

Good Practice Guide

The Selection of Access Methods to Install and Dismantle Safety Netting

FASET is the trade association for the safety net rigging and temporary safety systems industry. This document was originally published by the FASET Health and Safety Committee with assistance from the Health and Safety Executive (HSE) and gives general guidance on the various access methods available for rigging safety net fall arrest systems. The aim is to outline the principal methods available in order of priority and to give advice and guidance to rigging contractors and clients alike on the safe systems of work recommended by FASET.



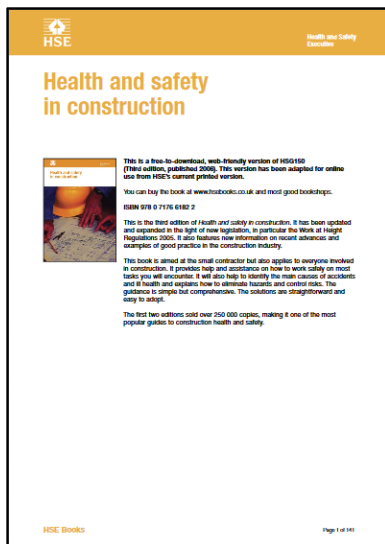
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The CDM regulations place duties on principal contractors to plan, manage and monitor construction, prepare and make available the relevant sections of the health and safety plan and check that the work is executed by competent contractors. The regulations also place duties on all contractors to co-operate with the principal contractor in planning and managing work, and reporting problems and hazards on site.



This guidance does not include specific measures to be taken by rigging contractors to ensure their operatives remain safe on construction sites in general, as advice on this is widely available from other sources such as the HSE's HSG150 "Health and safety in construction" and other task specific guidance.

Note: This guidance details the access methods used whilst rigging safety nets, but it does not detail the individual's competence in safety net rigging. This is only evidenced by the holding of a Blue Skilled CSCS Safety Net Rigger card. See <http://www.faset.org.uk/training/faset-safety-net-rigger-training/>

The method of access chosen by a rigging contractor should always be justified by an appropriate risk assessment, and the methodology included within a site specific method statement.

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Introduction

Work at height by its very nature can be hazardous and there is a degree of risk to safety net riggers who install safety net systems for other trades to work above. The Work at Height Regulations 2005 (WAH Regs) outlines the measures that employers must take to comply with the law. The regulations apply to all work at height where there is a risk of a fall likely to cause personal injury.

The regulations call for collective protection measures to be used rather than personal protective measures wherever reasonably practicable.

Regulation 6 of the WAH Regs details a simple hierarchy for managing and selecting equipment for work at height. This hierarchy requires the following measures:

1. Avoid – avoid work at height wherever reasonably practicable.
2. Prevent a fall – if it is not reasonably practicable to avoid working at height then adopt the most suitable method of working and select the most suitable equipment for work at height, which prevents falls from occurring.
3. Mitigate – if it is not reasonably practicable to prevent a risk of a fall, measures should be taken to mitigate the distance and consequences of a fall, e.g. safety.

Regulation 7 of the WAH Regs covers the principles for selection of work equipment for working at height, and requires employers to take account of:

1. The working conditions and the risks to the safety of persons at the place of work where the equipment is to be used.
2. The distance and consequence of a fall.
3. The duration and frequency of use of the equipment.
4. Select suitable work equipment by assessing the overall risk, e.g. risks from site conditions, erection, dismantling etc.
5. The need for timely evacuation and rescue in an emergency.
6. Any additional risk posed by the use, installation or removal of that work equipment or by evacuation and rescue from it.

Regulation 3 of the Management of Health and Safety at Work Regulations 1999 set out the legal requirement for every employer and self-employed person to make an assessment of the health and safety risks arising out of their work. The purpose of this assessment is to identify what needs to be done to control health and safety risks.

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FASET Recommended Hierarchy for Work at Height

There are six methods of access currently recommended for rigging and de-rigging safety nets which should be considered in the following order:

1. Rig / de-rig remotely —using remote attachment devices.
2. Rig / de-rig using powered access — MEWPs.
3. Rig / de-rig using ladders — recommended maximum height 4.5m.
4. FASET Specialist Rigger – employing industrial climbing techniques
5. Rope Access Techniques – IRATA
6. Mobile Access Towers

Site conditions often dictate that a combination of any or all of the above methods may be required.

Note: FASET do not recommend the use of scaffold towers or hop-ups for the rigging and de-rigging of safety nets under normal rigging conditions. There may be rare and isolated occasions for specific work where towers may be appropriate, having taken due regard of this document and the hierarchy set out within. Where such occasions arise, the rigging contractor must prepare a suitable risk assessment taking account of the rigging conditions, manual handling issues, tower stability and any additional control measures required. Towers must always be erected in accordance with the manufacturers / suppliers instructions by trained personnel.

See http://www.faset.org.uk/wp-content/uploads/2016/03/towers_guidance.pdf

1. Remote Attachment Devices

Remote attachment devices allow rigging / de-rigging to be carried out remotely from the level below, and therefore do not expose riggers to any risks associated with working at height. The safety net border rope is usually placed into the beam attachment device and offered up into position via a pole, with the rigger standing on a floor below.

There are limitations that need to be considered with this method of installation, the principal ones being:

- Installation height – the higher the reach the more difficult it becomes to locate the device onto the bottom flange of the steelwork and the greater the lever arm created (manufacturers generally recommend maximum steelwork height of 3.5 – 4m). Care must be taken to avoid the risk of musculoskeletal injuries as there is more strain on the riggers back and shoulders during rigging and de-rigging as the height from the ground increases. Sharing work activities within a team should therefore be encouraged.



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- Dependent on the steelwork arrangement, weather conditions and net size, additional fixings such as rope ties are sometimes required at the corners of the net to prevent movement during rigging. Installation of rope ties or similar will involve the rigger working at height to attach them, usually from a footed ladder due to the short period of time required to attach the net, however for longer periods of work, suitable control measures should be considered based upon the degree of risk.
- Remote positioning devices can only be attached to I section and C section beams. Other methods of attachment will be required for other steel sections etc.
- The limitations in reach will usually restrict the practical use of these devices to floor decking type applications.



It is important to always follow the manufacturer's instructions for use and to ensure that the level the riggers are working from is fully handrailed and clear of materials, plant and equipment that could impede the safe installation of the nets above.

2. Powered Access

Mobile Elevated Work Platforms (MEWPs) are generally considered as the best method of access for rigging nets to roofs and floors (subject to sufficient floor heights), where clear access and suitable ground conditions exist. Rigging contractors and their clients should always discuss and agree the method and sequence of work in these circumstances at an early stage as, depending on site conditions, it may become more hazardous to use MEWPs than it is to use other forms of access. On multi-storey construction where the use of remote positioning devices is not suitable, early planning and programming may make it possible to sequence works on site so that floors can be concreted to allow small MEWPs or scissor lifts to be operated from the floor slab to reach higher levels. Checks must be made to ensure that the maximum axle loads imposed by the MEWP can be safely transferred to the slab and supporting steelwork. Consideration should also be given to the provision of barriers or wheel stops set in from the perimeters of the floor to ensure that machines cannot accidentally reach the edge of the building.



A risk assessment should always be prepared to demonstrate the most suitable method of work.

A clear, workable rescue plan should be put in place before any works commence. It is a requirement of the WAH Regs that those involved in the plan are aware of their role and this is

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best achieved through training. The rescue plan must not place a reliance upon the emergency services as the sole means of rescue in the event of an emergency.

The safe use of MEWPs on site is dependent on various conditions, however the following can be used as guidance:

- Riggers must be suitably trained (IPAF PAL and PAL+ / CPCS or equivalent) and experienced to use the type of machine being used. FASET worked with the UKCG and HSE on this subject and have mandated that safety net riggers operating on FASET sites will hold PAL+ licences or their equivalent.
- Riggers must wear a suitable safety harness conforming to BS EN 361: 2002 – *Personal protective equipment against falls from a height* and short lanyard to BS EN 354: 2010 – *Personal fall protection equipment: Lanyards*. The lanyard must be attached to the designated anchorage point within the basket at all times.
- It is essential that the correct type of plant is specified for the intended work and that the location has been inspected for hazards. The choice of machine will be influenced by the ground conditions on site and control measures may be required such as trenches being adequately backfilled and other hazards such as manholes cordoned off or adequately covered. Demarcation of the working area should be carried out to restrict access to other trades during safety net rigging. The responsibility for undertaking this must be agreed prior to work commencing.
- When working in close proximity to the structure, the risk of entrapment may be present. A risk assessment must be carried out to consider whether secondary guarding is required and if so, what type of device is required. Additional care must be taken if MEWPs are used to manoeuvre up through several levels of steelwork to rig safety nets to upper levels as there is a risk of the operator becoming trapped and injured should the boom or basket strike the steelwork, especially whilst traversing. This risk increases with the number of levels the MEWP operates through, and if materials such as floor decking bundles are loaded out onto the lower levels, as there will be reduced clearance for the MEWP to manoeuvre. There is also a risk that materials could be dislodged by the boom or basket of the MEWP.



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- When overhead powerlines are present on site, care and planning is essential to avoid working in close proximity to them to avoid the possibility of electrocution and consultation with the electricity company regarding safe clearance distance is required.
- The MEWP must be thoroughly examined in line with the Lifting Operations and Lifting Equipment Regulations (LOLER). A copy of the last inspection certificate must be available (see General Note 1). The machine must also be maintained in line with the manufacturer's recommendations during its time on site.
- MEWPs must only be used within the manufacturers recommended wind speeds and the maximum safe weighing load (SWL) must not be exceeded.
- If MEWPs are operating in areas where other plant or machinery is in use, demarcation of the working area should be in place. The responsibility for undertaking this must be agreed prior to work commencing



For further information, please refer to:

- International Powered Access Federation (IPAF) Operators' Safety Guide for Mobile Elevated Work Equipment: <http://www.ipaf.org/>
- HSE OC314/20 – Preventing falls from mobile elevating work platforms (MEWPs) and selection and use of fall protection equipment
- HSE GEIS6 – The selection, management and use of mobile elevating work platforms
- Construction Plant-hire Association (CPA) Best Practice Guidance for MEWPs: avoiding trapping / crushing injuries to people in the platform.
<http://www.cpa.uk.net/sfpsgpublications/#MEWPs>

3. Ladders

The Work at Height Regulations limits the use of ladders to instances where a risk assessment can demonstrate that they are the overall least risk option available. The use of ladders for rigging safety nets can only be justified where it is not reasonably practicable to rig nets remotely, or to use MEWPs as a means of access.

HSE guidance note INDG455 – Safe use of ladders and step ladders – A brief guide; states that ladders should only be used for short duration work. Although ladders may be used continually throughout the day during safety net rigging, it will usually take less than 2 minutes to attach the net at each location and is therefore a short duration activity at each location. It should be remembered however, that although the work is of short duration at each location, this is not the deciding factor in establishing whether an activity is acceptable or not and the control measures should be based upon the actual risk.

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Regulation 1, Schedule 6 of the Work at Height Regulations 2005 – Requirements for Ladders, stipulates the requirements for the use of ladders as:

“Every employer shall ensure that a ladder is used for work at height only if a risk assessment under Regulation 3 of the Management Regulations has demonstrated that the use of more suitable work equipment is not justified because of the low risk and:

- (a) the short duration of use; or*
- (b) existing features on site which he cannot alter”*

Careful consideration must therefore be given prior to choosing a ladder as the access method and must always be backed by a suitable risk assessment and detailed method statement, specific for the work to be carried out.



During ladder use it is not possible to eliminate the potential for a fall, however this potential can be significantly reduced by taking the following steps:


1. Train riggers in the correct use and inspection of ladders.
2. Where practical, wedge the top stiles against / within the web of the steel to prevent lateral movement
3. Tie the ladder to a suitable point making sure both stiles are tied (see General Note 2)
4. Where tying is not practical, use a ladder stability device to prevent a ladder from sliding during use.
5. Where neither (3) nor (4) are practical, foot the ladder at all times during use.
6. Maintain 3 points of contact on the ladder at the work position. A safe system of work should be developed to ensure that contact with the ladder is maximised wherever possible. FASET consider looping an arm through the rungs as a suitable contact with the ladder. Additional measures may be necessary such as clipping onto the steelwork to maintain 3 points of contact.
7. Take care not to overload a ladder or over reach from it. Always keep your belt buckle between the two stiles. The ladder must be moved to suit each work position, so that the work position is directly in front of the rigger rather than stretching to either side. Keep both feet inside the stiles and on the same rung throughout the task.
8. Use a suitable ladder for the surface it will be used on. Manufacturers should indicate the type of surface it is intended for.
9. Place the ladder at the correct angle (1 unit out for every 4 units up). Where the work height is varied i.e. on pitched roofs, extendable ladders conforming to Class 1 / 2 or BS EN 131-6: 2015 *Ladders: Telescopic* ladders may be more suitable than a fixed length ladder.
10. Position the ladder on firm level ground capable of spreading the load.
11. Avoid using a ladder on a side slope of more than 16 degrees or a floor slope of more than 6 degrees unless the manufacturer states otherwise. The rungs still need to remain level.

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12. Carry out daily user inspections of ladders which should be supplemented by a formal inspection by a competent person, recorded in writing.
 13. Follow the manufacturers guidance at all times.

Note: HSE research has shown that training and awareness in the selection and use of ladders is key to ensuring the safe use of ladders. It is therefore important to ensure that operatives who use ladders as work equipment have been suitably trained, and that the ladders themselves are suitable for the task and subject to a daily user check and planned inspection and maintenance regimes. HSE Research has also shown that there is a risk of ladders flipping when the users overstretch sideways to reach a position. It is therefore important to ensure that ladders are continually moved to a point where the safety net can be reached without stretching.

Mitigating the consequence of a fall from ladders

There is an additional risk when working around the perimeter of buildings and internal openings as there is a potential for a greater fall. This risk **must** be controlled by the rigger wearing a full body harness and fall arrest device attached to a suitable anchorage point above and behind him prior to climbing the ladder to ensure that a fall from the perimeter of the building is prevented. The anchorage point should be independent of the ladder unless it is adequately tied to the structure and the ladder manufacturer confirms the design strength for resisting the fall.

Maximum working height from ladders

FASET recommend that ladders are only used up to a height of 4.5m (measured from the floor to the underside of steel), under normal circumstances (see General Note 3). This takes account of the increased risk of injury to riggers should a fall occur. It also takes account of the difficulty in constantly manually handling ladders into position on heights in excess of 4.5m.

For further reference please refer to the HSE document INDG455 – Safe use of ladders and stepladders. A brief guide.

Further information on the use of ladders and training is available from:

The Ladder Association <https://ladderassociation.org.uk/>

4. Industrial Access Techniques

In some situations, the aforementioned methods of access are not practicable and the only Available solution is for riggers to work from the steelwork to install safety nets.

Industrial access work is generally considered for contracts where it is not reasonably practicable to use remote attachment devices, MEWPs and because the working height exceeds 4.5m, the use of ladders is unsuitable (see General Note 3),

During planning, particular attention must be paid to the access, egress and rescue to and from

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the work area including hauling nets and attachment devices to the required positions. Early planning is essential to ensure that the risks are reduced as far as is reasonably practicable. This may for instance include ensuring that the nets are laced together where it would be problematic for riggers to access the steel at mid points and, where possible, ensuring that nets are attached in such a way that they can be released from above (provided that a suitable attachment point exists).

During safety net rigging /de-rigging the operatives will most commonly use the technique of Aided Access or Aiding, where the operative is attached directly to the structure by a minimum of two points of connection. The work method used can range from work positioning to a fall arrest, or a combination of the two.

Before industrial access work commences, a hazard identification and risk assessment has to be carried out to establish the appropriateness of using specialised access techniques, and to address the hazard issues.

There should be a specific workmate rescue plan in place for each worksite which must not rely upon the emergency services as the sole means of rescue.

Of primary importance is the principal of double protection. It is essential to include the provision of at least one alternative means of support to prevent an operative falling, i.e. a method of support plus a safety line, so that should one item fail or the operative falls there is adequate back up to prevent an accident. When an operative is to be in suspension, there should be at least two independent anchor points; one primary as a means of access, egress and support (the working line) and the other as an additional back up (the security line).



Connection to the rope system must be made from a safe area where there is no risk of a fall from height, unless protected by other means.

Exclusion zones should be established as identified by risk assessment.

All equipment should be appropriate for its application. It should be inspected before each use (pre-use inspection) and more thoroughly at regular intervals in line with the Lifting Operations and Lifting Equipment Regulations (LOLER 1998). Details of thorough inspections should be recorded and operatives should know when equipment must be withdrawn from service.

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Operatives must work in teams of at least two so that one operative is always able to effect a rescue. Operatives should be trained and competent to carry out any industrial access tasks that they are to undertake, including workmate rescue. Operatives should only be allocated tasks appropriate to their level of training.

Operatives should have clothing and equipment appropriate for the work situation and conditions.

FASET Specialist Rigger

FASET have developed a specialist rigger course which addresses the specific needs of working from or below the steel to rig and de-rig safety netting. Due to the complexity of this work, rigging is limited to the following criteria:

- Installing safety nets to the structure where the pitch does not exceed 20 degrees
- Traversing “I” section beams to rig and de-rig safety netting by the use of supported or suspended methods
- Traversing other sectional members using suspended methods to rig safety netting
- Ascending or descending fixed ropes for access or egress from the workplace for the purpose of rigging and de-rigging safety nets



It is important that the limitations of this technique are recognised by those specifying the method of access. Riggers undertaking this work must hold a Blue Skilled CSCS Safety Net Rigger card and must have completed the FASET Specialist Rigger qualification and have their CSCS card endorsed with FASET Specialist Rigger. The course includes the use of the specific access equipment required together with rescue equipment and access techniques.

It is a requirement of the scheme to have a FASET Specialist Rigger Supervisor within the employing organisation. This person is not required to attend site throughout the rigging and de-rigging but must have been consulted during when formulating the method statement and risk assessments for the project. This is important to ensure that the correct industrial access technique is chosen.

Note: The course does **not** allow FASET Specialist Riggers to carry out a work task whilst suspended from a rope. Specialist riggers are only trained to work in areas where a rescue can be effected quickly and efficiently in a vertical direction only to the preceding level or to the ground using standardised rescue procedures and equipment. FASET Specialist Riggers must always work with a minimum of two qualified operatives to ensure that one is always available should a rescue be required.

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Industrial Climbing Access Techniques (Roped Access)

Industrial climbing access techniques require technicians to work at height for the full duration of the rigging where operatives are required to work in suspension for the duration of their work. Work must be carried out in accordance with BS 7985: 2013 – *Code of practice for the use of rope access methods for industrial purposes*. The current acceptable training standard is from the Industrial Roped Access Trade Association (IRATA). Due to the hazardous nature of roped access work it is vital that rigging companies ensure the riggers are competent to carry out this work (see General Note 4).

BS 7985:2013 outlines that Supervisors should be competent in all roped access techniques appropriate to the workplace and should know and understand the limitations of those techniques. There must always be a Level 3 qualified supervisor on site who holds an appropriate first aid qualification.

Where there is a possibility of a fall, a full body harness conforming to BS EN 361: 2002 – *Personal protective equipment against falls from a height* must be used. Sit harnesses should conform to BS EN 813: 2008 *Personal fall protection equipment: Sit harnesses* and should only be used for work positioning (including descending and ascending), and work restraint.

For further information, please refer to the following documents:

BS ISO 22846-1: 2003 *Personal equipment for protection against falls. Rope access systems. Fundamental principles for a system of work*

BS ISO 22846-2: 2012 *Personal equipment for protection against falls. Rope access systems. Code of practice*.

General Notes

1. MEWPs must be inspected by a competent person at six monthly intervals. The machines must be delivered along with a copy of the last inspection certificate which remains with the machine, however this can often be misplaced and some hire companies therefore label the body of the MEWP with a sticker indicating last and / or next inspection date.
2. In most circumstances it is not practicable to tie off a ladder to prevent it moving due to the speed of progression and ladders are often moved several hundred times a day during the rigging of safety nets. Ladders must always be footed during use where they are not tied off.
3. Circumstances may lead to ladder use as the best option above 4.5m, however this will usually be for small one off areas only. A suitable and sufficient risk assessment should always be prepared outlining any additional control measures necessary.
4. Riggers must be suitably qualified in both industrial access techniques **and** safety net rigging.

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