



**Construction Industry
Development Board**



INCORPORATING OSH INTO TENDER DOCUMENT

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ACKNOWLEDGEMENTS

This is the first guideline entitled *Guideline: Incorporating OSH Into Tender Document*, a reference produced by CONSTRUCTION RESEARCH INSTITUTE OF MALAYSIA (CREAM) and CONSTRUCTION INDUSTRY DEVELOPMENT BOARD (CIDB) MALAYSIA for the industry.

The objective of this Guideline is to offer a basis against which Occupational Safety and Health (OSH) items are specified at the Pre-Contract Stage. This will enable the OSH activities to be embedded and monitored during the execution or Post-Contract period.

Highest gratitude and appreciation is extended to the Research Team/Working Group Members for CREAM, representatives from the industry for their unwavering effort;

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| 24 | Sr. Chew Nane Cheong | Institution of Surveyors Malaysia (ISM) |
| 25 | Ar.Ng Chin Heng | Pertubuhan Arkitek Malaysia (PAM) |
| 26 | Ir. Hamdan Uda | Board of Engineers Malaysia (BEM) |
| 27 | Ir. Noor Hisham Yahya | Institute of Engineers Malaysia (IEM) |
| 28 | Ir. Foo Check Lee | Master Builders Association of Malaysia (MBAM) |
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| 30 | Mdm. Aslinda Mohd Noor | Real Estate and Housing Development Association (REHDA) |
| 31 | Mr.Kamarudin Mohd.Saleh | Persatuan Kontraktor Melayu Malaysia (PKMM) |
| 32 | Mr. Ganesan Krishnan | Persatuan Kontraktor India Malaysia (PKIM) |

Acknowledgement is also extended to the following supportive agencies below:

- 1 Bovis Lend Lease
- 2 N & I Niaga Sdn. Bhd
- 3 IJM Corporation Berhad
- 4 Putrajaya Holding Berhad
- 5 Lembaga Lebuhraya Malaysia (LLM)
- 6 Land Transport Authority (LTA) Singapore
- 7 KLIA Training and Research Centre Sdn.Bhd
- 8 Majlis Amanah Rakyat (MARA)
- 9 Universiti Teknologi Malaysia (UTM)
- 10 Lembaga Juruukur Bahan Malaysia (BQSM)
- 11 Ranhill Engineers and Constructors Sdn.Bhd
- 12 Jabatan Pengairan dan Saliran (JPS)
- 13 Syarikat Perumahan Negara Berhad (SPNB)
- 14 Ahmad Zaki Resources Berhad (AZRB)

We wish to express our sincere thanks to the **Centre for Construction Project & Infrastructure Management (CPIM), Faculty of Architecture Planning & Surveying, Universiti Teknologi MARA** for the compilation and making this publication a success.

INTRODUCTION

There is a complexity of inter linkage factors starting from project inception to construction stage that leads to accidents. However it is difficult to trace them back under a dynamic system of procurement process. In fact, evidence has shown that many factors associated with construction accidents can be traced back to the designers' responsibility (may it be architect or engineers) as well as the client's responsibility.

One solution that can improve the OSH effectiveness in construction site is through sufficient allocation and provision of OSH specification at all stages stipulated in the tender document. By having clear specification and OSH provision stipulated in documents, it is a must that the contractors have to provide sufficient cost for it and it will be counted as part of the agreed project cost and they will have a better indicator/instruction to implement sufficient site safety.

According to the Master Plan for Occupational Safety and Health in Construction Industry 2005 – 2010 (MPOSH) produced by Department of Occupational Safety and Health, Human Resources Ministry and Construction Industry Development Board (CIDB), there is a need to specify health and safety requirements in the contract document for the nation. Such health and safety requirements may provide comprehensive guidelines and evidential analysis for any accident taking place on site. This may help anyone involved during construction to take any action in order to eliminate, avoid and reduce potential deficiencies leading to increased risk of accident.

Hence, this Guideline: Incorporating OSH Into Tender Document is a reference to create a basis against which Occupational Safety and Health (OSH) items are specified at the Pre-Contract Stage. This will enable the OSH activities to be embedded and monitored during the execution or Post-Contract period.

This Guideline comprising of templates: OSH Specification and Schedule of Prices do not intend to supersede the current OSH related documents enforced but act as reference for industry players. It is hope that these templates will leads to the formulation of Construction Industry Standards (CIS) in future.

USERS' GUIDE

SECTION TWO: OSH SPECIFICATION

1. The specification will act as a template to incorporate OSH within a Tender Document.
2. Where Standard Specification is used, the OSH Specification can be incorporated as an Addendum Specification (place after the Standard Specification).
3. The user may use in whole or part of the clauses in the specification depending on the requirements.
4. The term acceptable standards, other than that listed under glossary can be replaced with any other standards decided by the Client.
5. This specification also acts as a cross-reference while pricing the Schedule of Prices.

SECTION THREE: OSH SCHEDULE OF PRICES

1. The incorporation of OSH into a Tender Document can be in the form of Provisional Sum.
2. Where a Provisional Sum is provided for compliance to Occupational Safety and Health requirements, OSH Schedule of Prices should be incorporated as part of the Tender Document.

OR

Where OSH items are extended and specified within the Preliminaries, OSH Schedule of Prices should be incorporated as part of the Tender Document.

3. The prices quoted by the Contractor, subject to rationalization by the client representative upon signing of a contract shall be used as a basis against which the total price of OSH compliance is arrived at.
4. While pricing the items, cross-reference to the relevant OSH specification is a requirement.

1.0 GENERAL

1.1 Safety and Health Plan

1.1.1 The Contractor shall prepare the Safety and Health Plan that shall-

- a) Before the start of the construction phase, which is sufficient to ensure that the construction phase is planned, managed and monitored in a way which enables the construction work to be started so far as is practicable without risk to safety or health, paying adequate regard to the information provided by the owner and the pre-construction information provided;
- b) From time to time and as often as may be appropriate throughout the project update, review, revise and refine the Safety and Health Plan so that it continues to be sufficient to ensure that the construction phase is planned, managed and monitored in a way which enables the construction work to be carried out so far as is practicable without risk to safety or health; and
- c) Be arranged for it to be implemented in a way which will ensure so far as is practicable the safety and health of all persons carrying out the construction work and all persons who may be affected by the work.

1.1.2 The Contractor shall submit sets of the prepared Safety and Health Plan to the S.O. or the client representative and one (1) set to the Department of Occupational Safety and Health before the project commences and update it to the S.O. or the client representative throughout the construction phase. A copy of the updated Safety and Health Plan shall be kept at site.

1.1.3 The Contractor shall take all reasonable steps to ensure that the Safety and Health Plan identifies the risks to safety and health arising from the construction work (including the risks specific to the particular type of construction work concerned) and includes suitable and sufficient measures to address such risks, including any site rules.

1.1.4 Safety and Health Plan Content

- a) Description of project
 - i. Project description and programme details including any key dates;
 - ii. Details of client, designers, Contractor and other consultants;

- iii. Extent and location of existing records and plans that is relevant to health and safety on site, including information about existing structures when appropriate.
- b) Management of the work (site project organization structure)
 - i. Management structure and responsibilities;
 - ii. Safety and health goals for the project and arrangements for monitoring and review of safety and health performance;
- c) Arrangements for:
 - i. Regular liaison between parties on site,
 - ii. Consultation with the workforce,
 - iii. The exchange of design information between the client, designers, consultants and Contractors on site,
 - iv. Handling design changes during the project,
 - v. The selection and control of Contractors,
 - vi. The exchange of health and safety information between Contractors,
 - vii. Site security,
 - viii. Site induction,
 - ix. Onsite training,
 - x. Welfare facilities and first aid,
 - xi. The reporting and investigation of accidents and incidents including near misses,
 - xii. The production and approval of risk assessments and written systems of work;
 - xiii. Site rules (including drug and alcohol policy);
 - xiv. Fire and emergency procedures.

d) Arrangements for controlling significant site risks

i. Safety risks, including:

- Delivery and removal of materials (including waste*) and work equipment taking account of any risks to the public, for example during access to or egress from the site,
- Dealing with services - water, electricity and gas, including overhead power lines and temporary electrical installations,
- Accommodating adjacent land use,
- Stability of structures whilst carrying out construction work, including temporary structures and existing unstable structures,
- Preventing falls,
- Work with or near fragile materials,
- Control of lifting operations,
- The maintenance of plant and equipment,
- Work on excavations and work where there are poor ground conditions,
- Work on wells, underground earthworks and tunnels,
- Work on or near water where there is a risk of drowning,
- Work involving diving,
- Work in a caisson or compressed air working,
- Work involving explosives,
- Traffic management (includes routes and segregation of vehicles and pedestrians etc),
- Storage of materials (particularly hazardous materials) and work equipment,
- Any other significant safety risks;

- ii. Health risks, including:
 - The removal of asbestos,
 - Dealing with contaminated land,
 - Manual handling,
 - Use of hazardous substances, particularly where there is a need for health monitoring,
 - Reducing noise and vibration,
 - Work with ionising radiation,
 - Exposure to UV radiation (from the sun),
 - Any other significant health risks.

1.2 The Safety and Health Committee

- 1.2.1 The Contractor shall establish a safety and health committee at the place of work if-
 - a) There are forty or more persons employed at the place of work; or
 - b) The Director General of the Department of Occupational Safety and Health directs the establishment of such a committee at the place of work.
- 1.2.2 The composition of a safety and health committee established, the election or appointment of persons to the committee, the powers of the members of the committee and any other matter relating to the establishment or procedure of the committee shall be as prescribed in PART II of the Occupational Safety And Health (Safety And Health Committee) Regulations 1996.
- 1.2.3 The Contractor shall consult the Safety and Health Committee with a view to the making and maintenance of arrangements which will enable him and his employees to co-operate effectively in promoting and developing measures to ensure the safety and health at the place of work of the employees, and in checking the effectiveness of such measures.
- 1.2.4 Functions of safety and health committee
 - a) The safety and health committee established shall-

- i. Keep under review the measures taken to ensure the safety and health of persons at the place of work;
- ii. Investigate any matter at the place of work-
 - Which a member of the committee or a person employed thereat considers is not safe or is a risk to health; and
 - Which has been brought to the attention of the Contractor;
- b) Attempt to resolve any matter referred to in paragraph 1.2.4 a (ii) and, if it is unable to do so, shall request the Director General of the Department of Occupational Safety and Health to undertake an inspection of the place of work for that purpose; and
- c) Carry out the functions prescribed in PART III of the Occupational Safety And Health (Safety And Health Committee) Regulations 1996
- d) Meetings Of Safety And Health Committee

Frequency of meetings of committee, duty to provide facilities, inaugural meeting, quorum, non-member may attend meeting, matters to be discussed at meeting and minutes of meeting shall be as prescribed in PART IV of the Occupational Safety And Health (Safety And Health Committee) Regulations 1996
- e) The Contractor shall make the Safety and Health Committee available the documents and information as prescribed in PART V of the Occupational Safety and Health (Safety And Health Committee) Regulations 1996.

1.3 Design of Plant and Temporary Structures

- 1.3.1 The designs and manufacturing of any plant and temporary structures must be designed and constructed so as to be safe and without risks to health when properly used.
- 1.3.2 The Contractor shall make necessary arrangement for the following plant and structure to be designed and endorsed by a competent person or professional engineer as prescribed by the Factories And Machinery (Building Operations And Works Of Engineering Construction) (Safety) Regulations 1986 and directives or instruction set by the Department of Occupational Safety and Health:

- a) Formwork and reshores
- b) Scaffolding
- c) Catch platform
- d) Construction rubbish/debris disposal chute exceeding 12 metres in height
- e) Runways and ramps used by vehicles
- f) Support for stability of structure where adjoining area to be excavated or piled
- g) Loading platform
- h) Material and Passenger hoist
- i) Gondola
- j) Tower crane foundation

1.3.3 The Contractor shall submit the copy of the endorsed design to the Department before any work related to such plant or structure commences

1.3.4 The Contractor shall arranged for the carrying out of such testing and inspection as may be necessary for the performance of the duty imposed on him by paragraph 1.3.1; and

1.3.5 The Contractor shall take necessary steps to secure that there will be available in connection with the use of the plant at work, adequate information about the use for which it is designed and has been tested, and about any condition necessary to ensure that, when put to that use, it will be safe and without risks to health.

1.3.6 So far as is practicable ensure that any person who erects or installs any plant for use by persons at work, that nothing about the way in which it is erected or installed makes it unsafe or a risk to health when properly used.

1.4 Site Safety & Health Officer

1.4.1 When a project is RM 20 million or above, the Contractor shall employ a full time competent person to act as a Safety and Health Officer at the place of work throughout the entire period of the construction phase.

- 1.4.2 The safety and health officer shall be employed exclusively for the purpose of ensuring the due observance at the place of work of the provisions of the Act and any regulation made there under and the promotion of a safe conduct of work at the place of work.
- 1.4.3 The safety and health officer shall possess such qualifications or have received such training as prescribed in the Occupational Safety and Health (Safety and Health Officer) Regulations 1997.
- 1.4.4 The Safety and Health Officer shall perform his duties as prescribe in PART V of the Occupational Safety and Health (Safety and Health Officer) Regulations 1997.

1.5 Site Safety and Health Supervisor

- 1.5.1 A full-time competent person shall be appointed to act as a Site Safety and Health Supervisor at the place of work throughout the entire period of the construction phase.
- 1.5.2 The Site Safety and Health Supervisor shall perform his duties as prescribe in of the Factories And Machinery (Building Operations And Works Of Engineering Construction) (Safety) Regulations 1986

1.6 Medical Check-up

- 1.6.1 Medical check up shall be carried out at least on yearly basis on employees performing the following activities-
 - a) Tower crane operation
 - b) Confined spaces
 - c) Tunnelling operation
 - d) Any other activities as specified by S.O

1.7 Personal Protective Equipment

- 1.7.1 Employees are required to wear appropriate personal protective equipment in all operations where there is exposure to hazardous conditions.
- 1.7.2 Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided for works, used, and maintained by the Contractor in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a

manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

1.7.3 Where employees provide their own protective equipment, the Contractor shall be responsible to assure its adequacy, including proper maintenance, and sanitation of such equipment.

1.7.4 All personal protective equipment shall be of safe design and construction for the work to be performed.

1.7.5 Foot Protection

Safety-toe footwear for employees shall meet the requirements and specifications in the Malaysian Standard or Accepted International Standards

1.7.6 Head Protection

a) Employees working in areas where there is a possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns, shall be protected by protective helmets.

b) Helmets for the protection of employees against impact and penetration of falling and flying objects shall meet the specifications contained in Malaysian Standard or Accepted International Standard.

1.7.7 Hearing Protection

Wherever it is not feasible to reduce the noise levels or duration of exposures to those specified in.

1.7.8 Ear protective devices inserted in the ear shall :

a) Be correctly fit the employee;

b) Be compatible with the job requirement of the employee;
and

c) Not prejudice the health of the employee.

d) Not be of plain cotton.

1.7.9 Eye and Face Protection

a) The Contractor shall provide the employees with eye and face protection equipment when machines or operations present potential eye or face injury from physical, chemical, or radiation agents.

- b) Employees whose vision requires the use of corrective lenses in spectacles, when required by this regulation to wear eye protection, shall be protected by goggles or spectacles of one of the following types:
 - i. Spectacles whose protective lenses provide optical correction;
 - ii. Goggles that can be worn over corrective spectacles without disturbing the adjustment of the spectacles;
 - iii. Goggles that incorporate corrective lenses mounted behind the protective lenses;
- c) The selection of face and eye protection for the hazards and operations noted shall meet the specifications contained in the Accepted International Standards;
- d) Protectors shall meet the following minimum requirements:
 - i. They shall provide adequate protection against the particular hazards for which they are designed.
 - ii. They shall be reasonably comfortable when worn under the designated conditions.
 - iii. They shall fit snugly and shall not unduly interfere with the movements of the wearer.
 - iv. They shall be durable.
 - v. They shall be capable of being disinfected.
 - vi. They shall be easily cleanable.
- e) Every protector shall be distinctly marked to facilitate identification of the manufacturer.
- f) When limitations or precautions are indicated by the manufacturer, they shall be transmitted to the user and care taken to see that such limitations and precautions are strictly observed.

1.7.10 Protection against radiant energy

- a) Selection of shade numbers for welding filter

The selection of the proper shade numbers of filter lenses or plates used in welding shall meet those specified by the Accepted International Standard.

1.7.11 Laser protection

- a) Employees whose occupation or assignment requires exposure to laser beams shall be furnished with suitable laser safety goggles meeting the Accepted International Standard which will protect for the specific wavelength of the laser and be of optical density (O.D.) adequate for the energy involved.
- b) All protective goggles shall bear a label identifying the following data:
 - i. The laser wavelengths for which use is intended;
 - ii. The optical density of those wavelengths;
 - iii. The visible light transmission.

1.7.12 Respiratory Protection

- a) A respirator shall be provided to each worker when such equipment is necessary to protect the health of such worker.
- b) The Contractor shall provide the respirators which are applicable and suitable for the purpose intended. The Contractor shall maintain such respirator in good and efficient working condition.

1.8 Safety Belts, Lifeline, harnesses and Lanyards

1.8.1 The Contractor shall provide safety belts, lifeline, harnesses and lanyards where there is a risk for a person falling from a height of more than 3 meters.

1.8.2 Safety belts, lifeline, harnesses and lanyards shall conform to acceptable International Standard.

1.9 Safety Nets

1.9.1 The Contractor shall provide Safety nets for workplaces where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical.

1.9.2 Where safety net protection is required, operations shall not be undertaken until the net is in place.

1.9.3 Safety nets shall conform to British Standard BS 3913:1982 or any acceptable industrial standard and shall be of a type tested and

approved by a testing body approved by the DOSH Director General.

- 1.9.4 Nets shall extend 2.4 meter beyond the edge of the work surface where employees are exposed and shall be installed as close under the work surface as practical but in no case more than 7.6 metre below such work surface. Nets shall be hung with sufficient clearance to prevent user's contact with the surfaces or structures below.
- 1.9.5 Forged steel safety hooks or shackles shall be used to fasten the net to its supports.
- 1.9.6 Connections between net panels shall develop the full strength of the net.

1.10 Working Over or Near Water

- 1.10.1 Employees working over or near water, where the danger of drowning exists, shall be provided with approved life jacket or buoyant work vests.
- 1.10.2 Prior to and after each use, the buoyant work vests or life preservers shall be inspected for defects which would alter their strength or buoyancy. Defective units shall not be used.
- 1.10.3 Ring buoys with at least 27.5 metre of line shall be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed 61 metre.
- 1.10.4 At least one life boat shall be made available at locations where employees are working over or adjacent to water.

1.11 Safety and Health Training

- 1.11.1 Programs for the education and training of employees in the recognition, avoidance and prevention of unsafe conditions in employments covered by the Occupational Safety and Health Act 1994 (Act 514) and Factories and Machinery Act 1967 (Act 139) and other relevant regulations shall be established and implemented.

1.11.2 Site Induction Programme

Every personnel working at site shall undergo approved site safety and health induction programme.

Site health and safety induction courses for approved visitors

- a) Where visitors to the construction site are required to enter an operational construction zone, the Contractor shall ensure that they attend a brief site induction session.
- b) Any visitors shall be supervised by fully inducted site personnel at all times while on the site.

1.11.3 Tool box talk

- a) Tool box talk shall be scheduled as needed depending on the level of risks faced on the job, or the levels of experience of the employees.
- b) Records of the Toolbox Talks shall be kept and maintained.
- c) The Toolbox Talk shall be conducted by an employee of supervisory level or with basic OSH awareness. Any issues raised that cannot be resolved should be addressed by senior management

1.11.4 Fire Fighting

- a) An effective fire fighting program at the job site throughout all phases of the construction, repair, alteration, or demolition work shall be developed and maintained.
- b) The fire fighting and suppression equipment shall be available at all time.
- c) A trained and equipped fire fighting personnel shall be provided to assure adequate protection to life.
- d) The fire emergencies in the site shall be identified.
- e) Trained personal shall be able to demonstrate the following-
 - i. Respond to identified Fire Emergencies
 - ii. Deploy fire emergency response equipment
 - iii. Demonstrate the use of first attack fire fighting equipment
 - iv. Apply the principles of RECEO (Rescue, Exposure, Confinement, Extinguishment, Overhaul) to a fire scenario
 - v. Employees as an effective member of a fire fighting team

1.12 Emergency Response Plan (Preparedness, Response and Evacuation)

1.12.1 The Contractor shall establish a written Emergency Response Plan and shall cover those designated actions employers and employees must take to ensure employee safety from fire and other emergencies.

1.12.2 The plan shall be reviewed and communicated to all employees at the following time

- a) Initially when the plan is developed,
- b) Whenever the employee's responsibilities or designated actions under the plan change, and
- c) Whenever the plan is changed

1.12.3 Training

Before implementing the Emergency Response Plan, sufficient number of persons shall be designated and trained to assist in the safe and orderly emergency evacuation of employees.

1.13 Hazards Identification Risk Assessment And Risk Control (HIRARC)

1.13.1 The Contractor shall identify potential hazards to employees or, assess their risk, or likelihood of happening and the effects they would have, and the taking of necessary control measures for such hazards.

1.13.2 Records of HIRARC shall be kept, maintained and submitted to the S.O prior to commencement of the work. HIRARC may be reviewed during the course of work as required

1.13.3 The methodology proposed in the Guidelines for Hazard Identification, Risk Assessment and Risk Control (HIRARC) issued by the Department of Occupational Safety and Health, Malaysia shall be followed.

1.14 Monthly Report

1.14.1 The Contractor shall prepare a Site Safety and Health Monthly and submit to the SO, DOSH and other related parties every first week of the consecutive month.

1.14.2 The content of the report shall include:

- a) Man hours worked
- b) OSH Programme

- i. OSH training
 - ii. Safety and health committee meeting
 - iii. OSH promotional activities
 - iv. Internal OSH audit and inspections
- c) DOSH Notices
- d) Incidents and accidents

1.15 Site Safety Signage

1.15.1 Warn of people on or near construction sites of any hazardous activities taking place is required.

1.15.2 ANSI Z535 or other Acceptable International Standard shall be used as the reference standard to provide an effective means of communicating information concerning environmental hazards to the persons at site, so that injury resulting from the hazard(s) can be avoided.

1.15.3 Sign-

- a) Shall be of waterproof materials.
- b) Of metal or corflute plastic with vinyl letters or equivalent shall be used.
- c) Shall have a surface area of 0.12 metre square minimum
- d) Be printed in letters high enough to be easily read
- e) Be exhibited at a prominent position on the building site

1.16 Site Safety and Health Information Board

1.16.1 Boards where information is posted shall be provided to ensure that persons at site are at least informed about the safety and health activities.

1.16.2 The boards shall be located somewhere accessible to maximum number of people preferably they are close to areas of employees use.

1.17 Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Diseases

1.17.1 Notification and Record Keeping

a) Notification

Accidents, dangerous occurrence, occupational poisoning and occupational disease that occur at the workplace shall be notified.

b) Record keeping

Records of all accidents, dangerous occurrence, occupational poisoning and occupational disease that occur at the workplace shall be maintained.

1.17.2 Deciding whether a case should be notified and recorded

In determining whether a case should be notified and recorded, Contractor should follow the Guidelines on Safety and Health (Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Diseases) Regulations 2004 [NADOPOD]

1.18 First Aid Facilities

1.18.1 The Contractor shall make First aid services and provisions for medical care available for every employee performing work at the site which include provision of first aid kit and first aider.

1.18.2 Regulations prescribing specific requirements for first aid in Factories and Machinery (Safety, Health and Welfare) Regulations 1970 shall be followed.

1.19 Portable Firefighting Equipment

1.19.1 Fire extinguishers and small hose lines.

1.0 A fire extinguisher, as specified by the Jabatan Bomba and Penyelamat shall be provided for each 280 square meter feet of the protected building area, or major fraction thereof. Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 30 meter.

1.19.2 Portable fire extinguishers shall be inspected periodically and maintained in accordance with the requirements of the Jabatan Bomba and Penyelamat.

2.0 AMENITIES AND FACILITIES

2.1 Water Supply

- 2.1.1 Potable water
- 2.1.2 An adequate supply of potable water shall be provided in all places of employment.
- 2.1.3 Portable containers used to dispense drinking water shall be capable of being tightly closed, and equipped with a tap. Water shall not be dipped from containers.
- 2.1.4 Any container used to distribute drinking water shall be clearly marked as to the nature of its contents and not used for any other purpose.
- 2.1.5 The common drinking cup is prohibited.
- 2.1.6 Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.
- 2.1.7 Potable water means water which meets the quality standards prescribed by Ministry of Health Malaysia.

2.2 Sanitary conveniences at construction jobsites

- 2.2.1 The Contractor shall provide and maintain a minimum sanitary conveniences in accordance to Regulation 37 SH Welfare Regulations under FMA ,1967 as below-

| | |
|---|--|
| i. where twenty five males or less are employed at any one time | one water closet or latrine and four feet of urinal; |
| ii. where the number of males employed at any one time exceeds twenty five but not exceeding fifty | two water closets or latrines and eight feet of urinal; |
| iii. where the number of males employed at any one time exceeds fifty but not exceeding one hundred | three water closets or latrines and thirteen feet of urinal; |
| iv. where the number of males employed at any one time exceeds one hundred | as in (iii) above and an additional water closet or latrine and additional four feet of urinal are to be provided for every fifty males in excess; |
| v. where twenty females or less are employed at any one | one water closet; |

| | |
|---|---|
| time | |
| vi. where the number of females employed at any one time exceeds twenty | as in (v) above and one additional water closet is to be provided for every twenty females in excess. |

- 2.2.2 Closets and urinals in the interior of buildings shall be of the water-flush type.
- 2.2.3 Where conditions require, water shall be provided for every toilet facility.
- 2.2.4 Toilet facilities shall not communicate directly with the actual workplace but shall open only to corridors, halls, landings or courtyards.
- 2.2.5 Effective provision shall be made for every sanitary convenience in respect of lighting and ventilating to the open air.

2.3 Temporary rest area

The Contractor shall provide designated rest area/areas for workers and site staff. The areas provided shall be safe, ventilated and lighted.

2.4 Lighting

2.4.1 General

Construction areas shall be lighted to not less than the minimum illumination intensities as per regulation 29 SHW.

Emphasis shall be given to stairways, accesses and emergency escape routes.

2.5 Ventilation

2.5.1 General

Whenever hazardous substances such as dusts, fumes, mists, vapours, or gases exist or are produced in the course of construction work, their concentrations shall not exceed the limits specified in the Act. When ventilation is used as an engineering control method, the system shall be installed and operated according to the requirements of this section.

2.5.2 Local exhaust ventilation

Local exhaust ventilation when used as described in (a) shall be designed to prevent dispersion into the air of dusts, fumes, mists, vapours, and gases

in concentrations causing harmful exposure. Such exhaust systems shall be so designed that dusts, fumes, mists, vapours, or gases are not drawn through the work area of employees.

3.0 PREVENTION OF FALLS AT WORKPLACES

3.1 General

The Contractor shall provide fall protection systems. All fall protection required by this section shall conform to the Guidelines for the Prevention of Falls at workplaces issued by DOSH and criteria set forth in this part.

3.2 Unprotected Sides and Edges

Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 2 metre or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems.

3.3 Leading Edges

3.3.1 Each employee who is constructing a leading edge 2 metre or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems. Exception: When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the employer shall develop and implement a fall protection plan.

3.3.2 Each employee on a walking/working surface 2 metre or more above a lower level where leading edges are under construction, but who is not engaged in the leading edge work, shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system. If a guardrail system is chosen to provide the fall protection, and a controlled access zone has already been established for leading edge work, the control line may be used in lieu of a guardrail along the edge that parallels the leading edge.

3.4 Hoist Areas

Each employee in a hoist area shall be protected from falling 2 metre or more to lower levels by guardrail systems or personal fall arrest systems. If guardrail systems, [or chain, gate, or guardrail] or portions thereof, are removed to facilitate the hoisting operation (e.g., during landing of materials), and an employee must lean through the access opening or out over the edge of the access opening (to receive or guide equipment

and materials, for example), that employee shall be protected from fall hazards by a personal fall arrest system.

- 3.5.1 Each employee on walking/working surfaces shall be protected from falling through holes (including skylights) more than 2 metre above lower levels, by personal fall arrest systems, covers, or guardrail systems erected around such holes.
- 3.5.2 Each employee on a walking/working surface shall be protected from tripping in or stepping into or through holes (including skylights) by covers.
- 3.5.3 Each employee on a walking/working surface shall be protected from objects falling through holes (including skylights) by covers.

3.5 Formwork and reinforcing steel

Each employee on the face of formwork or reinforcing steel shall be protected from falling 6 feet (1.8 m) or more to lower levels by personal fall arrest systems, safety net systems, or positioning device systems.

3.6 Ramps, runways, and other walkways

Each employee on ramps, runways, and other walkways shall be protected from falling 2 metre or more to lower levels by guardrail systems.

3.7 Excavations

- 3.7.1 Each employee at the edge of an excavation 2 metre or more in depth shall be protected from falling by guardrail systems, fences, or barricades when the excavations are not readily seen because of plant growth or other visual barrier;
- 3.7.2 Each employee at the edge of a well, pit, shaft, and similar excavation 2 metre or more in depth shall be protected from falling by guardrail systems, fences, barricades, or covers.

3.8 Dangerous equipment

- 3.8.1 Each employee less than 2 metre above dangerous equipment shall be protected from falling into or onto the dangerous equipment by guardrail systems or by equipment guards.
- 3.8.2 Each employee 2 metre or more above dangerous equipment shall be protected from fall hazards by guardrail systems, personal fall arrest systems, or safety net systems.

3.9 Overhand bricklaying and related work

3.9.1 Each employee performing overhand bricklaying and related work 2 metre or more above lower levels, shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or shall work in a controlled access zone.

3.9.2 Each employee reaching more than 25 centimetre below the level of the walking/working surface on which they are working, shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system.

3.10 Roofing work on Low-slope roofs

Employee engaged in roofing activities on low-slope roofs, with unprotected sides and edges 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or a combination of warning line system and guardrail system, warning line system and safety net system, or warning line system and personal fall arrest system, or warning line system and safety monitoring system. Or, on roofs 50-feet (15.25 m) or less in width, the use of a safety monitoring system alone [i.e. without the warning line system] is permitted.

3.11 Steep roofs

Each employee on a steep roof with unprotected sides and edges 2 metre or more above lower levels shall be protected from falling by guardrail systems with toe boards, safety net systems, or personal fall arrest systems.

3.12 Precast concrete erection

Each employee engaged in the erection of precast concrete members (including, but not limited to the erection of wall panels, columns, beams, and floor and roof "tees") and related operations such as grouting of precast concrete members, who is 2 metre or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems, unless another provision in paragraph (b) of this section provides for an alternative fall protection measure. Exception: When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the employer shall develop and implement a fall protection plan.

3.13 Wall openings

Each employee working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 2 metre or more above lower levels and the inside bottom

edge of the wall opening is less than 1 metre above the walking/working surface, shall be protected from falling by the use of a guardrail system, a safety net system, or a personal fall arrest system.

3.14 Walking/working surfaces not otherwise addressed

Except as provided above, each employee on a walking/working surface 2 meter or more above lower levels shall be protected from falling by a guardrail system, safety net system, or personal fall arrest system.

3.15 Protection from falling objects

3.15.1 When an employee is exposed to falling objects, the Contractor shall have each employee wear a hard hat and shall implement one of the following measures:

- a) Erect toeboards, screens, or guardrail systems to prevent objects from falling from higher levels; or,
- b) Erect a canopy structure and keep potential fall objects far enough from the edge of the higher level so that those objects would not go over the edge if they were accidentally displaced; or,
- c) Barricade the area to which objects could fall, prohibit employees from entering the barricaded area, and keep objects that may fall far enough away from the edge of a higher level so that those objects would not go over the edge if they were accidentally displaced.

3.16 Ladders

3.16.1 The Contractor shall ensure that every ladders and step ladders are of good construction, sound material and adequate strength for its intended purpose and in compliance with Part IX of BOWEC.

3.16.2 The Contractor shall ensure that the ladders and step ladders are properly secured for the safety of the users.

3.17 Scaffolding for Temporary Working Platform, Access and Egress

3.17.1 Scaffold for Temporary Working Platform

- a) The design of the scaffold shall be in accordance with the provision of the law, and erected in accordance with that design under the supervision of the designated person.

- b) Safe means of access shall be provided for each employee erecting or dismantling a scaffold where the provision of safe access is feasible and does not create a greater hazard. The employer shall have a competent person determine whether it is feasible or would pose a greater hazard to provide, and have employees use a safe means of access. This determination shall be based on site conditions and the type of scaffold being erected or dismantled.
- 3.17.2 Scaffolds and scaffold components shall be inspected for visible defects by a designated person periodically, and after any occurrence which could affect a scaffold's structural integrity.
- 3.17.3 Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a person qualified in scaffold erection, moving, dismantling or alteration. Such activities shall be performed only by experienced and trained employees selected for such work by the person.
- 3.17.4 All scaffolds to be used at site shall comply with the requirements of the Part X of the Factories and Machinery (Building Operations and Works of Engineering Construction)(safety) Regulations, 1986.

3.18 Access and Egress

3.18.1 General

In every building or structure entrance and exits shall be so arranged and maintained as to provide free and unobstructed access and egress from all parts of the building or structure at all times when it is occupied. No lock or fastening to prevent free escape from the inside of any building shall be installed except in mental, penal, or corrective institutions where supervisory personnel is continually on duty and effective provisions are made to remove occupants in case of fire or other emergency.

3.18.2 Exit marking

Exits shall be marked by a readily visible sign. Access and egress to entrances and exits shall be marked by readily visible signs in all cases where the entrance or exit or way to reach it is not immediately visible to the occupants.

3.18.3 Maintenance and workmanship

Means of access and egress shall be continually maintained free of all obstructions or impediments to full instant use in the case of fire or other emergency.

3.19 Peripheral Net

3.19.1 Where scaffold is erected in an area where the construction activities may pose hazards in form of falling and flying objects, peripheral nets should be installed and maintained to envelope the scaffold.

3.19.2 Every peripheral net shall comply with Malaysia Standard (MS) or any acceptable International Standard.

3.20 Rubbish Chute

3.20.1 Wherever rubbish / debris disposal chute is used, it shall be constructed and maintained in accordance with Part VII of BOWEC.

3.20.2 Chutes exceeding 12 meters in height shall be constructed in accordance with the design and drawings of the professional engineer.

3.20.3 The dimension of the chute shall have a minimum cross sectional area of 0.4 meter square.

4.0 ELECTRICAL

All electric power supply shall comply with the electrical safety requirement by Suruhanjaya Tenaga Malaysia.

5.0 HAZARDOUS CHEMICALS AND MATERIALS

The Contractor shall comply with the Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulation 2000.

6.0 PLANTS

6.1 Certificated Machinery

The following plants shall have a valid certification before they are being put into operation:-

- a) Boiler
- b) Air Receiver
- c) Tower Crane
- d) Derrick

- e) Mobile Crane
- f) Material Hoist
- g) Passenger Hoist
- h) Gondola

6.2 Valid Certification

Plant provided by the Contractor shall be deemed to be in compliance with the requirements of this part when evidence of current and valid certification by the Department of Occupational Safety and Health Malaysia attesting to the safe installation, inspection, and testing is presented.

6.3 Registration and Renewal of Certification

The Contractor shall have the plant register and renew its certificate as required by the Department of Occupational Safety and Health.

6.4 Certificate of Competency

Where required, the Plant operator shall possess a valid certificate of competency issued by the Department of Occupational Safety and Health.

6.5 Slings and Signalman

Crane operator shall be assisted by a trained slingers and signalman throughout the crane operation.

6.6 Safe Access to Plant

Safe access for crane operators and other persons carrying out inspection and maintenance work on plant shall be provided to prevent these persons at risk of falling from a height.

7.0 SPECIAL WORK SITUATIONS

7.1 Working in Confine Space

To comply with the requirements of the Approved Code of Practice on Working In Confined Space and CIS 16:2009 – Guidelines Working In Confined Spaces at Construction Sites.

7.2 Traffic Movement Management within Site

7.2.1 Inspection of the Existing Site Condition

The information regarding the project shall be reviewed, prepared and plan for all traffic and parking for area(s) based on the available space.

7.2.2 Public Convenience

- a) Operations shall be conducted as to offer the least possible obstruction and inconvenience to the public, to maintain public safety, and shall have under construction no greater length or amount of work than can prosecute properly with due regard to the convenience and safety of the public.
- b) Spillage resulting from hauling operations along or across any public traveled way shall be removed immediately by the Contractor at his expense.

7.2.3 Maintaining Vehicular And Pedestrian Traffic Control

- a) Existing signals signs and street lighting
 - i. Existing traffic signal and street lighting systems shall be kept in operation for the benefit of the traffic during progress of the work.
 - ii. Certain signs might be required to be covered which regulate or direct traffic.
- b) Public passage through or around a construction area
 - i. Signs, lights, flares, and other facilities in order to direct and expedite the passage of public traffic through or around the work in a safe manner shall be installed.
 - ii. Competent flag personnel whose sole duties shall consist of directing the movement of public traffic through or around the work shall be engaged.

c) Prohibition of stopping and parking

Vehicles may be prohibited to stop or park within and adjacent to the construction site. As and when necessary, to provide temporary space required facilitating a particular construction activity. The "TOW-AWAY" or "NO PARKING, NO STOPPING" zones sign in critical areas may have to be provided in the work areas.

- d) Flag personnel
 - i. Flag personnel shall be used where necessary to control the flow of traffic through the construction site and shall be used in all cases where traffic is being routed through the construction under one-way control.
 - ii. Flag personnel, while assigned to traffic control, shall perform their duties and shall be provided with the necessary equipment. The equipment shall be furnished and kept clean and in good repair by the Contractor at his expense.

e) Detours

Where detours are required, they shall be outlined on a site drawing along with construction activities and support facilities, construction and parking, and streets and sidewalks in the general area of the project site. Existing and temporary traffic and parking controls such as signing and striping shall be indicated.

7.2.4 Traffic Management plan

- a) The Contractor shall prepare a traffic management plan by taking into consideration of the following factors.
 - i. The necessity for workers to carry equipment across the live carriageway;
 - ii. The necessity to stop traffic in live traffic lanes;
 - iii. The use of technology or equipment to help avoid or mitigate risks;
 - iv. Safe access for maintenance operations;
 - v. The specification of materials or equipment for use during the work;
 - vi. The establishment of safe working areas;
 - vii. The establishment of safety zones;
 - viii. The adoption of safe working practices;
 - ix. The provision of safe access to and egress from the working area for vehicles and pedestrians;

- x. The implementation of a traffic flow and control system aimed at keeping traffic delays to a minimum;
- xi. The needs of motorists, cyclists, pedestrians (including vulnerable road users).

7.3 Excavation

To comply with the provision of PART XII of the Factories and Machinery (Building Operation and Works of Engineering Construction)(Safety) Regulations, 1986.

7.4 Demolition Works

To comply with the provision of PART XI of the Factories and Machinery (Building Operation and Works of Engineering Construction)(Safety) Regulations, 1986 and the MS 2318: 2010(P) Demolition of Buildings - Code of practice.

7.5 Blasting Works

To comply with the provision of PART XV of the Factories and Machinery (Building Operation and Works of Engineering Construction)(Safety) Regulations, 1986 and other regulatory requirements.