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JABATAN KERJA RAYA MALAYSIA

SPECIFICATIONS FOR OCCUPATIONAL SAFETY AND HEALTH IN ENGINEERING CONSTRUCTION WORKS 2019

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FOREWORD

To trigger further improvements in the safety and health performance, it is imperative for Jabatan Kerja Raya (JKR) to continuously update and improve their OSH specifications. These new specifications are not only aimed at keeping abreast with current regulations, guidelines and practices but also to help improve the OSH performances based on contract requirement and also latest KPKR instruction. Consequently, these new specifications will ultimately have a significant positive impact on the construction works especially with the incorporation of new products and technologies.

The JKR Specifications for Occupational Safety and Health in Engineering Construction Works 2019 is an essential component in the construction of JKR's project. This Specification provides an improved guidance and reference in implementation of OSH monitoring and hazard control based on current best practices. The purpose of the Specifications for Occupational Safety and Health in Engineering Construction Works 2019 is to establish uniformity with latest revision of JKR Standard Specification for Building Works and JKR Standard Specification for Road Works.

This particular document, the "Specifications for Occupational Safety and Health in Engineering Construction Works 2019", is an improved specifications of the Specifications for Occupational Safety and Health for Engineering Construction Works 2011. The compilation of this document was carried out through many discussions and deliberations that had been held by the technical committee. The draft had also been presented and discussed at length in a specially held workshop to get feedback and comments from relevant parties involved, which were then carefully considered and incorporated into the Specification wherever appropriate or necessary.

The Specifications has also gone through the different phases of vetting and approval before the production of its final draft and printed copy. It will be reviewed and updated from time to time to cater for any changes in policies and the inclusion of current requirements, if necessary. Any feedback or improvement to be considered for future revisions should be forwarded to Bahagian Pengurusan Kualiti, Cawangan Dasar dan Pengurusan Korporat, JKR Malaysia.

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This **"Specification for Occupational Safety and Health in Engineering Construction Works 2019"** has been prepared by a technical committee comprising of the following members;

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Finally, the publisher would like to express its gratitude to the above committee members, and also all those who were involved, directly or indirectly, but their names missed out from being mentioned above, for their undying effort and substantial contribution towards the successful completion of this document.

ABBREVIATIONS

The following abbreviations appearing in these specifications have their meanings as assigned against them:

(i).	S.O	- Superintending Officer
(ii).	P.D	- Project Director
(iii).	SHO	- Safety and Health Officer
(iv).	PEPC	- Professional Engineer with Practicing Certification
(v).	CP	- Competent Person registered with DOSH
(vi).	DP	- Designated Person appointed by Employer
(vii).	CIDB	- Construction Industry Development Board
(viii).	DOSH	- Department of Occupational Safety and Health
(ix).	MOH	- Ministry of Health
(x).	SPJ	- Standard Specification For Road Works
(xi).	ATJ	- Arahan Teknik Jalan
(xii).	CLASS	- Classification, Labelling and Safety Data Sheet of Hazardous Chemicals
(xiii).	USECHH	- Use and Standard of Exposure of Chemical Hazardous to Health
(xiv).	BOWEC	- Building Operations And Works Of Engineering Construction.
(xv).	SPB	- Sistem Pengurusan Bersepadu
(xvi).	PTW	- Permit to Work

REGULATIONS AND LEGISLATIONS

List of Related Acts, By-Laws, Regulations, Codes of Practice, Standards, and Guidelines Referred To In This Specification:

1. Occupational Safety And Health Act (OSHA), 1994 and Regulations under the act
2. Factory And Machinery Act (FMA), 1967 and Regulations under the act
3. Uniform Building By-Law (UBBL), 1984
4. Environmental Quality Act (EQA), 1974
5. Construction Industry Development Board Act, 1994
6. Local Government Act, 1976
7. Street, Drainage and Building Act, 1974
8. Electricity Supply Act, 1990
9. Electricity Regulations, 1994
10. Fire Services Act, 1988
11. Explosives Act, 1957
12. Irrigation Areas Act, 1953
13. The Radiation Protection (Basic Safety Standards) Regulations 1987
14. MS 2318 : Code of Practice for Demolition of Buildings, 2010
15. MS 2558 : Safety and Health Signage Used In The Workplace
16. BS 5228 : Code of Practice for Noise control on Construction and Demolition Site
17. Code of Practice for Safe Working In A Confined Space, 2001, DOSH
18. Guidelines For Hazard Identification, Risk Assessment And Risk Control, 2008, DOSH
19. Guidelines For Public Safety And Health At Construction Sites, 2007, DOSH
20. Guidelines For The Prevention of Falls At Workplaces, 2007, DOSH
21. Guidelines on Occupational Vibration, 2003, DOSH
22. Guidelines On Occupational Safety And Health In Tunnel Construction,1998, DOSH
23. Standard OHSAS 18001 and ISO 45001 : Occupational Safety and Health Management System
24. Guidelines For Approval of Design Scaffolding 2016

Note : The contractor at all times need to comply with the provisions of all legislation, regulations and by-laws currently in force with regard and related to the construction works, the environment, safety and health. The relevant legislation, regulations and by-laws including any revisions thereto are as listed in but not limited in regulation and legislation stated in this specification. Compliance with this Specification does not of itself confer immunity from legal obligations.

SPECIFICATIONS FOR OCCUPATIONAL SAFETY AND HEALTH IN ENGINEERING CONSTRUCTION WORKS

1. GENERAL

1.1 General Requirements

1.1.1 Specifications for Occupational Safety and Health in Engineering Construction Works 2019 cover the requirement regarding occupational safety and health that all JKR Malaysia projects need to comply with.

1.1.2 This Specification shall be read in conjunction with latest version of Standard Specifications for Building Works, Standard Specifications for Road Works and Bill of Quantities for Occupational Safety and Health in Engineering Construction Works.

1.1.3 Construction works with contract period more than Six (6) weeks or involve the use of machinery shall register with DOSH by Contractor within Seven (7) days from the date of site possession as comply with Section 35, Factory And Machinery Act.

1.1.4 Comply with Section 15: Occupational Safety And Health Act

(i). The Contractor shall ensure, so far as is practicable, the safety, health and welfare at work of all his workmen (employees).

(ii). Without prejudice to the generality of item (i), the matters to which the duty extends, so far as is practicable, include in particular:

a) The provision and maintenance of plant and system of work with safe and without risks to health;
b) The making of arrangements for ensuring safety and absence of risks to health in connection with the use or operation, handling, storage and transport of plant and substances;
c) The provision for such information, instruction, training and supervision as is necessary to ensure the safety and health at work of his workmen
d) The maintenance of place of work condition, the provision and maintenance of the means of access to and egress from place of work that are safe and without risks.
e) The provision and maintenance of a working environment for his workmen that is safe without risks to health, and adequate as regards facilities for their welfare at work.

1.1.5 Comply with Construction Industry Development Board (CIDB) Malaysia Act and/or Regulations under the act

(i). Ensure all workmen at Works and before entering the Construction Site

must be owned with a valid CIDB Green Card.

1.2 Safety and Health Plan (S-Plan)

1.2.1 The Contractor shall submit S-Plan to the S.O / P.D, within one (1) month after the receipt of Letter of Acceptance. It shall include the following:

(i). The Contractor shall submit in writing to the S.O/ P.D, The Hazard Identification, Risk Assessment and Determining Control (HIRADC) before commencement of each activity throughout the contract period.

(ii). S-Plan shall be endorsed by the Owner/Director of the company with the date and version on the cover page.

1.2.2 The contractor shall provide a complete S-Plan as stated in **Appendix A**.

1.2.3 The S-Plan shall be monitored and reviewed when / after an incident (accident or illness) occurred including changes to the project organization chart or changes to the regulations and scope of project. S-Plan shall be revised periodically as requested by S.O/P.D.

1.3 Safety And Health Committee (SHC)

1.3.1 The Contractor shall form a Safety and Health Committee to be complied with Occupational Safety and Health (Safety and Health Committee) Regulations and organise meetings at minimum once in every three (3) months as required.

1.3.2 The Contractor shall provide Contractor's Organization Chart and Safety and Health Committee (SHC) Chart which shall describing the staff involved including list of duties and responsibilities.

1.4 Competent Person (CP) And Designated Person (DP)

1.4.1 The Contractor shall employ throughout the entire contract period a competent and qualified person as the Safety and Health Practitioner as below:

(i). Safety and Health Officer (SHO) to be stationed full time for all projects with cost of contract more than RM20 million or high risk workplace as directed by S.O/P.D/DOSH.

(ii). Site Safety Supervisor (SSS) to be stationed minimum 15 hours a week for all projects.

(iii). The Contractor shall comply with Occupational Safety And Health (Safety and Health Officer) Order 1997, Order I and II in any contract price of the project exceeds RM20 million or high risk. As stipulated in this Order, the main Contractor shall ensure their sub-Contractor(s) employ SHO.

(iv). Every Contractor other than main Contractor in charge of worksite who

employs more than 20 persons shall appoint their own Contractor Safety Supervisor (CSS) to be stationed minimum 5 hours a week.

1.4.2 If the Safety and Health Practitioner absent from Works, Contractor shall get the permission from DOSH to operate the Works without Safety and Health Practitioner or Contractor may require to (temporarily) appoint another Safety and Health Practitioner.

1.4.3 The Contractor shall employ Competent Person(s) (CP) in charge of handling high risk Works that defined by DOSH and CIDB.

1.4.4 The Contractor shall conduct Health Measurements (if necessary) by designated/ competent person (example: Occupational Health Doctor/ Medical Practitioner).

1.4.5 The Contractor shall employ Designated Person(s) (DP) for the following works:

1.4.5.1 Public vehicular traffic
1.4.5.2 Protection of the public
1.4.5.3 Inspection of Formwork
1.4.5.4 Inspection of Safety harness
1.4.5.5 Inspection of Safety nets
1.4.5.6 Demolition
1.4.5.7 Excavation work
1.4.5.8 Piling work
1.4.5.9 Pile testing
1.4.5.10 Handling of explosive
1.4.5.11 Other works as necessary

1.5 Medical Check-up / Health Surveillance

1.5.1 Medical Report (Health Surveillance) of workmen to be recorded by the Contractor (employer/ self-employed person) for the Works exposed to chemicals and hazardous working area as listed in Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000 or latest version. Medical Report (Health Surveillance) shall be conducted by Occupational Health Doctor / Medical Practitioner.

1.6 Personal Protective Equipment (PPE)

1.6.1 Provision and maintenance of Personal Protective Equipment to S.O/P.D staffs at site of adequate quantity and of approved quality as instructed by S.O/P.D. The equipment shall include but not be limited to the following:

(i). Safety boots
(ii). Safety helmets
(iii). Safety harness and life lines (for workmen who work at heights more than 3 m above ground level)
(iv). Protective gloves
(v). Safety goggles
(vi). Safety jackets of reflective type
(vii). Ear plugs and muffs
(viii). Gas masks
(ix). Dust masks
(x). Head lamp
(xi). Life jacket
(xii). Others as necessary

1.6.2 Provision and maintenance on the site during the entire contract period, of the adequate safety equipment to be approved by the S.O/P.D:

(i). Gas detectors
(ii). Breathing apparatus
(iii). Air ventilation pumps
(iv). Adequate lighting and warning lamps
(v). Hazard tape
(vi). Safety barriers

1.7 Safety and Health Programme

1.7.1 The Contractor shall conduct OSH related training and programme for the workmen including sub-Contractor for the successful implementation of the project as following below. All costs shall be borne by the Contractor.

(i). OSH related Best Practise and Awareness Course
(ii). First Aid Training to be trained by a certified trainer.
(iii). CIDB Green Card.
(iv). Toolbox / Induction / Evacuation Drill / Housekeeping Programme

1.8 Monthly Safety and Health Report

1.8.1 The Contractor shall submit monthly safety and health reports to the S.O / P.D, in accordance with Appendix B.

1.9 Inspection Report

1.9.1 The Contractor shall conduct inspection at the place of work at least once in every three (3) months to ascertain if there is anything prejudicial to the safety and health of persons employed therein:

Provided that the committee may, at any time, make further inspections of any plant therein or any part of the place of work to check on the effectiveness of the measures taken to the safety and health of persons at the place of work.

1.10 Hazards Identification Risk and Determining Control (HIRADC)

1.10.1 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.

1.10.2 Records of HIRADC shall be kept, maintained and submitted to the S.O/PD prior to commencement of the work. HIRADC may be reviewed during the course of work as required.

1.11 Site Safety Signage and Information Board

1.11.1 The Contractor shall do provision and maintenance of safety and health statistic scoreboard at the entrance of site office / workplace as approved by S.O / P.D

1.11.2 The Contractor shall provide and maintain adequate safety and health signage, warning signs and warning lights or as instructed by S.O / P.D. Minimum requirements of signage:

(i). Sign Plate

Sign plate shall be made of aluminium composite material with total minimum thickness of 4mm with aluminium thickness of 0.2mm for both sides.

(ii). Sign Face

The sign face shall comply with the Malaysian Standard Specification for Reflective Sign Faces Materials (MS 1216 or ASTM D4956).

(iii). Colour code usage

a) Red: Prohibition, danger alarm, fire protection equipment, high risk of injury or death, emergency stops and alarms
b) Yellow :Warning, caution statements , minor risk of injury , materials handling equipment
c) Blue : Mandatory , no immediate hazard
d) Green : Emergency escape, safety equipment or information , first aid equipment or location, no danger

1.12 Emergency Response Plan (ERP)

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:

(i). initially when the plan is developed
(ii). Whenever the employees' responsibilities or designated actions under the plan change; and
(iii). Whenever the plan is changed.

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

1.12.4 Emergency drill for testing the plan shall be conducted.

1.13 Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease (NADOPOD)

1.13.1 Notification and record keeping:

(i). <u>Notification</u>
Accident, dangerous occurrence, occupational poisoning and occupational disease that occur at the workplace shall be notified to relevant authorities

(ii). <u>Record keeping</u>
Records of all accident, dangerous occurrence, occupational poisoning and occupational disease that occur at the workplace shall be maintained.

1.13.2 Deciding whether a case should be notified and recorded

(i). In determining whether a case should be notified and recorded, contractor should follow the "Guidelines on Occupational Safety and Health (Notification of Accident, Dangerous Occurrence, Occupational Poisoning and Occupational Disease) Regulations [NADOPOD]".

1.14 Fire Fighting Equipment

1.14.1 Suitable types of fire fighting equipment shall be installed and maintained at required locations on the Site throughout the Contract period.

1.15 Traffic Movement Management

1.15.1 The Contractor shall provide and maintain adequate safety including traffic warning signs and warning lights at place of works and close proximity of public.

1.15.2 The Contractor shall provide and maintain traffic control and signage by competent persons including provision of flagmen; where Works is in close proximity of public road and reporting to S.O/ P.D. (refer Standard Specification For Road Works Section 19 (SPJ Section 19) and latest version of Arahan Teknik Jalan 2C/85).

2. HEALTH AND WELFARE

The Contractor shall provide and maintain at his own risk adequate water supply, power supply, sanitary system, lighting, temporary rest area, first aid facilities and ventilation where required for use in the Works and shall pay all costs, fees and charges and comply with all safety regulations, requirements and by-laws in connection therewith.

3. PLANT AND MACHINERIES

The Contractor shall taking measures to ensure that all equipment, machinery and place of Works are in proper working condition so as to minimize the amount of noise generated and dust suppression. All Work shall be carried out without unreasonable noise and dust suppression The S.O/ P.D may require the Contractor to replace any machinery and equipment as well as method of statements that to his discretion, is emitting excessive noise and dust.

3.1 Registration Certification

3.1.1 All plant and machineries shall have valid certification under Factories and Machinery Act, Section 19.

3.1.2 All machineries specified in the schedule as stated at the Factories and Machinery (Exemption of Certificate of Fitness for Hoisting Machine) Order 2015 are exempted from statement 3.1.1.

3.2 Valid Certification Period

3.2.1 The contractor must ensure that the Certificate of Fitness of the plant and machinery used throughout the contract period is still valid

3.3 Renewal of Certification

3.3.1 The Contractor shall ensure that renewal of certification should refer Factories and Machinery (Notification, Certificate of Fitness and Inspection) Regulations.

3.3.2 The contractor shall have the plant registration and renew its certification as required by the Department of Occupational Safety and Health.

3.4 Operation of Plant and Machinery

3.4.1 The Contractor shall ensure that operation of Plant and Machinery should refer to the Factories and Machinery (Fencing of Machinery and Safety) and (BOWEC) Regulations.

3.4.2 Unless otherwise provided, all the provisions of the Factories and Machinery (Fencing of Machinery and Safety) Regulations shall apply to every machinery used in connection with or for the purpose of building operations and works of engineering construction.

3.5 Machinery Installed On Any Floor Above The Ground Floor

3.5.1 The Contractor shall ensure that machinery installed on any floor above the ground floor need to refer to Factories and Machinery (BOWEC) Regulations.

3.5.2 No machinery shall be used or caused to be used on any floor above the ground floor of any building or structure unless such floor or structure has been so designed and constructed as to support the load imposed by the machinery or alternatively strengthened for the purpose.

3.5.3 Any floor or working level surrounding any machinery shall be maintained in good and safe condition and shall, as is practicable, be free from any loose material and in non-slippery condition.

4. SAFE WORKING AREA

4.1 Catch Platform

4.1.1 Erection, maintains and dismantling of catch platform during demolition of structure or other related exterior works at more than 12m height; and shall be constructed and maintained not more than 6m below from which the exterior works. Such platform shall be designed by a Professional Engineer with Practising Certificate (PEPC) and certified for safety prior to erection under Factory and Machinery (BOWEC) Regulations. Catch platform shall not be used for storage of material or be used as working platforms or walkways.

4.2 Scaffolding

4.2.1 Erection, maintenance, and dismantling of scaffolding, working platform with safety nettings by Competent Person(s) under the direct supervision of a Designated Person under Factory and Machinery (BOWEC) Regulations.

4.2.2 Every metal tube scaffold exceeding 40m in height and every other scaffold exceeding 15m in height shall be constructed in accordance with the design and drawings of a Professional Engineer with Practising Certificate (PEPC). All other metal tube scaffolds shall have their designs and drawings approved by the DOSH. (refer to the Guidelines For Approval of Design Scaffolding 2016)

4.2.3 No scaffold shall be used unless:

(i). It has been inspected by a Designated Person (DP) within the preceding seven days;

(ii). It has been inspected by a Designated Person (DP) since its exposure to weather conditions is likely to have affected its strength or stability or to have displaced any part; and

(iii). The result of such inspection are entered by the Designated Person (DP) into a register which is to be kept at the worksite

4.3 Floor Opening/ Manholes/ Open Edges

4.3.1 Erection, maintenance and removal of safety barricades/ fencing/ railing/ screen/ wire netting/ toe board for maintaining safe working environment during the Works.

4.3.2 Provision, maintenance and removal of guardrails or board fences and temporary foot walks with adequate overhead protection for public walkways and thoroughfares during the Works.

4.4 Working At Height

4.4.1 Construction Works above 3 m

(i). Submission of scaffolding design and working platform certified by a Professional Engineer with Practising Certificate (PEPC) for the approval from DOSH. The copy of the approval must be submitted to S.O/P.D.

(ii). Fall arrest equipment shall be provided by the contractor and be used in accordance with the manufacturer’s instruction.

4.5 Access to Workplace

4.5.1 Stairways, ramps or runways shall be provided as the means of access to working levels above or below ground except where the nature of progress of work prevent their installation in which case ladders or other safe means shall be provided.

4.5.2 All buildings under construction of more than two storeys high shall be provided with well-defined access at the ground floor with adequate overhead protective cover for person entering or leaving the building.

4.6 Excavation and Shoring

4.6.1 No employee shall be permitted to enter any excavated area unless sheet piling, shoring or other safeguards that may be necessary for his protection are provided.

4.6.2 The excavation site and its vicinity shall be checked by Designated Person (DP) after every rainstorm or other hazard-increasing occurrence and the protection against slides and cave-ins shall be increased, if necessary.

4.6.3 Excavated materials and other superimposed loads shall be placed at least 600mm from the edge of open excavation and trenches, and shall be so piled or retained that no part thereof can fall into excavation, or cause the banks to slip or cause the upheaval of the excavation bed.

4.6.4 Open sides of excavations where a person may fall more than 3m shall be guarded by adequate barricades and suitable warning sign.

4.7 Formwork and Concreting

4.7.1 Formwork and shores shall be certified structurally safe by a Professional Engineer with Practicing Certificate (PEPC) and shall be properly braced or tied together.

4.7.2 A Designated Person (DP) shall supervise the erection of the formwork including the shores, braces and other support and to do inspection regularly during placing of concrete. All records of such inspection shall be kept at worksite.

4.7.3 Where the floor to ceiling height exceeds 9.14m or where the formwork deck is supported by shores constructed in two or more tiers, or where the dead, live and impact loads on the formwork exceed 732.2kgf/m2, the formwork structure shall be designated by Professional Engineer with Practicing Certificate (PEPC)

and a copy of the specification and drawings shall be submitted to DOSH before work commences.

4.7.4 Where the formwork structure is designed by a Professional Engineer with Practicing Certificate (PEPC), he shall be responsible for the supervision of the construction and stability of such structure.

4.7.5 Where the formwork structure is of two or more tiers, it shall have sufficient cat-walks and other secure access for inspection.

4.8 Piling Works

4.8.1 Where there is any question of stability of structures adjoining area to be piled, such structures shall be supported where necessary by underpinning, sheet piling, shoring, bracing or other means in accordance with the design of a Professional Engineer with Practicing Certificate (PEPC) to prevent injury to any person

4.8.2 All pile-driving equipment shall be inspected daily by a Designated Person (DP) before the start of work. Every piling frame shall be thoroughly examined by an approved person at least once in every twelve months.

4.9 Lifting Works

4.9.1 Cordoning off working area and provision of public control and safety measures where lifting operations, moving, shifting, transferring works are carried out outside the hoarded up area of the worksite.

5. MECHANICAL AND ELECTRICAL EQUIPMENT AND TOOLS

The Contractor shall ensure that mechanical and electrical equipment and tools should refer to the Factories and Machinery (BOWEC) Regulations.

5.1 General Requirement

5.1.1 All hand and power tools and similar equipment, whether furnished by the employer or the employee, shall be maintained in a safe condition.

5.1.2 When power-operated tools are designed to accommodate guards, they shall be equipped with such guards when in use.

5.1.3 Belts, gears, shafts, pulleys, sprockets, spindles, drum, fly wheels, chains, or other reciprocating rotating or moving parts of the equipment shall be guarded if such parts are exposed to contact by employees or otherwise create a hazard

in accordance with the requirements of the Factories and Machinery (Fencing of Machinery and Safety) Regulations.

5.1.4 Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, mists, vapours or gases shall be provided with the necessary personal protective equipment to protect them from hazards.

5.1.5 Hand-held powered requirement:

(i). All hand-held powered platen sanders, grinders with wheels 51 millimetres in diameter or less, routers, planers, laminate trimers, nibblers, shears, scroll saws, and jigsaws with blade shanks 6 millimetres wide or less may be equipped with only a positive "on-off" control.

(ii). All hand-held powered drills, tappers, fastener, drivers, horizontal, vertical, and angle grinder with wheels greater than 51 millimetres in diameter, disc sanders, belt sanders, reciprocating saws and other similar operating powered tools, shall be equipped with a momentary contact "on-off" control and may have a "lock-on" control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

(iii). All other hand-held powered tools, such as circular saws, chain saws, and percussion tools without positive accessory holding means, shall be equipped with a content pressure switch that will shut off the power when the pressure is released.

5.2 Hand Tools and Power Tools

5.2.1 The Contractor shall ensure that all electrical and mechanical tools and equipment is inspected by a designated person (DP) where relevant and in proper working condition.

5.2.2 Employers shall not issue, suffer or permit the use of unsafe hand tools.

5.2.3 Wrench, including adjustable pipe ends and socket wrenches shall not be used when jaws are sprung to the point that slippage occurs.

5.2.4 Impact tools, such as drift pins, wedges, and chisels, shall be kept free of mushroomed head.

5.2.5 The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the cool.

5.3 Electric Power-Operated Tools

5.3.1 Electric power-operated tools shall be insulated in accordance with the requirement of Electrical Inspectorate Regulations.

5.3.2 The use of electric cords for hoisting or lowering tools shall not be permitted.

5.4 Pneumatic Power Tools

5.4.1 Pneumatic-power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.

5.4.2 Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

5.4.3 All pneumatically-driven nails, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 7 bars pressure at the tool shall have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.

5.4.4 Compressed air shall not be used for cleaning clothing or parts of the body.

5.4.5 The manufacturer's safe operating pressure specification for hoses, pipes, valves, filters and other fittings shall not be exceeded.

5.4.6 The use of hoses for hoisting or lowering tools shall not be permitted.

5.4.7 All hoses whose inside diameter exceed 13 millimetres shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure.

5.4.8 Airless spray guns of the type which atomize paints and fluids at a pressure greater than 70 bars shall be equipped with automatic or visible manual safety devices which will prevent pulling of the trigger to prevent release of the paint or fluid until the safety device is manually released or alternatively, a diffuser which will prevent high pressure or high velocity release, while the nozzle tip is removed, plus a nozzle tip guard which will prevent the tip from coming into contact with the operator, or their equivalent protection, shall be provided.

5.5 Fuel-Powered Tools

5.5.1 All fuel-powered tools shall be stopped while being refuelled, serviced, or maintained, and fuel shall be transported, handled, and stored safely.

5.5.2 When fuel-powered tools are used in enclosed spaces, the applicable provisions in respect of concentrations of toxic gases and the use of personal protective equipment must be followed.

5.6 Hydraulic-Powered Tools

5.6.1 The fluid used in hydraulic-powered tools shall be fire-resistant fluids, and shall retain its operating characteristics at the most extreme temperatures to which it may be exposed.

5.6.2 The manufacturer's safe operating pressure specifications for hoses, pipes, valves, filters and other fittings shall not be exceeded.

5.7 Power-Actuated Tools

5.7.1 Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a power-actuated tool.

5.7.2 The tool shall be tested each day before loading to see that safety devices are in proper working condition. The method of testing shall be in accordance with the manufacturer's recommended procedure.

5.7.3 Any tool found not in proper working order, or that develops a defect during use, shall be immediately removed from use and shall not be used until it is properly repaired.

5.7.4 Tools shall only be loaded within a reasonable period prior to the intended firing time. Neither loaded nor empty tools shall be pointed at any employees. Hands shall be kept clear of the open barrel end.

5.7.5 Loaded tools shall not be left unattended.

5.7.6 Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tile, surface-hardened steel, glass block, live rock, face brick, or hollow tile.

5.7.7 Driving into materials easily penetrated shall be avoided unless such materials are backed by a substance that will prevent the pins or fastener from passing completely through to the other side.

5.7.8 No fastener shall be driven into a spalled area caused by an unsatisfactory fastening.

5.7.9 Tools shall not be used in an explosive or flammable atmosphere.

5.8 Wiring/Cabling/Switching

5.8.1 The Contractor shall ensure that wiring/cabling/switching should be refer to the Factories and Machinery (BOWEC) Regulations & (Fencing of Machinery and Safety) Regulations.

5.8.2 All electrical equipment and installations shall be of such construction and so installed and maintained as to prevent fire hazard and danger from contact with moving parts and live parts. Such electrical equipment and installations shall conform to all the requirements prescribed in any written law relating to electrical equipment and installations and shall have been approved by the authorities appointed by the said law.

5.8.3 The Contractor shall ensure that the electrical safety condition as stated in Factories and Machinery Act & Factories and Machinery (BOWEC) Regulation is adhered by the employee where the electric power circuit is exposed.

6. HAZARDOUS CHEMICALS AND MATERIALS

6.1 Storage

The Contractor shall ensure that chemicals to be stored should be classified refer to the Guidelines on Storage of Hazardous Chemicals: A Guide for Safe Warehousing of Packaged Hazardous Chemicals, DOSH.

6.2 Handling and Labelling

The Contractor shall ensure that chemicals are to be handled, labelled and/or relabelled as per to The Occupational Safety & Health (USECHH) Regulations 2000 and/or The Occupational Safety and Health (CLASS) Regulations, and/or The Pesticides Act 1974 (Latest amendment) and/or The Environmental Quality (Scheduled Wastes) Regulations 2005 (Latest amendments).

7. SPECIAL SAFE WORKING CONDITION

7.1 Confined Space

7.1.1 Including excavations works, underground works, foundation works, caisson piling works, tunnelling works, underwater diving, demolition works, and places of work as defined in the Code of Practice for Safe Working in a Confined Space, 2001, DOSH.

(i). The Contractor shall comply with Occupational Safety and Health requirements as listed in Regulation and Legislation.

(ii). The Contractor shall ensure that closed tanks with restricted means of entry and exit, open manholes, trenches, pipes, flues, ducts, ceiling voids, enclosed rooms such as basements and other places where there is inadequate ventilation and/ or the air is either contaminated or oxygen deficient, be tested by a Competent Person before entry to determine that there are adequate levels of oxygen present, and that dangerous amounts of flammable and or poisonous gases are not present.

(iii). The Contractor shall establish a safe work system for workers who will be carrying out their work in confined spaces.

(iv). The Contractor shall adopt an entry permit system, so as to ensure that employees and others are aware of the location of anyone required to enter confined spaces.

7.2 Hot Works

7.2.1 Hot Work includes flame cutting, welding, heat treatment, metal spraying, forging, grinding and any similar work that generates heat, flame or sparks. The Contractor shall appoint a Competent Person (CP) to be responsible for any hot works. The Contractor must ensure there is at least one trained person can use the fire fighting equipment when performing any hot works.

7.2.2 Hot work shall not be performed in a confined space until a Designated Person (DP) has tested the atmosphere and determined that it is not hazardous.

7.3 Blasting and Demolition Works

7.3.1 Danger signs shall be conspicuously posted around workplace and all doorways or thorough fares giving access to the property shall be barricaded except when being used as a passage for men or equipment.

7.3.2 Explosives shall not be handled or used except in accordance with the manufacturer's instructions, if any, and under the immediate control of a Designated Person (DP) who has the training, knowledge, or experience in the field of transporting, storing, handling and use of explosives.

7.4 Working At Night

7.4.1 Prior to the start of work, the Contractor shall submit a detailed work plan for review and approval by the SO/P.D. The plan shall be updated by the Contractor as operations require. The plan shall include, but may not be limited to:

(i). Traffic control;
(ii). Lighting plan; and
(iii). Special safety elements.

7.5 Working over/ near water

7.5.1 The Contractor shall provide approved life jacket or buoyant work vests when working over or near water, where the danger of drowning exists. 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.

7.5.2 A lifebuoy with sufficient lifeline (not less than 30m) should be provided and the locations of the lifebuoys should be at less than 50m intervals along the edges of places where work is being carried out over side or in an exposed position on vessels where there is a reasonably foreseeable risk of falling or being washed overboard. To avoid any delays to rescue operations, lifebuoys should not be tightly tied to posts.

APPENDIX A

REQUIREMENTS OF SAFETY AND HEALTH PLAN (S-PLAN)

1. Project Introductions
2. Management Responsibility
3. OSH Programme
4. Hazard Identification, Risk Assessment And Determining Control (HIRADC)
5. Safety And Health Control Form
6. Permit To Work (PTW)
7. Fire Precaution And Protection And Emergency Respond
8. Safety Operation Procedure
9. Investigation And Incident Report
10. Occupational Safety And Health Statistics And Record
11. Employee Health Examination
12. Safety, Health And Welfare
13. List Of Machines, Equipment And Plant
14. Traffic Control At Construction Site
15. Personnel Protective Equipment (PPE)

Whenever there is any dispute arise, item listed as per Prosedur Kawalan Keselamatan dan Kesihatan Pekerjaan JKR.PK(O).04B (Format Pelan Keselamatan dan Kesihatan Pekerjaan, S-PLAN) under the latest version of Sistem Pengurusan Bersepadu (SPB), JKR shall be referred.

APPENDIX B

REQUIREMENTS OF SAFETY AND HEALTH REPORT

1. Introductions
2. OSH Programme
3. OSH Statistics And Record
4. OSH Complaints and Notices
5. Status of S-Plan
6. Status of HIRADC
7. Employee and Worker's Registrations
8. Registration of Machineries, Equipment and Plants
9. Traffic and safety controls
10. Occupational Safety and Health Committee

Whenever there is any dispute arises, item listed as per Prosedur Kawalan Keselamatan dan Kesihatan Pekerjaan JKR.PK(O).04B (Format Laporan Keselamatan Dan Kesihatan Pekerjaan), under the latest version of Sistem Pengurusan Bersepadu (SPB), JKR shall be referred.

JKR 20700-0350-19

JABATAN KERJA RAYA MALAYSIA

BILL OF QUANTITIES FOR OCCUPATIONAL SAFETY AND HEALTH IN ENGINEERING CONSTRUCTION WORKS 2019

Item	Description	Unit	Qty	Rate	Amount
1	Prepare and submit safety and health plan (S-Plan) as per **Specifications For Occupational Safety And Health In Engineering Construction Works**.	No			…….....
2	Prepare and submit monthly safety & health report as per **Specifications For Occupational Safety And Health In Engineering Construction Works.**	No			……....
3	Employment of a Safety & Health Officer (SHO) registered with DOSH and to the satisfaction of the S.O/ P.D for the entire contract period to be stationed fulltime at the site. (For works exceeding RM20 millions contract value or high risk workplace as directed by S.O/ P.D/ DOSH)	Man/ Month			……..
4	Employment of a Site Safety Supervisor (SSS) and to the satisfaction of the S.O/ P.D for the entire duration of the construction period to be stationed minimum 15 hours a week at the site.	Man/ Month			……..
5	Provision and maintenance of Personal Protective Equipment to S.O/ P.D staffs at site of adequate quantity and of approved quality. The equipment shall include but not be limited to the following:				
	▪ Safety boots	No			.....
	▪ Safety helmets	No			……..
	▪ Full Body Harness c/w Hook and Lanyard for workmen who work at heights more than 3m above ground level	No			……..
	▪ Safety / life lines for workmen who work at heights more than 3m above ground level	m			……..
	▪ Protective gloves	No			……..
	▪ Safety goggles	No			……..
	▪ Safety jackets of reflective type	No			……..
	▪ Ear plugs and muffs	No			……..
	▪ Gas masks	No			……..
	▪ Dust masks	No			……..
	▪ Head lamp	No			……..
	▪ Life jacket	No			……..
	▪ Others as necessary	No			……..

6	Provision and maintenance on the Site during the duration of the Works, of the adequate safety equipment to be approved by the S.O/P.D as follows: Gas detectors Breathing apparatus Air ventilation pumps Warning lights Fire extinguishers Hazard tape Safety barriers	 No No No No No m No			 …….. …….. …….. …….. …….. …….. ……..
7	**Traffic Management** (Please delete this item if Traffic Management Plan is already existed in the contract) Provision and maintenance of adequate safety, traffic and warning signs and warning lights including traffic control and signage by competent persons where site is in close proximity of public road as stipulated in Standard Specification For Road Works Section 19 (SPJ Section 19) and latest version of Arahan Teknik Jalan 2C/85.	LS			…….. .