WORKING ON FRAGILE ROOFS

INTRODUCTION

Year after year, there are reports of workers falling through roofs that are too fragile to take their weight. Before any roof area is accessed or work is conducted - whether it is new construction, re-roofing, repair, maintenance, or demolition - it is essential to identify roofs consisting of fragile materials, and recognize all the necessary precautions that must be taken.

Most fatalities occur during demolition of an existing roofing system. Others occur from walking on fragile roofing systems. Several documented fatalities have occurred on new construction jobs where the surface was not secured and/or the decking was cut out from under the roofing system.

Fragile roofing materials include transite, glass, plastic, deteriorated decking and other brittle surfaces. Substantial-looking metal decking, wood decking, gypsum deck, etc. can be dangerously weathered. Surface coatings such as sprayed on urethane, multiple ply built-up, delaminated single ply’s or dirt and ponding water can conceal the fragile nature of the roof.

The knowledge that roofs need to be replaced emphasizes the need to carefully inspect the work surface from underneath prior to ascending the roof. Check first for rotten decking and supports, battens, etc.

REQUIREMENTS

The Occupational Safety and Health, Act provides little in its Regulations (Construction & General Industry) for specific measures to be taken when working on fragile roofs.

Signs must be fixed to the walls of buildings where access can be made to fragile roofs. Signs should be made of sheet metal or other approved material of not less than 8” by 12”, with wording and layout in accordance with OSHA 1926 Subpart G. See below for alternative postings used in Europe.

In addition, it is a requirement to provide a safe means of egress and maintain adequate, safe walkways or crawl boards. Any person required to be on a roof covered with fragile roofing materials must have a safe plan of action.

Workers can be fatally misled by the appearance of some roof coverings that appear more solid than they are, especially if the roofing system covers a deteriorated support structure or deck. The false sense of security may be reinforced by the misconception that the roof can take a substantial distributed load, and therefore it will bear the weight of a worker and materials. But unfortunately that is not the case. In fact, workers’ feet support a concentrated load. In the event that a person were to hit the roof hard with an ax or worse use a demo-machine or to fall down carrying a load, the brittle nature of many fragile roofs would give out and the unexpecting worker would then fall into the building.

Most experienced roofers can identify bad roof by signs of ponding water or a depression in the roofing system that are obvious. But many hazards are also hidden even from the most experienced roofer. They can only be identified by inspecting the underside of the roof structure.

Some fragile roofing materials fracture without warning, leaving jagged edges that could cause injury, even though wire mesh may be fitted. Experience has shown
that persons falling through asbestos cement sheeting and lightweight gypsum deck had no opportunity of saving themselves, because breakage occurs so rapidly.

Before tear-off commences on a re-roofing project, consider whether the roof is safe to work on. A hazard assessment must be conducted prior to starting any work. Included in the assessment should be procedures for a thorough inspection of the underside of the roof from inside the building.

A designated means of egress should be established on all roofs that have been identified as fragile, especially in cases where the work surface is so deteriorated that it cannot support the workers let alone the materials. Under these, work platforms and/or safety debris nets are required.

Access should not be permitted on any roof unless procedures are in place to prevent all employees from exposure to a fragile roof fall hazard. This includes all subcontractors such as HVAC and electricians who have no understanding of fragile roofs.

It is recommended that warning notices be posted at all access points to the roof. Bad roof areas should be barricaded off and posted as to the hazard.

The following fragile roof postings have been used in Europe for years.

NOTE: Improperly specified roofing systems on structurally unstable roofs have resulted in roof failures, serious injuries and fatalities.

CONCLUSION

Great care must be taken to ensure that all persons are aware of the dangers of standing or working on unprotected fragile roofing. Failure to appreciate the danger could be fatal!

The following must be considered:
• Identify the hazard before letting employees on the roof.

• Know the history of falls from the following fragile low-slope roofing materials:
  1. Tectum decking
  2. Panel tongue and groove
  3. Gypsum & lightweight concrete deck
  4. Lightweight metal
  5. Rusted metal & identification
  6. Rotten wood decking
  7. Patch jobs with plywood or smooth sheet metal
  8. Fiberglass panels
  9. Flat glass skylights
  10. Corrugated asbestos panels
  11. Others

• Develop work procedures and a fall protection plan that includes route of egress, access procedures and postings.

• Train and educate your work force, and document all training.

• When working on a 'brittle' roof, have in place fall protection systems that prevent employees from free-falling into the building. Such systems would possibly include positioning or restraint systems, a work platform or short (e.g., four-tread) roof ladder, etc. Walkways over fragile materials and work stages should have standard guardrails on one side.

• The possible use of safety and debris nets to catch falling roof materials that can injure employees in the building and protect workers during removal.

• The use of a fall protection system, such as guardrails or warning lines, with postings to identify bad roof areas.

This information is provided to offer guidance on a particular aspect of hazardous roofing work. It is not to be taken as a statement of law and must not be construed to waive or modify any legal obligation.