GUIDELINES FOR SAFETY & HEALTH ON CONSTRUCTION SITES

This guideline has been prepared with a view to providing essential information to job contractors/employers to ensure health and safety on construction sites.

1.0 MANAGING SAFETY AND HEALTH ON CONSTRUCTION SITES

1.1 Safety policy

Every employer of 50 or employees shall make a written statement of his policy with respect to the safety and health of his employees and make arrangements to give effect to the policy.

1.2 Risk assessment

The employer should make a suitable and sufficient assessment of: -

(a) Any risk to the safety and health to which any employee is exposed whilst he is at work.
(b) Any risk to the safety and health of any person not in his employment arising out of or in connection with the conduct by him of his undertaking.

2.0 ORGANISING THE SITE

2.1 Planning the work

Make a good planning by gathering as much information about the project and the project site before works begin to ensure safety during construction phase. Information that could be sought should be: -

(a) Underground services.
(b) Presence of live bare electrical conductors, underground/overhead insulated cables. Advice from the authority concerned should be sought prior to start of work.
(c) Ground conditions.
(d) Contract documents.
(e) Nearby schools, footpaths and roads.
(f) Other activities going on the site.

2.2 Organising the work

Responsibilities regarding safety and health between different stakeholders should be clearly allocated: -

(a) Between client/main contractor/subcontractor.
(b) By appointment of competent supervisors/safety and health officers.
(c) By proper coordination on site between parties.

2.3 Common facilities to be provided

Ensure provision of basic facilities to ensure safety, health and welfare of employees.

2.3.1 Site access

Adequate, safe and separate pedestrian and vehicular traffic routes should be provided on and around the site.

2.3.2 Site boundaries

Fence the construction site to prevent the entry of unauthorised persons on construction sites, which are located in built-up areas and alongside vehicular and pedestrian traffic routes.

2.3.3 Public safety

Ensure public safety through appropriate fencing of site or by other means.

2.3.4 Lighting

Ensure adequate lighting of all worksite through natural and/or artificial lighting.

2.3.5 Site tidiness

(a) The site should be kept tidy.
(b) Walkways and stairs should be kept free of slipping and tripping hazards.
(c) Ensure there are no protruding nails on loose or fixed materials.

2.3.6 Storage areas

(a) Set up storage areas for plants, materials, flammable substances (e.g. flammable liquids and gases) and hazardous substances (e.g. chemicals).
(b) Store flammable materials away from other materials and protected from accidental ignition.
(c) Prevent obstruction of access routes/emergency escapes by proper storage of materials.
(d) Materials to be properly stacked to prevent falls.

2.3.7 Fire Safety

Ensure fire safety on the construction site by: -

(a) Providing adequate means for fighting fire.
(b) Training of personnel in the use of these fire-fighting equipments.

3.0 EXCAVATIONS

(a) Locate and identify all utility services, such as electrical, water and sewer in the area before beginning to excavate.
(b) Don't use pointed tools to probe for underground electrical cables.
(c) Remove or secure trees, utility poles, rocks or similar objects near the edge of an excavation to prevent workers from being injured.

(d) Support the sides of excavations by sheet piling, shoring and bracing to guard against danger to workers from fall or dislodgement of earth, rock or other material.
(e) Inspect excavation slopes and/or supporting systems daily for erosion or deterioration.
(f) Keep excavated materials back at least 600 mm (2 ft.) from the edge of any trench excavation and 1.2 m (4 ft.) from any other excavation.
(g) Erect substantial guardrails or barriers around excavations to prevent workers or other persons from falling into them.
(h) Provide a ladder when workers are required to enter excavations over 1.5 m (5 ft) in depth.
(i) Do not place or move load, plant or equipment near the edge of any excavation where it is likely to cause its collapse and thereby endanger any person unless precautions such as the provision of shoring or piling are taken to prevent the sides from collapsing.
(j) Provide anchored stop blocks and barriers to prevent vehicles being driven into the excavation.
(k) Do not allow heavy vehicles near the excavation unless the support work has been specially designed to permit it.
(l) If an excavation is likely to affect the security of a structure on which persons are working, precautions should be taken to protect the structure from collapse by providing shoring.

4.0 WORKING AT HEIGHT

4.1 General provisions

(a) Ensure that working platform is secure and check that it: -

  (i) will support the weight of workers using it and any materials and equipment they are likely to use or store on it.
  (ii) is stable and will not overturn.
  (iii) is footed on stable ground or on a stable support or structure.

(b) Provide guard rails, barriers, etc. at open edges, including edges of floors, floor openings, edges of roofs and edges of working platforms.

4.2 Guard rails

Guard rails should: -

(a) be made from any material, provided they are strong and rigid enough to prevent people from falling and be able to withstand other loads likely to be placed on them.
(b) Be fixed to a structure, or part of a structure capable of supporting them.
(c) Include: -
  (i) a main guard rail at least 900 mm above any edge from which people are liable to fall.
  (ii) a toe board at least 150 mm high.
  (iii) a sufficient number of intermediate guard rails or suitable alternatives.
(d) Risks of falls through openings or fragile material (e.g. rooflights), to be reduced by providing appropriate and adequate guard rails or barriers to cover the opening or material.

4.3 Safe working platforms

All working platforms should be: -

(a) Fully boarded and securely fixed to prevent displacement.
(b) Strong enough to support the load usually placed on it (workers and materials).
(c) Provided with toe-boards so as to prevent materials and tools from falling over the edges.

4.4 General access scaffolds

All scaffolds should be: -

(a) Properly designed, constructed, erected and maintained so as to prevent collapse or accidental displacement.
(b) Based on a firm and level foundation.
(c) Erected on a firm ground capable of supporting the weight of the scaffold and any load likely to be placed on it.
(d) Braced and tied into a permanent structure or otherwise stabilized.
(e) Provided with platforms that are fully boarded and wide enough for the work and for access.
(f) Provided with scaffold boards that are properly supported and rest on at least three supports.
(g) Have a safe ladder or other access onto the work platforms.

4.5 Safe use of access ladders

(a) Any ladder should be properly fixed to prevent slipping.
(b) A good handhold should be provided to the ladder.
(c) The ladder should be leaned at the proper angle to minimize the risk of slipping outwards, that is, about 1 m out at the base for every 4 m in height.
(d) The top of the ladder should rest against a solid surface and not on fragile or other insecure materials such as cement or plastic guttering.
(e) Both feet of the ladder should rest on a firm footing and cannot slip.
(f) If the ladder is more than 3 m long, or used as a way to and from a workplace, it should be secured from falling by fixing it at the top or sometimes at base.
(g) If the ladder cannot be fixed a second person should secure the ladder at the base while it is being used.
(h) The ladder should extend a sufficient height (about 1 m) above any landing place where workers will get on and off it unless some other adequate handhold is available.

4.6 Stepladders

(a) Stepladders should be fully opened and both spreader bars should be locked.
(b) Stepladders should not be used on top of scaffolds, platforms, or other surfaces above the ground.
(c) Unattended tools, such as hammers, should not be left on top of stepladder.
(d) Stepladder should be dismounted before being moved.
(e) Top most rung of a stepladder should not be used.

4.7 Care of ladders

(a) Ladders should be inspected regularly by a competent person and damaged ladders should be removed from service.
(b) Ladders should be properly stored on racks under cover and above ground.
(c) Ladders should not be hung from its rungs.

4.8 Roof works

(a) All roof-work operations should be pre-planned and properly supervised.
(b) Roof work should only be undertaken by workers who are physically and psychologically fit and have the necessary knowledge and experience for such work.
(c) Work on roofs should not be carried on in weather conditions that threaten the safety of workers.

4.8.1 Flat roofs

(a) All the edges and openings on a roof from or through which there is a risk of fall should be protected with suitable guardrails and toe boards.
(b) All covers for openings in roofs should be of substantial construction and be secured in position.

4.8.2 Sloping roofs

(a) When work is being carried out on sloping roofs, sufficient and suitable crawling boards or roof ladders should be provided and firmly secured in position as soon as practicable.
(b) During extensive work on sloping roofs, edge protection in the form of barriers or guardrails high enough and strong enough should be provided to stop worker from falling off the roof.

4.8.3 Fragile Roofs

Where workers are required to work on or near roofs or other places covered with fragile material, through which they are liable to fall, they should be provided with sufficient suitable roof ladders or crawling boards strong enough, when spanning across the supports for the roof covering, to support those workers.

5.0 MOVING, LIFTING AND HANDLING LOADS

5.1 Manual handling

(a) Work site and storage of materials should be planned so that manual handling is reduced to a minimum.
(b) Manual handling should be done by the kinetic lifting technique and the person involved should be properly trained.

5.2 Hoists

(a) Select a hoist, which is suitable for the site and capable of lifting the loads required.
(b) To prevent people being struck by the platform or other moving parts: -
    (i) Enclose the hoistway at places where people might be struck, e.g., working platforms or window/door openings.
    (ii) Provide gates at all landings and at ground level
(c) Prevent falling down the hoistway by making sure: -
    (i) the hoistway is fenced where people could fall down it.
    (ii) the gates at landings are kept closed except during loading and unloading.
    (iii) the edge of the hoist platform is close to the edge of the landing so that there is no gap to fall through.
(d) Prevent being hit by falling materials by: -
    (i) stopping loads falling from the platform, e.g., make sure wheelbarrows are not overfilled.
    (ii) not carrying loose loads. Put loose loads in proper container or use a hoist with an enclosed platform.
    (iii) not overloading the platform.
    (iv) enclosing the hoistway.
    (v) hoist should be used to carry materials only.

5.3 Lifts

Lifts for the carriage of persons need to be especially constructed and installed for the purpose, with such features as mechanical and electrical interlocking devices on the cage and landing gates.

5.4 Mobile cranes

(a) The crane should be able to lift the load on a site.
(b) It should be of such a size so that it can be used safely on a site.
(c) Crane's inspection certificates should be up-to-date.
(d) The crane should be fitted with an automatic Safe Load Indicator, which should be in good working order.
(e) The employer should ensure that the driver is trained and experienced in the operation of the type of crane being used.
(f) The crane should be sited in a safe place, so that;
    - The driver has a clear view of the site.
    - It is well away from excavations and overhead powerlines.
    - It is on level ground which can take its full weight and together with its maximum load.

6.0 SITE VEHICLES AND MOBILE PLANT

(a) Provide safe site entry and exit points with adequate turning room and good visibility for vehicle drivers.
(b) Keep pedestrians separate from vehicles, e.g., by providing separate site entry and exit points.
(c) Consider a one-way system and avoid needs for vehicles to reverse wherever possible.

(d) Consider fitting reversing alarms to vehicles.
(e) Make use of signalers to control high-risk situations, e.g., where visibility is restricted.
(f) Prepare the running surface of temporary roads. Where the site is muddy, use hardcore or other fill to overcome the problem of skidding and repair potholes
(g) Protect any temporary structures, such as scaffolds or falseworks, which might be damaged and made unsafe if struck by a vehicle.
(h) Protect any excavations and alongside any areas of water if vehicles must pass close by.
(i) Take precautions, such as stop blocks, where vehicles tip materials into excavations.
(j) Make sure that vehicles are not overloaded as they may become unstable, difficult to steer or have their braking efficiency impaired.
(k) Make sure loads are securely attached to vehicles and that loose materials cannot fall from lorries or site dumpers and strike workers.
(l) Take special precautions with blind corners.

7.0 CHEMICALS

(a) Follow the instructions provided on the labels when working with glues, paints, and solvents.
(b) Work with glue, paint, or solvents in well-ventilated areas so as to prevent build-up of hazardous environment to chemical vapours.
(c) Use appropriate personal protective equipment and clothing to employees working with chemicals based on labels and Material Safety Data Sheet (MSDS).

8.0 PROTECTIVE EQUIPMENT

Employers on construction sites need specific Personal Protective Equipment (PPE) to ensure their safety and health. e.g.: -

8.1 Safety helmet

(a) Employees should be provided with safety helmets to protect the head from injury due to falling or flying objects or due to striking against objects or structures.
(b) Employers should ensure that the safety helmets are worn.
(c) When working at height, a strap should additionally be used to prevent the safety helmets from falling.

8.2 Footwear

(a) Protective footwear should be provided to workers who are exposed to the risk of injury of materials being dropped on their feet or nail or other sharp objects penetrating their sole.
(b) Where it is likely that employees will be working in water or wet concrete, appropriate boots should be provided.

8.3 Goggles and safety spectacles

The employer should provide goggles or other suitable protective device when likely to be exposed to eye or face injury from airborne dust or flying particles, dangerous substances,

harmful heat, light or other radiation, and in particular during welding, flame cutting, rock drilling, concrete mixing or other hazardous work;

8.4 Gloves and protective clothing

Protective gloves and suitable protective clothing to protect hands or the whole body as required when exposed to heat radiation or while handling hot, hazardous or other substances which might cause injury to the skin should be provided by the employer.

8.5 Other protective equipments

Where necessary, workers should be provided with and required to wear the following personal protective equipment: -

(a) Ear protection when exposed to noise.
(b) Dust masks when exposed to excessive dust.
(c) Waterproof clothing and head coverings when working in adverse weather conditions.
(d) Safety harnesses with independently secured lifelines where protection against falls cannot be provided by other appropriate means.
(e) Life vests and life preservers where there is a danger of falling into water.
(f) Distinguishing clothing or reflective devices or otherwise conspicuously visible material when there is regular exposure to danger from moving vehicles.

Note: All protective equipments should be properly maintained and stored after use.

9.0 EMERGENCY PROCEDURES

9.1 Transport

(a) Where an employee has suffered injury or illness at work necessitating his removal to his home or to a hospital or other similar institution, the employer shall promptly and at his own expense provide an appropriate means of conveyance for the employee.
(b) The appointed person or first-aider shall accompany the injured or ill employee to a hospital or other similar institution whenever the circumstances so justify.

RESOURCES: -

1. The ILO Code of Practice – Safety and Health in Construction.
2. The UK Construction (Design and Management) Regulations 2007.
3. Health and Safety in Construction – Health and Safety Executives (HSE) Books.
4. Safety, Health and Welfare – A training manual – ILO.
5. The Occupational Safety and Health Act 2005.
6. Regulation for Building and Excavation Work – GN 358 of 1980.