



Removal of Fragile Roofing

November 2005

1. BACKGROUND

The removal of fragile roofing material, from commercial and industrial structures, potentially exposes workers to risks of falling from or through the roof.

Due to the range of tasks involved, roof removal work may also expose workers to other non-fall related risks, including the risk of musculoskeletal injuries.

The degree of risk arising from hazards and the manner in which they are controlled is significantly influenced by whether the work is undertaken from above or below the roof.

This communiqué provides guidance on:

- The primary risks which contractors should consider when developing a safe work system for fragile roof sheet removal, and
- Controlling fall risks associated with fragile roof removal.

The communiqué does not provide guidance on controlling non-fall risks.

2. LEGISLATIVE REQUIREMENTS

The ***Occupational Health and Safety Act 2004*** requires the employer, so far as is reasonably practicable, to provide a workplace that is safe and without risk. In fulfilling this obligation the employer is required to give consideration to all the risks to which workers are likely to be exposed whilst undertaking roof removal work.

Other specific legislation relevant to fragile roof sheet removal work includes:

2.1 OCCUPATIONAL HEALTH AND SAFETY (PREVENTION OF FALLS) REGULATIONS 2003

Sets out an employer's obligations to eliminate or reduce, so far as is practicable, the fall risks associated with working at height. This includes access to and egress from the work area.

2.2 OCCUPATIONAL HEALTH AND SAFETY (MANUAL HANDLING) REGULATIONS 1999

Sets out an employer's obligations to eliminate or reduce, so far as is practicable, the risks of musculoskeletal injuries associated with hazardous manual handling.

2.3 OCCUPATIONAL HEALTH AND SAFETY (ASBESTOS) REGULATIONS 2004

Sets out an employer's obligations to control the risks associated with asbestos removal.

3. SAFE WORK SYSTEMS

During the development of a safe work system the employer should incorporate the following principles.

3.1 UNDERTAKE A RISK ASSESSMENT

The employer, in consultation with the workers involved, should undertake a process of hazard identification and risk assessment of the removal work to be undertaken.

This process should result in a documented safe work method statement (SWMS), which clearly sets out the specific steps to complete the removal work safely, how these steps are to be done and who is responsible for implementing the control measures and supervising the work.

The risks listed in Sections 4 and 5 should be addressed in the risk assessment process.

3.2 HIERARCHY OF CONTROL

In deciding how to comply with the above regulations employers are required to implement control measures, so far as is reasonably practicable, in accordance with the "hierarchy of control", as regulated in each of the respective regulations.

3.3 OVERALL RISK

When developing a safe work system the employer must consider the overall level of risk and determine the most feasible solution to the task, which on balance presents the least degree of overall risk to the health and safety of workers.

Although the risk of falling is very high in fragile roof removal work, the other potential risks outlined in Section 4 must also be controlled.

3.4 WORK FROM ABOVE OR BELOW?

The preferred method of controlling fall risks while removing fragile roofing is to use access equipment or other temporary work platforms, primarily from below the roof.

Safe work systems have been developed where the other risks, outlined in Section 4, have been successfully controlled allowing the removal works to be undertaken from below in an efficient and safe manner.

However, where one or more of the following situations exist, the most practicable roof removal process may be to develop a safe work system for working from on top of the roof:

- Where it is not possible to gain access from below the roof due to the presence of existing plant or structures.
- Where it is not possible to gain access from below the roof due to the nature of the roof structure and / or bracing elements.
- Where it is not reasonably practicable to otherwise address the potential musculoskeletal or other risks outlined in Section 4. For example, this may be due to the presence of particularly heavy or long sheets and / or the geometry of the roof structure.

Section 5 provides additional specific fall prevention guidance on developing safe work systems for working on top of fragile roofs.

4. WORKING FROM BELOW THE ROOF

Where the fall risks can be controlled by undertaking the works from below, using temporary work platforms, the following list of tasks and potential injury risks must be considered by the employer**.

MUSCULOSKELETAL INJURY RISKS		
TASK		POTENTIAL RISKS
1.	Cutting mesh with bolt cutters	<ul style="list-style-type: none"> Arms held at shoulder height or higher Length of time a repetitive task may take Mesh may 'spring' back to cut hands and face or damage the eyes
2.	Lifting end of sheet to clear bolt stub	<ul style="list-style-type: none"> Hands above shoulders to lift sheet High sheet weight (aggravated when wet) Room for only a single person to work Control of sheet (cannot see top of sheet from scissor lift) Sheets may break
3.	Sliding sheet down slope	<ul style="list-style-type: none"> Loss of control of sheet (lifting sheet with both hands on the underside)
4.	Sliding sheet across roof	<ul style="list-style-type: none"> Sheet 'snagging' on structural members or aligning in the adjacent sheet's corrugations Arms above shoulder height
5.	Pulling sheet into the scissor lift	<ul style="list-style-type: none"> Small leverage available to pull end of sheet downwards Sheets may break Additional 'rubble' on sheets adds weight Difficult to see from below
OTHER RISKS		
TASK		POTENTIAL RISKS
6.	Oxy cutting bolt heads.	<ul style="list-style-type: none"> Sparks falling on exposed employees.
7.	Various dragging / sliding actions Disturbance of existing dust	<ul style="list-style-type: none"> Exposure to asbestos fibres.
8.	Working near electrical cables located within, on or near roof	<ul style="list-style-type: none"> Electric shock
9.	Use of plant	<ul style="list-style-type: none"> Injuries resulting from crushing or entrapment of workers or instability of plant
10.	Roof sheet removal	<ul style="list-style-type: none"> Instability of building structure due to deterioration over time or removal of structural elements during current works

** Guidance on specific control measures for the above risks is outside the scope of this document. Further advice may be found in the reference documents listed in Section 6.

5. WORKING FROM ABOVE THE ROOF

5.1 FALL RISKS

The following is a list of fall risks to which persons working on fragile roofs may be exposed. (The employer must also assess and control all non-fall risks.)

FALL RISK		POSSIBLE CONTROLS
1.	Fall from roof edge	<ul style="list-style-type: none">• Perimeter guardrails / platforms• Safety harness systems
2.	Fall through roof (No safety mesh)	<ul style="list-style-type: none">• Use of engineered walkways, on roof, with integral fall protection (Refer Section 6)
3.	'Punching through' roof sheeting. (Verified safety mesh present)	<ul style="list-style-type: none">• Use of walkways on roof (Integral fall protection not required. Refer Section 5.2.1)

5.2 SAFE WORK SYSTEMS

Notwithstanding any consideration an employer may give to 'balancing the overall risk' as discussed in Section 3.4, work should only be undertaken from on top of a fragile roofing where a SWMS is developed incorporating the advice provided in Section 5.2.2.

Where roof safety mesh is not present, or the existing mesh cannot be verified in accordance with Section 5.2.1, walkways incorporate guard railing to all open sides should be provided. If this is not reasonably practicable, then an equivalent level of fall protection must be provided to all workers by the use of other equipment, or a combination of equipment.

5.2.1 Roof Safety Mesh

Any existing roof mesh should be considered incapable of acting as 'safety mesh', and not be used as fall protection, unless a competent person verifies otherwise. Verification should be in writing and be readily available on site.

Any verification must consider the integrity of the entire area of mesh including joints and fixings to all roof beams or purlins.

Particular attention should be given to any localised areas of mesh which may have been subject to corrosion or other deterioration.

The mesh must be assessed to meet the equivalent performance standards of the roof mesh set out in the WorkSafe publication '*Prevention of Falls in General Construction*' (Code of Practice No 28, 2004).

For example, where the existing roof mesh has not been joined or lapped in accordance with the recommendations in the Code of Practice the competent person may assess the joining method used for equivalent strength.

5.2.2 Safe Work Method Statement (SWMS)

Note: This section does not provide guidance on non-fall risks which must also be considered when developing the SWMS.

Following the hazard identification and risk assessment process (refer to Section 3); the employer should document the resultant safe work system in a SWMS.

In developing the SWMS detailed consideration should also be given to:

- Ensuring safe access and egress to the work location
- Ensuring no person traverses directly on a fragile surface, this is to avoid the risk of injury to workers from 'punching' through the fragile material
- Ensuring platforms or walkways are at least 450 mm wide
- Ensuring the relocation method, to be used to move any temporary work platform or walkway along the roof, does not exposing the workers to the risk of a fall
- The design and use of any static line or other fall injury prevention systems and the associated anchorages
- The 'safe' installation of any anchorages and static lines
- Ensuring where any harness systems are used that appropriate rescue procedures are developed and ready for implementation
- The handling of roof material from the roof location to ground level
- Ensuring adequate induction, training and supervision of workers

6. FURTHER INFORMATION

Further advice may be found in the following WorkSafe publications:

- *Prevention of Falls in General Construction* (Code of Practice No 28, 2004)
- *Framework for Undertaking Work Near Overhead and Underground Assets* (Booklet VWA649/02/08.4)
- *Manual Handling* (Code of Practice No 25, 2000)
- General Asbestos safety bulletins,
(Refer to WorkSafe's website www.worksafe.vic.gov.au and follow the links to safety basics/asbestos)

These documents and other related safety information can be downloaded, free of charge, from WorkSafe's website: www.worksafe.vic.gov.au



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