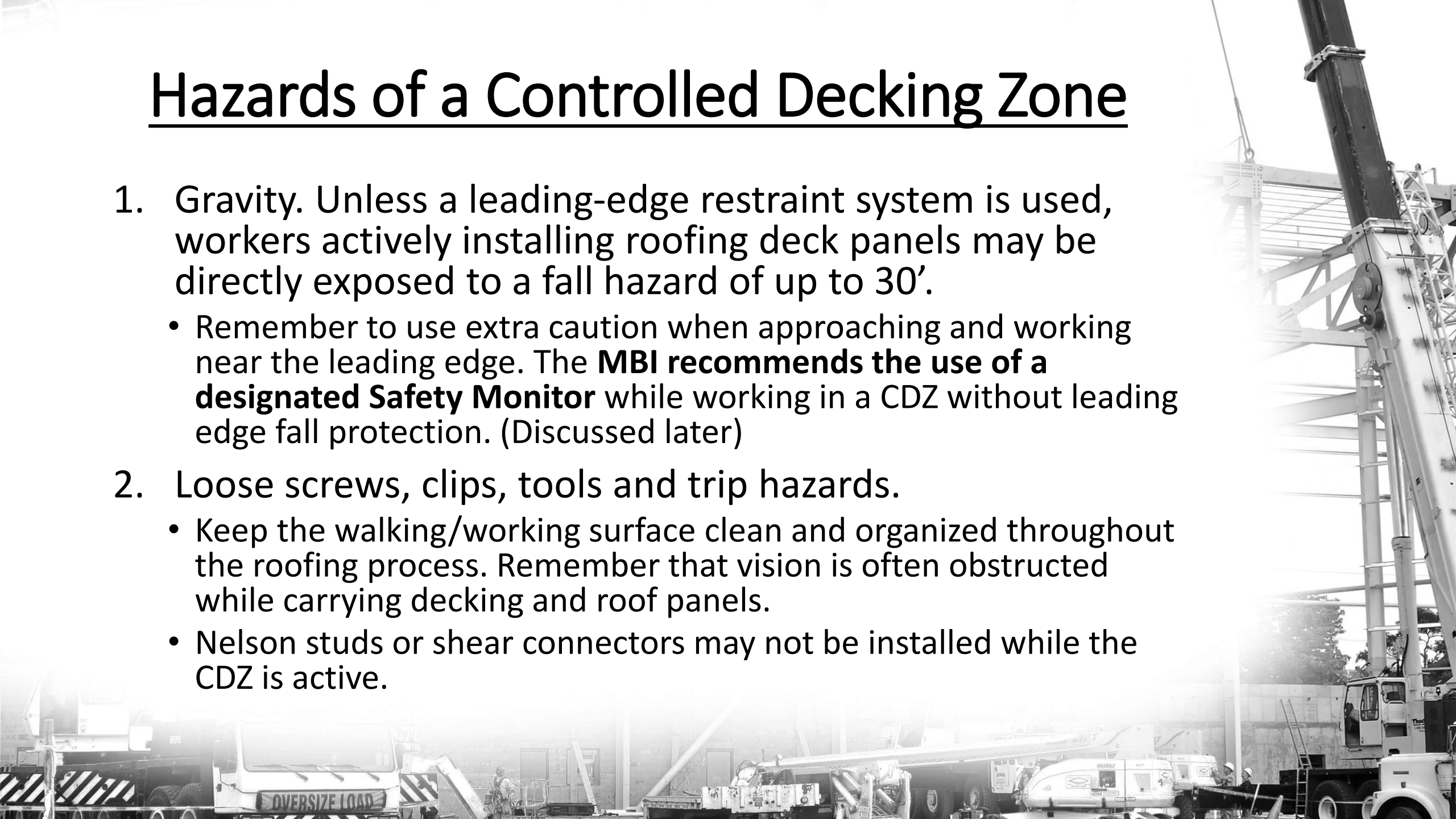
Question 6: When installing an integrated metal roof decking system, which includes the metal banding, insulation, and screw down clips, is the entire process considered steel erection?

Answer: Yes. These operations take place in a repeating sequence of steps. Once the banding is in place, a row of insulation is put down, metal decking is laid over it and then secured with clips. The metal decking forms both the structural and weather-proofing roof surface. Working from that completed row, the next row of insulation and decking is then installed and the process repeated across the building. **The installation of the metal roof decking is covered by subpart R under 1926.750(b)(1).** Because the metal banding, insulation and screw-down clips are installed "during and [as] a part of" the installation of the metal decking, these activities are covered by subpart R under 1926.750(b)(2)



Hazards of a Controlled Decking Zone

1. Gravity. Unless a leading-edge restraint system is used, workers actively installing roofing deck panels may be directly exposed to a fall hazard of up to 30'.
 - Remember to use extra caution when approaching and working near the leading edge. The **MBI recommends the use of a designated Safety Monitor** while working in a CDZ without leading edge fall protection. (Discussed later)
2. Loose screws, clips, tools and trip hazards.
 - Keep the walking/working surface clean and organized throughout the roofing process. Remember that vision is often obstructed while carrying decking and roof panels.
 - Nelson studs or shear connectors may not be installed while the CDZ is active.



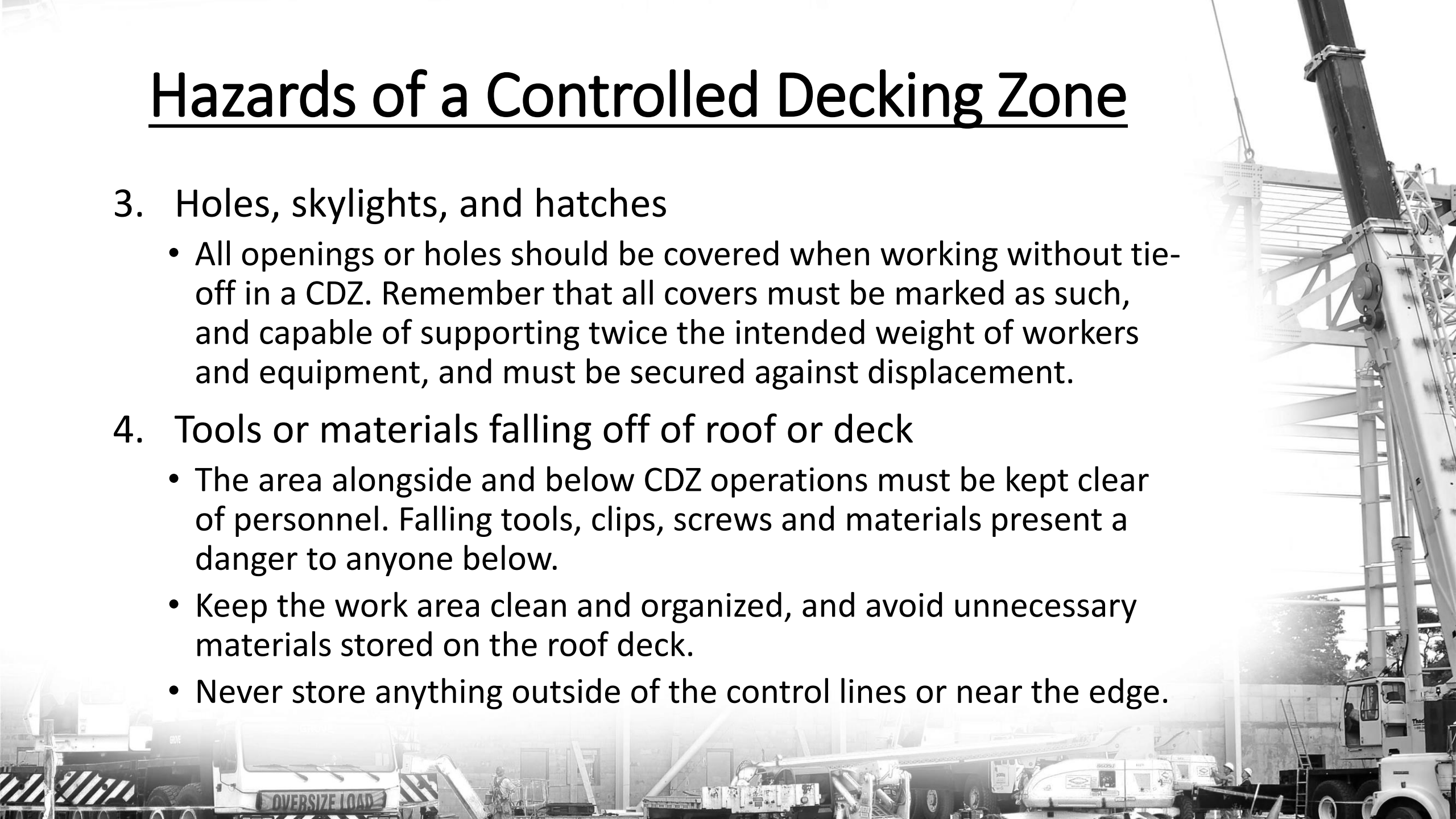
Hazards of a Controlled Decking Zone

3. Holes, skylights, and hatches

- All openings or holes should be covered when working without tie-off in a CDZ. Remember that all covers must be marked as such, and capable of supporting twice the intended weight of workers and equipment, and must be secured against displacement.

4. Tools or materials falling off of roof or deck

- The area alongside and below CDZ operations must be kept clear of personnel. Falling tools, clips, screws and materials present a danger to anyone below.
- Keep the work area clean and organized, and avoid unnecessary materials stored on the roof deck.
- Never store anything outside of the control lines or near the edge.



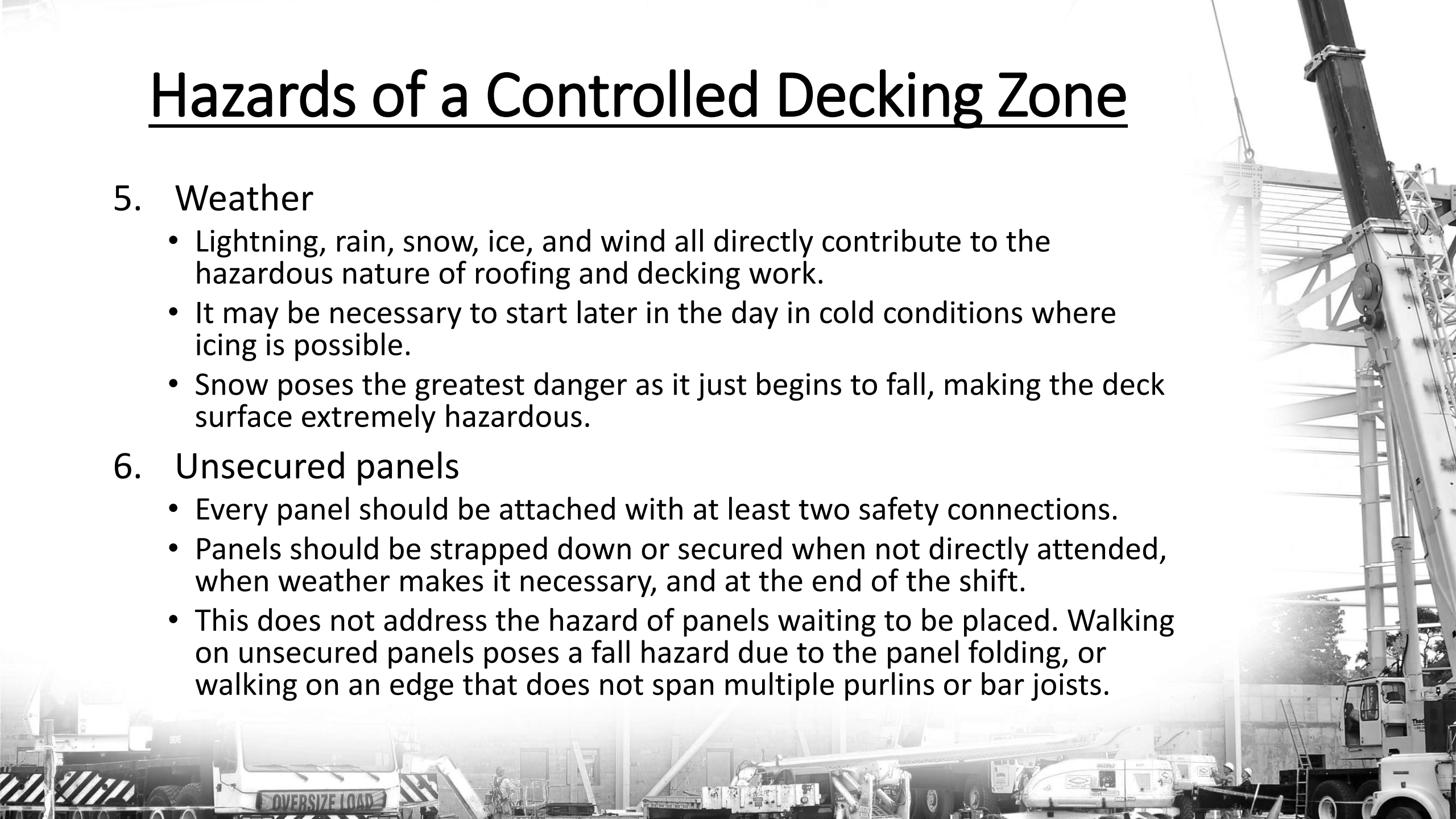
Hazards of a Controlled Decking Zone

5. Weather

- Lightning, rain, snow, ice, and wind all directly contribute to the hazardous nature of roofing and decking work.
- It may be necessary to start later in the day in cold conditions where icing is possible.
- Snow poses the greatest danger as it just begins to fall, making the deck surface extremely hazardous.

6. Unsecured panels

- Every panel should be attached with at least two safety connections.
- Panels should be strapped down or secured when not directly attended, when weather makes it necessary, and at the end of the shift.
- This does not address the hazard of panels waiting to be placed. Walking on unsecured panels poses a fall hazard due to the panel folding, or walking on an edge that does not span multiple purlins or bar joists.



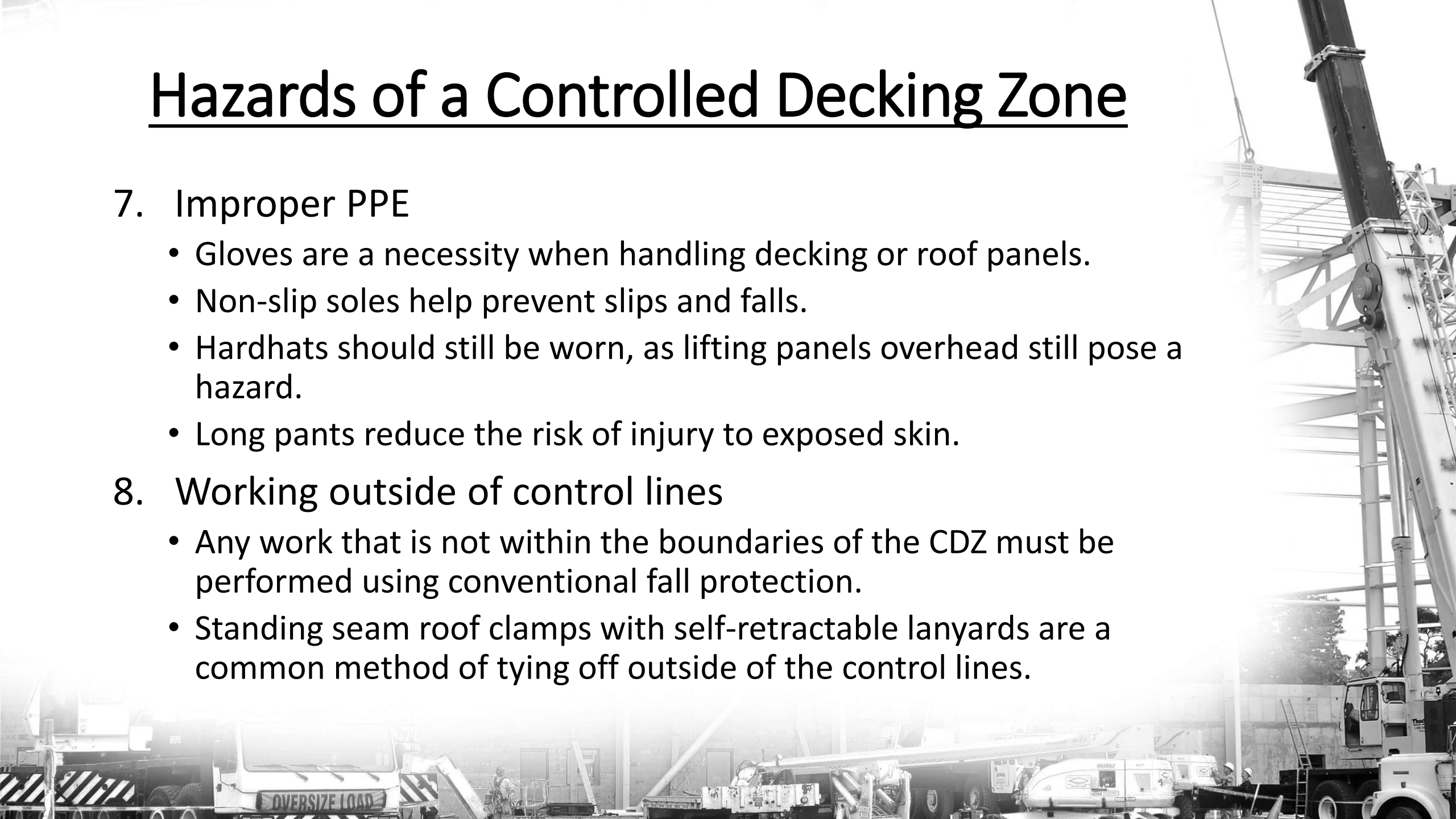
Hazards of a Controlled Decking Zone

7. Improper PPE

- Gloves are a necessity when handling decking or roof panels.
- Non-slip soles help prevent slips and falls.
- Hardhats should still be worn, as lifting panels overhead still pose a hazard.
- Long pants reduce the risk of injury to exposed skin.

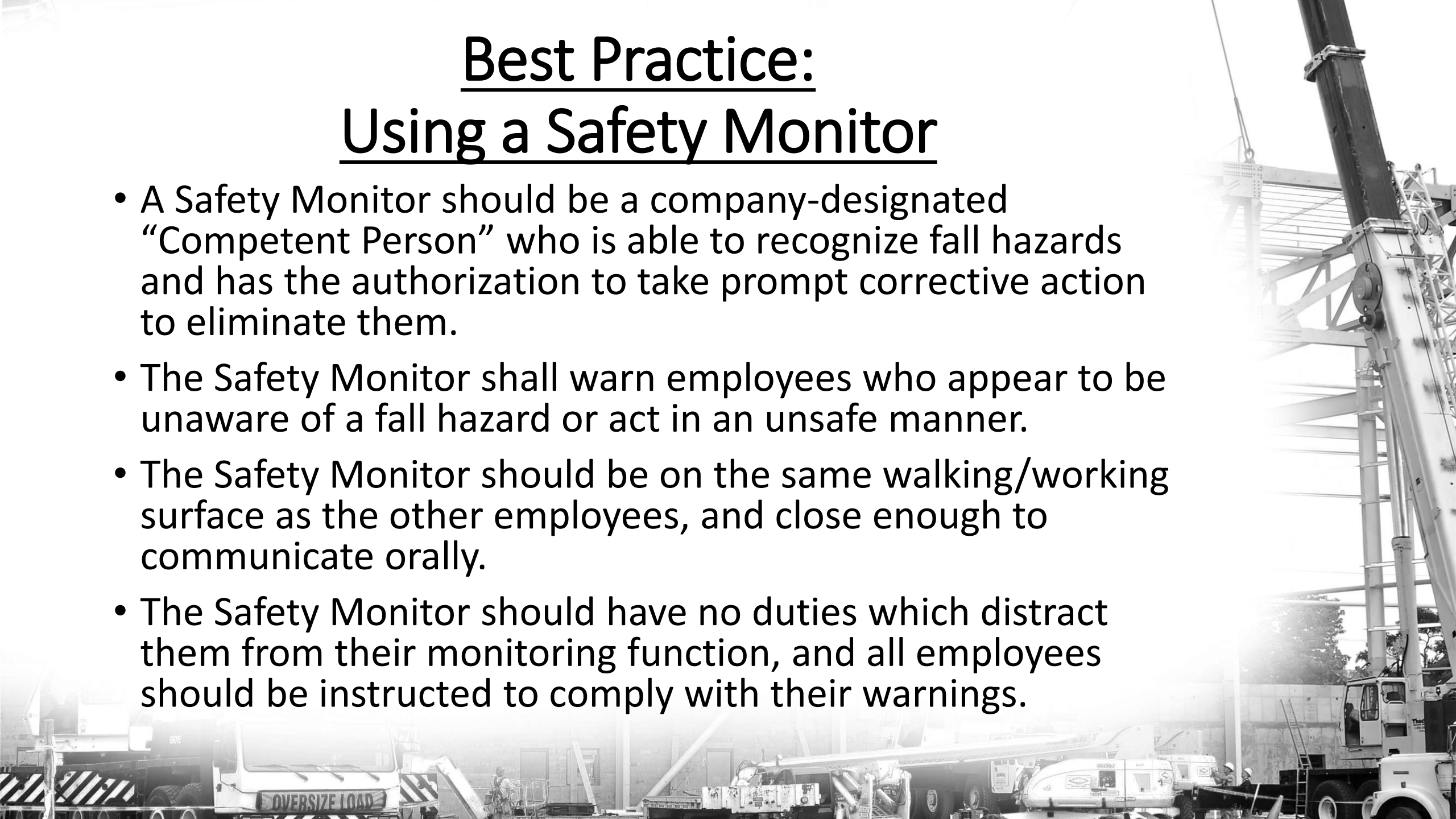
8. Working outside of control lines

- Any work that is not within the boundaries of the CDZ must be performed using conventional fall protection.
- Standing seam roof clamps with self-retractable lanyards are a common method of tying off outside of the control lines.



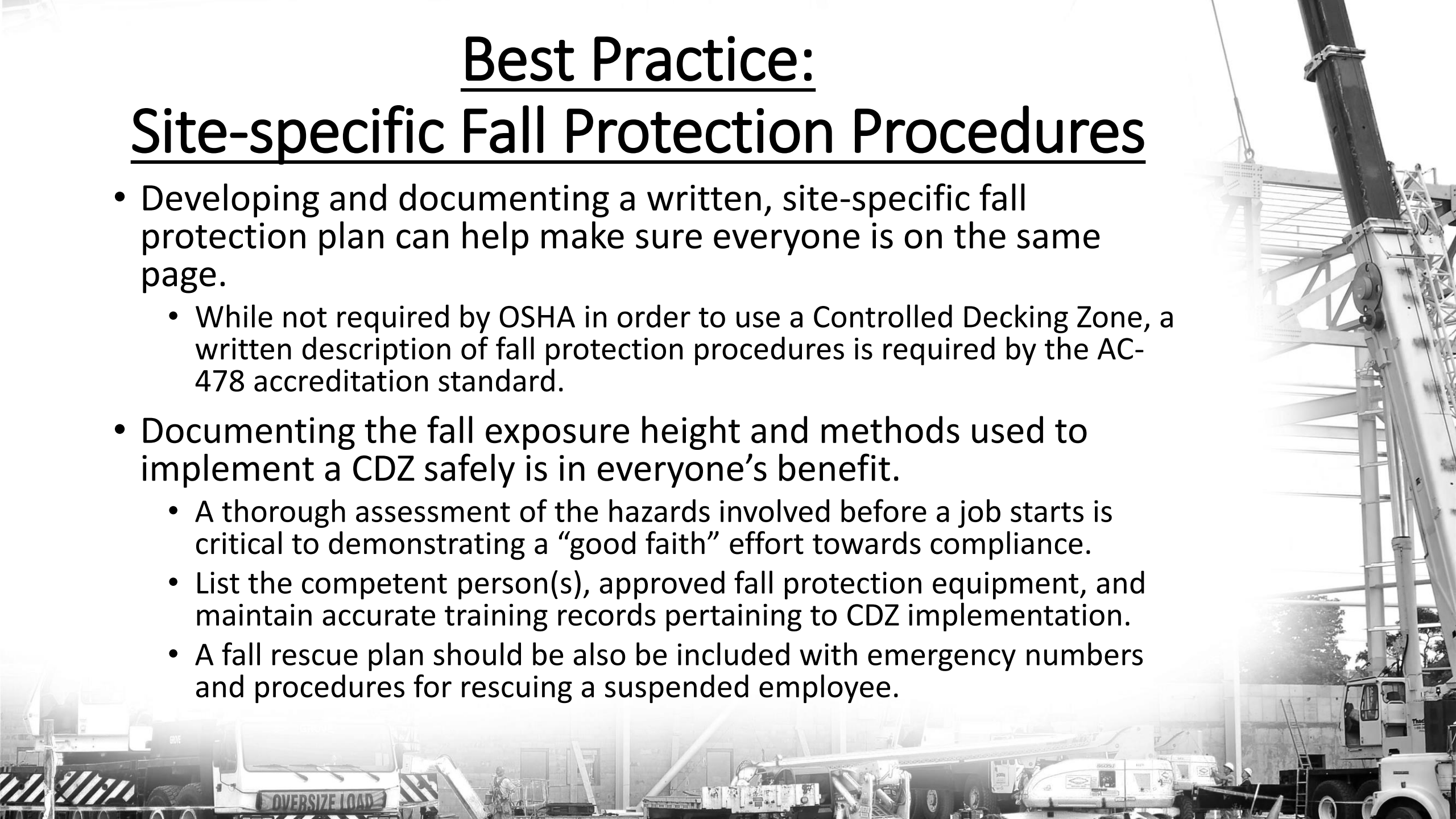
Best Practice: Using a Safety Monitor

- A Safety Monitor should be a company-designated “Competent Person” who is able to recognize fall hazards and has the authorization to take prompt corrective action to eliminate them.
- The Safety Monitor shall warn employees who appear to be unaware of a fall hazard or act in an unsafe manner.
- The Safety Monitor should be on the same walking/working surface as the other employees, and close enough to communicate orally.
- The Safety Monitor should have no duties which distract them from their monitoring function, and all employees should be instructed to comply with their warnings.



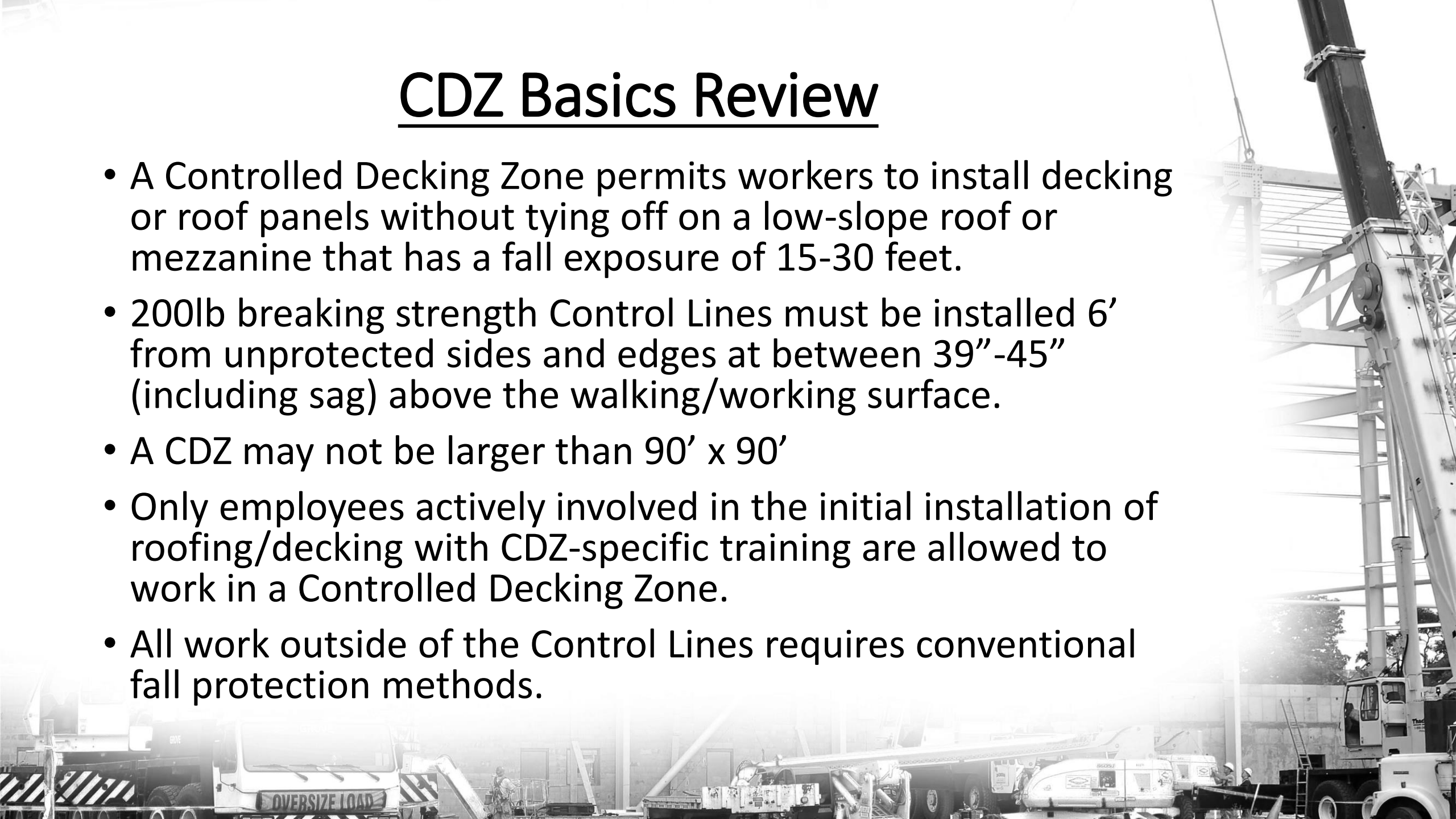
Best Practice: Site-specific Fall Protection Procedures

- Developing and documenting a written, site-specific fall protection plan can help make sure everyone is on the same page.
 - While not required by OSHA in order to use a Controlled Decking Zone, a written description of fall protection procedures is required by the AC-478 accreditation standard.
- Documenting the fall exposure height and methods used to implement a CDZ safely is in everyone's benefit.
 - A thorough assessment of the hazards involved before a job starts is critical to demonstrating a “good faith” effort towards compliance.
 - List the competent person(s), approved fall protection equipment, and maintain accurate training records pertaining to CDZ implementation.
 - A fall rescue plan should be also be included with emergency numbers and procedures for rescuing a suspended employee.



CDZ Basics Review

- A Controlled Decking Zone permits workers to install decking or roof panels without tying off on a low-slope roof or mezzanine that has a fall exposure of 15-30 feet.
- 200lb breaking strength Control Lines must be installed 6' from unprotected sides and edges at between 39"-45" (including sag) above the walking/working surface.
- A CDZ may not be larger than 90' x 90'
- Only employees actively involved in the initial installation of roofing/decking with CDZ-specific training are allowed to work in a Controlled Decking Zone.
- All work outside of the Control Lines requires conventional fall protection methods.



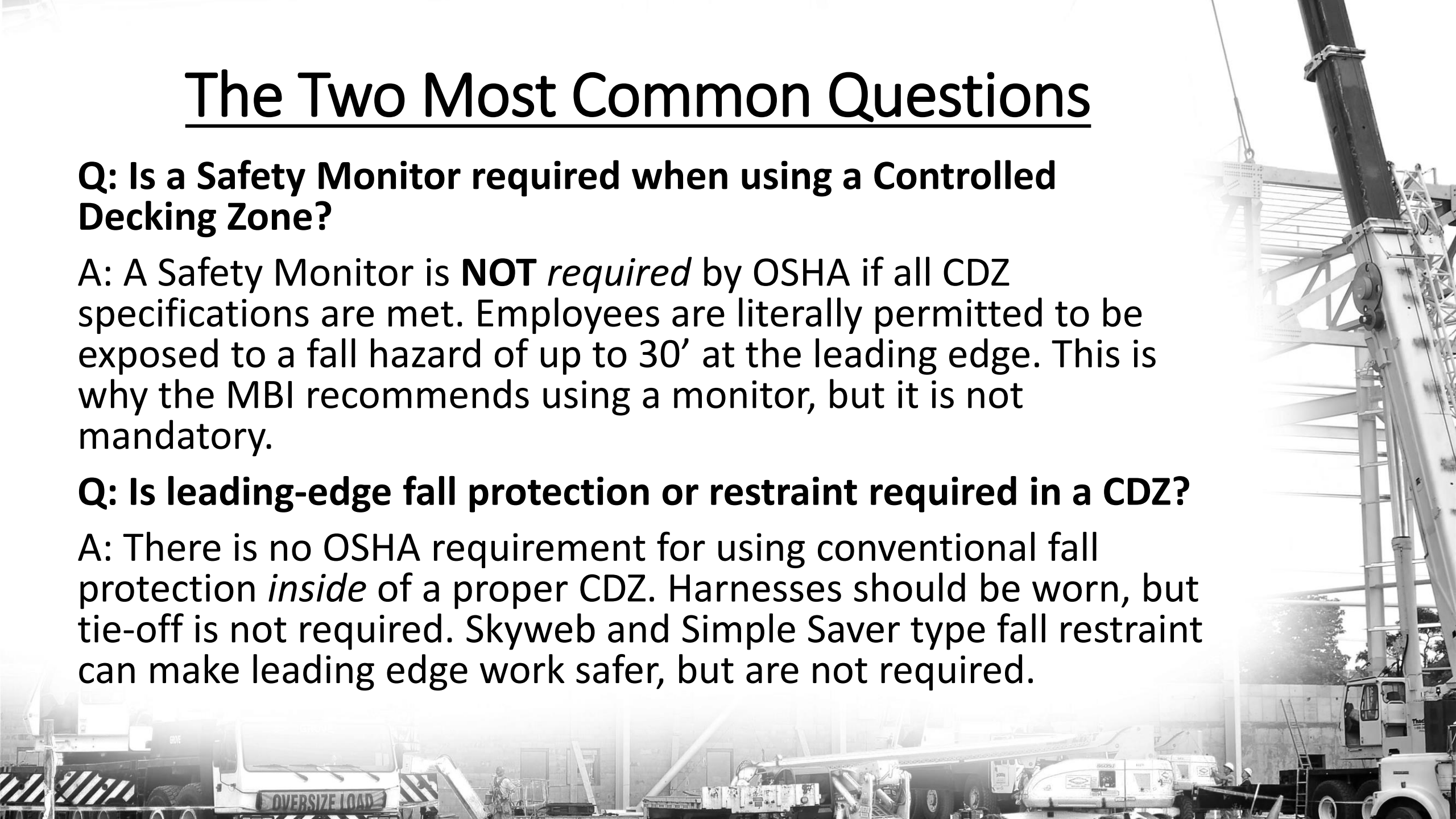
The Two Most Common Questions

Q: Is a Safety Monitor required when using a Controlled Decking Zone?

A: A Safety Monitor is **NOT** *required* by OSHA if all CDZ specifications are met. Employees are literally permitted to be exposed to a fall hazard of up to 30' at the leading edge. This is why the MBI recommends using a monitor, but it is not mandatory.

Q: Is leading-edge fall protection or restraint required in a CDZ?

A: There is no OSHA requirement for using conventional fall protection *inside* of a proper CDZ. Harnesses should be worn, but tie-off is not required. Skyweb and Simple Saver type fall restraint can make leading edge work safer, but are not required.



Additional Questions / Discussion



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