

Roofing loss prevention guidelines and best practices



INTRODUCTION

Every day, roofing contractors and their employees face numerous potential job site hazards and exposures. If not controlled, these hazards and exposures can lead to employee injury and even death. Falls from ladders and roofs still account for the majority of falls. Identifying fall hazards and deciding how best to protect workers is the first step in reducing or eliminating fall hazards. Occupational fatalities caused by falls remain a serious public health problem. The U.S. Department of Labor (DOL) lists falls as one of the leading causes of traumatic occupational death, accounting for eight percent of all occupational fatalities from trauma. Fall protection must be provided at six feet in construction.

In addition to fall exposures, there are also potential exposures to loss from roof fires, building water damage and vehicle accidents. Large losses in these areas can be costly and lead to increased insurance costs if controls are not followed. While unexpected losses happen, there are methods to decrease the potential for these types of losses that can be followed.

The following safety guidelines and best practices are provided to assist roofing contractors in identifying the minimum safety practices to be employed to control potential losses.

MANAGEMENT RESPONSIBILITIES

- A.** Company safety rules should be developed and provided to all employees. All employees should be required to review these rules and be documented as reviewed with their signature. The National Roofing Contractors Association (NRCA) does have safety rules that can be included in your written safety rules.
- B.** Personal protective equipment (PPE) should be made available to all employees. Each job should be reviewed prior to the start of work to determine appropriate PPE to be provided. All employees should receive training in proper use of PPE.
- C.** Minimum written guidelines and procedures should be developed and followed to control losses from potential roof leaks and roof fires. Suggested best practices are provided by United Fire Group (UFG) in this technical bulletin.
- D.** Screen all drivers for competence and safe driving records.

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MINIMUM JOB SAFETY GUIDELINES

A. Holes and openings

- Holes are defined as a gap or void of 2 inches or more in its least dimension in a floor, roof or other walking/working surfaces. Holes, including skylights 6 feet or more above a lower level, should be protected by use of personal fall arrest systems, covers or guardrails around each hole. Skylight nets are also available.
- Covers should be strong enough to withstand twice the weight of workers, materials and equipment that may be on the cover at any time. Roofing materials should never be used as cover for holes.
- All covers should be secured in place by either nails or screws. Color coding of covers should be done, as well as marking the cover to indicate a roof opening by painting HOLE or COVER.

B. Roof perimeter and walking/working surface fall protection

- Each employee on a walking/working surface with unprotected sides or edges and more than 6 feet from a lower level should be protected by guardrail systems, safety net systems, personal fall arrest systems or warning lines. In addition, safety monitors may be used in certain circumstances.

Guardrail systems

- Top edge of guardrail should be 42 inches plus or minus 3 inches.
- Mid-rails, screens, mesh or intermediate structural members should be installed between the top edge of the guardrail system and walking/working surface if there is no wall or parapet wall at least 21 inches high. If vertical structures are used, such as balusters, they should be spaced no more than 19 inches apart.
- Guardrail systems should be capable of withstanding, without failure, at least 200 pounds applied within 2 inches of the top edge in any outward or downward direction at any point along the top edge.
- Guardrails used on ramps and runways should be erected along all unprotected sides and edges.

Safety nets

- Safety net systems use should comply with all provisions of Code of Federal Regulations (CFR) 1926.
- Safety nets should be inspected prior to each use and installed by competent persons.
- Safety nets, if used, should be installed as close as practicable under the working surface on which employees are working, but in no case more than 30 feet below such level.
- Safety nets should be installed with sufficient clearance under them to prevent contact with the surface or structures below when subjected to drop-test specification as outlined in CFR 1926.

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Personal fall arrest system (PFAS)

- A system to arrest a falling employee from a working level consisting of an anchorage, connectors and a body harness. System may include a lanyard, deceleration device, lifeline or suitable combination of these options.
- Inspection of PFAS should be completed prior to each use.
- Connectors, such as D-rings and snaphooks, should be drop forged and corrosion resistant with a minimum tensile strength of 5,000 pounds.
- A competent person should install and inspect all PFASs daily with employees who will be using such systems.
- Training of all employees who use a PFAS should be provided and documented.
- PFAS should comply with all provisions of CFR 1925.

Warning line systems

- Warning lines may be used on roof perimeters where work is completed to warn employees that they are approaching an unprotected roof side or edge.
- When mechanical equipment is not used, the warning line should be installed no less than 6 feet from the roof edge.
- When mechanical equipment is used, the warning line should be installed no less than 6 feet when working parallel with such equipment to the line and no less than 10 feet when working with mechanical equipment perpendicular to the line.
- Mechanical equipment may not be used or stored outside of the warning line.

Safety monitoring systems

- A competent employee trained to recognize and warn employees of potential fall hazards should be the only one allowed to act as a safety monitor.
- The safety monitor should be on the same working level in visual sighting of roofers and close enough to verbally warn employees approaching potential fall hazards or acting in an unsafe manner.
- The safety monitor should have no other duties or responsibilities while acting in this capacity.
- Mechanical equipment should not be used or stored in areas where safety monitoring is being provided.

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Roof slopes of 4/12 to 8/12

- Eave guards should be used consisting of planks and supported by metal brackets installed perpendicular to the roof edge.
- Eave planks should be supported by a minimum of three brackets with a 7-foot maximum span between brackets.
- For wood and composition shingles, a 2-by-6 plank supported by roof brackets should be erected at the eave and below the area in which men are working.
- For slate, tile or asbestos shingles, a 2-by-10 plank supported by roof brackets should be erected at the eave and below the area in which men are working.
- Roof slopes steeper than 8/12 should have safety lines or a 42-inch high barrier at the eaves provided.

C. Ladders

- Extension ladders must be tied and secured at the top and placed firmly on level ground at the bottom. Side rails must extend a minimum of 36 inches above the roof edge.
- Extension ladders must be placed so the distance of the foot to the wall is 1/4 the length of the ladder to the roof edge.
- Ladders should be inspected each day prior to use.
- Defective ladders should not be used and repairs should not be attempted. If defective, the ladder should be tagged and discarded.

D. Scaffolds—more than 6 feet off the ground

- Follow all provisions in CFR 1926.451.
- Designated and trained competent persons should be the only employees authorized to erect scaffolding.
- Scaffolding components should be inspected daily, prior to use by competent individuals.
- Standard guardrails should be provided.
- Scaffolding should be secured to prevent tipping or swaying.
- Provide PFAS where needed as determined by pre-job review.
- Wooden planks should not be less than 2-by-8 material that has not been spliced.

E. Hoists

- Roofing material should never be used as counterweight. The counterweight material should be secured to the hoist.
- The hoist operator and hoist area should have fall protection provided by guardrails securely installed on either side or PFASs.
- Daily inspection of the hoist and fall protection should be completed by an onsite competent person.
- Weekly inspections of hoisting equipment should be completed and documented by a competent person.

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F. Equipment and manual lifting training

- A program of continuing education should be implemented for enforcement and instruction in the safe use of equipment and manual lifting tasks and procedures. This should be done for all new employees and documented.

G. Personal protective equipment (PPE)

- Hard hats should be worn at all times when there is an overhead exposure. If there is no overhead exposure, then hard hats may be removed unless company policy dictates otherwise.
- Kettlemen should wear full face shields and long sleeve, non-synthetic shirts.
- When hot work is completed, employees should be required to wear long sleeves down and buttoned. Gloves should be worn with snug fitting cuffs extended under the short sleeves.
- Properly fitting long pants (preferably without cuffs) should be worn with standard work boots.
- Work shoes or boots should have clean soles when climbing or descending ladders.
- Eye protection (safety goggles) should be used when tearing off roofs or using power tools.
- Employees working with any substance considered hazardous should change contaminated clothes and wash before eating, drinking or smoking.
- Appropriate National Institute for Occupational Safety and Health (NIOSH) respirators should be provided and used as needed for hazards identified during the pre-job review.

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H. Roof fire control—minimum guidelines and best practices

- Fire extinguishers should be placed on the roof, annually serviced, inspected daily and placed so that extinguishers are near the work area. Travel distances between extinguishers should be no greater than 75 feet.
- Employee training should be completed for proper use and storage of fire extinguishers.
- Pre-job inspections should determine potential areas where hot work or torch work may contact combustible materials and be reviewed with roofers.
- All electrical cords should be regularly inspected and repairs of defective cords should not be attempted.
- Defective cords should be discarded.
- Ground Fault Circuit Interrupter (GFCI) protection, properly maintained and operational, should be in place for all power tools in use.
- Kettles should be on preventative maintenance schedules to ensure proper maintenance and operation of burners and controls.
- Propane cylinders should be hydrostatically tested per manufacturer recommendations and all hoses inspected daily prior to use. Employees should be trained on proper use, handling and storage of propane cylinders.
- Smoking should not be allowed on the roof.
- Gasoline, if in use on the roof, should be stored in listed flammable liquid safety containers.
- A fire watch should be completed by trained personnel at least one hour after all hot work has been completed.
- Visual inspection and/or use of infrared detection devices can be used to assist in identifying potential hot spots.

I. Roof water damage control—minimum guidelines and best practices

- Pre-existing water damage should be documented through notes and photos at the time the estimate is completed.
- If possible, a signature should be obtained from the job owner as to the existence of the damage.
- Inspection of rooftop units' condition and area of curbing should be completed at the time of estimate to ensure leaks are not already present.
- Weather should be monitored daily with use of dedicated radar systems or weather radios.
- Infrared detectors can be used to identify areas of pre-existing damage in roofs and walls.
- Tie-ins or roof seals are inspected at the end of each workday by a designated competent employee.

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J. Minimum vehicle safety guidelines

- State Motor Vehicle Records (MVRs) should be obtained on all new drivers and annually for all existing drivers and reviewed by management.
- Drivers with poor driving records should not be allowed to operate company vehicles or use personal vehicles on company business. Criteria to determine acceptable driving records should be established by management.
- A program of periodic critical item vehicle inspections by drivers should be implemented and documented.
- Documented preventative maintenance of vehicles should be completed with records kept.
- Federal Motor Carrier Safety Regulations (FMCSR) should be followed as applicable.

Summary

UFG's risk control consultants are available for technical assistance as outlined in our *Risk Control Guidelines and Best Practices*. If further assistance is needed, please call 800-828-2705 or email us at riskcontrol@unitedfiregroup.com.

Related references

CRF1925

CFR 1926 Subpart E – Personal Protective and Life Saving Equipment 1926

CFR 1926 Subpart L – Scaffolds 1926

CFR 1926 Subpart M – Fall Protection 1926

CFR 1926 Subpart X – Stairways and Ladders 1926

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