



UNIT-1

Setting up the Construction Site

Learning Outcomes

By the end of this unit the learner will be able to:

Unit 1

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Preparing for work

The key to achieving healthy and safe working conditions is to ensure that health and safety issues are planned, organised, controlled, monitored and reviewed.

Everyone controlling site work has health and safety responsibilities. Checking that working conditions are healthy and safe before work begins and ensuring that the proposed work is not going to put others at risk requires planning and organisation.

This applies equally to a firm running and managing a small job, or to a subcontractor working at a large site controlled by someone else. Planning has to consider changes to the site as it develops – from welfare arrangements at the set up, through to snagging work and the dismantling of site huts and hoardings at the end of the contract. The basic requirements apply to all jobs.

The principal contractor, who is appointed under the Construction (Design and Management) Regulations 1994² (CDM), has more formal responsibilities for securing health and safety on site. The legal requirements of CDM do not apply to every job). Whether or not CDM applies, the principles of successful health and safety management are the same.

Planning the work

Gathering as much health and safety information about the project and the proposed site before work begins is important. Information available at tendering should be used so that allowance is made for the time and resources required to deal with particular problems. Sources of information include:

- the client;
- the design team;
- contract documents;
- the main contractors on the site;
- specialist contractors and consultants;
- trade and contractor organisations;
- equipment and material suppliers; and
- HSE guidance and British or European Standards.

Find out about the history of the site and its surroundings. See if there are any unusual features which might affect the work, or how the work will affect others. Pay particular attention to:

- asbestos or other contaminants;
- overhead power lines and underground services;
- unusual ground conditions;
- public rights of way across the site;
- nearby schools, footpaths, roads or railways; and
- other activities going on at the site.

Where CDM applies, much of this information should be found in the pre- construction-stage health and safety plan. Make sure its contents have been taken into account before tenders are submitted. Where CDM does not apply, gathering information is still important.

When estimating costs and preparing the programme, consider any particular health and safety hazards associated with the work. Make sure suitable allowances have been made in the price. The job will run more smoothly, efficiently and profitably if hazards have been predicted, planned for and controlled from the outset. Having to stop or reschedule work to deal with emergencies wastes time and money.

When materials are bought, or equipment is hired, the supplier has a duty to provide certain health and safety information. Make sure this is obtained and read. It may be necessary to:

- consider using a specialist who is familiar with the necessary precautions;
- carry out an assessment of the health risks arising from substances or equipment; and
- act on your findings, eg by eliminating harmful substances where possible, or by using a less hazardous method of work or providing training on the safe use of the material or equipment.

When programmes are prepared, consider whether there are any operations that will affect the health or safety of others working at the site. For example:

- think about access to the workplace – which trades will need to go where and when? Arrange the programme to make sure everyone who needs to use a scaffold or other means of access has time to do so. Plan to make sure the access will be safe and suitable for their use;
- timber treatment or site radiography usually has to be done when no one else is on site. The site may have to be left vacant for a few days. Where a specialist contractor is used, check the requirements with them and programme the work well in advance.

Discuss proposed working methods with subcontractors before letting contracts. Find out how they are going to work, what equipment and facilities they are expecting to be provided and the equipment they will bring to the site. Identify any health or safety risks that their operations may create for others working at the site and agree control measures. Obtaining health and safety risk assessments and method statements will help

Decide what plant will be required and check that it will be suitable.

Plan material deliveries and consider storage needs.

Plan your emergency and rescue procedures. Decide what equipment will be required and who is trained to operate it.

Organising the work

Decide who will supervise the work – check that they are adequately trained and experienced.

When taking on workers, ask about the training they have received and ask to see certificates of training achievement. Get them to demonstrate their knowledge or to show examples of safe working practice before setting them to work.

Make sure that firms coming onto site provide adequate supervision for their workers. Agree what training they will have received or will be provided at the site.

See that work methods and safety precautions agreed before work is started are put into practice. Make sure everyone understands how work is to be done and is aware of relevant method statements before work starts.

Find out if any of the work will be further subcontracted. Make sure that people working for subcontractors also get the information they require and provide training, supervision etc as needed.

Notifying the site to HSE

HSE should be notified in writing before construction starts (see Figure 1) if the work is expected to either:

- last longer than 30 days; or
- involve more than 500 person days of construction work.

The notification should be sent to the HSE office nearest to the proposed site.

A form (Form 10 rev) can be used for notification. Forms are available from HSE offices. It is not essential that this form is used for notification, but the information required on Form 10 must be provided in writing to HSE. A copy of the notification details should be displayed at a place on site where it can be easily read.

Where CDM applies to the work, notification of the project will be the responsibility of the planning supervisor (see paragraphs 630-631). The planning supervisor should update the information as it becomes available (eg when the principal contractor is appointed). Where CDM does not apply, it will be the responsibility of the contractors to notify the site to HSE

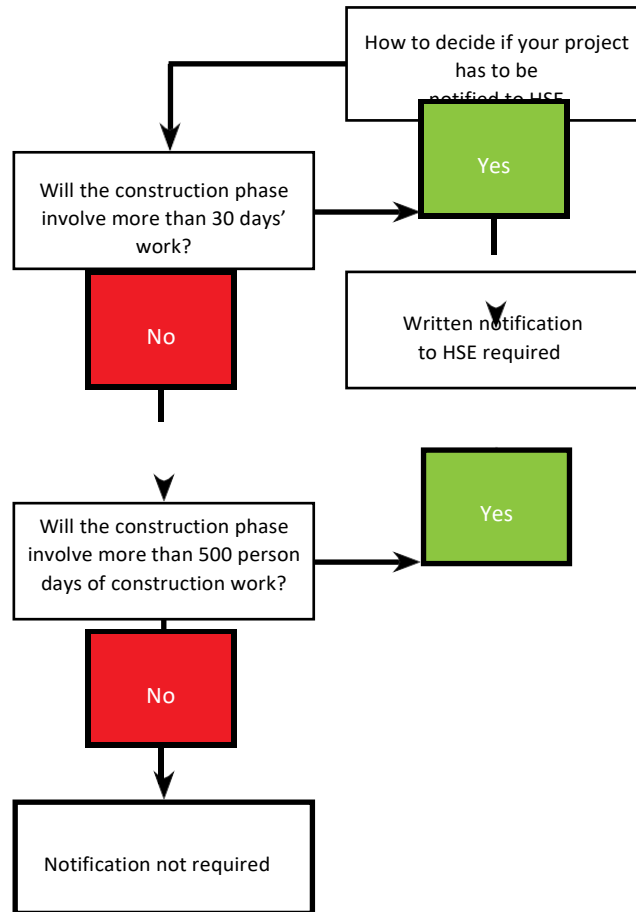


Figure 1 F10 notification requirements

Setting up the site

Site access

There should be safe access onto and around the site for people and vehicles. Plan how vehicles will be kept clear of pedestrians, especially at site entrances where it may be necessary to provide doors or gates to achieve this segregation. Doors that open onto traffic routes may need viewing panels or windows.

Your plan should include how vehicles can be kept clear of pedestrians at vehicle loading/unloading areas, parking and manoeuvring places and areas where drivers' vision may be obstructed. For further information, see *Safe use of vehicles on construction sites*.³

Site boundaries

Construction work should be fenced off and suitably signed. This will protect people (especially children) from site dangers and the site from vandalism and theft. For some jobs the workplace will have to be shared. Perhaps the work will be done in an operating factory or office. Agree who has to control each area. Agree what fences, barriers, means of separation or permits to work are required to keep both construction workers away from hazards created by others and other people away from hazards created by the construction work; site rules might be needed (see paragraphs 100-101). Make sure there is a system to ensure necessary precautions are kept in place during working hours and that night-time and weekend protection is put in place as required before the site closes. For further information, see *Protecting the public: Your next move*.⁴

Welfare facilities

Everyone who works on any site must have access to adequate toilet and washing facilities, a place for preparing and consuming refreshments and somewhere for storing and drying clothing and personal protective equipment.

Principal contractors and others who have control over construction sites are responsible for providing or making available site welfare facilities. Employers are also responsible for ensuring that welfare facilities are adequate for their employees.

The welfare facilities should be sufficient for everybody who is working on the site. If facilities such as toilets and canteens provided by someone else are to be used, check that they are suitable and properly maintained. They should be kept clean, warm and properly ventilated and lit.

Welfare facilities should be easily available to people working on the site. Toilets need to be easily accessible from where the work is being done. Washing facilities should be as close as possible to the toilets. Washing facilities also need to be close to canteens and rest rooms so that people can wash before eating.

In almost all cases, these facilities will be provided on site. Where the work is of short duration, arrangements still need to be made for welfare facilities.

If mobile gangs are employed to work at a number of locations over a few days (eg road repair and cable-laying gangs), facilities can be provided at a central location. This is on condition that they are available to workers within reasonable walking distance or within a reasonable time, taking into account the available transport. Workers should not be left to make their own arrangements on an 'as and when required' basis.

Sanitary conveniences

The numbers of toilets required will depend on the number of people working on the site.

Wherever possible toilets should be flushed by water and connected to a mains drainage system. If this is not possible, toilets with a built-in water supply and drainage tank may be provided. If neither option is possible, chemical toilets may be provided. Figure 2 shows a self-contained water-flushing toilet block with built-in tank.

Men and women may use the same toilet, provided it is in a separate room with a door that can be locked from the inside.

A washbasin with water, soap and towels or dryers should be located close to the toilets.

Washing facilities

On all sites, provide basins large enough to allow people to wash their faces, hands and forearms (see Figure 3). All basins should have a supply of clean hot and cold, or warm, running water. If mains water is not available, water supplied from a tank may be used.



Figure 2 A self-contained water-flushing toilet block with built-in tank people to wash their forearms



Figure 3 Washbasin large enough for

Soap and towels (either roller-type cloth or paper) or dryers should also be provided. It is good practice to provide skincare products.

Where the work is particularly dirty or workers are exposed to toxic or corrosive substances (eg during demolition or work in contaminated ground), showers should be provided.

Men and women can share basins used for washing their faces, hands and arms.

A shower may be used by both men and women provided that it is in a separate room with a lock on the inside of the door.

Rest facilities

Facilities should be available for taking breaks and meal breaks (see Figure 4). The facilities should provide shelter from the wind and rain and be heated as necessary.

The rest facilities should have:

- tables and chairs;
- a kettle or urn for boiling water;
- a means of heating food (eg a gas or electrical heating ring, or microwave oven).

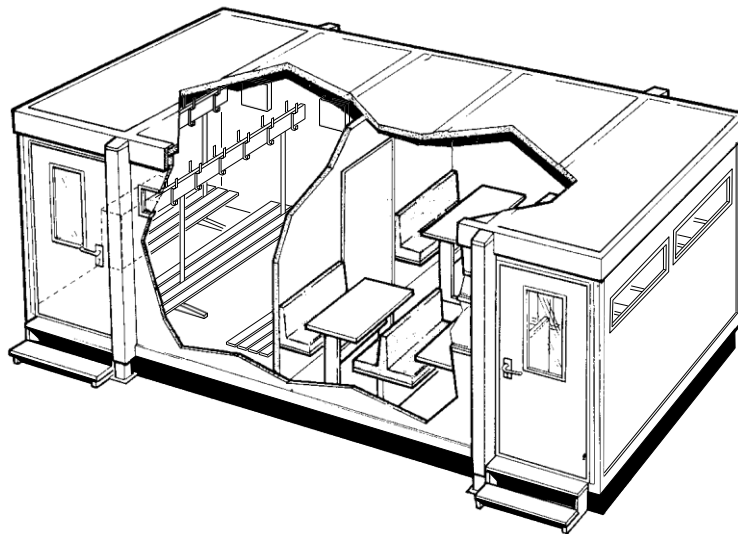


Figure 4 A welfare unit with a rest area and drying room

It should be possible for non-smokers to use the facilities without suffering discomfort from tobacco smoke. This can be achieved by providing separate facilities for smokers and non-smokers, or by prohibiting smoking in the rest facilities.

For small sites, rest facilities can often be provided within the site office or site hut, especially where this is one of the common portable units.

Remember, open-flued gas heaters and gas cooking rings can produce carbon monoxide if there is inadequate ventilation. When poorly maintained, they also give rise to leaks of methane which can ignite or explode without warning. Gas appliances should not be used in site huts, containers or other enclosed areas unless there are vents or louvres that give a permanent supply of fresh air that cannot be closed off (a window that can be opened is not adequate as it is likely to be closed in cold weather). LPG cylinders must be stored in the open air, if necessary locked cages may be used to secure them.

Storing and drying clothing and personal protective equipment

Make sure there are proper arrangements for storing:

- clothing not worn on site (eg hats and coats);
- protective clothing needed for site work (eg Wellington boots, overalls, gloves etc);
- personally issued equipment (eg ear defenders, goggles, harnesses etc).

Separate lockers might be needed, although on smaller sites the site office may be a suitable storage area, provided it is kept secure. Where there is a risk of protective site clothing contaminating everyday clothing, store items separately.

Where necessary for propriety, men and women should be able to change separately.

A drying area should be provided to dry wet site clothing. This area should be separated from the eating area (see Figure 4).

If electrical heaters are used, ensure that they are either fitted with a high-temperature cut-out device or are properly ventilated. Many fires have been caused by placing clothing on electrical heaters to dry, making the appliance overheat.

Drinking water

Make sure there is a supply of drinking water. It is best if a tap direct from the mains is available, otherwise bottles or tanks of water may be used for storage. If water is stored, it should be protected from possible contamination and changed often enough to prevent it from becoming stale or contaminated.

The tap should be clearly marked if it is possible to confuse the drinking water supply with other water supplies or other liquids such as:

- those not fit for consumption (eg water from storage tanks used for wheel washers); or
- certain toxic materials (eg from taps to pipelines in factories).

Cups or other drinking vessels should be available at the water tap, unless the water is supplied as an upward jet that can be drunk from easily (eg a drinking fountain).

Good order, storage areas and waste materials

Plan how the site will be kept tidy and how housekeeping will be actively managed:

- keep walkways and stairways free of tripping hazards such as trailing cables, building materials and waste. This is especially important for emergency routes. Make sure that all flammable waste materials (such as packaging and timber offcuts) are cleared away regularly to reduce fire risks;
- keep inside floor areas clean and dry;
- outdoor footpaths should be level and firm and should not be used for storing materials.

Designate storage areas for plant, materials, waste, flammable substances (eg foam plastics, flammable liquids and gases such as propane) and hazardous substances (eg pesticides and timber treatment chemicals). Flammable materials will usually need to be stored away from other materials and protected from accidental ignition. Do not store materials where they obstruct access routes or where they could interfere with emergency escape, eg do not store flammable materials under staircases or near to doors or fire exits (see Figure 5).



Figure 5 A designated timber storage area

If materials are stored at height (eg on top of a container or on a scaffold gantry), make sure necessary guard rails are in place if people could fall when stacking or collecting materials or equipment.

Keep all storage areas tidy, whether in the main compound or on the site itself. Try to plan deliveries to keep the amount of materials on site to a minimum.

Decide how the waste stream will be managed to ensure it is timely and effective. You might want to consider whether you will require the contractors to be responsible for collecting their own waste or whether you will provide someone to do this for the site. Don't forget that waste materials also need storing safely before their removal from the site and make sure that you allow sufficient space for waste skips and bins. If you are collecting waste in skips you will need to decide where the skips can be positioned and how often they will need to be collected (see Figure 6). Consider waste generated inside and whether you need to provide wheeled bins to enable it to be brought out of the building safely.

Lighting

Every part of the site that is in use should, as far as possible, be arranged so that natural light is available for people to see to do their work and move about the site safely. Where natural light is inadequate or not available, artificial lighting should be provided.

Where work will continue outside daylight hours or the building or structure is enclosed, artificial lighting will be required. Make sure that any artificial lighting does not change the apparent colour or visibility of any safety signs or other safety-related items such as fire extinguishers.

With both daylight and artificial light, shadows can obscure hazards both at the workplace (eg making it difficult to see the blade of a cutting disc or a drill bit) and on the site generally (eg at stairwells). If necessary, provide extra lighting to illuminate shadow areas.

Where failure of the primary artificial lighting would be a risk to the health or safety of anyone (eg someone working on a tower scaffold in a basement may fall while trying to descend in the dark), provide emergency lighting. Where it is not possible to have lighting that comes on automatically when the primary lighting fails, torches or other similar lights may provide suitable lighting.

In addition, emergency routes (the corridors, passageways etc that people must follow in an emergency to escape from danger) should be kept well lit while there are workers on the site. Where daylight provides adequate lighting, no further action is required. Where emergency routes need artificial light, provide emergency lighting that comes on if the primary lighting fails (eg battery or emergency generator-powered lighting). See also *Emergency procedures*. Emergency lighting does not have to provide the same level of lighting as under normal circumstances; merely enough to enable escape.



Figure 6 A designated waste collection area

Emergency procedures

At most sites, the most obvious emergency is fire. The general principles for dealing with fire risks are considered in greater detail in paragraphs 83-93. These general principles can be applied to planning for other emergencies, such as flooding in excavations, tunnels, work near the sea or rivers, waterworks etc, or a risk from asphyxiation or toxic gases. Plan emergency procedures before work begins and put general precautions in place from the start of work.

Some emergencies may require evacuation of the site or part of the site, while others might involve the rescue of an injured person. For example, it may be necessary to plan how someone injured in a fall within a confined space or within a restricted plant room can be attended to by first aiders and the emergency services before being taken to a place of safety.

Planning for an emergency

When planning emergency procedures, routes and exits, take into account:

- the type of work being done on site (eg extra precautions may be required to maintain routes down stairs during demolition);
- the characteristics and size of the site and the number and location of workplaces on the site. A large site with people working at many locations will probably need bells or sirens at a number of places to raise the alarm. On small sites with only two or three people working, an air horn may be adequate;
- the plant and equipment being used (eg consider tower crane drivers, people working on suspended access equipment or where the exit may be obstructed by equipment);
- the number of people likely to be present on the site at any one time. On sites where many people work, escape routes need to be wide enough to allow everyone to get through doorways or down stairs easily without them becoming overcrowded; and

- the physical and chemical properties of substances or materials on or likely to be on the site (eg work at petrochemical installations or at sites where flammable paints or glues are in use may require an increased standard of ventilation).

Take precautions to ensure:

- the likelihood of emergencies arising is as low as possible;
- everyone on site can be alerted in an emergency;
- everyone working on site (including contractors who may only be at the site for a few hours) knows what signal will be given if there is an emergency and knows what to do;
- someone who has been trained in what to do is on site while work is in progress and will take responsibility for co-ordinating procedures;
- Emergency routes are available, kept clear, signed and adequately lit. When the site is not adequately lit by daylight for all periods when people are at work, provide lighting that will come on automatically in an emergency;
- There are arrangements for calling the emergency services. It is good practice to let the Fire Brigade know about any work in tunnels, confined spaces or above 18 m (above this height they may require specialist access equipment) and anywhere else where specialised rescue equipment may be needed;
- there is adequate access to the site for the emergency services and that access does not become blocked by plant or material building up;
- arrangements for treating and recovering injured people are available;
- If an emergency does arise, someone is posted at the site entrance, or in another prominent position, so that they can direct the emergency service.

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Further Reading:

