

2020

SITE SET UP

CONSTRUCTION SAFETY SITE SET UP

HANDBOOK

Disclaimer

This book is aimed at the small contractor but also applies to everyone involved in construction. It provides help and assistance on how to work safely on most tasks you will encounter. It is intended to help clients or their representatives monitor the safety performance of their contractors, implement the concept of construction design and management (CDM) and protect the safety and health of the employees assigned to work on the contractor's sites. It will also help to equip contractors and their management teams with the necessary skills to run an effective safety management system.

Objectives of this Handbook.

The main purpose of the handbook is to explain, in plain language, how to develop safe work practices and how to meet the statutory and common contract requirements in undertaking construction site set up works. It is not intended to cover each and every type of workplace scenario, nor to be used as a pictorial guide of do's and don'ts. The focus is to address the most common – and hence more accident-prone – hazards found in worksites.

More specifically, the objectives are:

To fill a knowledge gap on some site safety issues during site preparation



To provide handy reference of best practices for frontline management teams



To offer some site safety management techniques, tools and products for use

Use of this Handbook

Contractors who have experience of undertaking construction projects should be quite familiar with concepts of a site safety plan, risk assessment, safe working method statement and other safety management arrangements, but private sector clients and contractors may not have the same experience and exposure, particularly for the smaller developers and contractors.

Where a contract involves the use of subcontractors, a contractor should be aware that suitable systems of selection and supervision should apply to his subcontractors and specialist contractors. A contract manager should ensure that suitable training and instructions are in place to ensure that nothing falls between the cracks in understanding and actually implementing the safety requirements.

This Handbook provides a framework for frontline management teams to tackle different aspects of site safety, but it is not substituted for complying with the statutory provisions and standards. Some reference is made to good industry practice and different approaches to tackling the same issue under different circumstances. The intention is to strike a balance between pitching above the minimum requirements of the law and best practices.

How is the Handbook structured?

Section 1: Duties of Responsible Persons

Section 2: Preparing for work

Section 3: Setting up the site

Section 4: Let's Work Together

Section 5: Our Products and Services

A successful corporate safety programme should include a clear statement of policy by the client or owner, expressly showing management support for meeting safety objectives and the involvement of different stakeholders in the management system.

01

Duties of Person Responsible.

Clients

Clients should put safety and health on the top of the agenda along with financial considerations.

- To ensure that all contracts are completed on time, on budget and safely, clients should:
- Ensure that safety and health is not compromised
 - Ensure the best value as against the lowest cost
 - Put in place safety and health considerations during the design stage
 - Have allowed sufficient time and resources for implementing the contractor's safety programme

Contractors

- Plan emergency routes and exits, traffic routes, danger areas, loading bays, ramps, etc.
- Ensure provision of safe work equipment, with due care to their suitability, selection, safety features, safe use, training and information, inspection and maintenance.
- Provide safe working slope for excavators.
- Design an anchor for fork-lift trucks and dump trucks to prevent roll-over or overturn
- Provide suitable safety signs and warning notices
- Provide personal protective equipment, e.g. reflective clothing that should be fit, comfortable and well maintained
- Keep the workplace free from hazards
- Provide suitable communication and information – to let employees know how to protect themselves against hazards
- Conduct regular job site safety inspections
- Employ trained first aid personnel on site and/or put in place an emergency response system.

Employees

- Follow all safety rules
- Ensure that all safety features and equipment installed are functioning properly
- Replace damaged or dull hand tools immediately
- Avoid horseplay or other activities that create a hazard
- Stop work when they are unwell or physically not fit to do the job
- Report any unsafe work practice and any injury or accident to the line supervisor

Senior Site Management

- Inform workers of the risks present and the control measures required
- Evaluate risks that cannot be avoided
- Combat risks at source
- Establish emergency procedures
- Avoid all risks to workers
- Ensure that appropriate training is given

Architects, structural engineers, and other designers

- Discuss and agree on the safety and health terms with client
- Plan for safety and health in layout and design drawings, with due regard to buildability, future maintenance and repairs
- Provide information about the safety and health risk of the design after the client has decided on which contractor(s) to use
- Carry out periodic checks and sort out interface problems with different contractors
- Certify contractor's claims for safety payment and conclude the final accounts.

Safety professionals and supervisors

- Identify hazards in the workplace
- Give advice and suggest options for solving safety or health problems
- Suggest different kinds of help available, such as specialists in chemical, electrical and mechanical engineering safety to sort out issues at stake
- Investigate accidents/incidents and recommend remedial measures
- Carry out periodic checks and provide a written report summarizing the findings
- Develop and maintain an effective safety and health programme
- Provide safety training for employees

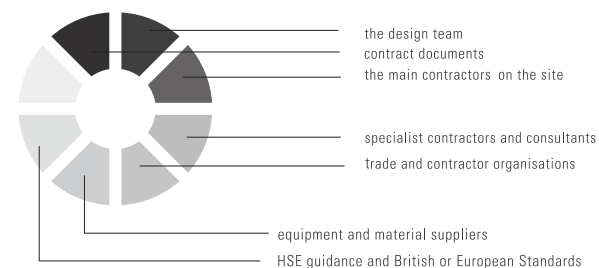
The key to achieving healthy and safe working conditions is to ensure that health and safety issues are planned, organised, controlled, monitored and reviewed. Everyone controlling site work has health and safety responsibilities. Checking that working conditions are healthy and safe before work begins and ensuring that the proposed work is not going to put others at risk requires planning and organisation



Pre-work Planning.

Gathering as much health and safety information about the project and the proposed site before work begins is important. The 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:



Make sure you provide:

- A Health & Safety Plan
- An OH&S policy displayed
- An accident report book
- Induction training records
- Workplace inspection records
- Documented safe working procedures or method statements
- Protective clothing & equipment records
- Material safety data sheets (MSDS) available
- Health & safety system manual
- Health and safety representatives appointed including management safety representative
- Contract- specific risk assessment conducted
- Emergency procedures and necessary training records



For small worksites or construction projects, look for the dangers on site (not as a substitute for a full risk assessment) and take the following preventive actions:

- Ensure that dangerous substances on site are being properly stored and used
- Provide and ensure that all persons on site wear proper personal protection equipment
- Identify ways that a risk can be controlled without using personal protective equipment (PPE)
- Ensure that workers are using the right and fit PPE for the job
- Check all plant, machinery and equipment (including PPE) are marked and correctly labeled, e.g. Safe Working Load
- Fence the site against unauthorized entry
- Take measures to prevent objects from falling from height and to take measures to protect members of the public (such as persons passing by the site)
- Provide and keep safe egress and access to the place of work, such as access to scaffolding
- Put up appropriate signs including traffic routes, authorized personnel only etc.
- Keep the site tidy, well lit and well laid out
- Provide sufficient welfare and first aid facilities
- Provide adequate fire precautions such as fire extinguishers, escape routes
- Ensure that existing power lines (buried or overhead) are identified and associated safe systems of work in place
- Take necessary precautions to ensure that electrical systems are well maintained in a safe condition
- Ensure that vehicles and people are kept apart, especially slewing vehicles, with traffic routes maintained in a safe condition
- Ensure that vehicle and plant operators are suitably trained or licensed if required
- Ensure that hoists and lifting appliances are properly installed and checked by competent persons
- Ensure that scaffolds are erected, altered and dismantled by competent people only
- Take measures to stop workers from falling and ensure fall protection
- Minimize and eliminate risk of manual handling by the use of mechanical equipment, or arrange material to be supplied in manageable sizes and weights to reduce the risk of back injury
- Take all measures to reduce exposure to noise and vibration
- Ensure that holes are protected, with clear marking and fixed covers to prevent falls
- Ensure that excavations are adequately supported or otherwise constructed to minimize the risk of collapse and arrange regular inspection by a competent person.

Where CDM applies much of this information should be found in the pre-construction-stage of 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 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;
- 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.

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.

Setting Up the Site.

The set-up of a construction site, of whatever size or scale, should be carefully planned and resourced so that the site offers a safe environment for workers, visitors and the general public. Where appropriate, a site manager should be appointed who will be responsible for site set-up, site facilities and site security. Necessary tasks required of the site manager should be informed by the requirements of the Construction Phase Plan.

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.

Site Layout

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.

- Plan emergency routes and exits, traffic routes, danger areas, loading bays, ramps, etc.
- Ensure provision of safe plant and equipment, with due care to suitability, selection, safety features, safe use, training and information, inspection and maintenance.
- Provide safe working slope for excavators, fork-lift trucks and dump trucks
- Provide suitable safety signs and warning notices
- 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.
- Provide safety notices on the information bulletin board at the worksite entrance
- Create and cover walkway adjacent to the worksite

Site 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.

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.

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. 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.

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 (e.g. during demolition or work in contaminated ground) showers should be provided.

Rest facilities: Facilities should be available for taking breaks and meal breaks. 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 (e.g. a gas or electrical heating ring, or microwave oven).

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.

Storing facilities:

Make sure there are proper arrangements for storing:

- Clothing not worn on site (e.g. hats and coats)
- Protective clothing needed for site work (e.g. Wellington boots, overalls, gloves etc)
- Personally issued equipment (e.g. ear defenders, goggles, harnesses etc).

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 (e.g. water from storage tanks used for wheel washers).

Site security

- Maintenance of visitor's log system to check unauthorized entry
- Erect suitable barricades, fencing, and hoarding
- Proper signage and lighting in suitable places when passers-by or entry by public is likely
- Footpaths kept clean and free from debris
- Site access controlled
- Traffic control procedures in place

Site storage areas and waste materials collection

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 (e.g. foam, plastics, flammable liquids and gases such as propane) and hazardous substances (e.g. 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, e.g. do not store flammable materials under staircases or near to doors or fire exits. 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

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 color 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 (e.g. making it difficult to see the blade of a cutting disc or a drill bit) and on the site generally (e.g. at stairwells). If necessary, provide extra lighting to illuminate shadow areas.

Traffic and pedestrian arrangement

The first step is a suitable and sufficient risk assessment. Ask such questions as 'What might go wrong and why?', 'Could people be struck or run over?' and 'Could they lose balance and fall while loading and unloading?'

- Identify the hazards associated with activities involving workplace vehicles, e.g. reversing operations loading and unloading
- Identify who might be harmed by each hazard. This is likely to include drivers and other workers, and may also include visitors and the public
- Evaluate the risks for each hazard and the likelihood of the harm and its severity. Are existing precautions adequate or should more be done?
- Set priorities for action and implementation
- Review the risk assessment periodically, especially when there are changes, e.g. new vehicles, changes of traffic routes

To start with, consider collective measures to eliminate risks, such as:

- Improved design and layout of the workplace to minimize transport accidents
- Signs to be used as a secondary measure where risks cannot be eliminated

Maintain a system of work by:

- Avoiding the need for reversing by better layout design
- Using a safe system of work for reversing
- Ensuring a safe system of work for loading and unloading vehicles
- Checking to see if the layout of routes is appropriate for vehicle and pedestrian activities
- Segregating pedestrian and vehicle traffic routes if feasible posting adequate warnings in conspicuous places
- Ensuring suitable pedestrian crossing points on vehicleroutes introducing a one-way traffic system, if possible, to reduce the risk of head-on collision
- Checking to see if vehicle traffic routes are suitable for the types and flow of vehicles that use them
Other measures should also be considered:
- Suitable direction, speed limit and priority signs
- Suitable physical speed restrictions such as speed bumps, edges of loading bays, pits etc. must be clearly marked and fitted with either a temporary or permanent barrier
- Ensure that all vehicles are properly maintained

Emergency procedures

At most sites, the most obvious emergency is fire. 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.

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

- The type of work being done on site (e.g. extra precautions may be required to maintain routes downstairs during demolition)
- The number of people likely to be present on the site at any one time
- The characteristics and size of the site and the number and location of workplaces on the site

Fire Safety

Many solids, liquids and gases can catch fire and burn. It only takes a source of ignition, which may be a small flame or an electrical spark, together with air. Any outbreak of fire threatens the health and safety of those on site and will be costly in damage and delay. It can also be a hazard to people in surrounding properties. Fire can be a particular hazard in refurbishment work when there is a lot of dry timber and at the later stages of building jobs where flammable materials such as adhesives, insulating materials and soft furnishings are present.

The following precautions should be taken to prevent fires:

- Keep the quantity of flammables at the workplace to a minimum;
- Always keep and carry flammable liquids in suitable closed containers;
- Store flammable solids, liquids and gases safely. Separate them from each other and from oxygen cylinders or oxidizing materials. Keep them in ventilated secure stores or an outdoor storage area. Do not store them in or under occupied work areas or where they could obstruct or endanger escape routes;
- Have an extinguisher to hand when doing hot work such as welding or using a disc cutter that produces sparks;
- Provide closed metal containers to collect rubbish and remove them from the site regularly
- Collect highly flammable waste such as solvent-soaked rags separately in closed fire-resisting containers.

Precautions in case of fire

If a fire should break out, people must be able to escape from it. To achieve this, consider the points:

Means of giving warning: Set up a system to alert people on site; this could be a temporary or permanent mains operated fire alarm (which should be tested regularly, e.g. weekly) a klaxon, an air horn or a whistle, depending on the size and complexity of the site.

Any warning needs to be distinctive, audible above other noise and recognisable by everyone.

Means of escape: Plan escape routes and ensure they remain available and unobstructed. For work areas above or below ground, provide well separated alternative ways to ground level where possible. Protect routes by installing the permanent fire separation and fire doors as soon as possible. It is important that escape routes give access to a safe place where people can assemble and be accounted for. In a large chemical plant this may be a safety refuge, while on a small site the pavement outside may be adequate.

Signs will be needed if people are not familiar with the escape routes.

Keep your fire control well in place:

- Ensure all extinguishers and fire fighting equipment serviced and marked
- Provide adequate fire alarm and communication system
- Restrict smoking/naked flame
- Avoid storage of excess quantities of flammable substances at worksites
- Establish storage procedures for flammable substances
- Employ and train emergency personnel
- Ensure emergency procedures are documented and issued
- Display emergency telephone numbers
- Conduct regular fire alarm checks
- Perform periodic testing and trial evacuations

Steps for effective fire prevention:

- Provide fire extinguishers near all welding, oxy-acetylene cutting or other sources of ignition
- Keep fire extinguishers easy to locate and reach in case of an emergency
- Never store flammable or combustible materials in common areas, stairways or exits
- Avoid spraying of paint, solvents, or other types of flammable substances in areas with poor ventilation to avoid build-up of fumes and vapors leading to explosions or fires
- Store gasoline and other flammable liquids in a safety can in a ventilated place or an approved storage facility
- Ensure that leaks or spills of flammable or combustible materials are cleaned up promptly.

First Aid

First aid can save lives, reduce pain and help an injured person make a quicker recovery.

The minimum provision for all sites is:

- First aid box with enough equipment to cope with the number of workers on site
- An appointed person to take charge of first-aid arrangements;
- Information telling workers the name of the appointed person or first aider and where to find them. A notice in the site hut is a good way of doing this.

An appointed person is someone you choose to take charge when someone is injured or falls ill and who will telephone for an ambulance if one is required. An appointed person should not attempt to give first aid for which they have not been trained.

A first aider is someone who has undergone a training course in administering first aid at work and holds a current first aid at work certificate. A first aider can undertake the duties of an appointed person.

Housekeeping

Keep work areas free from rubbish and obstructions
Maintain all floor surfaces safe, suitable and free from slip or trip hazards
Ensure floor openings covered or otherwise fenced off
Materials are properly stacked and stored safely
Keep all passageways in good conditions:
Unobstructed and clearly defined
Provide adequate lighting
Ensure clear sightline at breaks and corner

Are lightings maintained in good working order?

Adequate and free from glare
Lighting clean and efficient
No flickering
Maintain steady lights
Provide and maintain all emergency lighting systems

Is workers' access to worksites well-maintained?

Keep all walkways and stairways clear of debris and other materials such as used boxes, wooden scrap, loose gravel, oil leakage, tools and supplies to prevent tripping and slipping
Put them in a bin or debris area to prevent fire and tripping hazards
Provide adequate lighting to prevent accidents

Stacking of all materials:

Maintain all stairs, steps and landings:
Replace or remove worn-out or broken steps
Keep handrails and fencings in good repair
Keep clear of all obstructions
Maintain adequate lighting
Provide and maintain emergency lighting
Ensure non-slip treatment/treads in good condition
Keep clear of debris and spills

Site set up Check List

Information to Display

- ✓ **Notice Board**
Get a notice board upto display important project information to your team. You can purchase one here econestore.com
- ✓ **Health and Safety Law Poster**
- ✓ **Insurance Certificates** – Should be placed on the notice board.
- ✓ **Fire & Emergency Plan** – Display the plan in a visible place and make sure it is understood by everyone accessing your site.
- ✓ **Traffic Management Plan** - One way systems, safe turning spots and separate vehicle and pedestrian routes all make for a safer site.
- ✓ **Safety Signage** - Health and safety signs should be displayed at the site perimeter and around the site.

Accidents and Emergencies

- ✓ **First Aid Kit** – The Health and Safety (First-Aid) Regulations require all employers to provide adequate and appropriate first aid equipment, facilities, and qualified people so that employees can receive immediate help if they are injured or ill at work.
- ✓ **Accident Book** – It's a legal requirement to keep an accident book on your sites. Make sure this is filled in if an any accidents occurs.
- ✓ **Fire Extinguishers** – The extinguishers should be appropriate to the nature of the potential fire:
 - wood, paper and cloth – water extinguisher;
 - flammable liquids – dry powder or foam extinguisher;
 - electrical – carbon dioxide (CO₂) extinguisher.

Safety Records

- ✓ **Site Register** – Sign in/sign sheet is needed, to provide a record of who is on your site at all times.
- ✓ **Induction Forms** – Before starting work every person on the site needs to be inducted. Keep a record as evidence of this.
- ✓ **Toolbox Talks** – It is your obligation to raise health and safety awareness with on-site safety training. Provide toolbox talks from the start of your project on a regular basis.
- ✓ **Training Records** – Ensure your team is trained and competent to do the tasks they are given.
- ✓ **Site Inspections** - Perform regular checks to make sure that rules are being followed and your site is in good working order.
- ✓ **Near Miss Reports** - Create a safer workplace with near miss reporting so that risks can be mitigated and more serious, even fatal, incidents can be prevented.

Management Documents

- ✓ **Construction Phase Plan** – CDM document is legally required on every construction project so make sure you have one.
- ✓ **H&S Policy** – If you employ 5 or more people you need a written health and safety policy and this should be easily accessible.
- ✓ **Contract Documents** – architects drawings, structural calculations, specification, the scope of works.
- ✓ **Project Surveys** – service locations, asbestos surveys, ground investigations.

PPE Protective Equipment



Safe Methods of Work

- ✓ **Risk Assessments** – Required by law and need to be in place for all activities on site.
- ✓ **Method Statements** – For high risk or complex activities safe working procedures should be documented.
- ✓ **Permits to Work** – To control high-risk activities on site.



Let's work together

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