Fall Protection Practices for the Firestop Industry

FCIA Firestop Industry Conference & Trade Show

November 8th, 2019

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Partner

SAFETY CHECK, INC.
REGION V FATALITY STATISTICS

Fatalities under OSHA’s jurisdiction in Region V

<table>
<thead>
<tr>
<th>Calendar Year 2019</th>
<th>Calendar Year 2018</th>
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<tbody>
<tr>
<td>End Date: September 30th</td>
<td>End Date: September 30th</td>
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Produced by the Administrative Programs Unit on 10/1/19.
### OSHA Top 10: NAICS 238310

<table>
<thead>
<tr>
<th>Standard</th>
<th>Citations</th>
<th>Inspections</th>
<th>Penalty</th>
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### 238310 Drywall and Insulation Contractors

This industry comprises establishments primarily engaged in drywall, plaster work, and building insulation work. Plaster work includes applying plain or ornamental plaster, and installation of lath to receive plaster. The work performed may include new work, additions, alterations, maintenance, and repairs. Establishments primarily engaged in providing firestop services are included in this industry.

**Illustrative Examples:**

- Acoustical ceiling tile and panel installation
- Lathing contractors
- Drop ceiling installation
- Plastering (i.e., ornamental, plain) contractors
- Drywall contractors
- Soundproofing contractors
- Firestop contractors
- Fresco (i.e., decorative plaster finishing) contractors
- Taping and finishing drywall contractors
- Gypsum board installation
- Wall cavity and attic space insulation installation
At what height is fall protection required?

- It depends on:
  - The type of work being performed
  - The surface on which work is being performed

<table>
<thead>
<tr>
<th>Type of work</th>
<th>Surface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance</td>
<td>Walking / Working Surfaces – 6 feet</td>
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<tr>
<td>Construction</td>
<td>Horizontal or Vertical</td>
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<tr>
<td></td>
<td>Roofs, Floors, Ramps, Bridges, formwork, rebar, etc.</td>
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<tr>
<td>Steel Erection</td>
<td>Scaffolds – 10 feet</td>
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<tr>
<td>Connectors / Deckers</td>
<td>Articulating Boom Lift – All heights</td>
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<tr>
<td></td>
<td>Fixed Ladders – 24 feet</td>
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<tr>
<td></td>
<td>Portable Ladders – No requirement</td>
</tr>
<tr>
<td></td>
<td>Stairs – 4 or more risers, or &gt; 30 inches, whichever is less</td>
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</table>
What Fall Protection?

**Passive**
- Guardrail Systems
- Safety Nets
- Hole Covers

**Active**
- Personal Fall Arrest Systems
- Travel Restraint Systems
- Positioning Systems
Walking / Working Surfaces - 6 Feet or more above lower levels

Guardrail System – a barrier erected to prevent employees from falling to lower levels

- Top rail height 42” +/- 3” above walking/working level
- Mid-rails, screens, mesh, or other intermediate members required where there is no wall at least 21” high
- Intermediate members installed so that there are no openings in guardrail system > 19” wide
- 200 lbs. outward and downward
- Steel or plastic banding prohibited
- Top-rails and mid-rails minimum ¼” diameter
- If wire rope is used for top-rail, it must be flagged with high-visibility material at least every 6 feet
- Surfaced to prevent laceration / snagging of clothing
- Free of projection hazards
200 lbs. outward & downward?
Wire rope top-rail needs to be flagged with high-visibility material at least every 6 feet
When a force of 200 lbs. is applied in a downward direction, the top-rail cannot deflect to a height of less than 39” above the walking / working surface.
Employees must be protected from falling objects beyond simply wearing a hardhat...

Toe-boards are often used for this purpose
• Minimum 3 ½” height
• 50 lbs. outward & downward
• Solid, or no openings > 1”
• No more than ¼” clearance above floor
Walking / Working Surfaces - 6 Feet or more above lower levels

Personal Fall Arrest System (PFAS) – a system used to arrest an employee in a fall from a working level

• It consists of an anchorage, connectors, and a body harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these

• When stopping a fall, PFAS must:
  • Limit the maximum arresting force to 1,800 lbs. or less
  • Neither allow the worker to free fall more than 6 feet, nor contact any lower level
PFAS anchorages shall be:
- Independent of any anchorage being used to support or suspend platforms
- Capable of supporting at least 5,000 lbs. per employee attached

PFAS shall not be attached to guardrail systems
Harness Fitting

- Chest strap tightened at mid chest
- Proper snugness shoulder to hips
- Leg straps snug but not binding
- “D” ring between shoulder blades
- Butt strap supports the load
• Free Fall Distance cannot exceed 6 feet unless specialized equipment is used and enough fall clearance exists

• Location of anchorage is important
29 CFR 1926.502(d)(20): The employer shall provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.

- Prevent the fall if possible
- Orthostatic Intolerance (Suspension Trauma)
- 911 may not be adequate
- What constitutes “prompt” can vary depending on the circumstances
- Self-rescue preferred, assisted rescue may be necessary
Travel Restraint System – a combination of an anchorage, anchorage connector, lanyard (or other means of connection), and body support that an employee uses to eliminate the possibility of going over the edge of a walking-working surface.

- Prevents the fall, but is dependent on the user
- Only on slopes up to 4:12 (vertical:horizontal)
- Anchorage must be capable of supporting at least 1,000 lbs. per person attached

- The same components of personal fall arrest system may be used for a travel restraint system, to the extent that it prevents the fall
Safety Nets

- Nets shall be installed as close as possible to the walking/working surface.
- Nets shall not be more than 30 feet below.
- Nets shall be installed with sufficient clearance under them.
- Drop test shall be conducted after installation of the safety net.
Safety nets shall extend beyond the outermost projection as follows:
• Defective nets shall not be used

• Nets shall be inspected weekly or any occurrence that could affect the integrity

• Debris shall be removed from nets as soon as possible but no later than the start of the next shift

• No opening greater than 6 inches on any side

• Border ropes 5000 # breaking strength

• Connections not more than 6 inches apart
Hole Covers

- Roadways and vehicular aisles:
  - Capable of supporting, without failure, at least twice the maximum axle load of the largest vehicle expected to cross over the cover.

- All other covers:
  - Capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.

- **Secured** to prevent accidental displacement by the wind, equipment, or employees

- **Marked** “Hole”, “Cover”, or color coded to provide warning of the hazard
Scaffolding
Scaffolds - More than 10 feet above lower levels

Scaffold - any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage), used for supporting employees or materials or both.

- Fall Protection is required when working on scaffold platforms that are more than 10 feet above lower levels
- Type of fall protection is dependent on type of scaffold
- Scaffolds need to be designed by a qualified person; scaffolds need to be constructed and loaded in accordance with that design
- Main categories are supported and suspended; many types of each category
Scaffold Basics

- Capacity
- Fall Protection
- Ground Conditions
- Planking
- Access
- 1:4 Width:Height Ratio
- Power Lines

Capacity (Supported Scaffolds) – Each scaffold and scaffold component shall be capable of supporting, without failure, its own weight and at least 4 times the maximum intended load applied or transmitted to it.
Fall Protection is required on scaffolds that are more than 10 feet above lower levels; The type of fall protection depends on the type of scaffold.

Requires PFAS:
- Boatswains’ Chair
- Catenary Scaffold
- Float Scaffold
- Needle Beam Scaffold
- Ladder Jack Scaffold

Requires PFAS and Guardrail System:
- Single-point adjustable suspension scaffold
- Two-point adjustable suspension scaffold
- Self-contained adjustable scaffold
- Articulating boom lift

All other scaffolds require PFAS or a Guardrail System.
• Top-rail 38”-45”
• Mid-rail, screens, or mesh between top-rail and platform
• No openings > 19” wide
• 200 lbs. outward & downward
• Cross-bracing can be used as top-rail when crossing point is between 38” and 48” above platform; mid-rail required

• Cross-bracing can be used as mid-rail when crossing point is between 20” and 30” above platform; top-rail required

• If relying on cross-bracing as either top or mid-rail, the end points at each upright shall be no more than 48” apart
• Mid-rail and toe-boards required
• Supported scaffold poles, legs, posts, frames, and uprights shall bear on base plates and mud sills or other adequate firm foundation.

• Footings shall be level, sound, rigid, and capable of supporting the loaded scaffold without settling or displacement.
Unstable objects shall not be used to support scaffolds or platform units.
Base plate with mudsill
• Scaffold casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the scaffold while the scaffold is used in a stationary manner.

• Housekeeping

• Riding mobile scaffold is prohibited....unless:
  • Floor is level
  • Floor is free of pits, holes, obstructions
  • Base:Height ratio is 1:2 or less
  • Each employee on scaffold is made aware of the move
Planking

Each platform on all working levels of scaffolds shall be fully planked or decked between the front uprights and the guardrail supports.
Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch wide.
Each scaffold platform and walkway shall be at least 18 inches wide.

Exceptions:
- Ladder Jack Scaffold: 12”
- Top Plate Bracket: 12”
- Pump Jack: 12”
- Roof Bracket: X
- Botswains’ Chair: X
Each end of a platform, unless cleated or otherwise restrained by hooks or equivalent means, shall extend over the centerline of its support at least 6 inches.
• Not more than 12 inches past end support for platforms ≤ 10 feet in length

• Not more than 18 inches past end support for platforms > 10 feet in length

Ladders shall be used only for the purpose for which they were designed
Overlap shall occur only over supports, and shall not be less than 12 inches unless the platforms are nailed together or otherwise restrained to prevent movement.
Climbing cross-bracing is prohibited

Acceptable means of access:
- Portable, hook-on, or attachable ladders
- Scaffold stair towers
- Stairway-type ladders (ladder stands)
- Ramps / walkways
- Integral prefabricated access frames
- Direct access from another surface when the scaffold is not more than 14” horizontally and not more than 24” vertically from the other surface
Tipping Prevention

Base: Height ratio of more than 1:4, requires guying, tying, or bracing

Base width increased where not secured to structure
Power Lines

< 50 kV – 10 Feet

> 50 kV – 10 Feet + .4” for every 1 kV over 50 kV

Protective coverings being installed by utility owner. Should have been installed prior to scaffold erection/use.
Aerial Lifts
• Scissor Lifts regulated as a mobile scaffold

• Guardrails are sufficient fall protection

• Occupants must have feet on floor of lift
• Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition

• Only authorized persons shall operate an aerial lift

• Belting off to an adjacent pole, structure, or equipment while working from an aerial lift shall not be permitted

• Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.

• A body harness shall be worn and a lanyard attached to the boom or basket when working from an aerial lift
Ladder Use
Ladders

• Inspect ladders for defects

• Damaged ladders should be removed from service and tagged “Do Not Use”

• Ladders shall be used only for the purpose for which they were designed

• Choose proper type and set up properly
  • Stepladder, straight ladder, multi-purpose
  • Metal, fiberglass, wood

• Never exceed rated capacity
Use of Straight / Extension Ladders

- Inspection
- Feet
- Proper Angle
- Secured
- 3-foot extension above landing
- 3 points of contact
Check The Locks

- Always check to be sure the extension locks are properly seated.
Set Feet Properly

**Firm Base**
Set both feet level and on the pads

**Soft Base**
Set on the spikes and seat the ladder in the ground.
Set The Proper Angle

• The distance from the bottom of the ladder to the wall should be one-fourth of the ladder's working height.

• An extended arm will be close.
Extend Above Platform

- Access ladders must be secured and extended above the landing platform 3 feet.
Safe Step Ladder Use

- Always face the ladder
- Stay off top two steps.
Fixed ladders > 24 feet require fall protection:
• Cage;
• Ladder Safety Device; or
• Self-Retracting Lifeline

• Where a cage or SRL is used, rest platforms are required at intervals not to exceed 50 feet, or 150 feet, respectively

• New fixed ladders require ladder safety device or personal fall arrest system

• All fixed ladders required to have ladder safety device or personal fall arrest system by 11/18/2036
Stairways

Stairways having four or more risers or rising more than 30 inches, whichever is less, shall be equipped with:

- A stair-rail system at along each unprotected side or edge, and
- At least one hand-rail

- The stair-rail may serve as hand-rail if between 36”-37” above the surface of the tread in line with the face of the riser at the forward edge of the tread
Must be barricaded to prevent use;

Stair-rail system with hand-rail is required;

Guardrail system is required on landings
Treads for temporary service shall be made of wood or other solid material, and shall be installed the full width and depth of the stair.
Questions.....?