



Level 1 Award in Health and Safety in a Construction Environment

Student notes (sample)

Version 2.0

A5

Fatalities, injuries and ill-health in construction

Did you know?

In the UK construction industry there are 100 times as many deaths from work-related ill-health and disease as there are from injuries.

Fatalities and injuries

According to the Health and Safety Executive (HSE) there were 43 fatal injuries to workers in the UK construction industry in 2015/16.

The main causes of fatalities were:

- Falls from height (59%)
- Being struck by a moving vehicle (10%)
- Collapse or overturning of equipment (5%)
- Electricity (5%)
- Being struck by a moving/falling object (3%)

The most common causes of major (serious) injuries to employees in construction were:

- Slips and trips (23%)
- Lifting and handling (22%)
- Falls from height (19%)
- Struck by a moving/falling object (11%)

The most common cause of 'over 7-day injuries' (when a worker is unable to do their normal work for more than 7 days) was lifting and handling.

Members of the public are also at risk from construction activities. 18 members of the public have been killed in the last five years.

Health risks

Safety risks in construction have been recognised for some time. Health risks have received less attention even though absence due to work-related ill-health is far greater than absence due to injuries at work.

Annually, around 69,000 UK construction workers suffer from an illness they believe was caused or made worse by their work.

Of these 69,000 cases:

- 45,000 are musculoskeletal disorders
- 14,000 are cases of stress, depression or anxiety
- 10,000 are other illnesses such as skin or respiratory conditions

Fact

Falls from height are the main cause of deaths in the UK construction industry and, in 2015/16, accounted for 59% of all fatal accidents.

Legal requirements for working at height

The Work at Height Regulations 2005 apply to all work at height where there is a risk of a fall that could cause personal injury. The regulations place duties on employers, the self-employed and any person that controls the work of others.

There is a simple 'hierarchy of controls' for managing risks for work at height:

- firstly **avoid** work at height wherever possible,
- then **prevent falls** from height and, failing that,
- **reduce the consequences** of a fall, should one occur.

Preference should always be given to control measures that protect everyone, like providing scaffolding or safety nets. These types of measures are known as 'collective measures' and are considered safer than measures which only protect individuals, like fall arrest equipment.

The risks from working at height must be assessed by the employer or person in charge and safe systems of work developed and followed. All work at height must be properly planned in advance to ensure the right equipment is used. Workers must be properly trained and in good health. Work at height should not be carried out in conditions which would create a significant risk, such as high winds or snow and ice.

All equipment provided for work at height must be suitable for the job and regularly inspected by a competent person to ensure it remains safe to use.

Edge protection and scaffolds

Suitable edge protection should be provided wherever there is a risk of falling from existing or temporary structures. This should consist of a top guard rail, a mid rail and toe boards. Edge protection is also required at the edges of excavations or where working next to deep water.

Scaffold platforms should be fully boarded with no sections missing or uneven. Working platforms should be kept tidy. Slip or trip hazards should be removed promptly.

If there is a risk of tools, materials or rubble falling from height, additional precautions should be taken such as fixing sheeting, brick guards or netting to the scaffold. Workers should store their hand tools safely and prevent them from falling by using a tool belt.



Mobile tower scaffold

Mobile tower scaffolds

Lightweight aluminium tower scaffolds are common on construction sites and considered a lot safer than working from a ladder, but they are not without risk.

Typical hazards include:

- Collapse of the tower, due to incorrect assembly
- Fall of people
- Falling objects
- Vehicles colliding with the tower
- Overturning of a tower that is unstable

Mobile towers can become unstable and overturn if they are built too high or overloaded with too many people, materials or heavy equipment. Use of towers in high winds, placing them on uneven ground or climbing up them the wrong way can cause a tower to topple over.

Rules for the safe use of tower scaffolds:

DO

- Follow the manufacturer's instructions for assembly and use
- Position the tower on firm, level ground
- Lock wheels / castors in place when the tower is in use
- Ensure guard rails and toe boards are fitted to the working platform and platforms are fully boarded
- Keep the platform tidy with tools and materials stored away to prevent slips, trips and falls
- Keep a safe distance from overhead power lines or other structures
- Wear head protection if there is a risk of falling materials from above

DON'T

- Exceed the recommended safe working load
- Erect, modify or dismantle a tower scaffold unless you are trained and authorised to do so
- Exceed the recommended maximum height unless suitable outriggers / stabilisers are used
- Move the tower while people or materials are still on it
- Climb up the outside of the tower (ladder access should be internal and fixed to the narrowest side)
- Stand on the guardrails of the tower, overreach from the platform or use the tower to access other structures
- Use the tower in bad weather such as high winds, icy conditions or heavy rain



Cherry picker



Mobile scissor lift

Mobile elevating work platforms (MEWPs)

Mobile elevating work platforms (MEWPs) are more commonly known as 'cherry pickers' or 'scissor lifts', depending on the type. MEWPs can provide excellent safe access for high level work. They are particularly suitable for short duration tasks where ladders would be unsafe and the use of scaffolding would not be cost effective or practical.

The hazards and risks from using MEWPs are similar to tower scaffolds, except there is also the risk of a crush injury from the moving parts of the machine.

Rules for the safe use of MEWPs:

DO

- Follow the manufacturer's operating instructions
- Inspect the equipment before use to ensure it is safe to use
- Ensure guard rails and toe boards are fitted to the working platform
- Position the equipment on firm, level ground with the tyres properly inflated
- Extend the outriggers before raising the platform
- Ensure guards are in place around the base of the MEWP to prevent access to moving parts
- Restrict access around the MEWP while it is being used
- Wear a harness and lanyard if there is a risk of collision or being thrown from the MEWP
- Wear head protection if there is a risk of falling materials

DON'T

- Stand on the guardrails of the MEWP
- Climb out of the MEWP while it is elevated
- Exceed the safe working load
- Use a MEWP near overhead cables
- Operate a MEWP unless you have been trained and are competent

Ladders

Where work at height is necessary you need to decide whether a ladder or stepladder is the most suitable access equipment compared to other options.

Ladders and stepladders should only be used if it is not reasonably practicable to use a MEWP or tower scaffold, and then only for short duration, light work.

Rules for the safe use of ladders:

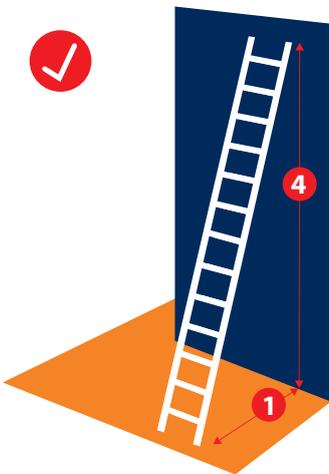
DO

- Only use industrial class ladders (Class 1 or EN 131), not domestic types, e.g. Class 3
- Inspect the ladder before use (it should be free from damage)
- Position the ladder on firm, level ground
- Position the ladder at the correct angle (75° or 1 in 4 ratio)
- Keep a safe distance from overhead power lines or other structures
- Secure the ladder by tying it at the top and bottom
- Protect the base from being hit by vehicles
- Clean wet, icy or greasy rungs before use
- Make sure footwear is clean and in good condition before climbing

DON'T

- Allow more than one person on the ladder at any one time
- Exceed the safe working load
- Use metal ladders near electric cables
- Overreach from a ladder (this is a common cause of accidents)
- Stand on the top two steps of a stepladder unless there is a handrail
- Use a ladder in bad weather such as high winds or heavy rain

If a ladder is used for access, there should be 1 metre of ladder above the stepping off point.



Roof work

Many construction projects involve roof work. The main hazards are:

- Falls from edges of flat roofs or sloping roofs
- Falls through fragile roofs or fragile roof lights
- Falls from equipment such as ladders or scaffolds
- Objects like tools and materials falling from the roof or scaffold

All roof work should be pre-planned and properly supervised. A risk assessment should be carried out by the persons in charge of the work to identify hazards and ensure proper controls are in place.

A safe system of work should be developed and written down in the form of a method statement which is then communicated to all workers involved.

Roof work should only be undertaken by workers who are physically fit and have the necessary knowledge and experience of such work.

Roof work should not be carried out in weather conditions that threaten the safety of workers.

Suitable edge protection and a safe means of getting up to the roof and moving across the roof must be provided.

Sloping roofs

Sloping roofs require scaffolding and edge protection to prevent people or materials falling from the edge. Where work is of short duration (a few minutes only), properly secured ladders may be used.

Flat roofs

Falls from flat roof edges can be prevented by providing fixed or temporary edge protection or barriers to prevent workers from reaching within 2 metres of an open edge. For very short duration work, like carrying out an inspection, travel restraint equipment can be used, which prevents the worker from actually reaching the edge of the roof as they are anchored to a fixed point.

Fragile surfaces

Work on or near fragile roof surfaces is high risk and requires careful planning and proper control measures.

Always follow a safe system of work using a platform beneath the roof where possible. Sometimes it is possible to reach the roof safely using a MEWP. Otherwise a combination of platforms, guard rails, fall arrest equipment and safety nets will be needed.

All roof surfaces should be treated as fragile unless a competent person has confirmed they are not. Do not trust any sheeted roof, whatever the material, to bear the weight of a person. This includes the roof ridge and purlins (supporting framework under the roof surface).

Fragile roof lights are a particular hazard. Some are difficult to see in certain conditions and others may be hidden by paint, moss or algae. Protection must be provided in these areas, either by using barriers or covers to prevent falls.

In addition to roof lights, typical fragile surfaces include fibre cement sheets (including asbestos cement), glass (including wired glass), metal sheets (where corroded), rotten chipboard and liner panels. Even slates and tiles can become fragile.

Buildings with fragile roofs should have a warning notice prominently displayed at the approaches to the roof.

Many roofs on older industrial or agricultural buildings are made of asbestos cement sheets. These are fragile but can also, if damaged or disturbed, release harmful asbestos fibres.

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Moving vehicles and mobile plant

Fact

On average, each year, 7 workers in the UK die as a result of accidents involving vehicles or mobile plant on construction sites. A further 93 are seriously injured.

Construction site traffic

Numerous vehicles visit or move around construction sites during the course of a project. These include cars, vans, lorries, low-loaders and mobile plant such as excavators, lift trucks and dumper trucks.

Hazards from vehicle movements include:

- Collision between vehicles and pedestrians
- People falling from vehicles
- Objects falling from vehicles
- Overturning of vehicles
- Vehicles striking stationary objects

The best way to reduce transport accidents on construction sites is by organising and controlling sites so that vehicles and pedestrians can move around safely and are kept apart as much as possible.

Key controls include:

- Providing separate entry and exit gateways for vehicles and pedestrians
- Installing barriers between roadways and walkways where possible
- Providing clearly signed and lit crossing points where drivers and pedestrians can see each other clearly
- Making sure drivers exiting on to public roads can see both ways along the pavement before they move on to it
- Keeping vehicle and pedestrian routes clear of obstructions
- Making sure there is adequate clearance around slewing vehicles
- Ensuring that everyone on site wears high visibility clothing
- Providing adequate lighting throughout the site

The number of vehicle movements should be kept to a minimum. Reversing vehicles are particularly high risk. Providing one-way systems and turning circles can reduce the amount of reversing needed. It may be necessary to use a 'reversing assistant' to guide and direct vehicle movements.

All workers should be instructed in the safe pedestrian routes on site, the meaning of signs and notices and any site rules controlling traffic and pedestrian movements.

Communication between drivers and others

Many construction vehicles have significant blind spots (areas that the driver cannot see) in various locations around the vehicle. In some cases this can create risks to both pedestrians and to the vehicle when the vehicle is moving.

Workers may at some time need to approach a moving vehicle. They should be instructed in a safe procedure for making the driver is aware of their intention to approach, and ensuring that the vehicle is safely at rest before they approach.

Additional safety rules for operating mobile plant

- People who drive vehicles and operate mobile plant, including those that direct vehicle movements (signallers), must be competent and trained.
- Only workers who are authorised should operate plant. Access to keys should be controlled and keys should never be left in an unattended vehicle.
- No-one should ride on vehicles or mobile plant except where the vehicle has been designed to carry a passenger.
- Loads should be properly secured to prevent objects falling off or dropping while being transported. Plant and equipment should never be loaded beyond the safe working load.
- Plant should be well-maintained. Drivers should check their vehicle daily and report any defects immediately.
- Using mobile plant on sloping, uneven or unstable ground can be hazardous and cause vehicles to overturn. Safe systems of work should be followed to ensure equipment is not used on dangerous slopes. Wearing seat belts and providing 'roll over protection' like roll bars and cabs on vehicles, can help prevent serious injuries in the event of a vehicle overturning.



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