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Occupational Health and Safety in Construction Industry (Continued)

Construction-phase health and safety

In construction work, many of the hazards (a hazard is something with the potential to cause harm) are obvious. Most of them can be found on almost every site. The causes of accidents are well known and often repeated. Too often hazards are just seen as an inevitable part of the job, so no action is taken to control the risks they create. Consequently, the rate of accidents and ill health remains high. Action is needed to change this.

Health and Safety Executive

This section identifies the most common causes of death, injury and ill health and sets out straightforward precautions. Applying this advice will make work safer and, in most cases, improve efficiency.

Some activities (eg roof work and steel erection) are considered in detail, but in general most operations will present a number of hazards, which are dealt with on a number of pages. For example:

- Painting may include:
  - a risk of falls;
  - paints and solvents, which may be health hazards.
- Fitting out in an office being refurbished may involve:
  - a risk of falls;
  - a risk of tripping over trailing cables or waste materials;
  - electrical risks from portable equipment; and – a risk of exposure to asbestos.

This information will help those carrying out risk assessments by explaining how to identify hazards and select control measures. In finalizing an appropriate safe system of work for any construction job, it will be necessary to consider the particular nature of the site and the detail of the operations to be carried out.

Site management and supervision

Effective management of work activities and competent site supervision are essential in maintaining healthy and safe conditions. It should be made clear to supervisors exactly what it is they are expected to do and how they are expected to do it. The greater the risk, the greater the degree of control and supervision required.

Ensure the level of site supervision provided is adequate. Site managers and supervisors should be trained to help them discharge their health and safety responsibilities. On larger sites, site managers may require the support of assistant site managers. On smaller sites, if the supervisor or manager is sometimes not present, they (or a deputy) should be contactable by phone and a responsible person should be left in charge of the site.

Before work starts:

- consider if there are any hazards you can avoid altogether (eg the need to paint at height can be eliminated if materials are brought to site ready-finished);
- decide which risks need to be controlled;
- consider the best ways of controlling them; and then
- having decided what needs to be done, make sure it happens.

Check that:

- everyone is properly trained and competent;
- they have the equipment they need; and
- agreed work methods are put into practice.

When people (either employees, other contractors or visitors) first come to site, it is important that they receive information about the site hazards and the steps that have been taken to control the risks. Make sure that the person running the site can be easily identified; if there is a site office, sign it clearly. A site plan showing the office location, placed at the site entrance together with an instruction that all visitors report to the site office, can be helpful. The principal contractor has a duty to take reasonable steps to ensure that only authorized people are allowed where construction work is being done.

People who are going to work on the site for the first time should be briefed about risks, welfare facilities and site rules. One way of doing this is by making sure the site supervisor speaks to them before they start work. They might also be given an information sheet or relevant information might be displayed on a notice board prominently placed near the site entrance. Remember, many people are killed and seriously injured during the first few days that they work at a site.

Ask people working at the site for their views and ideas about health and safety and how working conditions or systems can be improved. This can be done during formal meetings or on an informal basis either face to face or using a suggestion box.

Health and safety checks can be incorporated into normal progress and quality checks carried out by supervisors and managers. Specific additional checks on higher-risk work may also be needed.

Carrying out routine checks from time to time reminds everyone that health and safety matters!

Working at height

Work at height means work in any place, including a place at or below ground level, where if required measures are not taken, a person could fall a distance liable to cause personal injury. Work at height also includes obtaining access to or egress from a place of work at height.

The hierarchy of control measures

Falls are the largest cause of accidental death in the construction industry. They account for 50% of all fatalities. **There is no distinction between low and high falls.** This means that for any work at height, precautions are required to prevent or minimize the risk of injury from a fall.

To prevent or minimize risk when planning for work at height, consider the work to be done and take a sensible risk-based approach to identify suitable precautions. There is a hierarchy of control measures for determining how to work at height safely. **The hierarchy has to be followed systematically and only when one level is not reasonably practicable may the next level be considered.** Where it is reasonably practicable to prevent a fall, precautions should be taken to do so. It is not acceptable to select work equipment from lower down the hierarchy (eg personal fall arrest systems such as harnesses and lanyards) in the first instance.

Those in control of the work must:

- **avoid** work at height where they can;
- use work equipment to **prevent** falls where work at height cannot be avoided;
- where the risk of a fall cannot be eliminated, use work equipment to **minimize the distance and consequences** of a fall should one occur;
- always consider measures that protect all those at risk, i.e. **collective protection measures** (scaffolds, nets, soft landing systems) before measures that only protect the individual, i.e. **personal protection measures** (a harness);
- ensure work is carried out only when weather conditions do not jeopardize the health and safety of the workers.

The hierarchy of control measures with practical examples:

- **Avoid** working at height unless it is essential (eg erect guard rails on steelwork at ground level and then crane the steel and the guard rails into position; provide cast in mesh across riser ducts at the position of services; fix nets using extending poles).
- **Prevent** falls by using an existing safe place of work that does not require the use or addition of work equipment to prevent a fall (eg a flat roof with permanent edge protection).
- **Prevent** falls by using work equipment that protects all those at risk (eg access equipment fitted with guard rails, such as independent scaffolds, tower scaffolds, mobile elevating work platforms (MEWPs) and mast climbing work platforms (MCWPs)).
- **Prevent** falls by using work equipment that protects the individual (eg a harness with a short lanyard which makes it impossible for a person to get to a fall position (this is called work restraint) or use a podium).
- **Mitigate** falls by using work equipment to minimize the distance and consequences of a fall and protect all those at risk (eg nets or soft landing systems positioned close under the work surface).

- **Mitigate** falls by using work equipment to minimize the distance and consequences of a fall and protect the individual (eg a personal fall arrest system with the anchorage point sited above the head, or a rope access system).

- **Mitigate** falls by using work equipment that minimizes the consequences of a fall (eg nets rigged at a lower level, or inflatable injury protection).

- **Mitigate** falls through training, instruction or other means (eg ensure ladders are inspected regularly and are used by competent people, demarcate areas to provide a warning, provide adequate lighting, apply sensible housekeeping measures, provide suitable footwear etc).

Selecting the right means of access and work equipment

When planning for working at height that is unavoidable, the first choice will be to use any existing safe place of work that allows safe access and provides a safe working place. Where it is not reasonably practicable to work safely from the existing place of work, an alternative means of access will be needed. This will involve the use of work equipment.

Traditionally, much work has been done from scaffolding. However, other means of access (such as MEWPs and tower scaffolds) will ensure collective fall prevention because they are equipped with guard rails. Personal measures, such as podium steps, can also be used to prevent falls. If fall prevention is not reasonably practicable, other work equipment can be used to minimize the distance and consequences of a fall using, for example, personal suspension equipment such as rope access techniques and boatswain's chairs.

Ladders are at the bottom of the hierarchy because they do not prevent or mitigate a fall. However, if they are used by competent people and are regularly inspected and well maintained, then their use may be justified providing it is not reasonably practicable to use other work equipment which will prevent or mitigate a fall.

It is also essential to consider what risks there may be in erecting and removing the access equipment as well as using it.

When deciding upon the safest means of access and selecting the most suitable work equipment, you will need to consider:

- the distance and consequences of a potential fall;

- how long the work will last and how often it will be undertaken;

- how many people will be working at height and require protection;

- the space available on the site. Each type of platform requires a minimum amount of space, eg MEWPs need outriggers – check you can fit them in;

- the type of work to be carried out, eg some work may require heavy loads on the platform;

- what risks there will be during the erection and removal of the platform;

- can the equipment be stabilized, eg check that the scaffold can be tied;

- what will happen in adverse weather conditions;
- whether part of the structure can be provided early in the work so that there is a permanent working platform; and
- what emergency and rescue procedures are required.

Most accidents involving falls could have been prevented if the right equipment had been provided and properly used.

Summary of steps to take before working at height:

- Ask yourself whether any of the work can be carried out without working at height.
- Start at the top of the hierarchy to decide what equipment will provide the safest method of getting to the work area and carrying out the job.
- Check that the selected equipment is suitable for the conditions on site.
- Make sure that the equipment needed is delivered to site in good time and that the site has been prepared for it.
- Check that the equipment is in good condition and make sure that whoever puts the equipment together is competent and knows what they are doing.
- Make sure those who use the equipment are supervised so that they use it properly.
- The more specialized the equipment (eg boatswain's chairs and rope access equipment), the greater the degree of training and supervision required to ensure safety.
- Check any equipment provided by another company is safe before using it.
- Find out who to tell if any defects need to be remedied or modifications need to be made and keep them informed.
- Ensure you have procedures for rescuing an injured person and handling an emergency situation.

When selecting a means of access, remember:

- only when it is not practicable to provide a work platform that prevents falls (eg scaffolds, MEWPs) should measures which mitigate falls (eg nets, soft landing systems, personal fall arrest systems etc) be used;
- whenever harnesses are used, a method must be available to enable people to be rescued should they fall and be left suspended in their harness. Rescue kits and training can often be provided by the harness suppliers;
- it may be necessary to put measures in place to protect those installing guard rails or other fall protection measures;

- ladders should always be prevented from slipping and be positioned to ensure stability. They should be primarily used for access and only be used as workplaces for light work of short duration, and then only if it is safe to do so. It is generally safer to use a tower scaffold or MEWP even for short-term work;

- heavy work activity (such as drilling or carrying heavy or awkward loads) should never be carried out from a ladder. When climbing a ladder with a load, a safe handhold must always be maintained. When working from a ladder, a secure handhold must be available;

- when selecting a safe system of work at height, all the risks have to be considered before one method is selected. For example, if nets are selected, is there adequate clearance under the nets to prevent injury to those who may fall into them? If harnesses are used , is there sufficient clearance from the ground to allow the shock-absorbing lanyard or inertia reel to deploy? Make sure that no one will be put at risk while the equipment is being removed;

- before any work at height, check that there is adequate clearance for equipment, eg overhead power lines can be a risk when erecting scaffolds or using MEWPs, or there can be a risk of crushing against nearby structures when mobile access platforms are manoeuvred.

Safe working platforms

A working platform is virtually any surface from which work is carried out, such as a roof, scaffold, MEWP, tower scaffold, trestle etc. It becomes a safe working platform when you can't fall off it or through it or when measures have been taken to mitigate a fall from it.

Make sure the working platform is:

- capable of supporting the weight of the workers using it and any materials and equipment they are likely to use or store on it;

- stable and will not overturn. For example, scaffolds usually need to be tied to a supporting structure and MEWPs should not be operated on sloping or uneven ground;

- wide enough to allow people to pass back and forth safely and use any equipment or material necessary for their work at that place;

- kept clear of loose materials and constructed to prevent materials from falling. As well as toe boards or similar protection at the edge of the platform, the platform itself should be constructed to prevent any object that may be used on the platform from falling through gaps or holes, causing injury to people working below. For scaffolds, a close-boarded platform would suffice, although for work over public areas, a double-boarded platform sandwiching a polythene sheet, fans or protected walkways may also be needed. If MEWPs or cradles are used and they have meshed platform floors, the mesh should be fine enough to prevent materials, especially nails and bolts, from slipping through;

- free of openings and traps through which people's feet could pass, causing them to trip, fall or be injured in any other way; and

- kept free of tripping and slipping hazards. Keep platforms clean and tidy and do not allow materials or waste to build up on them.

Inspections and reports

All working platforms must be inspected by a competent person:

- after installation or assembly in any position;
- after any event likely to have affected its stability, eg following strong winds or substantial alteration; and
- at regular intervals if the working platform is below 2 m or at intervals not exceeding seven days if the working platform is at 2 m or above.

The person in control must have the inspections carried out by a competent person. This is someone with the appropriate training (eg attendance at a scaffolding inspection course) and experience to enable them to identify any risks that are present and decide upon the measures required to control the risks.

Whoever controls the activities of others who use a scaffold also needs to ensure it is safe before they use it for the first time.

If the competent person is not satisfied that work can be carried out safely, they should advise the person the inspection was carried out for (eg a senior manager of the principal contractor) as soon as possible. Stop work if the inspection shows it is not safe to continue.

The result of an inspection should be recorded and kept until the next inspection is recorded.

However, if the working platform is 2 m or above in height and the inspection is carried out after installation or assembly or to comply with the seven-day inspection regime, the competent person must:

- complete the inspection report before the end of the working period;
- provide a copy of the report to the person the inspection was carried out for within 24 hours.

The person receiving the report must:

- keep it at the site where the inspection was carried out until construction work is completed;
- thereafter, keep it at an office for three months.

The report should contain the following information:

- name and address of the person the inspection was carried out for;
- location of the place of work or work equipment inspected;
- description of the place of work or work equipment inspected;
- date and time of the inspection;

- details of any matter identified that could give rise to a risk to the health or safety of any person;
- details of any action taken as a result of any matter identified in the point above;
- details of any further action considered necessary;
- name and position of the person making the report..

To be continued in next issue.

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