

SAFETY PROVISION IN THE CONTRACT DOCUMENT

1.5.1 Site Safety Measures

The Contractor shall allow for the compliance with the Factories Act (hereafter referred to as "the Act") and the provisions of the Factories (Building Operations and Works of Engineering Construction) Regulations (hereafter referred to as "the Regulations") and any amendments or reenactment thereto. Precedent to the commencement of the Works, the Contractor shall first obtain a Certificate of Registration, under Part III of the Act.

It shall be the duty of the Contractor to comply with all such requirements of the Regulations, as affect him or any person or persons employed by him, and as related to any work, act or operation performed or about to be performed by him. The Contractor shall not permit any person to do anything not in accordance with the generally accepted principles of safe and sound practice.

The Contractor shall ensure a safe environment on the Site at all times. All safety provisions shall be properly maintained and shall not be removed without the written approval of the Superintending Officer (SO) Rep. The Contractor shall ensure that necessary and sufficient precautions are taken by his workmen when safety provisions are used. The Contractor shall not allow any of the safety provisions, to be used unless he has satisfied himself that the provision is safe. The Contractor shall submit a safety programme to the SO Rep for approval prior to the commencement of the Works. Such programme shall include safety rules and regulations, small group activities, company safety policy, safety cycle activities, safety slogans, safety campaign, slide shows and other such activities that the SO Rep may direct. The safety programmes must be displayed at the outside of the site office. The Contractor shall display safety posters at the site office, site canteen, exit/entry points of buildings, passenger cum material hoist area and staircase area.

The Contractor shall submit safety drawings, certified by his professional engineer, for approval at least one month before the commencement of the Works. The approval of the SO Rep shall not relieve the Contractor and his professional engineer of the need to ensure the adequacy and sufficiency of the safety provisions.

The Contractor is deemed to have allowed in the Contract Sum for all cost and expense for the safety provisions and for all additional costs that may arise from amendments to the Regulations and changes in the requirements of Ministry of Manpower(MOM).

The Contractor shall ensure that the requirements of the Regulations and the following requirements are strictly complied with at all times:

(a) Metal Scaffold

The Contractor shall provide, erect and maintain metal scaffold for all building blocks of 4 storeys and above or 12 m in height and above. This requirement may be waived, subject to the approval of the SO rep, where industrialised, semi-industrialised or other method of construction together with peripheral safety nets are employed. The Contractor shall allow free use of the scaffold by all contractors, sub-contractors, specialists, artisans and other tradesmen employed by the Employer or the Contractor.

The metal scaffold shall be of a type approved by the MOM. It shall comply with the requirements of the Singapore Standard Code Of Practice For Scaffolding, CP 14 and any amendment or re-enactment thereto. The metal scaffold shall be prezinc galvanised or other approved by the SO Rep.

The metal scaffold and any components therein shall be designed according to the CP 14 and Factories (BOWEC) Regulations by a Professional Engineer employed by the Contractor (hereinafter referred to as "PE" for the purposes of this sub-clause. The Professional Engineer's drawings and calculation shall be submitted for approval of the SO Rep before the erection of the scaffold. The submission shall be effected before the completion of ground floor beams of the first building block.

The scaffold shall be erected ahead of the structural work (including the construction of water tank rooms) from the second storey and supported by cantilevered platforms erected according to the Drawings of the PE. The

cantilevered platforms shall project about 1.1m from the edge of the building or any other distance approved by the SO Rep. The scaffold shall be erected within 300 mm from the building edge or at any other distance approved by the SO Rep. Where the structure does not allow the scaffold to be erected from the second storey or where the building is less than 15.0m in height, the Contractor may erect the scaffold from the first storey subject to the approval of the SO Rep.

The Contractor and his PE shall ensure that the building structure can resist the load imposed by the scaffold. The scaffold shall be designed to carry metal working platforms and two working levels in use concurrently. The maximum average loading per working level per bay is 220 kg per m². Signboards showing the maximum loading allowed on the scaffold shall be displayed on the scaffold.

The Contractor shall provide, erect and maintain continuous galvanised metal working platforms or other approved by the SO Rep at the second storey, every sixth lift of the scaffold, the immediate level below the top most level and the roof level of the building block under construction.

Where the height between the platform at the roof level and the platform directly below is two lifts or less, the latter platform may not be necessary subject to the approval of the SO Rep. No omission from the Contract Sum shall be made in the event that such a platform is not necessary.

The material used for the metal working platform shall be at least 1mm thick galvanised steel. Working platforms shall be adequately secured to scaffold frames at the required levels. The connections between working platform and scaffold frame, and between the working platforms shall be subject to the approval of the SO Rep. For any portion of the working platform where the use of metal is not suitable, the Contractor may use timber platform subject to the approval of the SO Rep. The platform shall be complete with 200mm high metal coloured toeboards and metal guardrails at least 1.1m above the platform.

The platform shall be at least 635mm in width and the edge of the platform shall not be more than 40mm away from the inner face of the standards of the scaffolding frame. The platform shall be used for:-

- (i) erecting and dismantling of formwork of structural elements;
- (ii) transferring of formwork and other materials from one working level to another; and
- (iii) external finishing works.

The Contractor shall provide, erect and maintain an overlying screening net to cover the entire external face of the scaffold. The installation of the net shall follow the erection of the scaffold closely. A 200mm high metal coloured toeboard shall be provided at the base of the net. After installation, there shall be no opening between separate sets of the net and any torn net shall be repaired immediately. The net shall comply with the following requirements:

- (i) Maximum mesh size (square) : 15mm
- (ii) Twine No. : minimum 350D
- (iii) Knot type : single or English knot
- (iv) Minimum 12 ply

The scaffold shall be effectively tied to the building structure by means of tie-backs. All tie-backs shall be painted with bright colour for easy identification.

The scaffold and any components therein shall be erected, or substantially extended to or dismantled, by scaffold erectors, under the immediate supervision of a scaffold supervisor, according to the Regulations. The scaffold and its components shall only be dismantled and removed after the SO Rep has given his permission.

(b) Personal Protective Equipment

The Contractor shall provide and maintain suitable personal protective equipment to all workmen employed on the Site. The Contractor shall ensure that such personal protective equipment comply with the requirements of the Regulations. The Contractor shall also ensure that all equipment are properly used by his workmen during the course of their work. The Contractor shall record the issuance of all equipment to his workmen in the prescribed forms and such forms shall be kept in the site office and made available for inspection at all times. Three mirrors of sizes 600 mm x 1500 mm are to be installed for workers to check their personal protective equipment during Tool Box Meeting. The location of these mirrors are to be approved by the SO Rep.

(c) Safety (Anti-fall) Net

The Contractor shall provide and maintain a safety net systems to catch person or persons falling whilst working in any location from where he would liable to fall.

The safety net system shall be obtained from suppliers approved by the SO Rep. The Contractor may propose an alternative system, to be certified by his professional engineer, to the SO Rep for approval. He shall submit his proposal at least one month prior to its installation.

The safety net shall comply with SS292 or other approved standards. The net shall be of sufficient size and strength to catch any person for whose protection it is to be used and the net shall be so located to cover the area of the possible fall.

The Contractor shall conduct a sample test on the safety net system, comprising the net and its supporting structures, before it is installed. Subsequent tests shall be carried out when directed by the SO Rep.

For buildings above four storeys, a peripheral safety net system shall be provided. Initially the net shall be installed at the second storey. As construction progresses, it shall be repositioned to follow the topmost working level but shall be kept at not more than 6.0 below it. It shall be removed only with the approval of the SO Rep.

Where access scaffolding is used, or any alternative safety measure approved by the SO Rep is used, a peripheral safety net system is not required.

(d) Working Platforms

The Contractor shall construct temporary working platforms, complete with toe boards and middle and top rails, to the design and drawings of his professional engineer. The working platforms shall be at least 635mm wide and shall be used for:

- (i.) erecting and dismantling of formwork of columns, walls and peripheral beams;
- (ii) transferring of formwork or other materials from one working level to another; and
- (iii) finishing work.

(e) Working Platforms For Lift Shafts And Voids

The Contractor shall provide working platforms, according to the design of his professional engineer, for the erection of lift shafts and void walls. The lift shaft platforms shall effectively cover the lift voids.

The lift platforms at the lift landings shall be left in place until approval by the SO Rep to remove them.

(f) Overhead Shelters

The Contractor shall provide, erect and maintain overhead shelters at every point of entry/exit to buildings of two or more storeys in height. The overhead shelter shall be constructed immediately below the second storey. The overhead shelters shall project at least 3.0m from the building edge and shall be at least 1.5m wide. The overhead shelters shall be made of curved metal roofing with radius of at least 1.5m or pitched metal roofing with a slope greater than one in two, with timber boarding below supported by steel pipes resting on rigid base.

The overhead shelter shall be designed in accordance with the relevant statutory requirements by a Professional Engineer. The Professional Engineer's drawings, detailings and calculation shall be submitted for the approval of the SO Rep at least one month prior to its construction.

The access to, along and egress from the entry/exit points shall be kept free from obstructions and accumulation of oil, greases, water and other substances causing slipping and tripping.

Overhead shelters shall also be provided for workmen working in areas exposed to falling objects.

(g) Peripheral Overhead Shelters

The Contractor shall provide peripheral overhead shelters for buildings of more than 15.0m in height. It shall be erected in place when the construction reaches the fourth storey slab. The overhead shelter shall be at least 2.0m wide, and inclined so that the outer edge is at least 150mm higher than the inner edge. The overhead shelter shall be sufficiently strong to support a weight of at least 75 kg point load.

(h) Barricade To Lift Openings, Voids and The Open Sides of Buildings

The Contractor shall barricade all lift openings, internal voids and the open buildings where a workman is liable to fall a distance of more than 3.0m. The barricade shall be at least 1.1m high and shall have sufficient strength and rigidity to withstand a load of 50 kg.

(i) Mechanical Suspended Scaffold

Where mechanical suspended cradle systems are to be used, the Contractor shall first obtain a Certificate of Registration under the Factories Act from MOM and a written approval from the SO Rep prior to the use. The mechanical suspended scaffold system shall comply with the requirements of the Singapore Standard Code of Practice for Suspended Cradles CP20. Where the use of access scaffolding is not stipulated, suspended scaffolds may be used for finishing work. All operators of suspended scaffold shall have undergone a training course approved by the SO Rep. Life lines shall be provided for the suspended scaffold users to anchor their safety belts.

(j) Authorised Operators For Machinery and Vehicles

The Contractor shall employ only experienced, trained and qualified operators for his site machinery and vehicles. The Contractor shall submit a list of the machinery and vehicles on the Site, together with the names, identity cards or passport numbers and years of experience of the operators qualified to operate them, not later than one month after the start of the Works. The Contractor shall inform the SO Rep within one week of any change made. The list shall also be displayed in the site office.

In the case for vehicles which are operated within the contract boundary, the authorised operators shall possess a minimum valid Class 3 driving license from the Registrar of Vehicles (Singapore) or equivalent from their originating countries. The equivalent of a minimum Class 3 driving licence shall first be verified by the respective embassy in Singapore and thereafter submitted for approval by the SO Rep.

(k) Safety Guards

The Contractor shall provide safety guards to all moving machine parts that are likely to injure a workman.

(l) Site Safety Supervisors

The Contractor shall employ Site Safety Supervisors with recognised and approved certification in construction safety to take charge of all matters related to safety on a full time basis throughout the Time for Completion. The said Site Safety Supervisors shall spend their time fully on the Site:

- (i) To supervise safety and promote safety conduct;
- (ii) To inspect and rectify any unsafe place of work;
- (iii) To correct any unsafe practice; and
- (iv) To ensure that the provisions of the Factories Act and any regulations made thereunder are complied with.

The number of Site Safety Supervisors to be employed for the purpose of this Clause shall be in accordance

with the following table:

Number of units as specified in the Contract	Number of Site Safety Supervisors to be employed per contract
Less than and equal to 600	1
601 to 1200	2
More than 1200	3

For the case where no unit are specified in the Contract, a minimum of one Site Safety Supervisor shall be provided by the Contractor.

The Site Supervisors shall put on a suitable uniform provided by the Contractor. The type of uniform shall be subject to the approval of the SO Rep.

The Contractor shall be deemed to have included in the Contract Sum for all costs and expenses to be incurred by him for compliance with the requirements stipulated in this subclause.

The Contractor shall submit the names, documentary evidence of the qualifications of the Site Safety Supervisors within one month from the date of the Letter of Acceptance for approval by the SO Rep. The type of uniform for the Site Safety Supervisors shall also be subject to the approval of the SO Rep.

All differences and/or disputes arising under this subclause (including questions relating to the interpretation) shall be determined by the Superintending Officer whose decision shall be final and binding on and conclusive against the Contractor.

(m) Safety Training

(i) Safety Orientation Course

The Contractor shall employ workmen who possess valid Safety Orientation Course Certificates. The Contractor shall be required to ensure that his workmen attend a prescribed safety refresher course at an interval of time to be decided by the SO Rep.

(ii) Safety Training Course

When directed by the SO Rep, the Contractor shall send his employees/staff as stipulated hereunder to MOM, CITI or other approved training centre for appropriate safety training as shown hereunder.

Safety Training Courses Conducted by MOM

Courses	Applicable to
Safety Officers Training Course	Safety Personnel for registration as Safety Officer
Safety Management Course	Chairman of Safety Committees, Managers, Engineers and Supervisory Staff
Training Course for Safety Committee Members	Safety Committee Members
Building Construction Safety Supervisor	Building Construction Foremen and Supervisors

Course

Industrial First Aid Course	Workers, Safety Personnel and Supervisors
Industrial First Aid Refresher Course	Trained First Aiders
SIC (Manhole) for Supervisors	Supervisors
Safety Instruction Course for Lifting Supervisors	Supervisors

Safety Training Courses Conducted by CITC (Construction Industry Training Institute)

Courses	Applicable to
Crawler Crane Operator Course: o New entrant programme	Crawler crane operator.
Tower crane operation course	Tower crane operator.
Explosive Power Tool Operator Course	Explosive Power Tool

The safety training shall be applicable to all levels of employees/staff stipulated in this sub-clause including top management at the work Site.

Particulars attention shall be given to the needs of young employees/staff. Further training shall be required where:

- i. Employees/staff are transferred or where employees/staff take on new responsibilities or where a change in the work activity or work environment could arise; and
- ii. There is a change in the work equipment or system of work in use.

Training shall be repeated periodically to ensure continued competence.

(n) Tower Cranes And Other Tall Construction Equipment

The Contractor shall comply with all height restrictions on the use of tower crane or other tall Construction Equipment, imposed by the Civil Aviation Authority of Singapore and Ministry of Defence. In addition, the height clearance of tower crane or other tall Construction Equipment shall be submitted to the SO Rep for approval before they are brought to the Site. Force limiting device, speed limiters and moment limit switches shall be installed for all cranes.

The Contractor shall submit detailed layout drawings and safety requirement of the tower cranes to the MOM and the SO Rep for approval at least one month prior to their installation. The slewing radii of the tower cranes shall not overlay, unless the tower cranes are equipped with slewing limit switches and their jibs are at different levels. The slewing limit switch shall be activated to stop the slewing action before the jib slews into the overlap zone.

The jib of a tower crane shall not be allowed to slew outside the contract boundary lines without the written approval of the SO Rep. The free standing mast of a tower crane must be certified by the Contractor's Professional Engineer prior to its use on the site.

The Contractor shall submit detailed drawings and calculations of the type of foundation support and the tie-back for the tower crane, duly endorsed by his Professional Engineer, together with technical information to the SO Rep for approval at least one month prior to their construction. The Contractor's Professional Engineer shall

certify that the free standing height of the mast is structurally adequate and sound before the tie-back is installed. No tower crane shall be installed and supported on the constructed RC structure of a building.

(o) Access For The Use of Mobile Crane And Piling Machine

Where the Contractor uses mobile cranes and piling machines on the Site which is next to existing buildings or public roads or Mass Rapid Transit lines, the access for the mobile cranes and piling machines shall be of steel plates or reinforced concrete or bituminous pavement as approved by the SO Rep. All such access shall be provided over adequate compacted hard-core base.

The Contractor shall provide full access for the movement of the cranes and piling machines and for their lifting or pile driving operations. The access shall be able to distribute the load so as not to exceed the bearing capacity of the underlying materials.

The Contractor shall engage at his own cost and expenses a Professional Engineering (hereinafter referred to as "PE" for the purposes of this sub-clause) to design the access. The drawings and calculations endorsed by the PE shall be submitted for approval by the SO Rep before the construction of the access. The access shall be constructed according to the approved Drawings and maintained in good condition at all times throughout the Time for Completion.

(p) Temporary Chute For The Removal Of Construction Debris

The Contractor shall provide adequate number of temporary chute to dispose construction debris from the upper storeys for every blocks of 4-storey and above. It shall be erected to follow the structural work. A large bin at the tower end of each of the chute shall be provided and emptied regularly. The chute can be a proprietary system or fabricated on Site. The Contractor shall submit detailed drawings and calculations duly endorsed by the Professional Engineer to the SO Rep at least one month prior to their installation. The temporary chute shall be removed only with the permission of the SO Rep.

(q) Warning Signs And Lights

The Contractor shall display warning signs of sizes 900mm x 600mm at strategic points around the periphery of the Site where trespassing is likely to occur. Such signs shall have the words 'DANGER - KEEP OUT' in the four official languages painted in red on a white background in gloss finishing paint. Warning lights shall be placed at similar positions at night to serve as a warning.

If work is carried out near public roads, all signage shall comply with the recommendations of the Temporary Road Signage Manual issued by PWD.

(r) Housekeeping

The Contractor shall maintain and ensure a safe working environment by keeping the site neat and tidy, and free from all hazards and debris. Materials shall be stacked up safely. All workstations and accesses thereto shall be kept free from hazards and debris. The Contractor shall submit such housekeeping technique to the SO Rep for approval at least one month before commencement of the Works.

Such housekeeping shall be carried out in such a manner and at such times so as not to cause any inconvenience to either the adjoining owners, occupiers and the public. Debris shall be wet to minimize the risk of dust. Containers for debris and rubbish are to be provided at the designated places. All the material storage area are to be barricaded using conical stand with steel rods in between.

(s) M C

The Contractor shall submit layout and details of the crane access to the SO Rep for approval prior to the use of the crane on the access. The Contractor shall ensure and check that the crane access is properly constructed. The Contractor shall keep all records of inspections of the cranes access at the Site and produce them for examination when requested by the SO Rep. The boom of the mobile crane with hoisted load shall not be allowed to swing outside the contract boundary without the written approval of the SO Rep. All the hoisting area must be barricaded using conical stands with steel rods in between.

The Contractor shall ensure the installation of barriers to warn the crane operator of depressions, excavated areas and other obstructions.

Moment limiters shall be installed for all cranes. The Contractor shall station a supervisor on the Site to oversee and guide the crane operator during positioning, hoisting and slewing. The cranes shall be tested by an "Approved Person" before its use on the Site irrespective of any valid test certificate. The Contractor shall ensure daily checks are carried out by the crane operator and maintenance checks conducted once every three months. The crane must have overhaul checks before it is used on the Site. Test certificate, overhaul certificates, maintenance certificates, inspection records by crane operator, Approved Persons and the Contractor's site engineer shall be properly documented, kept on the Site and produced for inspection by the SO Rep.

(t) Crane Operator And Lift Supervisor

The Contractor shall comply with the Factories (Operation of Cranes) Regulations 1998. He shall appoint at least one full time lifting supervisor to supervise all lifting operations of any crane for the Site. However, where more than one crane are used on the Site, the number of lifting supervisor employed by the Contractor shall be increased as required by the SO Rep. No lifting activity shall be allowed without the supervision of the Lifting Supervisor.

The lifting supervisor shall have a minimum of 3 years of experience in construction work and lifting operations. He must be a site foreman or site engineer and possesses a certificate on Safety Instruction Course for Lifting Supervisor. He shall spend his time fully on all lifting activities and ensure that unsafe conditions are rectified.

The crane operator and lifting supervisor shall carry out their duties strictly according to the abovementioned Regulations and other duties as the SO Rep deems necessary from time to time.

The Contractor shall submit a list of crane operators and lifting supervisors with the names, identification card or passport numbers, qualifications and years of experience to the SO Rep for approval one month before the use of the crane. He shall inform the SO Rep within one week of any changes made. The list shall be updated and kept on the Site at all times. The SO Rep reserves the right to examine the list as and when required.

(u) Temporary Staircase

The Contractor shall provide and maintain 0.8m minimum wide temporary metal staircases from one working floor to another. The staircase shall be placed against the adjacent staircase walls or formwork of the staircase walls that are under construction. The outer sides of the staircases shall be provided with metal handrails 1.1m above the outer staircase strings. The bottom of the staircase shall be covered fully with metal plate.

The Contractor shall engage a Professional Engineer (PE) to design the staircases. The Professional Engineer's drawings and calculation shall be submitted for approval by the SO Rep before the construction of the staircases.

(v) Safety Information Signboard and Assembly Stage

The Contractor shall provide, erect and maintain a Safety Information Signboard and Assembly Stage. The signboard shall be 6.0m x 3.0m made of timber plywood and fixed at a steel frame. The signboard shall consist of safety posters, safety theme and pictures, safety news, photos of good safety measures, one 600mm x 1500mm mirror, names of site safety equipment and machinery suppliers. The safety posters, news and photos shall be protected from weathering. The arrangement and size of display of all items referred herein shall be approved by the SO Rep.

The stage shall be constructed in front of the signboard and made of concrete. The stage shall consist of a raised platform of 4.5m x 1.0m with at least one step.

The signboard and stage shall be designed in accordance with the relevant statutory requirements by a Professional Engineer. The Professional Engineer's drawings, detailings and calculations shall be submitted for the approval of the SO Rep within one (1) month from the commencement of the Works.

The location of the signboard and stage shall be approved by the SO Rep. As and when instructed by the SO Rep, the Contractor shall remove or relocate and reconstruct the signboard and stage, and reinstate all the affected ground to the satisfaction of the SO Rep all at the costs and expenses of the Contractor. On satisfactory Substantial Completion of the Works, the signboard and stage shall be cleared away upon the approval of the SO Rep.

(w) Gas Cylinders and Related Equipment

The Contractor shall use gas cylinders fitted with a low pressure gauge and a high pressure gauge, reducing valve with pressure regulator, and safety relief device. The gas cylinders shall not be kept in the same room where welding, cutting or heating is being carried out or placed within five metres of any source of heat. The gas cylinders must always be kept upright in a wheeled-trolley.

The hose connecting a gas cylinder to an apparatus for cutting, welding, heating or other related works shall be of good construction and sound material, free from Defect, properly maintained, and not entangled or kinked.

A flashback arrestor or any other similar device which stops flashback that is acceptable to the Chief Inspector must be fitted at every outlet of a gas cylinder and every inlet of an apparatus.

The gas cylinders and hoses shall be colour-coded to conform to the Singapore Standard 152: Identification of Contents of industrial Gas Containers or any amendments thereof.

The Contractor shall engage a competent person to check the safety devices referred herein once in every 6 months. The competent person is any person who is competent by education, training and experience on the safety and operational aspects of the use of gas cylinders and related equipment.

(x) Health Measures

(i) Hazardous Chemicals Management

The Contractor shall establish and implement a programme to manage the receipt, movement, storage and use of hazardous chemicals in the Site. The programme shall include:-

- written procedures for the acquisition, transportation, storage and usage of hazardous chemicals;
- the appointment of a competent person to receive hazardous chemicals and manage their storage, distribution and handling;
- maintaining a register of hazardous chemicals together with their Material Safety Data Sheets (MSDS). The MSDS shall give details of the hazardous chemicals' composition, physical and chemical properties, toxicity, flammability, personal protective equipment required during their handling, and measures to be taken during an emergency;
- labelling of all containers of hazardous chemicals. The labels shall indicate the hazards involved and the precautions to be taken;
- designation of suitable storage areas. All unused hazardous chemicals shall be returned to the designated storage areas. Storage areas shall be secured against unauthorised access;
- regular hygiene monitoring where there is exposure to airborne hazardous chemicals. Workers shall not be exposed to toxic airborne chemicals exceeding the permissible exposure levels (PEL) specified in the Factories (Permissible Exposure Levels of Toxic Substances) Order, 1996;
- training and education of workers on the hazards associated with the hazardous chemicals, and the precautions to be taken during the storage, handling and use of these chemicals;
- the provision, maintenance and use of personal protective equipment (PPE) such as respirators. Workers shall be trained in the use of PPE. The Site Safety Supervisor shall regularly inspect for the provision and use of PPE by workers;

- arrangement for workers to undergo regular medical examinations if they are exposed to any of the chemicals (e.g., silica, asbestos, lead) listed in the Factories (Medical Examinations) Regulations.

(ii) Noise Management

The Contractor shall as far as practicable, ensure that all processes, machines and equipment used, do not cause workers to be exposed to excessive noise, ie. above an equivalent sound level of 85 dBA for an 8 hour workday, as stipulated in the Factories (Noise) Regulations, 1996. This can be done by implementing one or more of the following measures:

- engineering noise control, e.g., modifying noisy processes, machines or equipment, relocating noisy processes or isolating them within enclosures, erecting sound barriers, reducing kinetic or potential energy and regularly maintaining machines and equipment;
- administrative noise control, e.g., rotating noisy jobs among workers so that they are not exposed to noise above the permissible exposure limit;
- using quiet machines and equipment when such machines and equipment are available in the market. Examples are generators, compressors and concrete breakers.

The Contractor shall provide hearing protectors for workers who are exposed to excessive noise and ensure that they are worn at all times. Warning signs to remind workers that hearing protectors must be worn shall be put up in areas with excessive noise.

Construction workers should be trained and educated on the hazards of noise, and their control or prevention. Workers who are exposed to excessive noise should be sent for pre-employment and annual audiometric examinations (hearing tests) to detect any loss of hearing.

(iii) First-Aid

The Contractor shall establish and implement a first-aid programme to provide emergency treatment of victims of accidents, chemical poisoning or excessive exposure to toxic substances. The programme shall include:-

- first-aid facilities
- first-aid boxes
- first-aid room, where there are 500 or more workers at the Site;
- training and re-training of first-aiders;
- first-aid treatment procedures;
- standard procedures.
- special procedures, e.g., for poisoning.
- maintenance of first-aid facilities.

All first-aid provisions shall comply with the Factories (First-Aid) Regulations, 1995.

(y) Others

The Contractor shall provide and maintain guard or fence or barrier around excavations, lift pits or other similar potential places of danger to prevent accidents. The guards, fence and barrier shall be of sound material, good construction and possess adequate strength.

The Contractor shall provide and maintain storey number indicators of size 400mm x 400mm at every staircase area and 900mm x 900mm at the metal scaffold enclosing passenger cum material hoist. The indicators shall be displayed at every storey.

1.5.2 Safety Infringement

The Contractor shall include in his Contract Sum all the costs and expenses for complying with the safety requirements.

The SO Rep will conduct periodic inspections on the provision of safety measures with the Contractor's site safety supervisor or Contractor's Representative. The Contractor shall rectify immediately any contravention of or non-compliance with the Factories Act or Factories Regulations or safety measures specified. All Works or part of the Works may be stopped when the SO Rep considers the working environment or procedure is unsafe for Works to continue. In such events, the Contractor shall not be entitled to any claims for compensation or extension of Time for Completion.

Upon any accident or mishap occurring on the Site, the SO Rep or any Competent Authority may order a total or partial stoppage of the Works, depending on the nature and extent of the accident/mishap, to allow investigations and/or to carry out remedial measures. In such cases, the Contractor shall not be entitled to any claims for compensation or extension of time for Completion.

- i. Fatal accident, if the SO Rep or Competent Authority is of the opinion that the accident is the result of the defaults, acts, omissions or negligence, in part or in whole, of the Contractor.
- ii. Accident injuring a person or persons, if the SO Rep or Competent Authority is of the opinion that the accident is the result of objects falling from height; and
- iii. Other accident which the SO Rep or Competent Authority is of the opinion that the accident is the result of failure of the Contractor to provide necessary and sufficient safety measures stipulated in the Contractor or by any legislation.

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