

Reducing Falls During Roof Repairs

Roofers typically work at heights that put them at risk for falls. Workers making roof repairs face the same hazards, but they can be at increased risk if the roof shows signs of lost integrity or if they are uncertain of how to use fall protection on a roof that is already weatherproofed. Employers should provide a training program for each worker who might be exposed to fall hazards. The program shall enable each worker to recognize the hazards of falling and shall train each worker in the procedures to be followed in order to minimize these hazards. For fall protection training requirements, refer to 29 CFR 1926.503.

In all cases, employers must evaluate the hazards and take measures to reduce the risk of falls. For patching and repair jobs, roofers have several options, including scaffolding, aerial lifts and various types of conventional fall protection. The best choice depends on where the repair is needed and on the type of building.

How to Reduce Risks

Structural Integrity

Employers must determine the structural integrity of the roof and take all necessary precautions to protect the workers before repairs begin. If workers notice signs of structural deterioration (e.g., dry rot) as old weatherproofing is removed, a competent person should evaluate the area.

At the Roof's Edge

Access from stable platforms: When the damaged section of roof is along an edge, a roofer can work from a scaffold or aerial lift. Regardless of the condition of the roof, this equipment provides safe, stable work platforms

from which the worker can reach the area to be repaired.

Lifts: Depending on the building layout and the tasks involved, lifts (e.g., scissor, aerial) may be an option for roofing work near the edge. Lifts provide stable, elevated platforms from which workers can operate safely. For small tasks, aerial lifts might be more efficient than installing scaffolds. Aerial lifts are also a practical way to get to a customized height above or below the roof level. Care must be taken when loading material. Do not overload the lift. For more information on the safe operation of aerial and scissor lifts, refer to 29 CFR 1926.453, Aerial Lifts and 29 CFR 1926.452(w), Mobile Scaffolds.

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Scaffolds: When properly constructed and used, external scaffolds can provide suitable protection for repairs along the edge of the roof. Pump-jack scaffolds offer a secure platform to work from and can be raised and lowered for specific tasks, such as working underneath the eaves. Guardrails installed along the open side of the scaffold provide fall protection. For other requirements for scaffolds, refer to 29 CFR 1926 Subpart L-Scaffolds.

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Working Higher Up on a Roof

Scaffolds: When working farther up on the roof and beyond arm's reach, scaffolds can still provide fall protection if they are properly constructed. The top rail may have to extend higher than 45 inches above the roof surface to adequately protect workers from falls.

Personal Fall Arrest System (PFAS): A PFAS is another tool available to roofers during repair jobs. In fact, a PFAS is the system of choice for most roofers. A breakdown in any of its parts could be disastrous for a worker.

A PFAS is designed to safely stop a fall before the worker strikes a lower level. The system includes three major components:

1. An anchorage to which the other components of the PFAS are rigged
2. A full body harness worn by the worker
3. A connector, such as a lanyard or lifeline, linking the harness to the anchorage. A rip-stitch lanyard, or deceleration device, is typically a part of the system.

For more information on the requirements for a PFAS, refer to 29 CFR 1926.502(d).

Remember that workers must use full-body harnesses in fall arrest systems. Body belts can cause serious injury during a fall, and OSHA prohibits their use as part of fall arrest systems.

PFASs need strong anchor points that can hold the sudden weight of a falling worker. No anchor with a single connection point, such as a strap anchor or a bolt-on anchor, will protect a falling worker who is attached to a single truss.

Other systems, such as scaffolds, lifts and ladders, can be used to protect workers until a fully inter-connected, multi-truss section has been appropriately braced and secured.

OSHA requires fall protection measures for residential

construction activities 6 feet or more above lower levels. As a result, employers must plan ahead to ensure they have the right systems in place, and that all workers are properly trained before the job begins.

Finding, Installing and Using Anchors

Unlike other roofing jobs, patching and repair involves otherwise intact roofs. Selecting a location to install an anchor is a critical step in avoiding a fatal fall. An anchor gives the worker a secure point to tie off the lifeline for a fall arrest system. Most of the time, existing residential roofs will not have permanent anchors available for use as fall protection. However, a qualified person should survey the roof to confirm that this is the case. An anchor for a fall arrest system must meet the 5,000-pound strength requirement or maintain a safety factor of at least two (twice the impact load) under supervision of a qualified person [29 CFR 1926.502(d)(15)].

Identifying existing anchors: Inspect the ridge cap and last rows of shingles for permanently installed anchors. This activity should be performed from ground level. If present, these may be fastened to the top chord or other frame part during construction. Anchors could also have been installed with the original roof, using a low-profile style sometimes painted to match the roof color (making it less obvious from the ground).

When available, existing anchors might be effective points for a worker to tie off. Before using them as tie-off points, have a qualified person inspect them to make sure they can support the weight of a falling worker. The qualified person should make sure that the anchor is solid, unbent and well-fixed into the wood frame below. See 29 CFR 1926 Subpart M, Appendix C, for guidance about testing anchorage points.

Retrofit with anchors: If the roof was not fitted with permanent anchors, employers can install them as the first phase of the job. This retrofit process should be planned so that the roof remains intact and does not leak after the job is completed. It will likely be necessary to replace an additional shingle or reset a couple shingles or

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tiles. If attaching a new anchor, roofers must fix it to the truss or rafter structure underneath. Roof sheathing does not provide enough support by itself.

Always follow the manufacturer's instructions, or consult a professional engineer, for proper installation. Here are some anchor options that could be used, depending on the roof design:

- **Peak anchor:** At the apex of the roof, peak anchors are typically solid, unmoving pieces secured to the trusses underneath.
- **Permanent D-rings:** Inexpensive D-ring anchors attached to the truss frame that can be removed after the job is done, or left permanently on the roof.

Consider the anchor location: Depending on the roof design, some roofers choose the peak of the roof, directly over a truss. There, it will be above the worker and it will be easy to replace a small section of the ridge cap if the anchor is removed when the job is complete. Always follow the anchor manufacturer's installation instructions.

Add anchor points: Depending on the size of the repair job and the number of workers who need to be on the roof, it might be necessary to install more than one anchor.

An engineered horizontal lifeline is another way to increase the area in which a worker is protected. The system should be installed following the manufacturer's instructions or under the supervision of a qualified person.

Leave anchors in place: Where practical, consider leaving roof anchors in place. It will make the current job simpler and reduce the burden for roofers in the future.

Safe Roof Repair—Important Steps

Before beginning the job, focus on identifying fall protection needs:

- Guard against falls through skylights or other roof openings. Use a guardrail system, PFAS or protective cover that will support two times the weight of a worker.
- If necessary to protect workers below from falling debris, set up a work zone while roofers remove old roofing materials from the repair area.
- Workers should be careful of air hoses and power cords for nail guns and other electrical equipment. If a worker steps on one, hoses and cords can slip underfoot and lead to falls.
- Remember to place any removed shingles or replacement tiles in a safe location. If unsecured, these materials can visually blend in against the roof and create a dangerous trip hazard.
- New materials staged on the roof should be placed so that they are safe and secure.

Written Fall Protection Plans

If the employer does not use ladders, scaffolds or aerial lifts, and can demonstrate that it is not feasible or would create a greater hazard to use conventional fall protection equipment (guardrails, safety nets or PFAS) when working at heights of 6 feet or greater, the employer must develop a written site-specific fall protection plan in accordance with 29 CFR 1926.502(k). The plan must be prepared by a qualified person as defined by 29 CFR 1926.32(m). This person could be the owner, the supervisor or a worker who has extensive knowledge, training and experience with fall protection and is able to solve problems relating to fall protection. States with OSHA-approved state plans may have additional requirements for written fall protection plans.

The site-specific fall protection plan must document at each location why the use of conventional fall protection equipment is not feasible or will create a greater hazard. The plan must also describe the alternative methods that the employer will use so that workers are protected from

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falls. Workers and their supervisors must be trained on the proper use of those other fall protection methods.

Conventional fall protection equipment can reduce or eliminate the chances of a fatal fall. Written site-specific fall protection plans ensure that protection continues, even when conventional fall protection methods are determined to not be feasible.

Contact Thompson today to learn more about protecting your workers from falls on the construction site.

Source: OSHA