Regulation CS - 4.0: Construction Safety Regulations

HEALTH & SAFETY AT CONSTRUCTION SITES

4.1 DUTY OF CARE

4.1.1 General

All levels of management from director to site supervisor have a responsibility to ensure that those people working under their control are not exposed to unnecessary risk whilst they are at work. The 'duty of care' extends beyond what is legally required and covers the moral responsibility that all persons have to ensure others are not harmed by their acts or omissions.

4.1.2 Project Managers

Project Managers are ultimately responsible for safety on their project. They must ensure that adequate arrangements are in place to safeguard the health, safety and environmental aspects of the project and welfare of all persons under their control.

4.1.3 Project Management Teams (PMTs) / Supervising Consultants

Consultants and the contractors shall be jointly responsible for the compliance of applicable Health, Safety and Environmental Regulations on their projects.

4.1.4 Duty of Care Responsibilities

Every person employed has the following responsibilities under the 'duty of care' that exists:

1. To safeguard their own health, safety and welfare.
2. To ensure that others are not exposed to unnecessary risk by their acts or omissions.
3. To lead by example
4. To stop unsafe working practices or report unsafe working practices to their manager.

4.1.5 Training

All employees shall be briefed on the duty of care that exists in the form of inductions, toolbox talks and management safety briefings. The Project Manager is responsible for ensuring that adequate arrangements and resources are in place for training to be carried out.

4.2 RISK ASSESSMENTS

4.2.1 General Requirements

Every main contractor must ensure that risk assessments are undertaken for all work activities that present a risk to the health and safety of employees and others who may be affected by their undertaking. All risk assessments must be recorded and a register of risk assessments must be held in the main contractor's project office. EHS will review risk assessments as part of their COC I and II inspections and any contractor failing to undertake risk assessments will not be issued with the appropriate COC. (See also Construction Safety Guidelines No. 30)

4.2.2 Communication of Risk Assessment Information

The main contractor must ensure that the information contained in the risk assessments is communicated in a comprehensible way to the workforce. This communication will normally be in the form of inductions, toolbox talks or worker safety briefings but in any case the information must be passed to the workers before they start work. In the case of inductions the Main Contractor will be responsible for ensuring that every worker (including the workers of subcontractors) is inducted in the health and safety requirements of the project.

4.2.3 Review of Risk Assessments

The main contractor will ensure that risk assessments are regularly reviewed and kept up to date as new processes are adopted or when changes in the method of work present additional risks.

4.2.4 Five Steps to Risk Assessment

The following 5 steps to risk assessment are internationally recognized as the procedure to follow when undertaking risk assessments:-

Step 1 Look for the hazards
Step 2 Decide who might be harmed.
Step 3 Evaluate the risks and decide whether the existing precautions are adequate or whether more should be done.
Step 4 Record your findings
Step 5 Review your risk assessment on a regular basis and revise it if necessary

The main contractor must ensure that they have a written procedure to cover the identification of hazards and assessment of risk. All risk assessments must be signed and dated by the person

undertaking the assessment.

4.3 CERTIFICATES OF CONFORMITY (COC) AND NIGHT CONSTRUCTION NOC

4.3.1 General Requirements for COC

The main contractor will ensure that prior to the commencement of any project a Certificate of Conformity (COC) Stage 1 form is completed and submitted to EHS CS. In turn EHS will inspect the site and review the necessary site health and safety documentation as listed on the COC 1 form. If all requirements are successfully complied with EHS will approve the COC Stage 1 and notify the main contractor in writing of this.

The main contractor must make application for a COC Stage 2 when the height of the building reaches G+2 level or 6 metres by following the same procedure.

The main contractor must make application for a COC Stage 3 when the height of the building reaches 24 metres and should obtain COC 3 before height of the building reached 30 metres.

The main contractor for Fit-out / Renovation work must make application for a COC for Fit-out / Renovation work for activities specified in the Matrix.

The main contractor for Marine Construction work must make application for a COC for Marine Construction work for activities specified in the Matrix.

4.3.2 EHS NOC for Construction Activities at Night

The main contractor will ensure that for all construction activities at night (between 8pm to 7am) he shall obtain EHS NOC prior to commence the night construction activities.

4.3.3 Compliance with EHS Rules and Regulations

The main contractor should take note that by signing the COC Stage 1, 2, 3, COC for Fit-out / Renovation, COC for Marine Construction and EHS NOC for Construction Activities at Night forms he confirms that he will undertake construction work in accordance with PCFC/EHS/DM regulations and guidelines. The main contractor also assumes full responsibility for all activities on his site that he can reasonably be expected to control.

4.3.4 Financial Penalties

The main contractor accepts that by signing the EHS forms he is liable for all financial penalties that may be imposed on him as a result of him failing to comply with PCFC/EHS/DM regulations and guidelines.

4.4 HEALTH AND SAFETY PLANS

4.4.1 General Requirements

The main contractor must ensure that prior to the commencement of any project a Health and Safety Plan is prepared which covers the specific requirements of the project. The Health and Safety Plan will be reviewed by EHS as part of the COC Stage 1 application.

4.4.2 Health and Safety Plan Requirements

As a minimum the main contractor must ensure that the Health and Safety Plan that he prepares covers the following elements:

1. Project scope of works
2. Roles and responsibilities of key project staff
3. Appointments of key staff given health and safety responsibilities
4. Register of project risks identifying risk owner and schedule of submittal of risk assessments
5. Risk assessments to cover current and immediate future activities
6. Health and safety inspection and audit plan
7. Project logistics plan
8. First aid arrangements
9. Accident reporting procedure that complies with EHS reporting requirements
10. Emergency procedure for the project covering foreseeable emergencies
11. Details of fire arrangements
12. Details of health and safety meetings that will be held and their frequency
13. Environmental protection plan (refer to PCFC Environmental Protection Regulations & Regulations for Management of Environmental Nuisance from Construction Activities)
14. Safety Management System procedures that will be implemented on the project.
15. Crane plan and details of lifting operations (where applicable)

The main contractor will ensure that the Health and Safety Plan remains a live document and is reviewed and where necessary revised on a regular basis.

4.5 WORK AT HEIGHT

4.5.1 Definition of Work at Height

Work that can not be done from the ground or is next to an open excavation/pit and all work where there is a risk of a fall liable to cause any injury means, 'Working at height. Fall from height accounts

for a high percentage of fatalities and major injuries in the construction industry. (See also Construction Safety Guidelines No. 18).

4.5.2 Risk Assessment

The main contractor must carry out a risk assessment for all works that are carried out at height where there is a risk of people or materials/objects falling. The following hierarchy of control measures must be followed when carry out the risk assessment:

1. Eliminate the need for work at height to be carried out
2. Give priority to collective protective measures such as guardrails and toe boards
3. Use personal suspension equipment such as mobile elevating work platforms
4. Use proximity restraints to prevent access to the edge where a fall could occur
5. Use personal protective equipment such as a safety harness to mitigate the consequences of a fall
6. Use safety nets to reduce the fall but ensure nets are fitted as close as possible to the working level to minimize the fall distance.

The main contractor must ensure that all personnel working at height are briefed on the risk assessment and method statement for the work and are fully aware of the control measures that must be in place.

4.5.3 Working Platforms

The main contractor must ensure that where work at height is carried out a safe working platform is provided where this is reasonably practicable to achieve. The working platform must be provided with safe access and egress which should be in the form of stairs or ladders where vertical travel is required.

4.5.4 Areas of Work

The main contractor is to ensure that the place where any work at height is to be carried out, including the access to the place of work has features to prevent a fall including but not limited to guardrails, toe boards, safety nets, personal fall arrest systems, life lines or hole coverings. All reasonably practicable precautions must be taken to prevent anyone or anything from falling.

4.5.5 Training Requirements

The main contractor is to ensure all those working at height are competent and understand the risks involved. Training will include but not be limited to; pre job briefings, tool box talks, correct use and maintenance of personal fall arrest systems, life lines and how to avoid falls.

4.5.6 Inspections

The main contractor is to ensure that all areas and equipment for the purpose of working at height are inspected by a qualified and competent person based on the type of work platform or equipment in use. Inspections are to be carried out in accordance with manufacturer's instructions and after adverse weather conditions.

4.5.7 Weather Conditions

The main contractor is to ensure that work at height is stopped in adverse weather conditions that may endanger the health and safety of those employed.

4.5.8 Housekeeping

The main contractor is to ensure materials are stored correctly and rubbish is not to accumulate in areas where work at height is carried out. Tipping or throwing, rubbish or materials from height is strictly prohibited. The main contractor must make arrangements for a rubbish chute to be provided to facilitate the removal of rubbish from a height.

4.5.9 Falling objects

The main contractor is to ensure that all precautions are taken to prevent objects from falling and any person from being struck by falling objects, including but not limited to, exclusion area, debris fans or brick guards/nets. Two tier working is prohibited.

4.5.10 Emergency Arrangements

The main contractor will ensure that an emergency procedure is developed and implemented to deal with emergencies that may arise when work at height is being carried out. This will include, but not be limited to, dealing with the rescue of any person who may become suspended by their safety harness or any person who may become suspended in a safety net. In the case of a worker who may become suspended by their safety harness following a fall the procedure should allow for the rescue of the worker in 10 minutes or less as far as is practicable. The main contractor should carry out rescue drills frequently to test the effectiveness of the emergency procedure.

4.6 STEEL ERECTION AND ROOF WORKS

4.6.1 General Requirements for Steel Erection

The main contractor is to ensure that the following points are complied with where applicable:

1. Ensure the erection work is sequenced so that stairs and handrails can go in as early as possible to provide safe access to high levels of the structures.
2. Adding bracing into the design to ensure integral stability of the structure through all stages of erection.
3. Designing connection joints to make bolting up easy.
4. Ensuring adequate information is passed on to alert erectors about special sequences which need to be followed to ensure stability.
5. Steel beam walking, climbing or traversing is strictly prohibited where there is a risk of workers falling in excess of 2 metres.

4.6.2 Risk Assessment

The main contractor must undertake a risk assessment for steel erection work which should include but not be limited to covering the following points:

1. Falls when working at height.
2. Erectors being hit or knocked off the steel by moving steel members or decking packs being craned into position.
3. The structure collapsing before it is fully braced.
4. Materials dropping onto people working below.
5. The manual lifting of heavy steel members, causing back and other strains injuries.
6. Crane safety to ensure the correct crane capacity to prevent incidents such as the crane failing or overturning.

4.6.3 Roof Deck Construction

The man contractor is to ensure that roof deck construction work is carried out safely taking into account the specific hazards of the work. Where the roof deck design allows the positioning of decking sheets should be carried out from below using either mobile scaffolding or Mobile Elevating Work Platforms (MEWPS). Where this is not possible a safe system of work must be developed following the hierarchy of control measures outlined in section 4.5.2 of these regulations. Particular attention must be given to the leading edge of the roof deck construction where the main contractor must prepare a detailed health and safety method statement covering how the work is to be carried out safely.

4.6.4 Work on Fragile Roofs

A fragile roof is defined as any roof material through which a person could fall, it may include but is not limited to the following materials; asbestos cement, fiberglass, corrugated metal sheet, plastic or composite materials. The main contractor will undertake a survey of the roof and prepare a risk

assessment prior to any work being carried out on the roof. The risk assessment must identify if the roof sheet material could be classed as fragile taking into account the material and the possible effects of material deterioration over time. Where there is a risk of the roof material being fragile the main contractor must ensure the following:

1. All workers must be briefed on the hazards of the work and the control measures that must be followed. Where possible experienced workers should be selected.
2. Purpose made roof ladders and crawling boards must be used.
3. Roof lights should be covered with a suitable covering or barred off to prevent workers falling through them.
4. Section 4.5.5 of these regulation must be followed where workers are working at height

4.7 EMERGENCY ARRANGEMENTS

4.7.1 General Requirements

The main contractor is to ensure all emergency arrangements and procedures are in place and drills are carried out at least twice a year to test the system. Records will be kept of all drills and real emergencies. All procedures must be clearly posted on the safety notice boards around the site e.g. offices, welfare areas, site entrance and building access points.

4.7.2 Emergency Plans

The main contractor will prepare an emergency plan to cover foreseeable emergency situations. This will include but not be limited to procedures for the following:

a. Fire emergencies
b. Medical and health emergencies
c. Accidents
d. Serious incidents – to be defined in the emergency plan
e. Project/Area evacuation
f. Night working emergency response

The emergency plan prepared by the main contractor will clearly identify the roles and responsibilities of key personnel involved in the emergency procedure. The main contractor will ensure that all those given responsibilities in an emergency plan are fully briefed on their roles and given the training where necessary to discharge their duties fully.

4.7.3 Muster Points

The main contractor will ensure that there are a minimum of 2 muster points designated at each work

site which are clearly identified. The location of the muster points should take into account prevailing wind direction; in the event of smoke contaminating one muster point the other would be used.

4.7.4 Training

The main contractor is to ensure all those working on site are trained in and understand the emergency procedures. The emergency procedures must initially be communicated to all personnel during the site induction but regular reminders are to be given in the form of toolbox talks.

4.8 HEALTH AND SAFETY INSPECTIONS

4.8.1 General Requirements

The main contractor is to ensure that regular health and safety inspection are undertaken by the safety advisor(s) of all work areas including site offices and worker accommodation camps. As a minimum health and safety inspections are to be undertaken weekly and a full and detailed inspection report identifying non compliances is to be prepared. Where the main contractor has many buildings a sufficient number of inspections must be undertaken to ensure the whole site is inspected.

4.8.2 Non Compliance Close Out

The main contractor's project manager is responsible for ensuring that arrangements are in place to close out all non compliances raised in the health and safety inspection reports prepared by his safety advisor(s). The project manager must ensure that all managers, engineers and supervisors under his control take the necessary corrective/preventative action to close out non compliances.

4.8.3 EHS Health and Safety Inspections

EHS will undertake periodic inspections of the main contractors work areas and review project health and safety documentation. The main contractor will allow for a senior manager to accompany EHS on their inspections. A written health and safety inspection report will be prepared by the EHS inspector raising any non compliance identified during the inspection. In addition the necessary action and timescale for completion will be recorded on the report. The main contractor is responsible for ensuring that the action is taken within the agreed timescale.

4.8.4 Failure to Take Action

Should the main contractor consistently fail to rectify the non compliances raised in the inspection report a warning letter will be sent to him advising him that he has 7 days to take the necessary action. Should the main contractor continue to fail to rectify the non compliances then EHS reserve the right to issue a financial penalty commensurate with the seriousness of the non compliances

without further notice.

4.9 SCAFFOLDING

4.9.1 General Requirements

All scaffolding will be erected by competent scaffolders to the standards outlined in the Dubai Municipality Code of Construction Safety Practice. All scaffolding must be fit for purpose and lightweight scaffolding is to be used only up to a maximum height of 10 metres and only where no materials are loaded onto the working platforms. As a minimum scaffolders employed by the main contractor must be assessed as competent by an organisation approved by EHS and pass a practical test at the end of the course. All scaffolders must be clearly identifiable and the wording 'SCAFFOLDER' must be clearly printed on their coveralls. The main contractor must appoint a suitably experienced 'Scaffolding Supervisor' who will be assessed and certified by a training organization approved by EHS. The main contractor will only be permitted to erect scaffolding where the total height of the scaffold to the working platform does not exceed 10 metres. (See also Construction Safety Guidelines No. 17a & 17b).

4.9.2 Design of Scaffolding

A competent scaffold designer must be employed by the main contractor for all scaffolding that is to be erected over a height of 10 metres. EHS reserve the right to insist that the main contractor calls upon the services of the scaffold designer to inspect scaffolding to ensure the design requirements are fully complied with.

4.9.3 Erection of Scaffolds Over 10 Metres

The main contractor is to make arrangements for an independent scaffolding contractor to carry out all scaffolding works where the total height of the scaffold to the working platform exceeds 10 metres. Before the main contractor enters into any contractual arrangement with a proposed scaffolding contractor the main contractor must demonstrate to EHS that the selected scaffolding contractor is competent to undertake the work. The measure of competency shall be based on the following:

1. Training of scaffolders to an internationally recognized standard
2. Experience of the scaffold contractor
3. Competency of the scaffold contractors supervision to an advanced level of scaffolding
4. Suitability of the scaffold components to meet the requirements of the scaffolding

In the event of the main contractor not being able to satisfy EHS on the competency of the proposed scaffolding contractor, EHS reserves the right to reject the scaffolding contractor. Where any main

contractors feels he possesses the necessary competency to erect scaffolding in excess of 10 metres he should provide EHS with full details to meet points 1 – 4 above. Where a main contractor can demonstrate that they possess the necessary level of competency to erect scaffolding over 10 metres high an exemption certificate will be given in writing to this regulation by EHS on a project by project basis. EHS reserve the right to terminate this exemption certificate following a written final warning to the main contractor in the event of poor safety standards.

4.9.4 Prevention of Falling Materials and Objects

In addition to the requirements to provide toe boards the main contractor must ensure that adequate measures are taken to prevent materials falling. A risk assessment must be undertaken for works on scaffolding and where there is a risk of objects / materials falling brick guards or other similar protection must be provided.

4.9.5 Inspection of Scaffolding

The main contractor must ensure that a competent person undertakes an inspection of all scaffolding before it is used by workers. The scaffold inspector must either be the 'Scaffold Supervisor' or a member of the site team who has received training on scaffold inspection by an organization approved by EHS. The inspection must be recorded in a scaffold register which must be kept on site. The inspection must be repeated at least every 7 days and also following any alteration of the scaffolding. Scaffolding must also be inspected by a competent person after any event that may affect its safety, this will include but not be limited to bad weather conditions.

4.9.6 Tagging of Scaffolds

Every scaffold will be provided with a simple colour coded tag to identify if it is safe to use the scaffolding. The tag must be provided adjacent to the access point to the scaffold. The colour tag used for safe scaffolding will be Green and for unsafe scaffolding Red. The tagging system chosen by the main contractor shall meet the requirements of the internationally recognized Scafftag® system. The main contractor will ensure that all workers under their control are familiar with the tag system and understand that Red tagged scaffolds are not to be used.

4.9.7 Safe Place of Work

The main contractor will ensure to the best of their ability that every scaffold platform is safe to work from. There must be safe access to and egress from every scaffold. The main contractor must ensure that scaffolding is properly maintained in order to provide a safe place of work. Subsequent to rain or heavy wind, the Scaffolding Supervisor shall inspect all scaffolding and staging prior to work re-commencing.

4.9.8 Requirements for Scaffold Towers

The main contractor is to ensure that all scaffold towers are erected by trained and experienced workers. The maximum height of any scaffold tower without outriggers will be three and a half times its shortest base measurement. The main contractor will ensure that suitable safe access is provided to and from any scaffold tower. Under no circumstances will workers be permitted to climb the scaffold tower frame in order to gain access to the working platform. Guardrails and toe boards must be fitted to tower scaffolds where workers could fall 2.0 metres or more in accordance with the Dubai Municipality Code of Construction Safety Practice.

4.9.9 Use of Safety Harnesses

The main contractor will ensure that all scaffolders working where they could fall 4 metres or more are provided with and use a full body harness along with a shock absorbing lanyard. Workers using full body harnesses must be trained in the safe use of the harness and the main contractor must make arrangements to ensure the recovery of any worker who may become suspended by his harness following a fall. The use of safety belts by scaffolders is strictly forbidden.

4.9.10 Safe Place Safe Person Strategy

The main contractor will give priority to protective measures that protect the whole workforce as in the case of guardrails and a safe working platform. Harnesses will only be used when it is not possible to provide guardrails and a safe working platform as in the case of erecting scaffolding.

4.10 ACCIDENT REPORTING

4.10.1 General Requirements

The main contractor will ensure that the following types of injuries are reported to EHS immediately by telephone on 04 8833111 or any other means. This number is available 24 hours a day 7 days a week. The types of accidents (indicative) that require immediate notification are as follows:

A	Fatality
B	Any fracture other than finger, thumbs or toes
c	Any amputation
d	Dislocation of the shoulder, hip, knee or spine
e	Loss of sight (temporary or permanent)
f	A chemical or hot metal burn to the eye
g	Penetrating eye injury
h	Any injury resulting from an electric shock which causes unconsciousness
i	Any injury resulting from an electric shock which requires resuscitation

j Any injury resulting from an electric shock which requires hospital admittance for more than 24 hours.

k Any other injury that results in unconsciousness or the casualty needing resuscitation

l Any injury resulting in the casualty being admitted to hospital for more than 24 hours

The above injury conditions must be reported to EHS in writing within 24 hours of the accident on the Accident Notification Form (Form SCF-07a). The completed form must be submitted to EHS (faxed and / or e mailed) to 04 8813105 / ehs.construction@trakhees.ae . It remains the responsibility of the Contractor to ensure that this form is received by EHS. (See also Construction Safety Guidelines No. 02).

4.10.2 Over 3 Day Injuries

The main contractor must report all accidents where a worker is absent from work for more than 3 days, not including the day of the accident, on the Accident Notification Form (Form SCF-07a). The completed form must be completed and faxed to 04 8813105 or an alternative number provided by EHS on site, within 24 hours of the accident becoming reportable.

4.10.3 Reportable Diseases

The main contractor and /or medical practitioner must ensure that any occupational diseases as specified in Table 1 of EHS Regulations or infectious diseases are reported to EHS within 24 hours of the condition becoming medically diagnosed. The reportable occupational disease must be reported to EHS in writing and faxed to 04 8813105.

4.11 WELFARE

4.11.1 General Requirements

The main contractor is responsible for ensuring the welfare of all workers under his control. As a minimum the main contractor must ensure adequate welfare facilities as detailed in Dubai Municipality Code of Construction Safety Practice. The main contractor must make arrangements to ensure that the facilities provided are properly maintained and cleaned on at least a daily basis.

4.11.2 Drinking Water

The main contractor must ensure that there is an adequate supply of drinking water supplied close to the work site. During the summer months this supply of water must be chilled. During the period 15th June – 15th September the main contractor must also ensure that ISOTONIC solutions are provided to the workforce in order to prevent dehydration. The use of salt tablets is prohibited.

4.11.3 Site Accommodation & Cooking

The below activities are strictly prohibited at Construction sites:

- Any types of Site Accommodation
- Cooking of Food

4.12 PERMIT TO WORK PROCEDURES

4.12.1 General Requirements

The main contractor must ensure that a permit to work procedure is in place for high risk activities including but not limited to; hot works, excavations, work on electrical systems, diving, confined spaces and live fire alarm systems. (See also Construction Safety Guidelines No. 08)

4.12.2 Appointment of Competent Person

The main contractor must appoint a competent person as the permit to work coordinator who shall have the responsibility to oversee the permit to work procedure. The need for a permit will be identified in the risk assessment for the activity and all persons working under the control of the main contractor who will be affected by the permit to work procedure must be fully briefed on the arrangements.

4.12.3 Registers

The main contractor will ensure that a register is maintained for all permits to work which must be available for inspection. A permit is valid for the duration of a shift or until the work is complete, whichever is sooner. Upon completion of work or at the end of the shift the permit must be closed out and signed off by the supervisor in charge of the work.

4.12.4 Audit of Permit to Work Procedures

The main contractor will make arrangements to audit the permit to work procedure to ensure the level of control imposed by the permit is maintained.

4.13 ELECTRICAL SAFETY

4.13.1 General

This regulation covers the safety of temporary electrical installations on construction projects as well as the use of electrical tools and equipment. The main contractor is responsible for ensuring the safety of all temporary electrical installations and for ensuring the risks associated with using electrical tools and equipment are kept as low as possible. (See also Construction Safety Guidelines No. 14)

4.13.2 Competency of Electricians

All persons employed as electricians must be competent and be in possession of a recognized electrical qualification. The main contractor must ensure that any persons working on electrical installations including temporary electrics are competent.

4.13.3 Testing of Temporary Electrical Installations

The main contractor is to ensure that all temporary electrical installations are tested by a competent electrician and that a certificate is issued for each distribution board. A copy of the certificate shall be held in a plastic wallet and fixed to the distribution board so that it is easily available for inspection. All temporary electrical installations must be earthed and the resistance of the earthing must be checked to ensure it meets the level required under electrical safety guidelines from the generator manufacturer or DEWA in the case of mains supply. In the absence of any guidance from the generator manufacturer the earth rod shall be driven to a depth so that it penetrates the summer water table by 2 metres and the resistance of any point in the earth continuity system does not exceed 0.5 ohms.

4.13.4 Use of Reduced Voltage Electrical Tools and Equipment

The main contractor shall provide all electrical hand tools operating at 110v or 230 V as appropriate. A suitable step down transformer for 110V electrical hand tools shall be used wherever applicable. All 110v leads connected to the transformer and run across site are to be Yellow in colour. In case where 230v or greater voltage are used, a Residual Current Device (RCD) must be fitted with a 30mA trip.

4.13.5 Security of Electrical Installations

The main contractor must ensure that all electrical installations are secured. Distribution boards must be locked shut and under no circumstances shall live conductors be exposed where workers could accidentally come into contact with them. Clear warning signage must be displayed on all electrical installations and only competent electricians are to have access to distribution boards.

4.13.6 Protection of Electrical Cable

The main contractor must ensure that all electrical cables running from a generator to the distribution board are mechanically protected. The preferred method will be the use of steel wire armored (SWA) cable to ensure that the risk of electric shock from cable damage is greatly reduced. All connections in cables are to be made by a competent electrician and with proprietary connectors under no circumstances are joints to be made using solely electrical tape.

4.13.7 Electrical Connections

The main contractor is to ensure that all electrical connections are made using plugs and sockets that meet the requirements of BS4343. These connections should be either the waterproof or splash

proof design under no circumstances are domestic 2 or 3 pin plugs or sockets to be used. It is strictly prohibited for bare electrical cable ends to be pushed into electrical sockets in order to make a circuit.

4.14 WORK IN EXCAVATIONS

4.14.1 General Requirements

The main contractor will undertake a risk assessment for all excavation work where the depth of the excavation exceeds 1.2 metres. A trained and suitably experienced person must advise on the measures to be taken to ensure work in the excavation can be carried out safely. The preferred method to prevent the collapse of the excavation sides is battering or stepping the edges to an angle that is safe for the ground conditions. On deep excavations – greater than 2.0 metres – an engineer must advise on the necessary angle of repose for excavations with battered sides. Where it is not possible to batter or step the sides of the excavation physical supports should be provided in accordance with an engineers requirements. (See also Construction Safety Guidelines No. 09)

4.14.2 Inspection of Excavations

The main contractor is to ensure that a suitably trained and experienced person regularly (at least once per shift) inspects the sides of excavations to ensure the safety of the workers. Where temporary supports are installed in an excavation these must be inspected daily by a competent person and a record of a thorough inspection must be made each week in an excavation register. The inspection must be carried out before workers are allowed to work in the excavation. Where there is concern over the result of an inspection work must not be allowed to start in the excavation until the excavation is made safe. All excavations shall be inspected subsequent to any rains and subsequent to the ingress of water from other sources. Where the water entering the excavation appears to be ground water, work shall cease immediately until the excavation is danger free.

4.14.3 Access to the Excavation

The main contractor must ensure that there is safe access provided to the excavation. This will normally be in the form of ladder access and the ladder must be secured or fixed in some way to prevent it from being displaced. Under no circumstances are any workers to be allowed to climb on excavation support work or try to climb down the steep sides of the excavation.

4.14.4 Prevention of fall into Excavations

The main contractor must ensure that the work around the top of the excavation can be carried out safely. Guardrails and toe boards must be fitted in accordance with the Dubai Municipality Code of Construction Safety Practice. Adequate steps must be taken to ensure that materials or objects are

prevented from falling into the excavation. These steps could include but not be limited to providing debris netting or plastic sheeting around the top of the excavation fitted to the guardrails.

4.14.5 Vehicle Safety

Where possible the main contractor is to organize his work to ensure that vehicles and traffic are prevented from coming close to excavations. Where vehicles have to come close to open excavations for example when taking spoil away there must be baulk timbering provided to prevent the vehicle overrunning into the excavation. A trained and experienced person must advise the main contractor on the distance that vehicles can come to the edge of the excavation without compromising the safety of the excavation or those working in the excavation.

4.14.6 Dangerous Atmospheres

The main contractor must ensure the safety of those in excavations and as part of the risk assessment process must take into account the risks associated with dangerous atmospheres. Where there is a risk of a dangerous atmosphere the main contractor must identify appropriate control measures in the risk assessment and ensure the necessary action is taken. The types of dangerous atmospheres that must be considered include but are not limited to the following:

1. Oxygen Deficiency
2. Oxygen enrichment
3. Presence of harmful gases such as Hydrogen Sulfide or Carbon Monoxide from vehicles.
4. Flammable/explosive atmospheres resulting from a process/activity carried out in the excavation.

Where there is a risk of a dangerous atmosphere the main contractor must take all necessary steps to ensure the safety of the workers engaged in the excavation. The main contractor must ensure that the findings of the risk assessment and information on the control measures are passed to the workers. Where there is a specific training requirement as in the example of escape set breathing apparatus the main contractor must make arrangements for this training to be provided to the workers.

4.15 SAFETY ADVISORS / OFFICERS

4.15.1 General Requirements

Every main contractor must ensure that an adequate number of Safety Advisors/Officers are employed and resident on site. As a minimum 1 resident safety advisor must be employed when the main contractor or his subcontractors have 150 workers under his control. Further resident safety advisors must be employed for every 350 workers under the control of the main contractor thereafter. The main contractor must also make arrangements to ensure that an adequate number of resident

safety advisors are available to cover the night shift.

4.15.2 Registration of Safety Advisors

All safety advisors employed by the main contractor and consultant must be registered with EHS and approved. As a part of this registration process all safety advisors will be required to attend a safety advisors training course that will be run by EHS. At the end of the training a written examination must be successfully completed in order for the safety advisor to be approved. Once approved the safety advisor will be issued with a registration card that will be valid for a period of 2 years after which time the safety advisor must attend a refresher course in order to renew his registration with EHS.

4.15.3 Roles and Responsibilities of the Safety Advisors

The safety advisor is not responsible for the management of safety on the project, this responsibility rests with the main contractor's Project Manager. The safety advisor will have the following responsibilities:

1. Provide advice to the main contractor on health, safety and environmental issues.
2. Monitor statutory compliance by carrying out regular inspections and auditing the main contractor's works.
3. Undertake at least a weekly inspection and prepare a quantitative report for submittal to the main contractor's Project Manager.
4. Report immediately to the main contractor's senior management any serious safety breaches that place workers in life threatening situations.
5. Assist the main contractor in undertaking risk assessments and identifying safe systems of work to be recorded in safe work method statements.
6. Develop and deliver in house training courses on health, safety and environmental topics.
7. Assist supervisors in delivering toolbox talks to the workers on the control measures identified in risk assessments and the safe system of work to be adhered to.
8. Develop and deliver the worker induction ensuring that all workers receive an induction prior to starting work.
9. Develop procedures for high risk activities and brief management on their responsibilities under these procedures. Audit against these procedures regularly and report any non compliances to the Project Manager.
10. Ensure that the main contractor has an accident investigation reporting procedure in line with EHS requirements.

11. Undertake the lead role in all accident investigations and ensure that a written investigation report is provided to EHS for all reportable accidents.
12. Audit the registers which should be maintained by the Plant Manager for lifting equipment and lifting accessories.
13. Advise on the requirements for site welfare and carry out regular inspections of the facilities, reporting any concerns to the main contractor's Project Manager.
14. Conduct himself professionally at all times and ensure that the advice he gives his employer is to the best of his ability.

4.16 CONFINED SPACES

4.16.1 General Requirements

A confined space is to be defined as *"any place , including any chamber, tank, vat, silo, pit, trench, pipe, sewer, and flue, well or other similar space in which by virtue of its enclosed nature, there arises a reasonably foreseeable specified risk. These specified risks are the presence of any of the following conditions or a risk of any of these conditions arising:- oxygen enrichment, oxygen deficiency, presence of a toxic gas, fume or vapour, ingress of liquid, solid materials that can flow and excessive heat."* The main contractor must take all necessary precautions to ensure the safety of any worker employed in confined space working. (See also Construction Safety Guidelines No. 16).

4.16.2 Risk Assessment

The main contractor must undertake a full and detailed risk assessment prior to any work commencing in a confined space. As part of this risk assessment the emergency procedures must be identified and recorded in an emergency plan. The emergency plan must provide details on the procedure to be followed in the event of an emergency situation arising and the rescue arrangements. The main contractor's safety advisor must assist in the preparation of both the risk assessment and the emergency plan. The main contractor will make arrangements to ensure that all those working in a confined space are trained in confined space working and have the risk assessment information briefed to them prior to starting work.

4.16.3 Arrangements for Confined Space Working

The main contractor will make arrangements for working in a confined space including but not limited to:

1. Establishing a confined space permit to work procedure that allows work to be carried out in the confined space without risk to the heath and safety of workers.

2. Providing adequate trained supervision involved with supervising confined space working. Those supervising confined space working must have received confined space working training themselves.
3. Ensuring that there is an agreed means of communication between those in the confined space and those working as the lookout outside the confined space. This communication may need to be via two way radio if normal conversation is not possible between both parties.
4. Establishing testing of the atmosphere prior to entry where identified in the risk assessment and ongoing monitoring of the atmosphere whilst work in the confined space is being carried out.
5. Ensuring good ventilation in the confined space to prevent stale air and ensure the air quality remains breathable.
6. Removing any residues that may be present in the confined space which may give rise to risk or increase the risk to those working in the confined space.
7. Isolating the confined space from any gasses, liquids or other flowing materials that may enter the confined space. This isolation should be in the form of a lock-off and isolation permit in order to prevent any accidental flow into the confined space.
8. Ensuring that safe access and egress are provided into and out of the confined space. Where multiple access is required to a confined space a tally must be kept of the names of the workers in the confined space for emergency purposes.
9. Ensuring that where there is excessive temperature in the confined space the working shift is reduced and frequent breaks are provided. Arrangements must also be made to ensure that workers do not become dehydrated whilst working in excessive temperatures.
10. Establishing an emergency procedure to deal with the rescue or recovery of any workers who become injured or endangered in the confined space.

The main contractor must ensure that the permit to work procedures and working arrangements are regularly checked and audited to identify any non compliance from the agreed procedure.

4.17 WORK ON OR OVER WATER

4.17.1 General Requirements

The main contractor must ensure that where there is a risk of personnel falling into water and a possibility of drowning a full and detailed risk assessment must be prepared. It is prohibited for the main contractor to rely solely on the fact that workers can swim when identifying the necessary level of control.

4.17.2 Prevention of fall into Water

The main contractor is to take all measures reasonably practicable to prevent falls into water. Where

there is still a risk that workers could fall into water the following procedures must be followed:

1. A rescue boat should be provided where there is a risk of workers being swept away by the tide or where rescue from the shore is not possible.
2. All off shore workers are to be trained in off shore procedures and emergency arrangements.
3. Where life rings are provided they must be provided with a 30 metre life line and at a distance of no more than 60 metres apart.
4. For night time working workers must be provided with chemical light sticks and the rescue boat must be fitted with high powered search lights.
5. All workers are to be provided with a life jacket equipped with a whistle and emergency light.
6. Strictly no lone working at any time.

The main contractor must provide training to all workers who are involved in work on or over water. This training must cover the safe system of work identified in the risk assessment and method statement as well as the emergency procedure. Emergency drills must be carried out on a regular basis to test the effectiveness of the procedure.

4.18 FIRST AID REQUIREMENTS

4.18.1 General Requirements

4.18.2 The Main Contractor shall ensure the availability of one certified first aider prior to the commencement of the works for prompt medical attention in case of serious injury.

All First Aiders and Male Nurses shall be fully qualified for their respective position and copies all certification and qualifications shall be maintained at the site office at all times for EHS Dept personnel inspection.

First Aid provisions are dependant on the number of personnel working on the Project. Reference should be made to the Dubai Municipality Code of Construction Safety Practice which details the First Aid facility requirements depending on the number of personnel on the project. (See also Construction Safety Guidelines No. 03)

4.19 USE OF HAZARDOUS SUBSTANCES

4.19.1 Definition of Hazardous Substance

A hazardous substance is any substance in solid, liquid, vapour, aerosol, gas or particulate form that has the potential to cause harm or ill health. For a list of hazardous substances the main contractor should refer to Table 2 & 2a of EHS Regulations in this regulation. Further information on specific hazardous substances can be obtained from the Manufacturers Safety Data Sheet (MSDS).

4.19.2 General Requirements

The main contractor is to ensure that where a hazardous substance is assigned a Maximum Exposure Limit (MEL) the MEL must not be exceeded under any circumstances. Where a hazardous substance is assigned an MEL the main contractor must set up procedures for monitoring exposure to the hazardous substance.

4.19.3 Assessment of Risk

The main contractor must under take a risk assessment for the use of all hazardous substances. Where alternative less hazardous substances are available which serve the same purpose the main contractor must give consideration to these substances. If these less hazardous substances are not used the main contractor must make justification to EHS as to why these alternatives are not used. The following is a guide to the risk assessment process for hazardous substances.

Step 1. The main contractor must asses the risk to health from hazardous substances used in or created by his undertaking. The manufacturers safety data sheet (MSDS) should be used as a guide for preparing the risk assessment for a particular hazardous substance.

Step 2. The main contractor must decide what precautions are needed, he must not carry out work which could expose his workers to hazardous substances without first considering the risks and the necessary precautions.

Step 3. As a priority the main contractor should consider measures that prevent exposure to hazardous substances. Where preventing exposure is not reasonably practicable he must adequately control exposure to hazardous substances. Personal protective equipment is always to be considered as a last resort when controlling exposure.

Step 4. The main contractor must ensure that where engineering control measures are used to prevent or reduce exposure they must be properly maintained. Procedures must be developed for the use and maintenance of engineering control measures. Where maintenance is required a preventative maintenance program must be developed.

Step 5. The main contractor must ensure that exposure to hazardous substances is monitored where required.

Step 6. Where a substance is assigned an MEL the main contractor must ensure that appropriate health surveillance is provided, where necessary, to those who may become exposed to a hazardous substance.

Step 7. The main contractor must ensure that plans and procedures to deal with accidents, incidents and emergencies are prepared where necessary.

Step 8. Every main contractor must ensure that workers are properly informed, trained and supervised. He should provide his employees with suitable and sufficient information, instruction and training.

All risk assessments for hazardous substances must be signed and dated by the person undertaking the assessment.

4.20 ILLUMINATION

4.20.1 General Access Lighting Requirements

The main contractor is to ensure that where work is carried out in the absence of natural light, including during the hours of darkness, illumination levels provided allow for the safe access of workers. This must take into account any illumination that is required for the safe use of vehicles and pedestrian crossing points. Any artificial lighting that is provided must be properly maintained and in the case of fire escape routes, must have battery backup where power failure would result in illumination levels being below those required in these regulations.

4.20.2 Task Lighting

The main contractor must ensure that sufficient task lighting is provided where the minimum illumination levels cannot be achieved with natural lighting. Where artificial lighting is provided for task specific purposes the main contractor must ensure that any shadows cast do not effect the workers ability to carry out the work safely.

4.20.3 Working at Height

Where work at height is carried out the main contractor must ensure as far as practicable that lighting levels allow for the work to be carried out safely. Where artificial lighting is provided special care must be taken to ensure that shadows are not cast in any area where there is a risk of falling.

4.20.4 Minimum Illumination Levels

The main contractor is to ensure that the minimum illumination levels detailed in Table 5 of EHS Regulations of these regulations and standards are achieved at all times.

4.21 CRANES AND LIFTING OPERATIONS

4.21.1 General Requirements

The main contractor is to ensure that all lifting operations are carried out in a planned and safe

manner. All lifting equipment must be tested in accordance with the Dubai Municipality Code of Construction Safety Practice, where any lifting equipment is used for lifting persons the test frequency must be 6 monthly. Risk assessments must be undertaken for all operations where mechanical lifting is carried out, this includes but is not limited to lifting carried out by cranes, excavators, forklifts and hoists. The risk assessment must identify how lifting is to be carried out safely and must be communicated to all those involved in supervising and carrying out the lifting operation. (See also EHS Lifting Equipment Protocol and Construction Safety Guidelines No. 19 & 20).

4.21.2 Lifting Plans

In the case of tower cranes, crawler cranes and mobile cranes a lifting plan must be prepared by the main contractor. The lifting plan must include the following information:

1. Details of the person in overall charge of all lifting operations (the *Appointed Person*), including relevant experience of this person in planning lifting operations.
2. A list of responsibilities of those involved in lifting operations including, person in overall control, crane operator and signaler / slinger.
3. An overview procedure detailing how lifting operations will be planned, supervised, monitored and reviewed.
4. Details of the crane(s) capacities at various radius.
5. Copies and a register of all crane operator competency certificates issued by an EHS approved third party.
6. Copies and a register of all signaler / slinger competency certificates issued by an EHS approved third party.
7. Copies of all test certificates for the cranes to be used issued by an EHS approved third party engineer.
8. A schedule of common lifts to be undertaken by the crane detailing what is to be lifted, weight of load and how.
9. A written procedure detailing how special lifts will be planned to ensure they can be carried out safely. A special lift is any lift not detailed in the schedule of common lifts.
10. A written procedure detailing the planned maintenance requirements of each type of crane and the inspections and checks that must be carried out.
11. Copies of all risk assessments undertaken for crane lifting operations.

4.21.3 Competency of Personnel

The main contractor is to ensure that all those involved in lifting operation are competent to carry out their work safely. The Appointed Person shall possess the necessary knowledge and experience to

ensure that all lifts are planned and can be executed safely. All crane operators and signaler / slingers are to be trained and certified by a third party approved by EHS. All signaler / slingers must be easily identifiable and the working “Crane Banksman” or “Signaler/Slinger” must be printed on their coveralls.

4.21.4 In Service Inspection of Cranes

All cranes are subject to a weekly inspection by a competent person. The main contractor is to ensure that inspections are carried out and recorded for each crane in use on the project. The inspection should take into account the items recommended by the crane manufacturer and include lubrication as recommended by the manufacturer.

4.21.5 High Winds

The main contractor is to ensure that an anemometer is fitted to the highest crane on their project and is kept in good working condition. The main contractor must ensure that wind speeds are monitored and that cranes are stopped when the wind speed exceeds the maximum speed stated in the manufacturers operating manual. The main contractor will also ensure that where loads with a large surface area are lifted wind condition are assessed and the lift is stopped if the load cannot be controlled. External works and crane operations shall be completely stopped when the wind speed is 38 km/h (20.5 knots) or more.

4.21.6 Climbing Frames

The main contractor will ensure that where a climbing frame is used on a tower crane the frame must be tested and certified by a competent third party engineer in accordance with the crane manufacturer’s manual. Following use the climbing frame will be lowered in accordance with the crane manufacturer’s manual.

4.21.7 Communication

The main contractor will ensure that there is an effective means of communication in place between every crane operators and signaler / slinger. Where there is no clear line of sight between the crane operator and the signaler / slinger radio communication must be used. In any case on all tower cranes erected over the height of 35 metres measured from the ground to the operators cab radio communication will be used.

4.21.8 Lifting Accessories

The main contractor will ensure as a minimum that all lifting accessories are thoroughly examined by a competent person every 6 months. All lifting accessories that have been thoroughly examined by a

competent person and deemed to be in a condition that is safe to use must be clearly identifiable. The main contractor is to operate a colour coded tagging system to identify lifting accessories that are safe to use and the colour shall be in use for the validity period of the thorough examination. The tag colour for the current period must be clearly displayed at the site and all signaler / slingers are to be briefed on the colour tagging arrangements. The main contractor is to ensure that arrangements are in place to maintain the colour tagging system. Under no circumstances are lifting accessories to be used that have not passed a thorough examination within the previous 6 months.

It is mandatory to ensure all portable, circulating and fixed lifting equipments are colour coded as per EHS Lifting Equipment Protocol, to give visual indication of its certification status.

4.21.9 Emergency Arrangements

The main contractor must ensure that subcontractors he may employ to erect and maintain tower cranes have procedures in place to deal with any emergency situation that may arise. This will include but not be limited to workers becoming suspended by their safety harness following a fall. These procedures must make provision for the rescue of workers and include a rescue buddy system such as the 'Gotcha Rescue Kit'.

4.21.10 Warning Lights

The main contractor must ensure that the tower cranes above 30 m height must be fitted with flashing lights. Cranes with boom length of 30 m or more must be fitted with warning lights and kept ON 24X7 & also while the crane is in operation. Building structures with height of 60 m or above must be fitted with flashing lights (both finished and under construction buildings). Flashing lights are for aviation purpose and must be kept ON 24 x 7.

4.22 MOBILE ELEVATED WORK PLATFORMS (MEWPs)

4.22.1 General Requirements

The main contractor must ensure that where MEWP's are used a risk assessment is undertaken to identify the specific health and safety requirements of the work. When using a MEWP the main contractor must ensure the following:

1. The operator is fully trained and competent.
2. The work platform is provided with guard rails and toe boards.
3. Outriggers are extended and chocked as necessary before raising the platform
4. All workers know what to do if the machine fails with the platform in the raised position.
5. An inspection of the MEWP must be carried out and recorded by the operator on a daily basis.

6. The MEWP must be suitable for the conditions it is required to be used in i.e. rough terrain
7. Harnesses must be worn by workers in the MEWP where identified as necessary in the risk assessment or if required by the manufacturer in the operating manual.

4.23 PERSONNEL PROTECTIVE EQUIPMENT (PPE)

4.23.1 General Requirements

The main contractor is to ensure all possible engineering controls are put in place to eliminate or significantly reduce the risk of injury arising from work activities and site hazards. In the hierarchy of control measures PPE is always to be used as a last resort and never relied on as the primary method of controlling the risk of injury. In the case of hard hats the main contractor will ensure that the requirements of either the British Standard or the American National Standards Institute are complied with. The minimum requirements for PPE on all projects where these regulations apply will be; Hard Hat, Safety Footwear and Hi-Vis vests or jackets. All PPE issued including equipment for fall arrest will comply with internationally recognized standards such as; American, Australian or European. (See also Construction Safety Guidelines No. 04)

4.23.2 Financial Cost

The main contractor will be responsible for all costs associated with supplying PPE to his workers. Under no circumstances is the main contractor allowed to make any charge financially or otherwise for PPE issued to his workers.

4.23.3 Training

The main contractor will ensure that all personnel under his control are trained in the fitting, use and maintenance of personal protective equipment. As part of the training, the main contractor will explain the nature of the risks that the PPE is designed to protect against. Regular reminders in the form of toolbox talks will be given to the workers to prevent them becoming complacent in the wearing of PPE.

4.24 SPECIAL TOOLS

4.24.1 Definitions

Special tools are tools which present an additional risk of injury during their use owing to the operating speed, power, torque or complicated nature of the tool. The following are classed as special tools:

1. Cartridge operated tools
2. Abrasive wheel machines – all types

3. Hand held and bench circular saws
4. Core drilling rigs
5. Compressed air driven tools

4.24.2 General Requirements

The main contractor must ensure that special tools are used only by those workers that have received specific training on the use of the tool. Where available this specific training is to be carried out by the tool manufacturer. The main contractor is to ensure that those trained in the use of special tools are clearly identifiable, for example with a hard hat sticker. Supervisors and foreman must also be trained in the use of special tools that may be used by workers under their control.

4.24.3 Guarding Requirements

The main contractor must ensure where a special tool is fitted with a guard, as in the case of abrasive wheel machines and circular saws, the guard must always be in place when the tool is used. An inspection and maintenance procedure must be developed by the main contractor to ensure the guarding requirements of this regulation are fully complied with.

4.25 LONE WORKING

4.25.1 Definition of Lone Working

For the purpose of these regulations lone working is defined as any situation where a worker is alone by virtue of the fact that supervision or other workers are not present. Lone working requirements will apply to all workers employed in construction activities and also any night watchman or security guard that is employed by the main contractor.

4.25.2 General Requirements

The main contractor is to undertake a risk assessment for any situation that may arise where workers may be working alone. The risk assessment must take into account arrangements that must be in place to safeguard the worker and deal with any situations that may arise including emergencies. The following work is prohibited for lone workers:

1. Work at height where safety harnesses are required.
2. Work on or over water where there is a risk of falling into the water.
3. Work in excavations deeper than 2.0 metres.

The risk assessment carried out by the main contractor may identify other work activities that are not to be carried out by lone workers.

4.25.3 Means of Summonsing for Help

The risk assessment carried out by the main contractor must identify the procedure to be employed in the case of the lone worker requiring assistance in the event of an accident or emergency situation. Typical planning will include but not be limited to the use of mobile telephones and regular reporting in calls. The main contractor will ensure a procedure is in place to deal with any situation that may arise where a lone workers does not report in.

4.25.4 Training

The main contractor will ensure that all persons involved in lone working, including those who the lone worker reports in to, are fully trained on the lone working procedure and the emergency arrangements to be employed. Regular refresher training must be provided and the main contractor must test the procedure for raising the alarm on a regularly.

4.26 GOOD ORDER

4.26.1 General Requirements

The main contractor must ensure that his site is kept in good order at all times. This includes ensuring that regular housekeeping is carried out to minimize the risk or trips and falls. All scrap wood from shuttering/formwork and temporary works will be de-nailed as soon as it is dismantled. All access routes must be properly maintained and illuminated in accordance with Regulation 19 and Dubai Municipality Code of Construction Safety Practice. Emergency escape routes must be clearly marked with appropriate signage and inspected regularly to ensure they remain clear at all times.

4.26.2 Fire Prevention Requirements

The main contractor will organize and manage his site at all times so as to prevent the risk of fire so far as reasonably practicable. Waste piles must not be allowed to accumulate so that they become a fire risk. All flammable materials and liquids will be stored in a suitable area that is outside the building and away from rest / office accommodation areas.

4.26.3 Segregation of Waste

The main contractor will ensure that different waste streams are segregated and removed from site by licensed contractors. As a minimum waste must be segregated into the following categories:

1. Hazardous waste which includes waste oil, paints, thinners, solvents, etc.
2. Construction waste which includes general arising from construction activities.

3. Food waste which will be kept in sealed containers and cleared on a daily basis.

Any lightweight waste such as packaging must be placed in containers or rubbish skips and covered to prevent the waste being blown around the construction site. The main contractor is strictly prohibited from burning any waste on site.

4.27 CONTROL OF CONTRACTORS

4.27.1 General Requirements

The main contractor is responsible for exercising management control over all subcontractors that he may employ. The main contractor must ensure the health and safety competency of all subcontractors at the pre-tender stage by carrying out a health and safety prequalification on prospective subcontractors. During the prequalification process the following should be determined by the main contractor:

1. Experience of the subcontractor carrying out similar work
2. Past health and safety performance including details of any penalties imposed by PCFC EHS or Dubai Municipality.
3. Details of serious accidents and any fatalities that may have occurred.
4. Action taken in the event of serious accidents or any fatalities to prevent recurrence.
5. The ability of the subcontractor to manage workers in accordance with health and safety requirements.
6. Details of health and safety training courses that manager/s have attended.
7. Professional qualifications of the subcontractor's health and safety department.

The main contractor must review all health and safety pre-qualifications received from prospective subcontractors and take health and safety performance into account when selecting the successful subcontractor.

4.27.2 Requirements on Subcontractors

Every subcontractor must ensure they work with the main contractor in following health and safety regulations and ensuring the safety of those workers that they employ.

4.28 SECURITY ARRANGEMENTS

4.28.1 General Requirements

The main contractor is to ensure that all reasonably practicable measures are taken to prevent unauthorized access to his work site. Where there is a risk of others entering the site, fencing and 24

hour security patrols must be provided. Particular attention is to be given to projects that are partly completed where units are occupied. In these situations the measures taken are to ensure that adequate provisions are made to prevent children entering the site.

4.28.2 Security Personnel

The main contractor will ensure that all security personnel are trained in their duties and provided with information on the action to take in the event of site emergencies. The main contractor is to ensure that security personnel have a means of communication to communicate emergencies and raise the alarm as necessary. Security personnel must receive fire safety training which must include practical training on the use of fire extinguishers.

4.29 CONTROL OF NOISE AT WORK

4.29.1 Action Levels

For the purpose of this regulation the main contractor will be aware of action levels that exist for the control of noise at work. The action levels are as follows:

1. First Action Level means a daily personal noise exposure of 85 dB(A) based on an 8 hour time weighted average period per day.
2. Second Action Level means a daily personal noise exposure of 90 dB(A) based on an 8 hour time weighted average per day.
3. Peak Action Level means a level of peak sound pressure of 200 pascals.

4.29.2 General Requirements

The main contractor will ensure that where his workers are exposed to the first action level or above or the peak action level or above a noise assessment is carried out by a trained and experienced person. The assessment must identify the workers at risk and the noise levels to which those workers are exposed to. The main contractor will ensure that the risk of damage to the hearing of his workers from exposure to noise is reduced to the lowest level reasonably practicable.

4.29.3 Reduction of Noise Exposure

The main contractor will ensure that where his workers are exposed to the second action level or above or the peak action level or above he must reduce exposure to noise of these workers so far as is reasonably practicable. Reduction of exposure is to be by any means other that the use of personal ear protectors.

4.29.4 Use of Personal Ear Protection

The main contractor is to rely on the use personal ear protection only after the measures taken in 4.29.3 have failed to reduce the workers exposure to noise to below the first action level or below the peak action level. Where a worker is exposed to noise in excess of the first action level but below the second action level the main contractor is to ensure that personal ear protection is provided at the request of the workers. Where a worker is exposed to noise levels in excess of the second action level or in excess of the peak action level the main contractor must provide personal ear protection to every worker and the wearing of the personal ear protection must be enforced.

4.29.5 Hearing Protection Zones

The main contractor is to ensure that any area or areas that form part of his work site, where workers may be exposed to noise levels in excess of the second action level or in excess of the peak action level, are clearly identified. The areas are to be marked as personal ear protection zones and the main contractor is to enforce the wearing of personal ear protection in these zones.

4.29.6 Training

The main contractor is to ensure that all workers that either request personal ear protection, or are required to wear personal ear protection as prescribed by these regulations, are provided with adequate information, instruction and training. This will cover the risks of exposure to high levels of noise as well as the fitting, use, maintenance and storage of the personal ear protection.

4.29.7 Health Surveillance

The main contractor is responsible for ensuring that health surveillance is carried out for any workers that are permanently exposed to noise levels in excess of the second action level or the peak action level. For the purpose of this regulation permanent exposure will be considered as exposure that forms the main part of the workers daily duties. Health surveillance will take the form of audiometric testing that will be carried out in the first month of the worker commencing work and then every 2 years.

4.30 PROHIBITION AND IMPROVEMENT NOTICES

4.30.1 General Requirements

As part of their role as an enforcement authority EHS will identify any activities where there are significant risks to the workers that have not been adequately controlled by the main contractor. In situations where it is reasonably foreseeable that a worker could become fatally injured EHS will serve a prohibition notice on the main contractor for a particular work activity or area, this will impose an immediate stop on the unsafe work. In situations that are less serious involving breaches of regulations where workers are not exposed to immediate danger, EHS will issue an Improvement notice and state a time period for the improvements to be made.

4.30.2 Compliance with a Prohibition or Improvement Notice

Where a main contractor has complied with the requirements of a prohibition notice he must inform EHS initially by telephone (in writing soon after) on the action that he has taken before allowing his workers to continue work. Where deemed appropriate by EHS they will inspect the area to check if the requirements of the notice have been fully complied with. The main contractor shall follow up the telephone call in writing detailing the action that has been taken to correct the unsafe condition and prevent it from recurring. In the case of improvement notices the main contractor is to record in writing to EHS the action he will be taking to comply with the notice.

4.30.3 Offences under This Regulation

Where any main contractor fails to comply with the requirements of a prohibition or improvement notice by allowing work to either continue or resume before the necessary action has been taken he will be subject to financial penalties as detailed in Regulation 31. In addition EHS reserve the right to remove the offending Project Manager permanently from the project at their discretion.

4.31 FINANCIAL PENALTIES

4.31.1 General Requirements

Financial Penalties will be imposed on main contractors for infringements of health and safety requirements in accordance with the following table:

Item	Description of Offence	Maximum Fine
1	Fatal accident as a consequence of management failures	AED200,000 (two hundred thousand)
2	Serious injury as a consequence of management failures	AED100,000 (one hundred thousand)
3	Failure to immediately report a fatal accident (this is in addition to item 1)	AED75,000 (seventy five thousand)
4	Failure to immediately report a serious injury or near miss incident / accident (this is in addition to item 2 and 5)	AED75,000 (seventy five thousand)
5	Serious near miss incidents as a result of management failures	AED50,000 (fifty thousand)
6	Failure to comply with the requirements of a prohibition notice issued by EHS	AED50,000 (fifty thousand)
7	Failure to meet the requirements of an improvement notice within the timeframe assigned by EHS	AED50,000 (fifty thousand)

8	Consistent failure to take action on safety infringements highlighted during EHS inspections	AED25,000 (twenty five thousand)
9	Failure to pass a Certificate of Conformity inspection requested by a main contractor	AED1,000 (one thousand)

All main contractors should note that past health and safety performance will be taken into account when financial penalties are imposed. Main contractors with a good track record in the management of health and safety may receive reduced financial penalties where appropriate. It should be noted that any main contractor failing to make payment of a financial penalty within the specified time will be subject to having COC and Building Completion Inspections suspended.

4.31.2 Use of Funds Generated from Financial Penalties

All Main Contractors are advised that excess financial penalties collected by EHS will be re-invested in the promotion of Environment, Health and Safety initiatives.

4.32 DESIGNER RESPONSIBILITIES

4.32.1 Introduction

All those involved with the design process of any structure must receive health and safety training from an agency approved by EHS. Training will include specific information about local health and safety legislation and provide designers with an understanding of risk control during the design process.

4.32.2 Control of Risk at the Design Stage

Every designer is required to give consideration to the hierarchy of control measures as follows:- elimination, reduction, information and communication. Designers must be aware of the risks associated with their designs and wherever possible eliminate these risks. The designer must consider not just the risks associated with the construction of the structure but also the risks associated with ongoing maintenance and eventually the demolition of the structure. Designers must ensure that once identified, details of any specific risks are passed to the project management team so that appropriate control measures can be put in place.

4.33 DEMOLITION OR DISMANTLING

4.33.1 General Requirements

The client must check the competency of the main contractor to carry out the demolition works prior to appointment. The criteria for competency would include but not limited to the experience, set up &

any previous history of accidents/mishaps during execution. The main contractor for demolition or dismantling works shall ensure that the demolition or dismantling work of a structure, or its part thereof, shall be planned and carried out in a manner that will prevent an accident or reduce the associated risks to a level which is reasonably practicable and acceptable. (non-Significant level) Prior to starting the demolition work, an engineering survey shall be carried out by a competent person, to check the condition of the structure frame, floors, and walls, and determine the possibility of an unplanned collapse of the structure or is part thereof. Any adjacent structure which is likely to be affected by the demolition and dismantling operation, shall also be checked. The process of carrying out demolition or dismantling operation and the arrangements made shall be documented & agreed by the executing agencies, before the work begins.

4.33.2 Method statement

A detailed method statement need to be prepared by the main contractor, where all the demolition requirements should be observed and every activity included in the demolition process should be detailed in the method statement. Responsibilities of every person involved in the activity to be detailed. All the health and safety requirements should be assessed and adequate planning for the arrangements need to be mentioned in the method statement. As a minimum method statement should contain the following elements:

01. Scope of method statement
02. Purpose of the method statement
03. Description of the plot
04. Resources for demolition (Men, material & equipment)
05. Fire precautions
06. Demolition procedure (Flow)
07. Responsibilities
08. Emergency requirements and procedure
09. Risk assessment

4.33.3 Risk Assessment

The main contractor must carry out a detailed risk assessment study for all activities that are planned to be carried out for demolition or dismantling work. The following hierarchy of control measures must be followed when carrying out the risk assessment:

1. List all the activities planned to be carried out.
2. Identify significant risk areas & corresponding control measures based on substitution, training, engineering controls & finally use of PPE.

The main contractor shall ensure that all personnel working for demolition or dismantling work are made aware of the associated risks & the method statement for the work and that they are fully aware of the specified control measures that are put in place, before the start of work. EHS guideline number 30 should be followed while making the risk assessment.

4.33.4 Training Requirements

The main contractor shall ensure that all those working for demolition and dismantling works are competent to perform the task and aware about the risks involved. Trainings shall include but will not be limited to, pre job briefings, tool box talk, correct use of personal protective equipments as well as third party training for operators, signal-man's (Rigger) to use heavy lifting equipments, machinery and cranes. The main contractor shall provide a training program for each worker who might be exposed to fall hazards. The program shall enable each worker to recognize the hazards of falling and shall train each worker in the procedures to be followed in order to minimize these hazards. The main contractor shall prepare a written certification record. The written certification record shall contain the name or other identity of the employee trained, the date(s) of the training, and the signature of the person who conducted the training or the signature of the employer. If the employer relies on training conducted by another employer or completed prior to the effective date of this section, the certification record shall indicate the date the employer determined the prior training was adequate rather than the date of actual training. If the training was conducted by a third party (Trakhees approved), necessary certificates shall be obtained and kept in record.

4.33.5 Survey

Prior to start demolition operations, an engineering survey shall be made, by a competent person (Approved Engineer), of the structure to determine the condition of the structure, girder beams, floors, and walls, and possibility of unplanned collapse of any portion of the structure. Any adjacent structure where employees may be exposed shall also be similarly checked. The main contractor shall have in written evidence that such a survey has been performed.

4.33.6 It shall also be determined if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property. When the presence of any such substances is apparent or suspected, testing and purging shall be performed and the hazard eliminated before demolition is started

4.33.7 Demolition of damaged structure

When workers are required to work within a structure to be demolished which has been damaged by fire, flood, explosion, or other cause, the walls or floor shall be shored or braced from bottom or from sideways. All the open edges are to be protected with rigid hand rails. No worker is allowed to work

on open edges without necessary safety precautions. Effective engineering controls need to be in place before starting the activity.

4.33.8 Access and egress

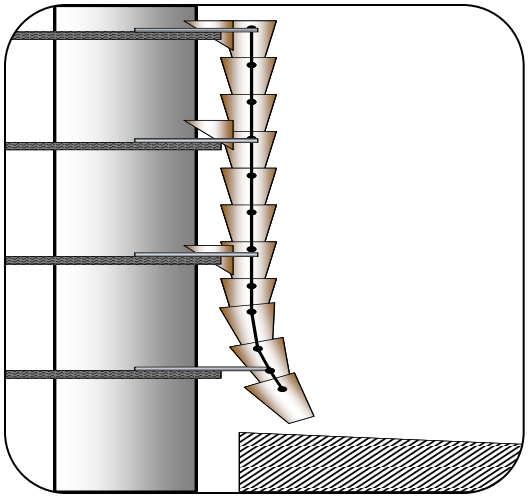
Workers entrances to demolishing area shall be completely protected by sidewalk sheds or canopies, or both, providing protection from the face of the building for a minimum of 2.4 meter. All such canopies shall be at least 50 centimeter wider than the building entrances or openings (30 centimeter wider on each side thereof), and shall be capable of sustaining a load of 70 kilograms per square foot.

If a stairwell is being used to access the higher floors, it shall be properly illuminated by either natural or artificial means, and completely and substantially covered over at a point not less than two floors below the floor on which work is being performed, and access to the floor where the work is in progress shall be through a properly lighted, protected, and separate passageway.

4.33.9 Mechanical equipment shall not be used on floors or working surfaces unless such floors or surfaces are of sufficient having strength to support the imposed load.

4.33.10 No material shall be dropped to any point lying outside the exterior walls of the structure. Chutes shall be designed and constructed of such strength as to eliminate failure due to impact of materials or debris loaded therein.

All materials chutes or sections thereof, at an angle of more than 45 deg. from the horizontal, shall be entirely enclosed, except for openings equipped with closures at or about floor level for the insertion of materials. The openings shall not exceed 48 inches in height measured along the wall of the chute. At all stories below t he top floor, such openings shall be kept closed when not in use.



Any chute opening, into which workmen dump debris, shall be protected by a substantial guardrail approximately 42 inches above the floor or other surface on which the men stand to dump the

material. Any space between the chute and the edge of openings in the floors through which it passes shall be solidly covered over

4.33.11 Any openings cut in a floor for the disposal of materials shall be no larger in size than 25 percent of the aggregate of the total floor area, unless the lateral supports of the removed flooring remain in place. Floors weakened or otherwise made unsafe by demolition operations shall be shored to carry safely the intended imposed load from demolition operations.

4.33.12 Where the material is dumped from mechanical equipment or wheelbarrows, a securely attached toe board or bumper, not less than 4 inches thick and 6 inches high, shall be provided at each chute opening. Dumping area shall be secured from all possible variations of human fall into the chute.

4.33.13 Any structural member being dismembered shall not be overstressed

4.33.14 Inspections

The main contractor shall ensure that all equipments to be used for the demolition and dismantling works are inspected by EHS approved 3rd party. Inspections are to be carried out in accordance with manufacturer's instructions and after their use in adverse weather conditions.

4.33.15 Weather Conditions

The main contractor shall ensure that demolition activities are stopped during adverse weather conditions that may endanger the health and safety of those executing the job.

4.33.16 Housekeeping

The main contractor shall ensure that, all materials are stored properly and no debris is allowed to accumulate in areas where demolition and dismantling work is carried out. The main contractor must make arrangements for regular disposal of waste to facilitate the removal of debris from site.

4.33.17 Fall from height

The main contractor shall ensure that all precautions are taken to prevent workmen falling from height. Adequate barricading, as well as PPE with proper arrangements for anchoring must be provided. Guardrail systems shall be capable of withstanding, without failure, without movement a force of at least 91 kilograms (890 N) applied within 2 inches (5.1 cm) of the top edge, in any outward or downward direction, at any point along the top edge.

4.33.18 Falling objects

The main contractor shall ensure that all precautions are taken to prevent objects from falling from height and adequate over head protection provided to prevent any person from being struck by falling objects or debris. These steps shall include but not limited to, providing debris fans or brick guards/nets. Two tier working must be prohibited. Care shall be taken to prevent premature or uncontrolled collapse of the structures. All the perimeter area of the structure under demolition should be secured from human entry and such perimeter area should be calculated in 3:2 meter ration, i.e. if structure height is 3 meter the protected perimeter area will be 2 meter from the structure. If the setback area contain a different structure, necessary precautions need to taken to protect the structure being hit by the falling objects. If the setback area reached a different plot (Vacant) then necessary NOC should be obtained from the owner of the plot and submitted to Trakhees. If the neighboring plot (Extended setback area) contains a building (operational or not operational) a detailed study need to be conducted to change the method of demolition so that no any material will fall into the neighboring area.

4.33.19 Risk from associated services

The main contractor shall ensure that all existing associated/connected services, e.g. gas, water, electricity telecommunication etc., are isolated or disconnected before demotion works begins. Relevant NOC / clearance shall be obtained from concerned authorities prior to start of demolition and dismantling works. Main contractor shall ensure that all the drawings related to the associated services are available in the site. Main contractor should take the setback area limits while obtaining relevant NOC's from the concerned authorities. An emergency procedure should be prepared in response to the NOC's received from each authority (Utilities and services)

4.33.20 Noise, Vibration and Dust

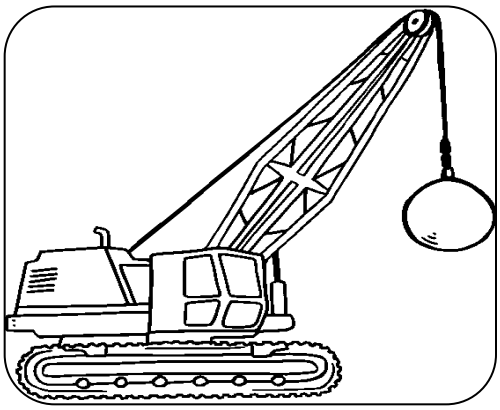
The main contractor shall assess and limit the worker's exposure to noise, vibration and dust. They shall also ensure that noise and vibration levels are within the prescribed limits and that there is no disturbance to others in the vicinity. During demolition and dismantling work, generation of dust shall be minimized and suitable control measures shall be put in place. Main contractor should ensure the availability of sound level meter in the demolition site for continuous monitoring.

4.33.21 Emergency Arrangements

The main contractor shall ensure that an emergency response procedure is developed and implemented to deal with emergencies that may arise while carrying out the demolition activities. This will include, but not be limited to, dealing with the person falling from height, getting injured by falling objects or by injury related to construction vehicles. The main contractor should carry out rescue drills frequently to test the effectiveness of the emergency procedure.

4.33.22 Machinery and Equipments

The machinery used, like wrecking ball demolition/crawler crane/pneumatic tools/jack hammers etc.,



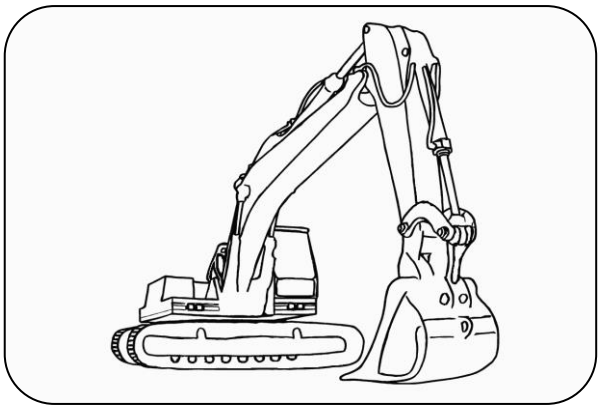
shall be tested and certified by, “Trakhees” approved third party certifying agencies and all operators must be trained in the safe use and handling of these machines.

4.33.23 Mechanical demolition

No workers shall be permitted in any area, which can be adversely affected by demolition operations, when balling or clamming is being performed. Only those workers necessary for the performance of the operations shall be permitted in this area at any other time

The weight of the demolition ball shall not exceed 50 percent of the crane's rated load, based on the length of the boom and the maximum angle of operation at which the demolition ball will be used, or it shall not exceed 25 percent of the nominal breaking strength of the line by which it is suspended, whichever results in a lesser value.

The crane boom and load line shall be as short as possible. The ball shall be attached to the load line with a swivel-type connection to prevent twisting of the load line, and shall be attached by positive means in such manner that the weight cannot become accidentally disconnected. When pulling over walls or portions thereof, all steel members affected shall have been previously cut free. All roof cornices or other such ornamental stonework shall be removed prior to pulling walls over.



During demolition, continuing inspections by a competent person shall be made as the work progresses to detect hazards resulting from weakened or deteriorated floors, or walls, or loosened material. No employee shall be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means.

4.33.24 Demolition using explosives

It is not allowed to use explosives to demolish the structure, unless approved by the authority

4.33.25 EHS COC procedure for Demolition and Dismantling activities

Prior to commencing of any demolition and dismantling activities “COC” for Demolition must be obtained from Trakhees

4.33.26 Extended requirements

Apart from this regulation all other detailed standards and guidelines will form major part of this regulation.