

A GUIDE TO HEALTH AND SAFETY IN ROOF WORK



HSG33

HSG33 - An Overview

Falls from height are one of the main causes of death and injury in the construction industry with roofers accounting for around 24% of deaths. However, not everyone working on a roof is a trained roofer. Many people access a roof for other purposes such as for maintenance of plant and equipment, cleaning guttering or for carrying out surveys, so it is essential to ensure that all those accessing a roof are fully trained and competent.

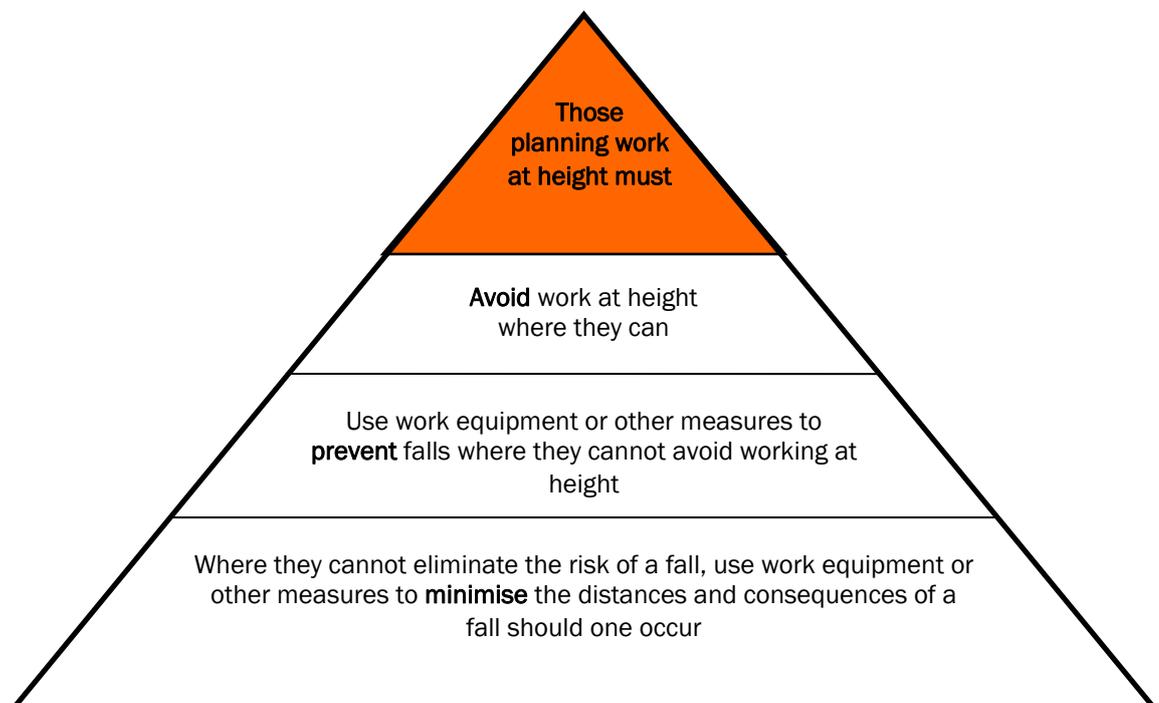
HSG 33 addresses the main problems associated with falls from height including falls through fragile materials and from unprotected roof edges. The guidance is aimed at anyone planning, arranging or supervising roof work or work on roofs and covers new buildings, repair, maintenance, cleaning work and demolition.

The aim of the guidance is to promote roof safety by helping to identify the main cause of accidents and ill health and explaining how to eliminate the risks associated with roofwork.

The following is an overview of certain areas within the guidance and does not cover all subjects addressed in the publication. A full copy of *A Health and safety in roof work* (ISBN 978 0 7176 6250 0) can be obtained from HSE books at www.hsebooks.co.uk.

Hierarchy of control

The hierarchy of fall protection methods as set out in the Work at Height Regulations 2005 must be followed with those in control of the work considering collective protection systems before user participant ones such as harnesses.



Examples of solutions following the hierarchy for work at height include the following:

- **Avoid:** by using a telescopic pole with camera attachment to carry out roof surveys
- **Prevent:** by using edge protection scaffold with guardrails and nettings, MEWPs or restraint system such as harness and short lanyard to prevent the user reaching the roof edge.
- **Minimise:** by using beanbags or inflatable air bags under the working area and ensuring all those working at height are properly trained. Personal fall arrest systems should only be used as a last resort

Competency

When employing a company to carry out any form of roofwork it is essential that the company and its workers are competent. Competency includes:

- Knowledge of the work being undertaken
- Experience of the latest techniques, standards and materials so that the work can be carried out safely. This would ideally be through membership to a relevant trade organisation so that they are updated regularly on changes to legislation and standards.
- Training or accreditation by a recognised training body. Training should include safe working practices as well as health and safety issues relating to their work such as COSHH, asbestos, manual handling, risk assessments, work at height and work at height rescue.

Method statements

A method statement should be prepared by a competent person before any form of work commences. This should identify risks, what control measures are required in addition to working positions, access routes to and on the roof and necessary training.

Safe access to the roof

Safe access to the work area must be carefully planned in order to select the correct equipment. These could include:

- **General access scaffolds** – must be designed, erected, altered and dismantled by competent people.
- **Tower scaffolds and stair towers** – the manufacturer or hirer must provide an instruction manual explaining how to erect the equipment safely. Anyone erecting the scaffold or tower must be trained and competent.
- **Mobile access equipment (MEWPs)** – All equipment must be maintained in a safe condition. If being used as a means of access to the roof, safe access from the MEWP to the roof must be an integral part of the equipment's design.
- **Ladders** – A third of all falls from height involve ladders and stepladders. Ladders must be appropriate for the task and maintained so that they are safe to use. Anyone using a ladder must be trained in correct selection and usage.

Rescue procedures

Rescue of a person or people must be planned for under the Work at Height Regulations 2005. The proposed method must be proportionate to the risk and may include simple measures such as using a MEWP or ladder to reach the victim, or simply lowering them to safety. This is the preferred option as it overcomes manual handling issues, but whatever method is chosen it is essential that all those who are likely to be involved are fully trained.

Once the rescue has been completed, the casualty should be laid down and standard first aid guidance for the post recovery of a semi conscious or unconscious person should then be followed by a competent first aider.

If a conscious casualty can not be released immediately from a suspended position, their legs should be elevated by either the rescuer or casualty themselves, to help suspension tolerance.

Types of work

People need to access a roof for a variety of reasons, for example;

- **Inspection:** If remote inspection is not possible then access to the roof must be planned and any risks must be assessed and appropriate action taken to reduce the dangers. If a fall protection system is already installed, ensure that the system has been maintained and inspected properly and that only trained and competent people use the system.
- **Refurbishment & re-roofing:** This type of work accounts for a large number of accidents. Careful attention must be paid to fragile or potential fragile surfaces and measures put in place to prevent material falling.
- **Ancillary works:** These might include adjusting television or satellite aerials. This type of work must only be undertaken after the relevant work at height training has been carried out.
- **Maintenance & cleaning:** This work is often short term and so tends to be carried out by those with little or no experience of working at height. Anyone carrying out this type of work must receive relevant health and safety training including specific areas such as fragile materials and PPE and be properly supervised during the work.
- **Roof cleaning:** This could include cleaning valley gutters on a fragile surface such as asbestos cement. Systems designed to provide long term protection or temporary protection systems should be considered.
- **Stripping & dismantling roofs:** An independent scaffold to provide safe access to the roof must be provided and measures taken to prevent internal falls. Harnesses should be seen as a last option and only used with a suitable anchorage point and sufficient clearance around the area should a person fall.
- **Short duration work:** These are tasks that take minutes rather than hours and can include minor adjustments to aerials or replacing a roof tile. Safe access and a safe means of working on the roof must be provided. Mobile access equipment or proprietary access systems can be used to provide a suitable working platform or if this is not suitable then a fall restraint system which prevents the operative reaching a possible fall position or fall arrest system could be considered. If harnesses are being used then individuals should be properly trained on how to fit and use them, they must be attached to a suitable anchorage point and have enough space below for a fall to be arrested safely. Appropriate rescue plans and procedures must also be in place.

Demarcation of access routes and work areas

Where edge protection is not practical around a large section of roof, demarcation placed at least 2m from the edge will provide sufficient protection as long as any work in the area is supervised in order to ensure people do not go beyond the demarcated area. Demarcation must be durable and easily seen.

Fragile roofs

22% of all fatal accidents are as a result of falls through fragile surfaces. Typical fragile surfaces include; roof lights, non-reinforced fibre cement sheets, corroded metal sheets, glass (including wired glass), slates and tiles.

All roofs should be assumed to be fragile until a competent person has confirmed that they are not. Further information on working with fragile roofs can be found in *Safe working on fragile roofs* ACR (CP)002:2005 published by the Advisory Committee for Roof Work (ACR).

Where possible you should not work near fragile materials. If this is not possible then the area needs to be clearly identified, the information recorded and measures put in place to prevent or minimise the effect of a fall. The recommended hierarchy for working on fragile roofs is:

- To work underneath the roof using a suitable work platform
- Where this is not possible, a MEWP with basket can be used to carry out the work without accessing the roof itself.
- If access can not be avoided, perimeter edge protection should be installed with staging to spread the load. If work is not taking place on the staging or platform with guardrails, then safety nets or a harness systems should be used.
- If harnesses are being used, ensure there are adequate anchorage points and proper training and supervision is undertaken. Harnesses and lifeline systems must only be used if you are sure there is adequate clearance around the area.

Workers must be properly supervised and trained and a safe working platform as well as safe access be provided. For example, guardrails or coverings can be used to prevent someone who is working near to or passing by fragile material from falling through. Demarcation or boundaries placed at least 2m from the fragile material can be used to identify safe areas.

Leading edge protection

Precautions must be put in place to prevent a person falling from roof edges and working ('leading') edges. Nets and birdcage scaffolds are the preferred option, but if this is not possible then lifeline systems or temporary barriers such as trolley systems at the leading edge can be used.

Lifeline systems with a suitable harness can be attached to the structure, a mobile anchorage point or to a suitable working platform. These systems must be designed and tested to ensure they are fit for the required purpose.

If using an inertia reel system, the anchorage point should be directly above the user (vertical plane) to avoid the possibility of the line sheering over the horizontal edge or the pendulum swing should a person fall.

Whenever lifeline and harness systems are used, operatives must be trained in the correct usage and inspection of the system and associated PPE. A comprehensive rescue procedure must also be in place before anyone uses the system.

All PPE and rescue equipment must be checked thoroughly before use in accordance with the manufacturer's instruction. This should include both visual and tactile inspections by a competent person.

Controlling health risks

Health and safety in roofwork is not just limited to falls from height, other areas that need assessing and require relevant training for both workers and those responsible for the work include:

- **Manual Handling:** Construction has one of the highest rates of musculoskeletal disorders (MSDs). This can be caused by lifting or carrying objects as well as from repetitive tasks, twisting when lifting a load or holding a load awkwardly. The Manual Handling Operations Regulations 1992 require employers and the self-employed to assess a task and then either remove or alleviate the risks.
- **Hazardous substances:** these include Asbestos (e.g. cement profiled sheets, guttering, pipes and floor tiles), Lead, Silica, Bitumen and asphalt, Glues and solvents and Biological hazards. The Control of Substances Hazardous to Health Regulations (COSHH) 2002 require employers to identify hazardous substances while designers should always try not to use hazardous materials in their designs. If this is not possible then the least hazardous materials should be used. Hazardous substances must be clearly identified and those working where a hazardous substance is present must be properly trained in the risks and how to deal with them.
- **Physical agents:** risks from exposure to vibration, noise, ultraviolet radiation and heat exposure must be prevented or controlled. Employers are required to provide a suitable health surveillance where the risk assessment has identified a risk to workers' health.

Training and competence of roof workers

All those working on a roof need to have the appropriate knowledge, skills and experience to carry out the work safely and competently. Those who are training or less experienced will require supervision by a competent person.

Competency is an ongoing process which is developed through work experience and regular training. Workers must be trained in all health and safety issues specific to their trade, including the risks they might encounter such as asbestos or fragile materials.

Training for roof workers should ideally include the relevant health and safety disciplines including Work at Height (covering the regulations, risk assessments, selection of work equipment and rescue training), PPE, ladders, MEWPs and PASMA in addition to more specialist areas such as first aid, asbestos awareness, COSHH, risk assessor and fire safety.

Rescue training must be provided for people who are likely to be involved with a rescue. Initial training should be carried out by the supplier of the rescue system and should include a simulated exercise to assess the trainee's competence. Refresher training must be carried out every six months and should include an assessment of competence by carrying out a simulated rescue.

Construction (Design and Management) Regulation 2007

The Construction (Design and Management) Regulations 2007 (CDM2007) came into force on 6th April 2007 and bring together CDM 1994 and the Construction (Health, Safety and Welfare) (CHSW) Regulations 1996 into a single regulatory package.

The key aim of CDM2007 is to integrate health and safety into the management of a project and to encourage everyone involved to work together to:

- Improve the planning and management of projects from the very beginning
- Identify hazards early on so that they can be eliminated or reduced at the design or planning stage and any remaining risks can be properly managed
- Target effort where it can do the most good in terms of health & safety
- Discourage unnecessary bureaucracy

The new CDM 2007 Regulations are divided into 5 parts:

- Part 1 deals with the application of the Regulations and definitions.
- Part 2 covers general management duties which apply to all construction projects, including those that are non-identifiable
- Part 3 sets out additional management duties on notifiable projects. In other words those lasting more than 30 days, or involving more than 500 person days of construction work.
- Part 4 contains practical requirements that apply to all construction sites.
- Part 5 contains the transitional arrangements, cancellations and amendments.

Key legislation and standards

The following should also be considered for any form of roof work or work at height:

- Health and Safety at Work etc Act 1974
- Work at Height Regulations 2005
- Management of Health and Safety at Work Regulations 1999
- Construction (Design and Management) Regulations 2007
- Lifting Operations and Lifting Equipment Regulations 1998
- Provision and Use of Work Equipment Regulations 1998
- BS8454:2006 Code of practice for the delivery of training and education for work at height and rescue.
- BS8437:2005 Code of practice for selection, use and maintenance of personal fall protection systems and equipment for use in the workplace

A full list of references and further reading can be found in *A Health and safety in roof work* (ISBN 978 0 7176 6250 0)