حكومة رأس الخيمة
Government of Ras Al Khaimah

rakez
RAS AL KHAIMAH
ECONOMIC ZONE

RAKEZ HS&E CONSTRUCTION REGULATIONS

FIRST EDITION - 2023

Foreword

The health, safety, and environmental (HS&E) rules and regulations provide broad standards for all stakeholders and business activities operating within the jurisdictions of the Ras Al Khaimah Economic Zone. The purpose is to ensure a high level of health and safety for people and property, equipment, and the working environment against risks and hazards associated with the operations as per the employer's licensed activities.

These regulations are effective from the date of issuance of the current edition and have the force of law, and all stakeholders are obliged to comply with them strictly. This document shall be read in conjunction with other RAKEZ regulatory documents and other applicable local and federal HS&E requirements, laws, standards, regulations, and guidelines.

The employer is also responsible under UAE federal and local laws for the protection and safety of their employees in regard to all risks/hazards and related injuries, disease, fire, etc., that exist at work. The employer shall take the appropriate precautions and control measures to the satisfaction of RAKEZ.

All stakeholders shall adopt and operate clean, modern technologies, ensure efficient use of energy and materials, minimise waste generation by implementing recycle, reuse, and recovery (RRR) options, and ensure the safe and responsible disposal of any residual waste. An effective balance shall be achieved between the industry and the environment to provide the necessary protection measures in the workplace and ensure industrial growth and sustainable development.

The Construction HS&E rules and regulations are available through RAKEZ's official website: https://www.rakez.com.

The regulations are periodically reviewed, updated, and made available to stakeholders as part of the RAKEZ HS&E Department's responsibility. The stakeholder shall familiarise themselves with this document to ensure compliance with RAKEZ HS&E Rules and Regulations.

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1. Scope

A. The provisions of these regulations define minimum HS&E requirements for construction safety under RAKEZ's jurisdiction. The standards reflect the necessity for the protection of life and property while accounting for the hazards involved with building activities.
B. These provisions apply to the construction, alteration, demolition, extension, and fit-out operations under RAKEZ's jurisdiction. All requirements included in these regulations shall be complied with in full, and those included in appendices to these regulations shall be met with regard to the primary topic for which they serve as requirements. These restrictions are based on functional needs and include precise dimensional and technical specifications, as stipulated by applicable municipal and federal legislation.
C. These regulations include a list of violations for which appropriate monetary penalties will be imposed. In the event of a breach of these regulations, neither lack of possession nor ignorance of these regulations shall be recognized as mitigating circumstances.
D. All regulations are required, based on functional requirements, and do not include exact dimensions and technical specifications
E. The RAKEZ HS&E Department shall be responsible for enforcing these regulations. The RAKEZ HS&E Department is authorized to inspect all sites to ensure compliance with the provisions of these laws, including but not limited to procedures, RAKEZ TSS approvals, and applicable UAE Government statutes and regulations. In the event that poor conditions are found during these inspections, the RAKEZ HS&E Department will take the appropriate measures to ensure a safe, healthy, and clean environment.
F. The stakeholder shall adhere to specific standards and suggestions [that may not be addressed by these regulations/adopted references] that the RAKEZ HS&E Department proposes on a case-by-case basis.
G. Nothing in these regulations shall be construed as relieving the employer and/or employees of any organization of responsibility for the safety of the operations/activity of the licence(s) given by RAKEZ.
H. RAKEZ retains the right, with or without previous notice, to update, change, amend, or eliminate any or all of the provisions contained in these regulations at any time.
I. The parties involved are expected to ensure their land and buildings against fire, explosion, and risk.
J. Stakeholders are required to obtain the RAKEZ HS&E Department's express interpretation of the terms of any provision of these regulations where the situation and context so require.
K. If any of the provisions of this document contradict superseding rules or with regulations and codes of larger scope, the applicable codes, standards, and publications shall govern.
L. These regulations shall be read in conjunction with other RAKEZ legislation and standards.

2. Roles and Responsibilities

2.1. Project Manager

PMs are ultimately responsible for the safety of their project. They shall ensure that suitable safeguards are in place to protect the HS&E aspects of the project and the well-being of all individuals under their supervision. They will carry out the following:

A. Plan and participate in project safety and health leadership tours.
B. Participate in and contribute to contractor safety meetings.
C. Ensure that design consultants, consultants, and contractors coordinate their efforts.

D. Ensure that visual standards and knowledge sharing are developed and disseminated.
E. Ensure that the contractor has procedures for collecting employees' feedback and incorporating it into new improvement processes or practices.
F. Ensure that all accidents and incidents are investigated and reported in line with the accident and incident reporting procedure.

2.2. Competent Authority

The Competent authority responsibilities include, but are not limited to, the following:

A. Enforce and implement these rules and regulations to preserve employee health and safety at all sites/locations and the working environment in RAKEZ jurisdictional areas.
B. Issue/amend regulations, guidelines, and codes of practice for the safe conduct of work, if required.
C. Inspect all workplaces, collect samples or photographs, and offer directives/instructions to verify HS&E compliance.
D. Issue Warning/Improvement/Prohibition Notices and/or fines as appropriate.
E. Develop, implement, and/or suggest HS&E-related education/training/awareness programs.
F. Liaise with relevant government authorities to facilitate compliance with local regulations.

2.3. HS&E Representative

The HS&E Representative's responsibilities include, but are not limited to, the following:

A. Advise on HS&E matters and oversee legal compliance by conducting routine inspections and audits of works.
B. Ensure a minimum of one weekly inspection and give a quantitative report to the project manager.
C. Notify the Project Manager promptly of any significant safety violations that place workers in life-threatening situations.
D. Assist the Project Manager in conducting risk assessments and identifying safe work methods for inclusion in safe work method declarations.
E. Develop and deliver internal training courses on HS&E-related issues.
F. Assist supervisors in delivering toolbox talks to workers about the control measures found in risk assessments and the safe system of work that shall be followed.
G. Develop and administer employee orientation, ensuring that all employees get orientation prior to beginning work.
H. Develop procedures for high-risk activities and brief management on their obligations under these procedures; conduct routine audits of these processes and report noncompliance to the project manager.
I. Assume the lead position in all accident investigations and ensure that RAKEZ HS&E receives a documented investigation report for all reportable accidents.
J. Audit the registers that the Project Manager shall maintain for lifting equipment and lifting accessories.
K. Advise on the requirements for site welfare and conduct routine inspections of the facilities, reporting any issues to the Project Manager of the primary contractor.
L. Conduct themselves in a professional manner at all times and provide their employer with the finest advice possible.

M. There shall be one safety officer for every 150 workers supervised by the contractor or subcontractors. There shall be an additional safety officer for every 350 workers supervised by contractors. The contractor is responsible for ensuring that there are sufficient safety officers available to cover the night shift.

2.4. Consultant and Project Management Team (Engineering Consultant)

Consultants will be responsible for compliance with applicable HS&E Regulations on their projects. This will include the following tasks:

A. Develop, review, and update HS&E Management Plan.
B. Develop and implement a monitoring schedule that includes site tours, inspections, and welfare facility audits.
C. Develop a competency framework for their team, including a training matrix, record, and strategy.
D. Direct formal weekly Health and Safety inspections, workshops, and meetings as appropriate; raise and verify closure of identified observations and actions.
E. Schedule weekly Health and Safety meetings with the Health and Safety and management teams of the contractor.
F. Ensure that a sufficient number of qualified Health and Safety resources are appointed in accordance with legal and employer standards to enable the proper execution of their duties.
G. Ensure (by the contractor, subcontractors, suppliers, and vendors operating under their supervision) that contracts are implemented in accordance with:
    i. Health, Safety, Quality, and Environment Policy,
    ii. Health and Safety Management System,
    iii. General conditions of construction contracts, legal and other requirements.
H. Ensure that each contractor has Health and Safety plans in place before work begins.
I. Review, approve, and verify the contractor's implementation of Health and Safety plans, method statements and risk assessments (MS/RA), and all other deliverables as stipulated by the regulations.
J. Ensure that the contractor offers appropriate competent resources for Health and Safety-critical jobs, such as appointed personnel and emergency response-trained personnel. Interviews may be utilized for a competency evaluation.
K. Communicate the Health, Safety, Quality, and Environment Policy, employer requirements, objectives, standards, and goals, as well as hazard, risk, and control information to all contractors and personnel operating under their supervision, and ensure that this information is sent onward.
L. Conduct pre-start Health and Safety meetings with contractors according to the employer's agenda and needs.
M. Participate in contractor meetings, obtaining minutes or chairing meetings as required to verify contractual requirements are met.
N. Liaison with the Health & Safety departments of contractors and employers.
O. Provide leadership, direction, guidance, and technical help to contractors as required in relation to Health and Safety standards and procedures.
P. Ensure that the contractor provides competent employees by routinely assessing competence frameworks, training, and inductions, and by assisting with the implementation of employer or contractor training as needed.
Q. Ensure the continued suitability and availability of security, traffic management, logistics, and emergency plans.
R. Assist the project management and design consultant in providing the appropriate Health and Safety standards and performance, and ensure continued communication of any design-related concerns.

S. Continuously monitor and review the Health and Safety performance of the contractor and their supply chain, and regularly evaluate their effectiveness, ensuring that any Health and Safety nonconformance is corrected promptly or escalated, and that appropriate protective and preventive controls are maintained at all times.
T. In the event of a lack of safety control and imminent danger of injury or persistent failure to correct a hazardous act/condition, issue a contract-mandated suspension of work instruction (cost implications to be borne by the contractor).
U. Ensure that all accidents/incidents and near misses are documented and investigated according to the employer's protocols; evaluate and approve reports; and give technical help, guidance, and recommendations as needed.
V. The employer submits a monthly Health and Safety report and reports regularly on Health and Safety performance. The report shall contain, but not be limited to, an executive summary, accident/incident performance, trend and root cause analysis, KPI performance, required actions, best practices, lessons learned, and strategies for continuous development.
W. Ensure that the contractor creates Health and Safety register in accordance with the employer's specifications.

2.5. Designers

The Health and Safety responsibilities of the Design Consultant are as follows:

A. Applying the general principles of prevention and control hierarchy to all project phases, including design, construction, operation, event, and decommissioning.
B. During the early/middle concept phase, hazards and risks associated with the proposed site shall be considered. This includes issues arising from existing site activities, existing services, adjacent site activities, and the existing built environment.
C. Consider all applicable legal and other design-specific requirements.
D. Ensure that regular design reviews are performed to eliminate or reduce risk.
E. Consider the installation feasibility of specified components, including handling and placement. The consultant shall highlight any unusual or innovative design requirements for the project that necessitate a temporary design by the contractor.
F. Ensure that all workplaces comply with the local workplace regulations. This includes Health and Safety requirements for end-users in the workplace as well as other fit-for-purpose concerns such as safe access/egress arrangements and accessible workplaces.
G. Provide the contractor with residual risk information in the form of preconstruction information/residual risk registers.
H. Provide risk information or specific details to the Project Manager in the form of a Health and Safety register for design features, including assisting in the building's life after construction, e.g. maintenance, designed dismantling methodology, etc.
I. Ensure that all organizations and individuals involved in the design process are competent.

2.6. Contractor

The Health and Safety responsibilities of the contractor are as follows:

A. Provide proactive and visible leadership and management for Health and Safety, promote and support the program on a daily basis, drive high standards, and guarantee full compliance with the RAKEZ Construction Regulations.
B. Maintain a management system, ideally in accordance with ISO 45001:2018 requirements.
C. Prepare, develop, and implement measures in accordance with the regulations and any other document deemed necessary to ensure the safety of project personnel.
D. Before construction begins, a Health and Safety Plan shall be developed and approved by a consultant.
E. Produce, evaluate, approve, and oversee the implementation of procedures and Method Statements/Risk Assessments.
F. Ensure that all subcontractors and supply chain members are aware of and comply with the employer's Health and Safety requirements and the project's specifications.
G. Plan, oversee, and manage construction in collaboration with subcontractors.
H. Ensure that appropriate on-site welfare facilities are provided from the outset and maintained throughout the duration of the construction project. Welfare shall be the first aspect of a new workplace to be installed.
I. Notify the Project Manager and Consultant of all incidents, diseases, and potentially hazardous situations. Incidents shall be investigated and reported in accordance with the reporting procedure.
J. Develop a competency framework and compare all appointees and contractors to the requirements, ensuring that an appropriate training plan is in place.
K. Ensure that all personnel, including subcontractors, are given a site-specific orientation by a qualified individual.
L. Ensure that expert knowledge or advice is accessible in regard to potentially dangerous activities.
M. Consult the employees regarding Health and Safety matters.
N. Develop a design management plan containing procedures, plans, and specific design risk assessments outlining how construction, maintenance, and end-use risks will be eliminated or mitigated by the design process.
O. Communicate with the employer, the project manager, the design consultant, and others, as needed, regarding the ongoing design.
P. Create routine Health and Safety campaigns based on the risk profile of the project.
Q. Ensure that the site is always secure.
R. Plan and manage work in conjunction with the employer, Project Manager, and Consultant.
S. Ensure that the Health and Safety performance is reviewed and monitored on a weekly basis through formal site meetings presided over by the Consultant to discuss any challenges or coordination issues, etc.
T. Report weekly and monthly to the employer on the Health and Safety performance of all project parties, including the monthly submission of a Health and Safety report. The report shall include, but not be limited to, an Executive Summary, Incident performance, incident trends, root cause analysis, KPI performance, deliverables status, required actions, best practices, lessons learned, and forward-looking plans.
U. Create and implement incentive and recognition programs.
V. Provide the Project Manager with the required Health and safety register information.

3. General Requirements for Construction Stage Approvals

Before any project commences, the general contractor will ensure that a Stage 1 approval form has been completed and submitted to RAKEZ HS&E. The RAKEZ HS&E team will inspect the site and review the required health and safety documentation, as outlined in the Stage 1 approval form, upon receipt of the application. If all requirements are met, RAKEZ HS&E will approve Stage 1 and notify the general contractor in writing.

When the building's height reaches 6 meters, the general contractor shall submit an application for Stage 2 approval using the same process.

When the building reaches a height of 24 meters, the general contractor shall submit an application for Stage 3 approval and shall obtain it before the building reaches a height of 30 meters.

The prime contractor for modifications shall submit a stage approval application for modification work activities.

4. NOC for Construction Activities at Night

The main contractor shall obtain NOC from RAKEZ HS&E for all construction activities at night (between 8 pm and 7 am) before commencing night construction activities.

5. Contractor Supervision Levels

Contractors are required to provide sufficient resources to ensure adequate supervision of the work. On-site identification of these Supervisors is required. Contractors must provide one working supervisor for every eight workers and one non-working supervisor for every twenty-four workers.

Depending on the risk profile of particular activities, supplementary supervision resources may be necessary.

In their HS&E Safety plan, contractors must identify their organization and arrangements for supervising operations.

6. Work Control

6.1. HS&E Plan

Contractors shall ensure that the HS&E Plan contains the following information as a minimum:

A. The project scope of works
B. Legal and other requirements
C. Roles and responsibilities of key project personnel, including training requirements to ensure the competency of personnel
D. Risk assessments to cover all project activities
E. HS&E objectives and targets
F. Health and safety inspection and audit plan
G. Project logistics plan
H. First-aid arrangements
I. Incident reporting procedure that complies with reporting RAKEZ requirements
J. Emergency preparedness and response
K. HS&E performance measurement and monitoring

L. Non-conformance, corrective and preventative action
M. An audit
N. Details of fire arrangements
O. Details and frequency of health and safety meetings that will be held
P. Environmental protection plan
Q. Safety Management System procedures that will be implemented during the project
R. Permit to Work system
S. Site Rules
T. Temporary works
U. Personal protective equipment (PPE)
V. Details of working at height, hot work, confined spaces, excavation, electrical safety
W. Safe selection and use of lifting equipment
X. Traffic management
Y. Tools and equipment
Z. Use of compressed air
AA. Hazardous substances
BB. Crane plan and details of lifting operations (where applicable)
CC. Waste management

The main contractor shall ensure that the HS&E Plan is reviewed and, where necessary, revised regularly.

6.2. Risk Management

The employer is required to implement a risk management plan, which is the implementation of a strategic plan for managing identified risks. Depending on the business culture of the organization, the history of previous efforts, the available resources, the number of employees, and other variables, this procedure can take on numerous forms.

6.2.1 Risk Assessment

A risk assessment is performed for a particular work activity, piece of equipment, location, operation, etc., or a combination of these. Risk assessment is a method for ranking the severity of safety and health concerns. The employer is required to conduct risk assessments for foreseen safety and health concerns and other identified hazards.

The risk assessment shall contain the following information:

A. Identifying the hazards
B. Identifying who/what may be harmed
C. Evaluating the risk
D. Determining the severity
E. Determining the likelihood
F. Defining the level of risk.

6.2.2 Risk Reduction

Once the level of risk has been identified, the unacceptable risks shall be reduced to an acceptable level. This involves using the hierarchy of control to identify the most effective control measures. The hierarchy of control includes:

A. Elimination of the hazard
B. Substitution of the hazard
C. Engineering controls
D. Segregation
E. Administrative controls
F. Personal Protective Equipment.

6.2.3 Residual Risk

Once the risks have been revised through the hierarchy of control, the residual risk shall be determined.

6.2.4 Communication of Risk Assessment Information

The contractor is responsible for ensuring that the information contained in the risk assessments is effectively communicated to the employees. This communication shall typically take the form of orientations, toolbox discussions, or worker safety briefings, and it shall be provided to employees before they begin work. The contractor is responsible for ensuring that every worker (including subcontractor personnel) is briefed on the project's health and safety requirements.

6.2.5 Review of Risk Assessment

The main contractor shall ensure that risk assessments are regularly reviewed and kept up to date when changes to working methods present additional risks.

6.3. Permit to Work

For high-risk tasks, a permit-to-work system shall be implemented. The Consultant shall review and approve contractor permit system arrangements, which shall include information on authorised persons, specific control measures, training requirements, and obtaining and revoking permits. Due to the higher risk associated with permits, the Consultant is expected to conduct regular inspections of the specifically permitted works.

As a minimum, the contractor’s permit systems shall include the following permits:

A. Excavation
B. Hot Work
C. Work at Height
D. Confined Space
E. Electrical
F. Demolition
G. Lifting
H. General Work

The contractor shall appoint a competent individual to oversee the permit-to-work procedure as the permit-to-work coordinator. The contractor is responsible for maintaining a record of all work permits, which will be available for inspection. A permit is valid for the duration of a shift or until the completion of the work, whichever occurs first. Upon completion of work or the end of the shift, the supervisor in charge of the work will close out and sign the permit.

7. Consultation, Communication, Cooperation, and Coordination

7.1. Health & Safety Consultation

Effective HS&E consultations are necessary to ensure that pertinent HS&E issues are discussed with the employees at the proper times. Methods of consultation shall facilitate two-way communication and encourage workers to raise concerns or suggest improvements for health and safety issues.

7.2. Health and Safety Communication

Communication regarding HS&E shall be proactive in order to provide pertinent information and updates, and reactive in order to address specific problems or review an incident. In all forms of communication, the following shall be present:

- Communications shall take into account the literacy levels and languages spoken by the employees, which may necessitate the use of translators.
- The required levels of safety competence and training shall be the same regardless of the origins or language of the employees.

7.2.1 Site Induction

The purpose of site inductions is to acquaint personnel with the hazards and controls pertinent to the site or office location. At each location or office, all employees shall undergo training to ensure they are aware of any specific hazards, activities, and emergency procedures. The Project Manager will ensure that site and office inductions are available and conducted; however, all employees shall ensure that they receive an induction when they arrive at a site or office where they have not been inducted previously. The Project Manager shall keep track of all site or office inductions.

7.2.2 Toolbox Talks

Contractors will ensure that site-based safety toolbox meetings are held. The contractor's supervisor shall select a topic pertinent to the upcoming activity and address the employees on the safety requirements. The discussions shall adhere to the following:

A. The meeting shall occur before the start of the activity
B. The meeting shall be at least 10 minutes long
C. All the contractor’s employees shall attend
D. A record of each toolbox talk listing attendees shall be maintained

7.3. Cooperation and Coordination for Health and Safety

Effective health and safety cooperation and coordination are necessary to ensure that health and safety issues are discussed and health and safety arrangements are clarified where there is a shared duty, responsibility, or interface. Cooperation and coordination between contractors are essential for addressing health and safety hazards and risks and establishing and maintaining consistent application of controls. This method also ensures that, on construction sites with multiple contractors, everyone is aware of health and safety risks and how to avoid or mitigate exposure.

7.4. Essential health and safety regulations

The following Health and Safety rules shall be observed by all persons on site:

Access

- Do not start work without an induction
- Display a valid security badge at all times
- Do not give your security badge to another person
- Hand back your security badge after use
- Visitors must remain with their host at all times
- Comply with site rules or any other instructions from RAKEZ HSE Construction Regulation

Personal Protective Equipment (PPE)

- Wear a hard hat, high visibility jacket, safety boots, glasses, and gloves when on site
- Wear additional PPE when needed for protection from other risks (e.g. noise, dust)

Pedestrians

- Always keep to the designated walkways
- Hold the handrail while using stairs
- Only use a mobile phone when it is safe

Behavior

- Do not enter an exclusion zone unless you are authorized
- Respond immediately to make safe any unsafe condition
- Only rest in designated areas
- Consume food only in designated areas
- Do not use radio's, MP3 players or similar devices onsite

Emergency

- Report immediately all accidents near misses or suspicious behaviour
- Make sure that you are aware of the location of the nearest assembly point
- In the event of an emergency call the emergency services

Fire

- Do not smoke unless in designated areas
- Do not burn materials onsite
- Do not undertake hot works without a permit

8. Incident Reporting (from RAKEZ HS&E Regulations)

The contractor shall have a system for the notification of incidents reportable to MOHAP and inform RAKEZ.

Type of Reportable Incidents	Notification Period to MOHAP and RAKEZ
Fatality	Immediately
Injuries	Within 48 Hours (For incidents not covered in section 4.9.3)
Occupational Diseases	
Dangerous Occurrence	

The contractor will ensure that all dangerous occurrences and the following types of incidents are reported to the nearest RAKEZ Security checkpoint immediately by telephone as per the emergency contact number (Refer to Incident Notification Form (HSE-RR01.F01)) which is available 24 hours a day, 7 days a week. The types of incidents that require immediate notification are as follows:

A. Fatality;
B. Fire incident;
C. Structural collapse of buildings, cranes, or equipment;
D. Any fracture;
E. Any amputation;
F. Dislocation of the shoulder, hip, knee, or spine;
G. Loss of sight (temporary or permanent);
H. A chemical or hot metal burn to the body;
I. Penetrating eye injury;
J. Any other injury that results in unconsciousness or requires resuscitation/hospital admittance;
K. Any injury resulting in the casualty being admitted to the hospital for more than 24 hours;
L. Any minor injury resulting in an absence from work unable to undertake normal active duties for less than 3 days;
M. Any injury where an employee is absent from work for more than 3 days, not including the day of the incident;
N. Any major injury suffered as a result of an incident arising out of or in connection with any work carried out on the premises;
O. Any injury suffered by a person, not at work, e.g. a visitor, customer, passenger, or by-stander as a result of an incident arising out of or in connection with work where that person is taken from the incident site to hospital for treatment;
P. Any Chemical/Gas/waste leak/discharge with a potential for HS&E impacts;

Q. Incidents include non-consensual physical acts of violence done to a person at work, suicide in/out of work;
R. Occupational/reportable/infectious diseases;

The above injury conditions shall be reported immediately to the RAKEZ security section at each zone and hse@rakez.com within 24 hours of the incident, using Incident Notification Form (HSE-RR01.F01). Employers and employees are obliged under duty and law to disclose incident data to security and safety representatives and authorities.

All incidents shall be investigated to determine their cause and define the actions that shall be taken to prevent any similar incidents in the future. The formality and depth of the investigation shall be proportional to the severity or potential severity of the incident. The names of witnesses shall be recorded and any relevant photographs taken shall be identified, captioned, and dated. The investigation shall consider all the relevant evidence. This may include the site where the incident occurs, the plant, the type of materials being handled or substances being used, systems of work, responsibilities, and people involved, including their physical or mental condition, training, and competencies. It is important to investigate not only the direct cause of an incident but also to determine the underlying cause or causes, which are often the real cause of an incident. Following an incident, a copy of the detailed incident investigation report and supporting documents are required to be submitted to hse@rakez.com within 7 days of the incident.

Contravention of any of the provisions above is an offence. Inability by the employer to ensure incident-free operations shall also invite sanctions/penalties from RAKEZ, especially where it is established that adequate safeguards were not taken to prevent the re-occurrence of incidents.

9. Emergency Management (from RAKEZ HS&E Regulations)

9.1. Emergency Plans

The employer will prepare an emergency plan to cover foreseeable emergencies, including procedures for managing the following:

A. Fire emergencies;
B. Medical and health emergencies;
C. Incidents;
D. Serious incidents – to be defined in the emergency plan;
E. Facility/project/area evacuation;
F. Night working emergency response.

The emergency plan prepared by the employer will identify the roles and responsibilities of key personnel involved in the emergency procedure. The employer 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.

9.2. Assembly Point

The contractor will ensure that there is an adequate number of assembly points identified and provided on the premises.

9.3. Training

The employer shall ensure all those operating/working on the facility/site are trained in and understand the emergency procedures. The emergency procedures shall initially be communicated to all personnel during the work/site induction but regular reminders shall be given in the form of weekly toolbox talks.

9.4. First Aid Facility

All premises shall be provided with adequate first aid facilities for enabling first aid services to be rendered to the employees if they are injured or become ill at work.

First Aider	Nurse/Medic	Doctor	First Aid Kits No. (min)
<125 operatives, 1 first aider and then 1 per 125 operatives*	1 at 250 operatives*	1 at 5000 operatives*	1 per 150 operatives*

The contractor shall provide or ensure that there is an adequate and appropriate number of suitable persons for rendering first aid. A first aider is a person who has received training and holds a current first aid certificate from a consultant whose training and qualification for first aiders are registered with RAKEZ.

10. Work at Height

10.1. General Requirements

All working at height shall be:

A. Planned and organized properly, including emergency and rescue planning.
B. Using the hierarchy of control measures, the risk associated with the activity was evaluated.
C. Supervised by the appropriate personnel.
D. As far as can be reasonably expected, safety is maintained.
E. Performed by appropriately trained and supervised competent individuals, including managers and supervisors.

Utilizing equipment that has been inspected and maintained on a consistent basis.

10.2. Fall Prevention Plan

Due to the high-risk nature of working at height, in addition to method statements and risk assessments, the contractor requires the use of working at height permits for high-risk tasks such as roof access, working from lifelines, or accessing a tower crane jib, as well as a specific fall prevention plan. The fall prevention plan is incorporated into the Health and Safety plan or can be incorporated into working at height procedures. The contractor shall submit their fall prevention plan to the Consultant for review and approval. The following elements shall be included in the fall prevention plan:

A. Identification of potential tasks involving working at height and the corresponding standards and expectations for each scenario in order to mitigate risk.
B. Identify openings between floors where personnel or materials could fall, as well as the standards required for each, including lift shafts, risers, and general openings.
C. Clear application of the working at height hierarchy in which collective fall prevention measures are prioritized over individual measures.
D. Instruction for supervisors and workers at height, such as steel erectors and scaffolders.

10.3. Hierarchy of Control

All working at height shall be checked in accordance with the following hierarchy of control:

A. Avoid working at height by, for instance, employing equipment that extends from the ground.
B. Prevent falls by utilizing the proper access equipment, such as work platforms or rope access.
C. Lessen the distance and impact of a fall, if one occurs

Collective measures, such as mobile elevating work platforms (MEWPs), are preferable to other fall prevention measures, such as fall protection systems, because other measures may only mitigate the distance and consequences of a fall (such as fall protection systems) or only provide personal protection against a fall.

Any selection of equipment for working at height shall take account of the following:

A. The working conditions and risks to worker safety at the location where the equipment will be used.
B. The severity and repercussions of a potential fall.
C. The duration and frequency of the work.
D. The requirement for simple and prompt evacuation and rescue during an emergency.
E. Any additional risk posed by the utilization, installation, or removal of work equipment, as well as its evacuation and rescue.

10.4. Working at Height Requirements

10.4.1. Metal Frame Erection

MEWPs shall be used to erect metal frame structures, and when access to the steel cannot be avoided, workers shall use beam gliders. During operations involving metal decking, safety nets, and guard rails shall be installed.

To ensure that metal frame structures are constructed in accordance with this standard, the following risk mitigation measures are required:

A. During the design phase, an opportunity to pre-assemble all steelwork either in a factory or on-site, but always at ground level, shall be considered. This factor shall also include the painting of the frame.
B. If a suitable operating base is available, MEWPs shall be utilized in preference to all other methods. Prior to beginning any operation, the nature of the base shall be determined. To prevent crushing, MEWPs shall be equipped with secondary anti-entrapment protective devices, such as cages, pressure bars, and alarms.
C. The positioning of nets shall minimize the distance of any fall.
D. All steel shall be erected within an exclusion zone

Note: Anchorage and lifeline systems shall be prefabricated and/or installed on the ground before lifting or installed from a MEWP.

10.4.2. Formwork and Falsework Erection

Concrete formwork/falsework systems shall be proprietary systems erected from safe working platforms or from below, either manually or through the use of MEWPs below the deck level. The following considerations are required:

A. Use proprietary formwork and falsework systems in accordance with the manufacturer's guidelines. Before reinforcing the formwork, supports, decking, and protective elements shall be erected from the ground, and a safe working area shall be established. The leading edge shall have robust edge protection, and all floors shall have decking.
B. Propriety systems shall always be erected from below, and workers shall never be required to erect from above or be exposed to a leading edge.
C. On columns and walls, workers shall utilize mobile working platforms for walls and specialized column shutters/forms for column erection. Ladders and harnesses shall only be used as a last resort, and they shall be equipped with fall protection whenever possible. If possible, columns shall be reinforced and walls constructed at ground level.
D. Rather than a ladder, these areas shall be accessible via a specialized access staircase.
E. All falsework and framework shall be approved by the consultant.

10.4.3. Roof Deck Construction

The contractor shall ensure that the construction of roof decks is conducted safely, taking into account the inherent dangers of the work. Decking sheets shall be positioned from below using mobile scaffolding or MEWPs if the roof deck design permits. In the event that this is not possible, a safe system of work shall be developed in accordance with the control measures hierarchy outlined in section 6.2.2 of these regulations. Particular attention shall be paid to the construction of the roof deck's leading edge, for which the general contractor shall prepare a comprehensive health and safety method statement outlining the safe execution of the work. The availability of third-party certification for the roof deck shall be ensured by the consultant.

10.4.4. Working on Fragile Roof

A fragile roof is any material through which an individual could fall. It may contain but is not limited to, asbestos, cement, fiberglass, corrugated metal sheet plastic, and composite materials. Prior to beginning work on the roof, the contractor shall conduct a roof inspection and prepare a risk assessment. Taking into account the material and the possible effects of material deterioration over time, the risk assessment will determine whether the material of the roof sheet could be considered fragile. If there is a possibility that the roofing material is fragile, the consultant shall ensure that the general contractor implements the following:

A. All workers are briefed on the hazards of the work and the control measures to be followed.
B. Where possible, experienced workers are selected.
C. Purpose-made roof ladders and crawling boards are used.
D. Roof lights are covered with a suitable covering or barred off to prevent workers from falling through them.
E. Third-party certified anchorage and lifeline systems and safety nets are used.

10.4.5. Loading Platforms

Before installation, all loading platforms shall be evaluated and fitted with perimeter guardrails. Loading platform systems shall be evaluated as temporary works and inspected regularly. Guardrails or gate systems (e.g. pivot-type up-and-over gates), which offer complete edge protection, shall be used to secure the front/exposed edge of loading platforms. Chains and wire cables are not acceptable alternatives. Certification from a third party shall be available for the loading platform, and the consultant shall ensure this.

10.4.6. Vehicle Offloading

Loading or unloading a vehicle requires a method statement and risk assessment. There shall be access platforms or decks as well as safer access points in areas where repeated activities occur. Edge protection or other appropriate fall prevention shall be installed on vehicles, and loads shall be pre-slung to eliminate or minimize the need to access the rear of any vehicle. The provision of vehicle netting shall comply with a risk assessment covering the controls in this section.

10.5. Perimeter and Edge Protection Standards

On floors above ground, above a basement, and at roof level, a minimum of fixed guard rail edge protection is required. Where operatives work at leading edges, appropriate distance barriers and signage shall be erected to protect other operatives. Appropriate fall restraints or fall protection/fall arrest systems shall be made available to frontline personnel.

All edges from which a person or object could fall will be protected according to the following specifications. Methods of perimeter security are classified as either standard or advanced.

Prior to considering any other edge protection options, the use of perimeter screens shall be pursued as the default. If this method cannot be implemented, the team shall implement alternative progressive protection to ensure that a full-height or 2-meter-tall barrier is used.

Full-height edge protection shall be used for mid-rise construction, three floors and above, or on any building where site workers or the public are at risk due to the nature of the work or the location of the site. The protection shall be utilized to eliminate the risk of falling people or objects at a height where wind, in particular, poses a significant risk to the movement of people and objects.

To meet the minimum standard perimeter protection requirements, the edge protection will:

A. Be constructed with a minimum height of 100 cm and a 15 cm high toe board capable of preventing materials from falling, with no gaps below.
B. Have no vertical gaps greater than 47 cm between any guardrails or toe boards.
C. Be durable and constructed continuously.
D. Where mobile equipment is likely to be used, provide physical stops to prevent the equipment from reaching the slab's edge and/or impacting the edge protection.
E. Be erected, maintained, and dismantled by qualified individuals, and be inspected prior to use and after alterations, repairs, and maintenance, as well as in adverse weather conditions.
F. Include vertical netting, mesh, brick guards, or similar where additional hazards are identified, such as adjacent public areas/project interfaces (walkways, roads, and offices) or particular work activities.
G. Ensure no items are capable of falling

Any edge protection system other than guard rails shall have the proper elements in place to prevent items from falling through or under the element of the edge protection system in use. This protection shall consist of double guardrails and toe boards.

10.6. Vertical Access

Access to general work floors shall be provided by a permanent solution as much as is practically possible. In situations where this is not possible, the contractor shall provide temporary staircases with adequate width and handrails.

As soon as possible during construction, the permanent staircase shall be poured and installed as the floors are poured. All permanent and temporary stairways will be constructed and secured in accordance with the following minimum requirements:

A. Permanent handrails on both sides for access safety.
B. Riser spacing that does not exceed 200 cm.
C. Top guardrails shall be a minimum of 100 cm in height, with intermediate rails installed to prevent excessive gaps.
D. Protected landing platforms with appropriate and adequate collective edge protection.
E. Temporary guardrails are installed on metal staircases prior to their erection or installation.
F. If temporary guardrails are installed during construction, they shall be positioned and secured so that permanent protection can be installed prior to their removal.
G. Sufficient lighting to provide a uniform lighting level and prevent shadows/dark areas, and battery-powered emergency lighting for stairwell access in buildings for a minimum of three hours.
H. Temporary protection (where provided) shall be inspected prior to use and after alterations, repairs, adverse weather (external), and seven-day use periods. A competent individual shall conduct inspections, and a record shall be kept.

10.7. Access Equipment Requirements

The following requirements apply to all access equipment, including scaffolding, MEWPs, Mobile towers and podiums, access steps, ladders, etc.

A. All-access equipment shall be stable, with sound footings, locked wheels (where applicable), and secured to the structure where the specification or design so requires.
B. General and emergency access routes shall be clearly marked, barricaded, and illuminated, with special attention paid to emergency routes.
C. The selection of access equipment shall adhere to the working at height hierarchy.
D. All equipment shall be erected/installed/altered/disassembled by a competent individual trained in the use of the specific system or equipment in accordance with the manufacturer's guidelines.
E. When providing equipment for working platforms or requiring temporary access between floors, stairways shall be used whenever possible. The selection of all other equipment shall be governed by a risk assessment, and it shall be installed in accordance with best practices, such as securing ladders 1 m above the ground and keeping them clean and maintained.
F. Conforming to industry standards, all equipment shall be subject to a pre-use and ongoing, documented inspection program.
G. All equipment shall be free of obvious flaws and constructed according to the manufacturer's specifications or a specified design.
H. The use of mobile elevated work platforms (MEWPs) to transport materials and personnel from one location to another is strictly prohibited.

10.8. Inspection and Authorisation for Use

Before using any access equipment, it shall be inspected by a qualified supervisor or designated inspector in accordance with the manufacturer's instructions for the intended design. Nominated scaffolding inspectors shall possess a valid third-party inspection certificate and be familiar with the employed scaffolding system.

A competent and certified scaffolding supervisor or inspector shall conduct daily inspections, and adequate records shall be kept.

The use of scaffolding constructed in accordance with the approved design will be authorized by posting the following information at all access points:

A. The scaffolding's unique identification and location.
B. The name of the individual writing the check.
C. The date that the check was processed.
D. The anticipated load capacity of the scaffolding.
E. Tags on scaffolds shall be updated every week (seven days), or adequate records shall be kept if a scaffold is deemed unfit for purpose by the daily inspection regime.

10.8.1. Scaffolding

A. All scaffolding will be erected by qualified, certified scaffolders, and it shall be suitable for its intended purpose. The use of lightweight scaffolding is restricted to a maximum height of 10 meters when no materials are loaded onto the work platforms.
B. A scaffold coordinator shall be appointed to oversee and manage all scaffolding arrangements on-site, including the maintenance of a scaffold register, inspections, team competency, and ongoing access support.
C. Guard rails, mid-rails, and toe boards shall be installed on all open sides of platforms from which people or objects could fall. Where materials may fall over toe board guards, fencing or (designed) weighted netting shall be installed. All working platforms shall be boarded closely. The boards shall

be secured and devoid of defective and/or damaged boards as well as debris. Damaged boards shall be quarantined and rendered unusable. Boards shall be placed closely with no gaps between them. Where smaller gaps exist, boards present a tripping hazard, or the walkway is heavily utilized, the platform shall be completely plywood-boarded.

D. When a proprietary guard rail system is required either in place or as an additional element, the working platform shall be equipped with a top rail, mid-rail, and toe board on all four sides.
E. Toe boards shall extend at least 15 cm above the level of the platform.
F. The height of guardrails shall be between 95 cm and 105 cm above the platform, and there shall be no vertical gaps greater than 47 cm between guardrails and toe boards, with no gaps below the toe boards.
G. The contractor shall ensure that a qualified individual inspects all scaffolding prior to its use by workers. The scaffold inspector shall be the Scaffold Supervisor or a member of the site team who has received scaffold inspection training from a RAKEZ-registered third-party agency.

10.8.2. Mobile Elevating Working Platform

A. For the operation of MEWPs, including boom and scissor lift types, competent and certified operators are required. When the MEWP has attachments or specialized features, additional training is necessary.
B. Contractors shall conduct familiarisation training specific to the type of MEWP in use with the assistance of manufacturers and suppliers. If this is not possible, the consultant shall ensure that the contractor nominates a person or group of people with greater experience than a standard operator.
C. When operating boom-type lifts or in other situations identified by a risk assessment, fall protection shall be worn. Anchor points installed by the manufacturer shall be utilized.
D. Instructions and examination certificates (or copies) shall be kept in every MEWP.
E. Each MEWP will be supplied with a fire extinguisher.
F. The operator shall conduct and document a daily inspection of the MEWP.
G. When using plant and equipment in the vicinity of overhead hazards or buried utilities, minimum clearance distances shall be maintained. The use of secondary protection devices, such as cages, anti-crush barriers, and sky sirens, shall be considered in risk assessments. Banksmen or spotters can reduce risk and shall be considered when other physical alternatives are unavailable or inappropriate.
H. The emergency plans shall include descent plans for MEWPs from the ground.
I. When utilizing MEWPs, mobile towers, and podiums, all tools shall be secured.

10.8.3. Aluminium Access Towers

A. All mobile towers shall be designed and certified in accordance with BS EN 1004 and be accompanied by an instruction manual compliant with BS EN 1298.
B. All prefabricated tower scaffolds (such as static towers, cantilever towers, and stepped towers) shall conform to BS 1139-6. All podiums shall be constructed and certified in accordance with PAS 250 or BS 8620.
C. All towers shall be constructed, modified, and dismantled using the 'Through the Trap' (3T) method or an advance guardrail (AGR) tower system.
D. The maximum platform height for freestanding mobile towers is 8 meters outdoors (subject to wind loads, for instance) and 12 meters indoors.
E. Stabilizers, outriggers, and ballast shall be installed as soon as possible during tower assembly and in accordance with the tower's manual.
F. Toeboards shall be installed on all working platforms and any platform on which materials (tools or equipment) are stored. Materials on the platform shall be kept to a minimum and stored in suitable containers, and the risk of dropped objects shall be evaluated and mitigated.

G. Climbing the end frame horizontally is prohibited; designated ladders, stair ladders, or internal stairways shall be used instead. Never lean a ladder against a tower in order to gain access to the working platform.
H. Doors and gates shall be shut when they are not in use.
I. No person, equipment, or materials shall be present on a mobile tower or podium during movement.
J. For mobility, mobile towers shall have a platform height of 4 meters.
K. Towers and podiums are not intended to serve as anchors for fall arrest or restraint systems, so they shall not be used as such.
L. Mobile towers shall lock their wheels when in use.
M. Follow the manufacturer's recommendations regarding the number of people who may use a tower or podium.
N. At least once per week, towers and podiums shall be inspected by a qualified individual, and a record (such as an inspection record) shall be kept and displayed on the tower.
O. The ratio of base to height is no longer acceptable for adequate stability.
P. Maximum platform heights are determined in accordance with BS EN 1004.
Q. Ensure that the access tower is not used for material transfer.

10.8.4. Ladders

The employer's strategy is to reduce the use of all types of ladders and incorporate safer means of working at height (e.g. MEWPs, scaffold towers, and podium steps). All ladders shall be structurally sound, installed securely, and used safely.

Unless three points of contact can be maintained, ladders shall only be used for access and not as a place of work; some specialized systems are available. Step ladders and extension ladders are only acceptable in the workplace if the following conditions are met:

A. All other safer alternatives, including MEWPs, scaffold towers, platform steps, and podium steps, have been evaluated and determined to be "not reasonable" or "not practicable."
B. The activity is low-risk, brief (less than 10 minutes), and nonrepetitive.
C. Location is not within 3 m of an additional fall hazard (e.g., an edge) or penetration (shafts) unless a compliant penetration cover is in place or floor-to-ceiling protection exists.

Note: A ladder is permitted as a form of access to working for decks on platforms/scaffolds if there is no requirement for workers to manually handle tools or material in the work area.

The following applies when using ladders:

A. Ladders used to access another level shall be secured (e.g., tied to an appropriate point) and extend at least 1 m above the landing point to provide a secure handhold. At ladder access points, an automatic-closing gate is advised. Step ladders shall not be utilized to gain access to a higher level.
B. If a ladder's height exceeds 9 meters, intermediate landing platforms that are adequately guarded and protected shall be provided.
C. In order to avoid carrying materials up or down a ladder, separate provisions such as stairs, a hoist, or satchel bags shall be created.
D. In the presence of live electrical equipment, aluminum ladders shall not be used.
E. One person may only use a ladder at a time.
F. The user shall adhere to the safety information (such as load rating and inclination angle) displayed on the ladder's labels and instructions.
G. Only use ladders on firm, level ground, clean, solid surfaces, and in areas where they will not be struck by vehicles.
H. Prior to use, ladders shall be inspected, and a competent individual who can verify the condition of the ladders shall conduct weekly inspections and maintain a record.

I. There shall be no side loading on ladders.
J. Follow the 3-point contact system when utilizing ladders.
K. The use of ladders adjacent to slab edges, voids, service risers, or lift shafts is prohibited.
L. Where installed, gates shall be closed and wheels shall be locked on access steps

10.9. Use of Harnesses

A safety harness cannot be used for primary fall prevention or protection unless the following requirements are met:

A. The Consultant and contractor have evaluated and eliminated all other reasonable and practicable options for providing adequate fall protection at a higher level.
B. Harnesses shall be managed in accordance with International Standards, including inspection, maintenance, certification, and labeling.
C. Users shall be competent and trained in harness use, including but not limited to daily inspection, proper fitting, care, and storage, maintaining 100 percent tie-off with two lanyards, and rescue procedures and emergency arrangements.
D. A restraint with a fixed length is preferred to a fall arrest.
E. A competent individual shall conduct inspections at intervals of no more than one month.

10.10. Falling Objects

The contractor is responsible for ensuring that risk assessments consider and mitigate falling object risks. The following additional requirements apply in conjunction with the risk assessment:

10.10.1. Lift Shafts

Openings to lift shafts are to be fully protected with a signed, secure, full-height system and managerial system preventing unauthorised entry and eliminating the risk of falls of persons or materials. Safe working platforms shall be provided for all those working in lift shafts.

All elevator shafts will be constructed in such a way as to protect those carrying out the construction and those implementing the installation below.

All intermediate floors will be fully protected against the egress of materials or personnel. This protection shall be tamper-proof and suitably controlled.

10.10.2. Service Risers and Penetrations

Penetrations and risers shall have mesh cast in during construction or be fitted with other robust protection as soon as possible, such as metal guard rails or covers, to prevent people or objects from falling through them.

Service shafts and risers will be designed to a minimum size to prevent falls or will be constructed in a manner that protects those performing construction and those implementing the service installation below. Using wall-to-wall protection, all floors will be fully protected against the egress of materials or personnel. At each floor level, protection shall be installed upon demolishing the formwork and completion of the riser walls.

For floor openings and riser shafts, reinforcing mesh will be left in place to serve as a fall-prevention mechanism (with the mesh removed when risers are installed). Where feasible, risers with a blockwork-enclosed permanent solution in the design will be used to ensure that the blockwork is sequenced as early as possible to permit the formation of a blockwork parapet greater than 1 m in height.

All penetrations shall be protected with sturdy, securely fastened (screwed or bolted, not nailed) and plainly marked covers to prevent falling objects or individuals. The covers shall not pose a risk of tripping.

As a minimum:

A. Holes up to 600 mm wide (of any length) shall be covered with structural mesh and flush 20 mm ply, with a 'HOLE UNDER' notice. The mesh shall only be cut when necessary to allow passage for services. Whenever possible, a perimeter square of meshing shall remain embedded in the slab surrounding the hole. Any board edge that could present a tripping hazard shall be protected and either marked or taped.

B. Holes 600 mm to 2 m wide (any length) shall have structural mesh cast across the hole and a full decking cover at each floor level, which shall be firmly fastened. Instead of nails, the cover shall be screwed or bolted to the surrounding surface.

C. A double handrail and toe board, as well as a personnel and debris net at every second floor across the void, shall surround holes wider than 2 meters.

D. Protective measures for all openings are removed only when work is being performed in or around the opening, and effective fall-prevention measures shall be implemented.

10.10.3. Waste Chutes

The following controls are required where waste chutes are to be employed:

A. Prior to its usage on the construction site, the design and installation method of a garbage chute shall be approved because it is regarded as a temporary job.

B. A barrier shall be erected around the skip to prevent workers and others from entering the waste discharge zone (removable for lorry access). The barrier shall be able to contain light spillage from the skip, such as by employing debris netting.

C. The use of overhead protection and/or physical barriers to restrict access to the discharge zone can protect falling materials.

D. To prevent a build-up of discharged materials and subsequent blockage, there shall be approximately one metre of clear space between the bottom chute section and the top of the receiving skip or other receptacles. This space will allow materials to be dispersed throughout the skip.

E. Additional controls, such as more frequent inspections and additional barriers and/or debris netting at the site boundary or adjacent to the skip, may be required if materials have the potential to be ejected.

F. If the chute is attached to a scaffold, it will be subject to the same inspection requirements as the scaffold. Even if the chute is not attached to a scaffold, it will be inspected at least once per week or after any event likely to compromise its integrity, such as alterations, repairs, blockages, or severe weather.

G. There shall be provisions in place to isolate the chutes where skips are removed from the base of the chute.

10.10.4. Tool Tethering

Work performed outside the perimeter protection or within 4 meters of a leading edge shall utilize lanyards to secure tools and equipment, including when working from platforms or access equipment.

All contractors are required to conduct a risk assessment in accordance with the hierarchy of fall prevention measures in order to identify and specify the necessary measures to control the risk of tools falling. Tethers for tools shall be:

A. Specifically designed for tethering.

B. Associated with a tool that has been individually weighed to ensure it is within the tether's maximum allowable limits. Heavy objects shall be secured to fixed anchor points rather than to a person.

C. Equipped with a locking mechanism at the connection points or otherwise irreversibly secured.

D. Inspected and maintained according to the manufacturer's recommendations. This shall include a daily inspection by the user prior to use.

10.10.5. Exclusion Zones

Contractors are required to identify and maintain exclusion zones in areas below work-at-height zones where an object could fall on a person below.

As part of the planning process, strong exclusion zones and any work at height shall be considered and monitored to ensure their effectiveness.

Physical barriers shall be used to create exclusion zones whenever possible. The height and installation of the barriers shall be determined based on the hazard and the need to restrict access to it. Warning signs shall be posted at regular intervals along the perimeter of the exclusion zone.

Exclusion zones shall account for the protection of any flagman who may be present, i.e., physical separation between equipment and personnel shall be implemented whenever possible.

11. Mobile Plant and Equipment

All contractors are required to ensure that any plant or equipment they use is fit-for-purpose. Specifically, this will include:

A. Selecting and maintaining the appropriate plant and equipment for the task at hand.

B. Those who utilize the equipment have quick and easy access to records of inspections and maintenance, including any applicable certification. Marking equipment with basic certification information is required.

C. The design of every supporting structure, including existing structures, loading bays, hoist ties, and tower crane grillages, shall be verified by a qualified individual.

D. Operational training and equipment fitness certifications shall be performed by third-party consultants registered with RAKEZ.

S.N.	Type of Equipment	Key Safety Aspects
1	Lifting Equipment e.g. Cranes, Piling Rigs, Hi-abs, Excavators used for lifting operations	Compliance with BS7121 – Part 1 – The Safe Use of Cranes: A. The Appointed Person will be responsible for the following: o Plan crane lifting operations and ensure adequate control of crane lifting operations o Provide Lifting Operations Plan and method statements for crane lifting operations o Allocate adequate competent resources to ensure control of the lifting operation o Plan temporary works (outrigger loadings/positions, etc.) o Provide and implement statutory tests/examinations/inspections regime o Implement Safety Integrity Level (SIL) 2 AntCollision systems for tower cranes

S.N.	Type of Equipment	Key Safety Aspects
2	Other Lifting Equipment (other than cranes) e.g. Hoists, Winches, MEWPs, Cradles, Mast Climbers	B. The Appointed Person will be responsible for the following: o Plan lifting operations and ensure adequate control of lifting operations using lifting equipment (other than cranes) o Provide a Lift Plan for control of lifting operations o Allocate adequate and competent resources to ensure control of lifting operations o Plan temporary works (where necessary) o Provide and implement statutory tests/examinations/inspections regime
3	Mobile Concrete Pumps	C. The Appointed Person will: o Set up relevant checklists o Provide a solid platform capable of taking outrigger loadings o Ensure good access for concrete delivery vehicles minimising reversing and reducing pinch points for banksman o Ensure trained and competent operators are present o Ensure pump lines are regularly checked and inspected for damage o Establish safe methodologies for pipe cleaning on site, e.g. catch pots or skips.

11.1. General Conditions

Contractors shall ensure that their plant, equipment, and vehicles, as well as the plant and equipment of their subcontractors, meet the following requirements:

A. All mobile plants shall have a 360-degree vision or be equipped with 360-degree visibility aids so that the driver can see a one-meter-high object from all sides of the vehicle from a distance of one meter. Not to be installed are drapes or cardboard that may impede vision.
B. Other site-based vehicles, such as bowsers, concrete wagons, buses, and site transport vehicles, shall be equipped with 360-degree visibility aids whenever possible.
C. At no time will unauthorized personnel be permitted to work within three meters of a running machine or under any load or component of a running machine. Any exceptions require a comprehensive risk assessment.
D. Hitch systems shall have lock mechanisms that physically prevent placement, and method statements are provided for the particular tasks).
E. All operators of earth-moving equipment shall provide documentation of training in operating the specific machines and quick hitch system.
F. Contractors shall ensure that all mobile equipment and vehicles are manufactured and maintained in accordance with internationally accepted specifications.
G. Contractors shall ensure that mobile equipment, vehicles, and powered access equipment are outfitted with manufacturer-approved parts and fittings. Prohibited are unapproved or untested components and fittings.
H. On-site mobile equipment and vehicles will be equipped with operational lights, horns, reverse alarms, and amber flashing beacons. Risk assessments shall consider plant/pedestrian segregation, and banksmen will be provided only when required and, if possible, will be physically separated from equipment.
I. All deployed plant and equipment will be subjected to an initial inspection after transport and prior to first use on site.
J. Operators shall only use designed, safe means of access to the vehicle cab (ladder, steps, stairs, etc.), which are always provided.
K. The operator will not remain in the vehicle during loading. Equipment shall have protective structures and cabins installed by the manufacturer when available.
L. The noise produced by large power plants shall be minimized at the source. Persons performing work near noisy plants are required to wear hearing protection and, if necessary, protective clothing.
M. Such as speed limits, traffic safety systems, etc., and logistics risk needs to be managed.

N. Crossing points on walkways shall be protected by a gate or comparable control to prevent pedestrians from entering the road directly.
O. Passengers may not be transported on equipment unless a manufacturer-installed passenger seat is present.
P. When the plant is not in use or is unattended, the engines shall be turned off and the keys removed.
Q. Tracked equipment will not be permitted on-site access roads or asphalt roads unless adequate protection measures are in place.
R. Where there is a risk of rollover and falling objects, all mobile plants and equipment shall be equipped with manufacturer-approved Roll Over Protection Systems, Falling Object Protection Systems, and seatbelts.
S. All enclosed cabs shall be equipped with fully operational air conditioning.
T. Each mobile plant shall be equipped with a fully operational fire extinguisher.
U. Spills of fuel and oil shall be reported and cleaned up as soon as possible.
V. All mobile equipment and vehicles shall undergo daily and weekly user inspections.
W. Contractors are required to develop, implement, and document a maintenance schedule for all mobile equipment and vehicles.
X. In-house maintenance and repairs may be performed by a plant department. Only manufacturer-approved replacement parts shall be used, and documentation shall be kept.
Y. Any contractor equipment deployed on a permanent basis shall be tagged with a system managed by the contractor that includes inspection and maintenance information, manufacturer information, and a unique identifier. This tag shall never be removed as long as the equipment remains on-site

11.2. Third-Party Training, Licencing, and Certification

The following table details the operator training/certification and license requirements, as well as the inspection/certification and license requirements for mobile plants and vehicles. The Consultant will verify the equipment and operator certification and will not permit operations that do not conform to these requirements.

Definitions

A. **Assessment:** For registration purposes, service/inspection of the vehicle by an accredited third party. When no national registration is required, a competent internal plant department may conduct this evaluation.
B. **Examination:** Visual inspection by a competent and accredited third party.
C. **Test:** Test by a competent third party.

Note: All third-party equipment fitness certification and operator training shall be performed through RAKEZ's registered third-party agency.

Type of Equipment	Operator Requirement		Vehicle	Inspection/Registration
	Driving Licence	Type of Equipment		
Back Hoe Loader	Yes – National	Yes – Valid, accredited third-party operator assessment	Required	12-monthly assessments Also, need to include lifting requirements where the machines are capable of being used
Excavator	Yes – If used on public roads	Yes – Valid, accredited third-party operator assessment	Required (if used on public roads)	12-monthly assessments Also, need to include lifting requirements where the machines are capable of being used
Wheeled Excavator				
Wheeled Loader				
Skid Steer Loader (Bobcat)				
Mini Excavator				

Type of Equipment	Operator Requirement		Vehicle	Inspection/Registration
	Driving Licence	Type of Equipment		
Coring/Drilling Rig Trencher	N/A	Valid third-party training certificate	Not Required	12-monthly assessments
Grader	Required (if used on public roads)	Valid third-party operator	Required	12-monthly assessments
Dozer	N/A	Valid third-party operator assessment	Not Required	12-Monthly assessment
Telehandler	Required	Valid third-party training certificate	Required	12-monthly assessments (vehicle) 6-monthly third-party thorough examinations (lifting gear/accessories) 48 monthly third-party test
Forklift	Required (if used on public roads)	Valid third-party training certificate	Required	12-monthly assessments (vehicle) 6-monthly third-party thorough examinations (lifting gear/accessories) 48-monthly third-party test
Cold Planer Road Roller Ride on Roller Dumper	Required (if used on public roads)	Valid third-party training certificate	Required	12-monthly assessment
Mobile Crane	Required	Valid third-party training certificate	Required	Crane mat tested 12-monthly assessments (vehicle) 6-monthly third-party thorough examinations (lifting gear/accessories) 48-monthly third-party test
Crawler Crane Tower Crane	Required	Valid third-party training certificate	Required	Crane mat/foundation tested 12-monthly assessments (vehicle) (Cranes used for lifting people) 6-monthly third-party thorough examinations (lifting gear/accessories) 48-monthly third-party test

Type of Equipment	Operator Requirement		Vehicle	Inspection/Registration
	Driving Licence	Type of Equipment		
Truck Mounted Crane	Required	Third-party training certificate (crane operation) Valid third-party operator assessment (truck)	Required	12-monthly assessments (vehicle) 6-monthly third-party thorough examinations (lifting gear/accessories) 48-monthly third-party test Assessments
Tipper/Articulated Truck (including Tanker/Concrete Mixer Trucks)	Required	Valid third-party training certificate	Required	12-monthly assessment
Mobile Concrete Pump	Required	Valid third-party training certificate	Required	12-monthly assessments (vehicle) 6-monthly third-party thorough examinations (lifting gear/accessories) 24 monthly third-party test
Static Concrete pump	Required	Valid third-party training certificate	Not required	12-monthly assessment
MEWPS (scissor lift/cherry picker)	Not Required	Valid third-party training certificate	Not Required	12-monthly assessment 6-monthly third-party thorough examination

12. Lifting

Each contractor shall appoint a team of competent persons to manage lifting operations. All lifting shall be undertaken in accordance with ENAS and BS 7121:2016 requirements, including:

12.1. General Requirements

A. The lifting process shall be supervised by a team of trained and experienced professionals. If there are multiple contractors on a project site, the main contractor shall appoint someone to oversee the overall lifting of the project.

B. The Appointed Person of the contractor has overall responsibility for the safety of lifting operations. The 'Crane Supervisors' of the contractor shall defer to the decision/advice of the Appointed Person.

C. Plan and document the lift with a level of specificity proportional to the lift's complexity.

D. Where a contractor regularly performs multiple lifting tasks, the Consultant must ensure that lifting coordination is performed on a regular basis, which they shall attend (and chair, as appropriate) with the contractor's Appointed Person and team. The subject matter may be discussed in another forum, if appropriate.

E. Each contractor shall submit the necessary documentation to cover lifting arrangements that comply with BS 7121 and employer requirements. This collection of documents shall include a Lifting Operations Management Plan specific to the project, a Lifting Plan for each lift or type of lift, and pertinent method statements and risk assessments.

F. Monthly or quarterly color-coding of lifting equipment and accessories (lifting gear) is required to ensure that only certified equipment is in use on the job site. Only equipment or accessories with valid test or inspection certificates shall bear coloured tags.

G. In loading/unloading zones and lifting areas, exclusion zones shall be implemented and marked with caution tape or solid barriers to prevent accidental access. All slingers and signallers will be provided with a whistle to alert general workers of ongoing lifting operations.

H. The zoning and anti-collision systems shall be left in the "on" position with the keys removed and stored in a key safe under the control of a qualified Appointed Person.

I. For each appliance or piece of equipment, a qualified individual shall issue a certificate of safety after a thorough examination and test, and only after any necessary repairs have been made, indicating the serial number, technical details, tests completed, safe working load, etc. Any equipment requiring repair or awaiting replacement parts shall be quarantined and inaccessible on-site.

J. For all lifting equipment and lifting accessories, a copy of the third-party inspection and test certificates shall be on-site.

K. On the equipment, safe working loads shall be displayed.

12.2. Selection and Duties of Personnel

Shall consist of, but not be limited to:

A. Planning the lifting operation (including approval of all risk assessments, lift categorizations, and method statements), selecting the crane(s) and lifting accessories, providing instruction and supervision, and consulting with other responsible bodies as required to ensure effective collaboration for the safe performance of the work. The lift crew shall be informed of the content.

B. Ensure that the results of the planning process are documented in a lift plan.

C. Assuring that the equipment has undergone adequate pre-operational checks, intermediate inspections, maintenance, and a thorough examination.

D. Providing an efficient method for reporting defects and incidents and taking the necessary corrective actions.

E. Assuming responsibility for the planning and management of the lifting operation, as well as communicating with the Consultant.

F. Ensure that each crane’s zoning and anti-collision systems are tested daily.

G. Assuring that any cranes with faulty zoning or anti-collision systems are immediately removed from service and reported to the Consultant.

H. Obtaining written authorization from the Consultant prior to deactivating any zoning or anti-collision systems, following approval of a specific MS/RA. As soon as the task is complete, the zoning or anti-collision system(s) shall be reactivated

12.2.1. Lifting Supervisor

The contractors’ lifting supervisor will:

A. Monitor every lifting operation. The crane supervisor will direct and oversee the lifting operation, ensuring that the Lifting Plan is adhered to. The crane supervisor shall be qualified, suitably trained by a RAKEZ-registered third party, and have sufficient experience to perform the required duties. lifting Supervisors shall have completed an internationally-recognized training course for crane supervisors and possess pertinent experience.

B. Ensure lifting operations commence only after the project team has approved the task Lifting Plan and coordinated it with other lifting operations.

C. Supervise lifting operations to ensure that they are carried out safely and in accordance with the approved Lifting Plan, including supervision of crane drivers and slingers/signallers under their control in conjunction with the Appointed Person and other lifting Supervisors.

D. Supervise lifts by observing the lifting operation's complexity. Some lifts may require the crane supervisor's constant presence, while other repeated lifts with less complexity or risk may only require the crane supervisor to ensure that the operation is set up correctly and that all relevant parties understand the safe system of work/lifting plan and what to do if conditions or circumstances change that could affect the lift.

12.2.2. Slinger/Signaller (Rigger)

Contractors shall ensure that a sufficient number of qualified and certified Slinger/Signallers (riggers) are appointed to conduct all lifting operations safely. Slinger/Signallers shall be easily identifiable, with 'Slinger/Signaller' or 'Rigger' written on the back of a high visibility vest.

Slinger/Signallers shall:

A. Always be present when the crane or lift is in operation.

B. Possess a credential for lifting and slinging or other approved training. Their proficiency shall be verified through a physical demonstration on-site for the crane supervisor/Designated Person.

C. Employing hooks with safety catches, netting loose loads, and attaching tie lines, sling all loads according to lift plans and industry best practices, within the safe working limits of the equipment, while adhering to the safe working limits of the equipment.

D. Follow the crane supervisor and Appointed Person's instructions.

E. Provide crane operators with pertinent signals using the approved system of visual and radio signals.

12.2.3. Operators

Crane (or lifting equipment) operators shall hold a valid licence and or Operator Certificate for the type of crane they are operating and shall be responsible for the correct operation of their equipment as per the manufacturer’s instructions and within the bounds of their lifting method statement and task briefing. The operator shall only respond to the signals of one signaller.

12.3. Planning of Lifting Operations

All lifting operations shall be planned to ensure they are carried out safely. Planning will consider the following:

A. The type of load to be lifted, the load's characteristics, and the lifting technique (Note: It may be necessary to make allowance for any adhesion between the load and its support).

B. The selection of an appropriate crane for the operation, ensures that adequate clearances between the load(s) and the crane structure are maintained. Load-bearing travel shall be given special consideration.

C. The selection of lifting equipment, whose weight shall be considered when determining the crane's load capacity.

D. Crane and load positions before, during, and after the operation.

E. The location of the operations, taking into account proximity hazards, space, and ground or foundation suitability. When these environmental conditions are unsuitable, it may be necessary to suspend operations.

F. Any required erection and disassembly of the crane.

G. Any interface with other operations on-site that may pose a hazard, as well as methods for addressing these issues.

H. The closeness of the crane and load to the general public and third parties

The amount and level of planning required for a lifting operation will vary according to its complexity and level of risk. The three categories of lifting operations are described in the sections that follow.

The results of the risk assessment and planning shall be documented in a method statement, which may take the form of the Lifting Plan.

The level of specificity required in the Method Statement/Plan will vary based on the difficulty of the lift. For frequently lifted items such as pallets of blocks, the Project Lifting Plan shall include multiple generic solutions. On the opposite end of the spectrum, a method statement for a single lift of a large prefabricated roof could span several volumes.

Before any lift is performed, one of the following documents shall be produced and distributed to all relevant parties:

- Schedule of common lifts covering the lift to be carried out.
- A specific lift plan covering the task.

The lift plan shall consist of the following information as a minimum:

- Method Statement, Risk Assessment, and Lift Plan to be written by a certified Appointed Person.
- Appointed Person to sign Method Statement, Risk Assessment, and Lift Plan.
- Appointed Person, crane supervisor & Slinger Banksman certificates to be attached.
- Load details (weights and radius).
- Load analysis (weights and size).
- SWL analysis (% of crane capacity).
- Mobile crane, tower crane location, and drawing.
- Lifting accessories (chains, slings, wire ropes, shackles, pulleys. etc.).
- Laydown area for transport (loading and unloading).
- Barricading of area.
- Services locations.
- Surrounding environment.
- Valid crane certificates.

A. Basic Lifts: When the weight of the load to be lifted is known and there are no hazards or obstructions in the area of operation. This type of load typically consists of brick or block pallets, bundles of rebar, and scaffold tubes.

B. Intermediate Lifts: When the weight of the load to be lifted is known and there are hazards within the working area of the crane or on the access route to the working area, but no multiple crane lifting is involved. Pick-and-carry tasks, oversailing other cranes, lifting people, and landing or lifting a load without complete visibility of the path throughout the lift are typical examples of hazards.

C. Complex Lifts: When the lift takes place at a hazardous location, such as a chemical plant, or when the lifting operation requires more than one crane to lift the load, a Superlift-equipped crane shall be utilized.

D. Weather: The following measures shall be taken as a minimum:

  - When the wind speed exceeds the manufacturer's threshold or gusts of 38 mph at jib level, whichever is lower, tower cranes shall not lift. Lifting may only continue according to the manufacturer's recommendations, which typically specify a reduced average wind speed and a maximum gust wind speed.
  - When wind speeds exceed the manufacturer's recommendations or when gusts exceed 45 mph, whichever is lower, the crane shall be placed in the out-of-service position.
  - Either the load or the Slinger/Signaller shall be visible to crane operators. If environmental conditions prohibit it, lifting shall be halted. The visibility could be impaired by glare, fog, sandstorms, or heavy rain.
  - Consult the crane manufacturer's operating manual to determine when it is safe to lift in windy conditions and adhere strictly to its rules.

- Whenever crane operations are taking place, contractors shall have dedicated wind-speed monitoring equipment and protocols in place.

12.4. Crane Erection and Dismantling

All crane erection and dismantling operations contractors shall ensure the following requirements shall be met:

A. The verticality of the mast shall be examined to ensure that it is erected within the manufacturer's specifications. Before using or reusing a crane, the lifespan of its mast sections shall be determined and a suitable inspection conducted.
B. The location of the test and the path through which the test loads will be maneuvered shall be specified, including where and how the test load shall be disassembled, relocated, and reassembled around any obstructions on the test path.
C. Plan the work sequence, including a comprehensive pre-test examination, test sequence, lifting schedules, personnel involved, and general methodology.
D. Verify that the brake setting on the trolley motor is correct.
E. Proof shall be provided that manufacturer-approved jib clamps have been installed in the correct positions.
F. The test sledge shall prevent weights from becoming dislodged during the test, and it shall have the appropriate test and certification documentation.
G. Tower crane installation, climbing, dismantling, and testing shall be accompanied by a method statement and risk assessment. The statement/evaluation shall contain the following components:
    - Detailed description of the manufacturer's safety guidelines for activities, including a step-by-step procedure.
    - Methods for complying with all applicable local, state, and federal regulations
    - Safety checklists for all safety-critical procedures (e.g. ensuring checks are made before any securing bolts or pins are released, bolts are torqued to correct tension, etc.)
    - Accessibility and fall protection measures specifics for all work at height
    - Identification of suitable exclusion zones and implementation strategies
    - Examining lifting equipment/gear preparations (certificates on site)
    - Specification of crew roles, responsibilities, and competencies, as well as arrangements for supervision
    - Working hours, wind speeds, and other weather conditions, including the best day/date/time to perform the work to mitigate the risk of collapse, shall be considered.
    - Procedures for emergencies, including the rescue of incapacitated individuals from a height
    - Methods for team pre-launch briefings and toolbox meetings
    - Methodologies and plans for crew communications
    - Arrangements for third-party examinations of cranes (certification on site).
H. All permanent and temporary works, including crane bases, ties, hard standings, and loads imposed on the permanent structure, floor slabs, or ground, shall be reviewed by qualified engineers.
I. On-site cranes (typically tower and crawler cranes) shall be erected and dismantled by individuals with specialized training. Cranes shall be assembled in accordance with the manufacturer's manual using only manufacturer-approved parts and fittings. Hoisting and trolley cables shall be rigged in accordance with the manufacturer's detailed instructions.
J. Other cranes, other site activities, activities on neighboring premises, public activities such as transportation, electrical services, and anything else involving the public shall be adequately assessed and controlled.
K. Risks posed by/to installations and services in the area shall be evaluated and precautions taken (i.e. services overhead and below ground).
L. Other site-specific tasks shall be completed prior to commencing construction (e.g. testing tower crane base unit welds using the magnetic or dye methods before crane erection).
M. Unless otherwise specified, tower crane hoisting cables will be terminated with a wedge socket on the jib. The live and dead ends of the hoisting cable shall not be joined.

12.5. Lifting Communications

Establish a clear and efficient communication system between crane operators and riggers.

Contractors shall ensure radio communication exists between crane operators and signallers in order to supplement verbal communication with a visual signaling system. Hands-free communication is the preferred radio communication method because it allows signallers to simultaneously communicate visually and verbally.

In the absence of radio communication, contractors shall ensure that the crane operator always has an uninterrupted line of sight to the signallers.

To ensure consistency, all hand/arm signals shall adhere to the universal signaling system.

12.6. General Crane Requirements

Cranes shall be structurally sound and fitted with appropriate safety devices. Other general crane requirements include the following:

A. Prior to the installation of any crane, civil and military air traffic control authorities shall be consulted.
B. Before operating a crane, operators shall ensure that the test and maintenance certificates are up to date.
C. Where two or more cranes are erected in positions where they could collide or oversail, or where the crane jib could be swung into a restricted zone, a SIL 2-type anti-collision prevention system shall be utilized. This system shall only be utilized as a backup to vigilant crane drivers/bankmen equipped with crash radios, who shall be the first line of defense along with well-coordinated and managed lifts.
D. The systems shall be routinely inspected to ensure that the zoning and anti-clash functions are operating properly and that there has been no "creep" of zones, etc.
E. All projects with tower cranes shall maintain an agreed zoning and anti-collision drawing that depicts the zoning boundary, crane radii (including out-of-service), collision zones, and a designated zoning test point for each crane. The drawing shall be included in the lift plans for the project, and a copy shall be displayed in the cab of each crane.
F. Around the base of every tower crane mast, 2.4m high hoardings or mesh panels shall be erected, and hoardings shall be higher where adjacent structures or materials could aid in climbing. The access gate shall be locked to prevent unauthorized access, and consideration shall be given to the possibility that a rescue team may need to access the crane in an emergency to rescue the crane operator.
G. At any point of entry adjacent to a structure, hoardings or panels preventing access to the crane mast shall be installed.
H. Consider an operator access ladder with a fixed, lockable trapdoor and anti-climb mesh screens attached to the outside faces of the crane mast at the same level.
I. Every crane cab shall be equipped with a suitable fire extinguisher.
J. The working hours of crane operators shall be limited to reduce the likelihood of fatigue-related errors. Two drivers will operate single-tower cranes, three drivers will operate two-tower cranes, and five drivers will operate three-tower cranes.
K. Normally, the manufacturer's manual supplied with the crane specifies the regular inspection requirements, which shall be strictly adhered to. Before the crane is put to work, a visual inspection of the entire machine is required.
L. The crane shall be put through all of its motions by the driver, who shall immediately report any defects. All brakes and clutches shall be inspected to ensure proper operation.
M. A qualified individual shall be appointed to conduct a weekly inspection, which shall be documented. The inspection shall encompass the structure and mechanical components of the crane, as well as any structural ties, track, etc., and the proper operation of the safe load indicator.
N. The operator is responsible for completing the crane's logbook to record any faults or issues with the machine and its usage.

O. Always provide sufficient clear space for the length of the involved jib to prevent overlapping with jibs from other cranes.
P. Consideration shall be given to the proximity of other structures and contractors' work. Common access routes and areas shall always be inspected by contractors.
Q. Pre-operational checks include the following:
    - Crane is free of visual defects
    - Controls are in good condition and operational with readable markings
    - Ropes are not damaged and hooks are in good condition
    - Runways are clear of obstacles
    - Safety switches and interlocks are operational
    - Warning signs are in good condition
    - Lifting gear has current certification and shows no signs of damage
    - All brake stops and motion limits, including zoning (where applicable), are checked before any load is lifted.
R. If any lifting equipment or accessories lack certification or are damaged, they shall be removed from service.
S. No individual shall operate or permit the operation of a defective or uncertified crane.
T. Crane operators shall not exceed the crane's capacity and shall cease operations immediately if the automatic warning devices activate.
U. Grillages (crane mats) shall be used to distribute the load on mobile crane outriggers.
V. All mobile cranes shall extend their outriggers before initiating lifting operations. Before beginning lifting operations, the crane's warning devices and lights shall be fully operational.
W. For the use of mobile cranes managed by the contractor or Consultant, a permit-to-work system is required. Additional lifting permits may be required, as specified in each organization's regulations.
X. Cranes shall have the ability to isolate controls when the crane is not in use, the crane cab is powered (e.g., the air conditioning is on), or the operator is inside the cab to prevent accidental use of control.
Y. To ensure that no slippage occurs, brakes shall be rechecked as soon as the load has been lifted clear of the ground or landing.

12.7. General Lifting Accessories Requirements

A. Lifting equipment shall indicate a safe working load.
B. Wire ropes may not be used for lifting operations if they are kinked, or severely rusted, the core is visible, or if more than five percent of the individual wire strands are broken in any section. The supervisor shall decide when to remove a wire rope from the service.
C. If there are significant cuts, snags, or holes, web slings shall not be used for lifting operations. The competent supervisor shall determine when a web sling shall be removed from service.
D. Slings supplied with pre-slung materials and canvas bags shall be used only once.

12.8. Lifting of Person- Requirements

A. Every six months, all lifting equipment used for lifting people will be subject to a third-party inspection. Both lifting equipment and lifting gear are included.
B. Man-lifting operations utilizing MEWPs shall incorporate secondary fall protection. This protection consists of a harness and lanyard attached to a designated anchor point.
C. Cranes with "traditional" manually operated slipping friction clutches must not be employed. Cranes with permanently engaged hydraulic clutches are required.
D. Cranes shall be operated in a mode that automatically lowers their load. Cranes with a free-fall mode shall be "locked out" of free fall via a key-operated selector; this shall be indicated externally on the crane and internally via light or sound. While the crane is performing man-riding duties, the project or site manager or other designated personnel shall secure the keys.

E. Cranes shall be equipped with automatic brakes that engage when the hoisting lever is not in the operating position. In addition to the automatic brake, there shall be a hydraulic winch motor and a foot-operated brake for stopping the load.
F. The latching mechanisms shall be removed from cranes with catchable controls so that the controls automatically return to the neutral position when released.
G. Each crane shall be individually evaluated, and a technical statement detailing its suitability for lifting people shall be obtained from the Manufacturer. Before beginning man-riding, this statement shall be evaluated by a technically-competent person and agreed upon.
H. Planned manlifts shall include a method statement and risk assessment. Include detailed rescue procedures for workers at height in all emergency plans.

12.9. Include requirements for inspection by RAKEZ registered testing & training agencies

All cranes, lifting equipment, and accessories shall be inspected thoroughly prior to their first use and on a regular basis, with at least an annual certification from a qualified individual.

The user is responsible for ensuring that the crane or equipment is taken out of service long enough for the designated competent individual to conduct the comprehensive inspection. The user shall also ensure that a safe system of work is in place to protect the competent person from accidental crane operation. When lifting equipment is rented from a third party, the user is responsible for conducting thorough inspections at the prescribed intervals. If the user and the owner agree that the owner will conduct the thorough examinations, the user shall ensure that they are conducted.

The Appointed Person shall verify:

- Any third-party certificate, ensuring it is accurate and represents the lifting equipment or accessories in question.
- The company/competent person is accredited by the local regulatory authority.
- The company/competent person has insurance coverage for professional liability.

The crane certification shall consider the following:

- All types of cranes shall be inspected and certified by a RAKEZ-registered third-party agency prior to initial use and on a recurring basis, in accordance with local law.
- Before any crane is used, the Consultant shall verify that the current test/examination certificate is valid.
- Attached to the certificate shall be a statement from a qualified engineer confirming that the crane meets all statutory and manufacturer requirements, is in good condition, and is fit for its intended purpose.
- Webbing slings shall be inspected frequently, and any that are damaged or frayed shall be discarded and replaced.
- A competent individual shall inspect the hard-standing and packers beneath the outriggers of mobile cranes.

All lifting equipment shall be suitable for its intended use, marked with a means of identification and safe working load, and suited to the task at hand.

The Project Lifting Plan shall specify the appropriate lifting equipment for each task. No equipment other than that specified may be used for the lifting operation. If equipment not specified in the Lifting Plan is requested for use, the Lifting Plan shall be revised and reapproved.

Lifting Accessories (Gear)			Mandatory Inspection and Certification Requirements
 Shackles	 Wire Rope Sling	 Wire Rope Grips	A. Thorough examination before first use B. Competent person (user) pre-use inspection C. No less than a monthly reported in-service inspection/test by a competent person D. In-service thorough examination every six months
 Lifting Clutch	 Chain Slings	 Web Slings	
 Lifting hooks	 Plate clamps	 Lifting beam	
 Pipe Clamp	 Beam clamp	 Suction Lifter	
 Forklift Hook Attachment	 Pallet Lifter	 Man Basket	

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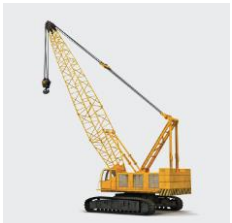
C Hook</td><td></td></tr>
<tr><td colspan="3">Lifting Equipment and Appliances</td><td>Mandatory Inspection and Certification Requirements</td></tr>
<tr><td> 
Tower Crane</td><td> 
Mobile Crane</td><td> 
Crawler Crane</td><td rowspan="4">A. Pre-use inspection (competent user) or monthly site inspection (competent person)
B. Annual inspection of equipment by a third party or an inspection every six months if used to lift the person
C. Third-party test (proof load) every two years</td></tr>
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Crane Arm</td><td> 
Telescopic Handler</td><td> 
Forklift</td></tr>
<tr><td> 
Powered Straddle lift</td><td> 
Winch</td><td> 
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<tr><td> 
Chain Block</td><td> 
Hydraulic Material lift</td><td> 
Hydraulic Table lift</td></tr>
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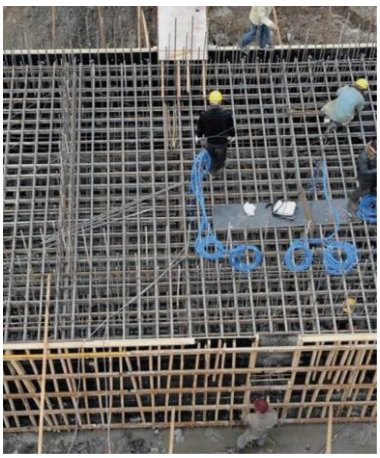
A Frame Gantry	Bottle Jacks	Hydraulic Jacks	

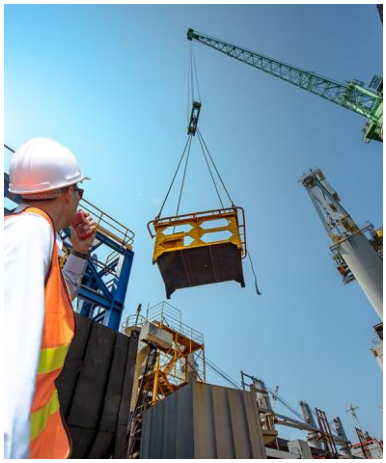
12.10 Slinging Methods

A schedule of common lift-recommended slinging methods is provided in the table below

Slinging Method	Description
 Man Basket	A. A crane is capable of lifting man-baskets. Attach a safety wire rope as depicted in the diagram. B. The agent shall wear a restraint harness without a shock absorber and attach it to a known anchor point. C. Man-basket certification is required every six months. D. Every six months, cranes and accessories used for lifting people shall be certified.
 Scaffold Tubes/Rebar Lengths	A. When lifting banded or unbanded bundles of tubes, bars, or other loose materials, slings shall be double-wrapped. B. The illustration depicts slings with a double-wrap choker hitch. C. Please be aware that a choke hitch will reduce the safe working load by 20%. Utilize a single-leg sling (also known as a drop or skip chain).

Slinging Method	Description
 Concrete Bucket	A. Wrap chain slings or wire rope around corner posts B. Fabric straps are inappropriate C. It is unlawful to ride on concrete buckets. D. A safety latch shall be in place before concrete buckets can be attached to the crane hook. Utilize a single-leg sling (also known as a drop or skip chain).
 Stillages/Skips	A. It is improper to double-stack skips. B. Skips shall be structurally sound and equipped with lifting points for transport. C. The lifting of the skips shall be coordinated with the provider. D. Skips shall not be overfilled or contain items that are too large to fall through the sides and shall have solid sides. E. When necessary, lifting cradles that have been designed, tested, and certified shall be used to secure the skip to the cradle and the crane. F. Before each use, skips shall be inspected, including a check of the underside, by the crane supervisor. The raising or lowering of skips over public roads or footpaths shall be avoided; if this is not possible, it shall be done only during off-peak hours, with particular attention paid to excluding personnel from the area of operation.
 Mesh/Preformed Rebar Cages	A. Pass each hook of a four-legged chain sling through welded rebar mesh and return to form a choke hitch. B. Lifting points shall be evenly spaced to prevent excessive bending or twisting.

Slinging Method	Description
 Palletised Loads	A. For delivering blocks and other stacked materials on a pallet, safety-netted pallet forks shall be utilized. B. Safety netting shall be certified and weighted for the intended load. C. The use of restraint netting for lifting is prohibited.
 Steel Sections/Beams	A. Use double-wrapped wire rope or chain slings when sling legs can slide together
 Lifting Points/Spreader Bars	A. Many plant items or prefabricated equipment (such as portacabins, compressors, skips, and pre-built scaffolds) are provided with a certified, built-in lifting point B. Lifting points shall be used with two-leg or four-leg chains C. Attachment points shall be determined by a competent crane supervisor

Slinging Method	Description
 Tag Lines	A. Double tag lines shall be used, where possible, to improve landing control
 Centre of Gravity	A. AB. Where uneven or unbalanced loads are lifted, the slinging a method shall account for the centre of gravity

13. Breaking Ground and Excavation

13.1. General Requirements

A. All excavations shall be conducted with an approved MS/RA and under a permit-to-dig arrangement, and contractors shall have permit-to-dig procedures and processes in place.

B. The excavation process shall be supervised by a competent individual.

C. Where excavations are near active sewers, where plant and machinery are nearby, or where airflow is restricted, atmospheric testing shall be conducted.

D. Signage, edge protection, barriers, and lighting shall be properly installed prior to excavation operations.

E. The location of new services shall be recorded accurately, using best practice techniques such as tracing tapes or other devices to facilitate future tracing and prevent strikes.

13.2. Planning of Excavations

13.2.1. Existing Services

A. Before beginning excavation work, the Consultant and the contractor shall take all necessary steps to obtain information regarding the location and nature of underground services.

B. No work shall be performed on live cables or close enough to cause danger. When it is impractical to terminate the cable, all necessary precautions shall be taken.

C. No Objection Certificates (NOCs) are necessary if work is to be performed within five metres of any active Etihad WE service.

D. The contractor shall employ safe excavation methods and implement details to divert or protect and mark these services.

E. Explicit services/utilities may require support. To support utility cables and pipes exposed during excavations, utility bridges/culverts or steel wire rope arrangements shall be used.

13.2.2. Design, Support, and Stability

The design of the excavation is determined by the size and shape of the required ground formation. Several factors shall be considered to guarantee excavation safety:

- Excavations exceeding 1.25 meters in depth and excavations adjacent to existing structures, infrastructure, and watercourses are prohibited.
  - When examining soil investigation/sampling reports, particular attention shall be paid to the location of any water table, whether it will be exposed by the excavation, and how it will affect the stability.
- The divergence of any surface water to prevent ingress into excavations and the process of removing groundwater from excavations shall be considered during design.
- During the excavation process, if any deviation in services or conditions is discovered, all work shall immediately cease and further direction shall be sought.
- The design of excavations shall eliminate the danger posed by confined spaces.

13.3. Excavation Work

13.3.1. Excavation Access

Access to excavations and trenches is favored via ramps, temporary system staircases, wooden stairs, access bridges, or equivalents. Ladders shall be utilized only as a last resort. The usage of wailings and struts is prohibited. All excavations and trenches, regardless of size, shall have at least two access points. The following shall be taken into account during all excavation work:

- Sandbags can be used to create stepped access in situations where access is required for an extended period of time but the excavation is deep or damaged. The access steps shall be provided with a suitable handrail.
- In the event of flooding or other emergencies, egress routes shall be considered.
- If ladders are used, they shall only be for temporary access. In the event of flooding or falling objects, ladders shall be securely fastened and well-maintained, and they shall allow for a quick and easy escape. At the point of access for ladders, self-closing scaffold gates are required.
- If benches are used for access, the contractor shall ensure that adequate edge protection (double guardrail) is installed along the entire access route.

13.3.2. Fall Protection

Wherever individuals, equipment, or materials could fall into excavations, pits, or holes, or where there is a risk of the excavation sides collapsing, barriers or edge protection shall be installed, with all edges sloped to appropriate gradients. Guarding excavations and preventing falls consists of the following components:

A. Edge protection shall be in place for all excavations, regardless of depth, to ensure personnel, plant, and equipment maintain a safe distance and that no materials are stored near the edge. Each barrier shall be at least one meter away and provide adequate protection.
B. Cones and hazard warning tape/rope used to demarcate work zones are not acceptable edge protection.
C. When vehicles are required to reverse into an excavation or work in close proximity to an excavation, stop blocks of sufficient size and strength shall be positioned to prevent the vehicle from driving over the edge. Additionally, the stop blocks shall be positioned so that the excavation's edge does not collapse under the weight of the vehicle (or the blocks). End gratuities are not permitted.
D. Any excavation within 10 meters of a roadway shall be surrounded by interlocked continuous barriers, concrete jerseys, water-filled bunds, or sand bunds. To prevent vehicles from falling into an excavation, there shall be substantial barriers.
E. For large earthwork projects, it is recommended that excavated material be used to construct a continuous bund wall along the perimeter of the project, with breaks only at access/egress points.
F. Barriers may be removed to allow access to machinery and equipment, but they shall be replaced immediately.
G. Low-light or nighttime working conditions necessitate the use of visible hazard warning lights at the excavation's perimeter.
H. Where there is a risk of loose material falling from excavation walls and edges, suitable debris netting shall be installed as part of the excavation design.
I. Under no circumstances shall surveyors and workers approach the edge of an excavation, and they shall always remain at least one metre away.
J. During excavation work, manual levelling is prohibited and shall be performed by surveyors using survey equipment or excavation machinery with GPS level checking systems.
K. No one shall enter an excavation via excavation benches, nor shall any work be performed while standing on excavation benches.

13.3.3. Inspection of Excavations

The excavations shall be inspected in the following circumstances:

- Weekly inspection by a competent engineer with documentation.
- daily by a qualified supervisor prior to the start of work.
- After any event that could have affected the excavation's or any portion's strength and stability.
- After any accidental material fall or injury incident that occurs during excavation.

13.4. Piling

- As with excavations and groundwork, piling requires controls:
- Existing information shall be gathered and evaluated to confirm the presence of services, and MS/RAs shall be supported by valid permits.
- The construction site shall have adequate exclusion zones and edge protection.
- The documentation of a comprehensive examination of lifting equipment and devices shall be maintained.
- As soon as the auger is removed, pile covers/gratings or physical barriers shall be installed around each pile; material stockpiles shall be moved away from the borehole.
- Any material extracted from an auger shall be accomplished mechanically, and if possible, automatically.

- Bundles of sheet piles require spacers and chocks; piles shall not be stacked in any position that could result in their collapse.
- Piling mats and access ramps shall be governed by temporary works arrangements.

14. Working in the Heat

The contractor shall conduct a risk assessment to identify high-temperature working environments and implement effective control measures to reduce exposure and safeguard workers from heat exposure.

14.1. Training and Competence

General training in working-in-heat awareness shall be provided to all employees throughout the summer months. Awareness activities shall include:

- Awareness-raising training about the dangers of working in the heat
- The significance of maintaining adequate hydration and a well-balanced diet is explained.
- Recognizing the symptoms of heat illness
- Appropriate information and awareness about heat as a hazard and the precautions necessary to avoid heat-related illnesses (e.g. posters, information leaflets, training videos, and presentations)
- Informational and awareness campaigns to maintain awareness among those exposed to extreme heat
- Posters illustrating monitoring will be displayed.

The contractor shall ensure managers and supervisors are appropriately trained on:

- How to identify the symptoms and signs of heat-related illness and how the body overheats
- The measures to be taken to prevent heat-related illness in the workplace.
- The significance of self-pacing and the necessity of adequate rest breaks for recovery
- Procedures for requesting First Aid or medical assistance.

Contractors shall ensure First Aiders are suitably trained on the:

- How the body overheats and how to identify the various types of heat-related illness
- Precautions shall be taken to prevent heat-related illnesses.
- Treatment of the various types of heat-related illness as a matter of first aid
- Methods for requesting medical assistance.

14.2. Heat Stress Programme Requirements

Contractors that have employees working in high-temperature environments shall develop a worksite-specific heat stress program consisting of but not limited to the following elements:

A. Allow 5–7 days for acclimatisation prior to beginning strenuous work in a hot environment for new employees, employees returning from vacation, and employees moving from a worksite with climate control to a worksite with high temperatures.
B. Method for evaluating environmental conditions using the Thermal Work Limit (TWL) to determine work/rest breaks and water consumption needs for employees.
C. System for communicating current environmental conditions to employees in order for them to take preventative measures against heat stress-related injuries and illnesses.
D. System for informing/reminding employees, employees returning from vacation, and site visitors of the dangers of heat stress, signs and symptoms of heat stress, and preventative measures against heat stress.
E. Provision of adequate quantities of potable drinking water near the worksite and electrolyte replacement drinks, as directed by a qualified physician, for employees working in high-temperature environments, as well as the implementation of programmed drinking every hour, as necessary, to encourage adequate fluid intake.

F. Provision of appropriate clothing (e.g., lightweight, cotton, light-colored, and loose-fitting, unless operating machinery) and PPE, as well as a large personal water container (without of at least one liter in size). Sharing drinking cups, water bottles, or other similar containers is prohibited.
G. Provision for the design and placement of shade and cooling shelters for employees working outside during the summer months, as well as suitable cooled accommodation/shelter during the Ministry of Labour-mandated midday break period.
H. Whenever possible, physical activities shall be scheduled during the summer months during the coolest part of the day.
I. Provision of pre-employment screening for all employees working in high-temperature environments in order to identify chronic medical conditions (e.g., hypertension, obesity) or the use of prescription medications that may affect their resistance to heat stress.
J. Inductions prior to working in high-temperature environments and a permit-to-work system in environments with extremely high temperature and humidity, including the TWL High, Risk Zone.
K. Audit/inspection program to ensure that workplaces adhere to the requirements of the heat stress program.
L. Training for all staff members.
M. Examining and reporting heat-related injuries and illnesses
N. Engineering controls to eliminate or reduce exposure to heat. Control measures could consist of:

- Offering work areas with shading
- Adding insulation to ceilings to reduce solar heat transfer.
- Offering water or electrolyte drinks in cooled and air-conditioned rest areas
- Utilizing exhaust ventilation such as fans to enhance airflow across the skin, thereby enhancing evaporation and cooling.
- Utilizing cooled air from an air conditioning system to cool work areas.

O. Planning work so that a sufficient number of workers are acclimated and prepared to work in a high-temperature environment.
P. Long shifts shall not be worked in areas with high heat stress.
Q. Appropriate isotonic fluids shall be readily available and easily accessible during periods of high temperature to ensure adequate hydration. If dependable containers (such as water coolers) are utilized, the seal shall be taped with the date the container was filled. Daily cleaning and refilling of refillable containers are required, and containers without a taped and dated seal shall not be used to rehydrate employees.
R. Contractors ought to display urine charts.
S. Contractors shall be prepared to work in extreme weather conditions. This plan shall include the requirements of the Summer Working Plans and other weather conditions to which workers are exposed, and it shall be submitted to the consultant at least eight weeks prior to the start of the Ministry of Labour-mandated summer working restrictions

15. Hot Work

Contractors shall develop a fire safety plan and fire risk assessment for their projects, including provisions for managing fire hazards, reducing fire risk, fire prevention and detection systems, emergency plans and response, training, and competency, key personnel, and responsibilities. The fire safety plan and fire risk assessment are deliverables that shall be approved by the Consultant. They are frequently incorporated into the Emergency Plan or the Health and Safety Plan.

Key fire safety precautions include the following:

A. No gasoline-powered equipment or tools are permitted on the premises.
B. Halogen portable lamps are not permitted as task lighting (stand lights).
C. For the temporary protection of building finishes, materials, and plant life, such as Monoflex and Correx, and the containment and protection of delivered materials, fire-resistant materials shall be used.
D. Unattended sources of potential fire ignition are prohibited, such as bitumen boilers and space heaters.

E. Smoking is only permitted in designated areas, which shall be clearly marked and completely separated from any flammable or combustible material storage areas.
F. The employees shall be adequately trained on how to use fire extinguishers safely.
G. Every type of hot work, including burning, welding, and abrasive wheel operations, shall be subject to a Hot Works Permit procedure. The use of acetylene shall be restricted to exceptional circumstances and shall be governed by a permit system.
H. Compressors shall be located in the open, away from other plant components, and shall never be powered by gasoline.

15.1. Hot Work Activities

All processes likely to produce ignition sources, including burning, grinding, heating, welding, and flame cutting, shall be governed by a permit system. At any location where hot work is performed, fire extinguishers and a log of issued permits and locations shall be readily available.

Contractors shall ensure that:

A. When performing hot work, all flammable and combustible materials are removed from the area.
B. The protection of wooden floors with non-combustible materials.
C. For welding and cutting operations, non-combustible (flame-resistant) screens are utilized or installed to prevent flashes from affecting other site users.
D. There are fire extinguishers and fire watchers available.
E. Upon completion, follow-up inspections are performed; this inspection shall be conducted at least one hour after the hot work has concluded.
F. The proper attire and PPE are worn.
G. Gas welding equipment only utilizes proprietary fittings.
H. All flammable gas or oxygen cylinders are equipped with 'flashback' arrestors and are only transported on a proprietary trolley with a fire extinguisher nearby, or with the cylinders themselves.
I. All fuel and oxygen containers are equipped with suitable flashback arrestors.
J. Full screening is available for arc welding in areas where access cannot be completely restricted.

15.2. Storage of Flammable or Combustible Materials

A. Storage areas shall be labeled to indicate any potential dangers.
B. Flammable materials, such as paints and gas cylinders, shall be stored in ventilated, locked areas outside of construction buildings, per manufacturer specifications.
C. Flammable materials shall not be stored in direct sunlight, shall have appropriate signage, shall be at least four meters away from buildings and boundary fences, and shall have fire control measures in place, including at a minimum a fire extinguisher.
D. At the end of each day, stored quantities of flammable materials shall be reduced to a minimum and returned to the warehouse. Any liquids shall be stored in accordance with the manufacturer's instructions and bunded areas or individually.
E. Gas stations are not permitted.
F. To prevent excessive fire loading of the construction building, combustible materials shall be brought to the site and stored using a "just in time" method. The presence of a fire exit shall be obvious in all stores.
G. All storage of materials and debris shall account for the possibility of fire, and the corresponding control measures shall reflect this. Protection measures for stores could include fire-resistant materials, sprinklers, and smoke detectors, but shall not be limited to them

15.3. Smoking

Smoking is prohibited at the following locations:

- every enclosed area

- In close proximity to flammable substances, explosives, and flammable liquids/gases.
- In existing structures, basements, or parking garages.
- In company vehicles or on-site transportation.
- In the final stages of construction where numerous flammable fixtures are installed.
- In offices, break rooms, kitchens, restrooms, and locker rooms.

Where smoking is allowed:

- In designated smoking areas, as identified and evaluated in the Fire Risk Assessment, smoking is permitted.
- Designated smoking areas shall be constructed of non-combustible materials and equipped with sand buckets or other suitable containers for safely extinguishing cigarettes. There shall be adequate signage indicating all designated smoking areas.

Note: Passive smoking endangers the health of other employees. Designated smoking areas shall not be located in locations where other personnel may be exposed to passive smoking.

15.4. Fire and Life Safety Systems

It is necessary to make provisions for fire detection, alarm, and extinguishment. The alarms shall be audible in all areas of the facility where people may be present, and they shall be tested weekly to ensure their functionality. The fire detection and alarm system shall conform to the UAE Fire Code.

15.5. Means of Escape

Whenever possible, two alternative escape routes shall be available at all workplaces. Emergency exit routes shall be easily identifiable, clear of obstructions, equipped with emergency lighting, directional signs, and clearly marked exit points, provide an additional level of fire resistance, and have fire doors installed as needed. Each area shall have an emergency exit route displayed on a map.

From each floor, a minimum of two escape routes shall be provided. Evacuation routes shall be clearly marked and displayed. Planned construction shall ensure that escape routes and stairwells are clear of obstructions. Fire marshals shall walk routes every day. Coordinators shall conduct weekly inspections of escape routes/staircases and record the results in a register. According to the UAE Fire Code, all escape routes and staircases shall be equipped with emergency lighting.

15.6. Fire Safety Coordinator and Wardens

Training and appointment of a sufficient number of fire coordinators and marshals/wardens are required. Courses in training shall be administered by Civil Defense-approved or -accredited providers.

15.6.1. General Duties of Fire Coordinator

A. Ensure the fire plan is accessible and current.
B. Ensure that the plan's requirements are carried out.
C. Check and maintain all firefighting equipment, and inspect fire exits and escape routes on a regular basis.
D. Ensure that designated fire personnel are properly trained and their information is recorded.
E. Ensure that emergency procedures are posted and that fire exits are well-marked.
F. Schedule a fire drill at least once every six months.
G. Communicate with the RAK Civil Defense regarding required Fire Risk Assessments.
H. In the event of a fire or other emergency evacuation, the Fire Coordinator is responsible for the overall evacuation of the establishment, with the Fire Marshals reporting to them at the assembly point.

15.6.2. General Duties of Fire Marshall/Warden

A. Enforce the fire plan's requirements.
B. Perform daily documented fire inspections of fire points, extinguishers, and escape routes.
C. Ensure that Civil Defense is directed to the incident site.
D. Ensure the key personnel/emergency list is up-to-date and direct or assist with any shearing arrangements.
E. Assist emergency services as needed by providing information on LPG storage facilities, high voltage cable routes, and other pertinent data.

15.7. Emergency Services

At all times, adequate access shall be maintained for emergency vehicles. Access to firefighting services, including hydrants and first aid or medical rooms, shall be clear and well-maintained. Access to emergency services shall be considered in the logistics and traffic management plans for the project. RAK Civil Defense shall conduct periodic reviews of the firefighting facilities in order to perform the following:

A. Update equipment.
B. Access relevant construction sites and processes.
C. Ensure that all mandatory standards for Civil Defense are met.

16. Confined Space

Where contractors are required to work in a confined space (i.e., any area including a chamber, tank, vat, silo, pit, trench, sewer, flue, or similar space that, by virtue of its enclosed nature, poses a reasonably foreseeable significant risk), these works shall be performed under the conditions specified in a job-specific confined-space-entry permit, method statement, and risk assessment.

Before beginning work in a confined space, a permit shall be obtained.

The following will be the responsibility of the contractors:

- Certification and good condition of all safety equipment, including portable gas detection devices, escape-breathing apparatus, harnesses, and other escape equipment (including a rescue tripod for work in holes).
- Providing training to all personnel who enter a confined space.
- Utilizing a permit system for confined spaces that includes an emergency plan.

16.1. Confined Space Documentation

Before beginning any work in a confined space, contractors shall develop the necessary documentation outlining access, egress, and emergency response procedures. This document shall contain;

- The scope and nature of confined space work to be carried out by the contractor
- A schedule of all confined spaces that the contractor will encounter on their project
- Classification of confined space based on risk profile and the number of entrants (e.g. Class A, Class B, etc.)
- Roles and responsibilities
- Organisation chart (with names and phone numbers)
- Health and safety control measures
  - Access/egress arrangements
  - Unauthorized access prevention arrangements
  - Entry and exit arrangements (monitor, register, ID tag system, etc.)
  - Criteria for excluding permit to work
  - Permit to work procedure and flow chart
  - Atmospheric monitoring procedure and frequency

- Ventilation provisions and, if the situation warrants, air replacement calculation performed by a competent engineer
- Communication arrangements (constant and intrinsically safe):
  - The system in place shall ensure continuous communication between applicants.
  - The system in place shall ensure continuous communication between participants and the observer/supervisor.
  - In the event of an emergency, the system in place shall allow for uninterrupted communication to summon assistance.
  - When positioning generators and ventilation inlets, wind direction shall be considered.
- Equipment (lights, tools, etc.) to be used inside the confined space (these shall be intrinsically safe – if not, a risk assessment is required to ensure risk is reduced to an acceptable level)
- Fire prevention measures
- Hierarchy of rescue and emergency arrangements based on the schedule below:
  - Eliminating dangers (self or tripod rescue)
  - Low risk and one participant (tripod rescue)
  - Low risk and numerous entrants (15 min escape sets and third-party rescue trained entrants)
  - High-risk and solitary entry (work rotation, escape sets, third-party rescue trained entrants)
  - Multiple participants and high-risk (work rotation, SCBA, escape sets, third-party rescue trained entrants, and standalone rescue team)
- Duration of exposure or maximum working hours for an entrant to be defined in a table based on the schedule above
- PPE schedule
- If a respiratory mask is to be used, then the procedure for the fit test shall be included in the plan
- Competency criteria for the entrant, gas monitor, and rescue team (all shall be third-party certified, and work-specific training shall be provided by the contractor and recorded)
- Lighting requirements
- Signage schedule
- Criteria/conditions to stop work
- Risk assessment

Note: Ensure that all work will be halted and documentation updated if any deviation, new hazard, or finding from an audit or inspection is encountered.

16.2. Personnel Selection

The contractor will ensure that both the applicant and the rescue team are capable of performing the work. The selection process shall include, but not be limited to, the following factors:

A. Size and fitness appropriate for the task.
B. Medical fitness – A medical fitness test shall be administered every six months to ensure that neither the entrant nor the rescue team suffers from any lung diseases, epilepsy, fits, blood pressure conditions, physical fitness issues, or mental health issues that could compromise their ability to perform their duties safely.
C. Personnel shall be knowledgeable.
D. Personnel shall receive entry and rescue training from a third party.
E. Personnel shall be knowledgeable of all required procedures.
F. Suitable attendants
G. A comprehensive risk assessment is required to confirm the aforementioned.
H. The operation shall be continuously monitored.
I. The provision of PPE and emergency equipment is required.
J. Communications shall be reliable and intrinsically secure.
K. Monitoring of the atmosphere shall be performed prior to and during entry.
L. Detailing emergency procedures, including first aid, is essential.

17. Electrical Safety

17.1. General Requirements

The contractor shall develop and disseminate a project-specific Electrical Safety Plan that addresses temporary and permanent installation arrangements and controls. The plan shall be approved before any electrical systems are installed.

A. All electrical installations shall comply fully with the latest IEE Wiring Regulations (BS7671: 2008).
B. In accordance with the IEE Wiring Regulations, all temporary electrical systems on construction sites shall be inspected and tested every three months.
C. Contractors shall appoint a qualified electrical coordinator/duty holder to oversee the design, installation, testing, and maintenance of temporary electrical systems.
D. All electrical equipment used on the job site shall be manufactured and installed in accordance with BS 7671 and internationally recognized standards.
E. Industrial-grade cables, sockets, connectors, and splitters will be utilized. In construction zones, domestic-style wiring, plugs, and outlets are prohibited. All electrical wires and cables shall be joined using proprietary terminations or connectors/splitters

17.2. Temporary Supply

A. Transformers, distribution boards, and supply panels shall be of sufficient quantity, secured against unauthorized access, earthed, and inspected by a qualified individual prior to use.
B. All on-site switchgear shall be accessible at all times, with an isolating switch readily available on the equipment or immediately adjacent.
C. All main switchgear shall be equipped with a locking mechanism for the open (off) position.
D. Switchgear shall be housed in freestanding main distribution units whenever possible.
E. If it is not possible to house switchgear in this manner, it shall be installed and protected so that it is not exposed to any adverse or dangerous conditions, and it shall be secured to prevent unauthorized access.
F. In the event of an emergency, there shall be one main switch on-site that can shut off all site power. This location shall be marked and the employees shall be aware of it.
G. If electricity is to be generated on-site, generators shall be grounded and enclosed, preferably in packaging, to reduce noise.
H. All generators shall have integral bunding and a drip tray.
I. The location of fuel storage shall be in a bunded facility.
J. The contractor shall install fire extinguishers made of foam.
K. All distribution units shall be lockable, IP-rated in areas where water intrusion is likely, elevated, fire-resistant, identified by serial number, and inspected by a qualified electrician.

17.3. Circuit Breakers

All electrical circuits shall be safeguarded by a protection device that is routinely inspected. Multiple circuits with protective devices shall be incorporated into electrical designs to reduce the likelihood of false tripping and facilitate the identification of any faults.

All outlets in the construction area with a voltage greater than 110 volts will be protected by individual RCDs with a maximum sensitivity of 30 milliamps and zero-delay time.

17.4. Cable Protection

All electrical supply boards, cables, cords, plugs, and sockets shall be positioned or protected to prevent becoming a tripping hazard or being physically damaged by vehicles, water, or other means (for example, by elevation or armour).

Elevate electrical cables to prevent them from becoming both a tripping hazard and a source of electrocution. Any cables elevated above pedestrian or vehicular paths shall be conspicuously marked to prevent collisions. Consideration shall be given to armored cables in hazardous or potentially hazardous environments. When burying a cable, appropriate protection shall be installed. The buried cable shall be encased in a protective duct or sleeve, buried at least 0.5 meters deep, and marked and recorded at ground level and on the relevant electrical plans.

Cables shall not be suspended from the steel scaffolding/falsework. All exposed metalwork and conductive components shall be earthed and grounded.

The electrical contractor in charge of temporary distribution shall place safety signage on all power distribution systems and equipment to alert users to potential electrical hazards.

17.5. Electrical Fires

All contractors shall assess the risk of electrical fires, take the necessary precautions, and implement appropriate mitigation strategies, including the provision of an adequate number of CO2 extinguishers, to address any potential problems.

As part of their Electrical Safety Plan, the electrical contractor will administer a permit-to-work system for all works requiring connection to and/or isolation from the existing temporary electrical system or incoming power supply.

17.6. Electrical Power Tools

A. All portable electrical tools and equipment shall be powered by a 110-volt supply.
B. Specialist operations requiring operating voltages greater than 110 volts (230 volts or 415 volts) shall be brought to the attention of the Consultant, who shall approve them. Before beginning work, all such equipment shall be protected by a residual current device and armored cable, if necessary, and inspected by a licensed electrician. All usage of these tools shall be governed by a work permit.
C. All electrical portable tools and equipment shall be inspected before initial use and on a regular basis, in accordance with industry standards, and labeled with the date of the most recent inspection. All equipment that can be connected to an electrical supply via a detachable plug shall be tested, including construction equipment, office appliances, and extension cables. Testing shall be performed by a qualified individual, and testing records shall be kept. Before using equipment, users shall be trained and conduct a visual inspection.

17.7. Competency of Electricians

Only qualified electricians may work on electrical circuits and equipment, and the contractor shall provide documentation of their qualifications.

A. All contractors shall ensure that this requirement is met and that evidence of qualification is readily available at the construction site office.
B. The Consultant shall inspect proof of competence to ensure that no one is put in danger by unqualified individuals performing electrical repairs or installations.
C. All electrical equipment, including distribution boards, shall be inspected by a licensed electrician in accordance with an inspection schedule, and the results shall be recorded in an electrical test register.
D. If there is no licensed electrician on-site, the electrical equipment shall be appropriately quarantined and marked until it has been inspected.

17.8. Lighting Safety

To avoid the risks of electric shock, burns, and glare, it is necessary to install lighting systems. In the event of an emergency, a backup lighting system shall be installed to ensure sufficient illumination for safe egress.

Due to the risk of fire, halogen lamps on tripods are unacceptable for task lighting. Halogen lamps with glass front plates and protective grills are only allowed when installed as area lighting on a structure.

As a precaution against potential emergencies, contractors shall install emergency lighting on all escape routes and staircases. Utilizing temporary lighting systems with strategically placed battery-operated fluorescent tubes or bulkhead fittings with a minimum three-hour performance is frequently the most effective way to provide emergency lighting. Emergency lighting shall be inspected, with inspections being recorded in a log, and any actions resulting from inspections shall be taken immediately.

17.9. Underground and Overhead Services

The Electrical Safety Plan for the project shall identify all overhead power lines and underground services within or adjacent to the project's boundaries.

The contractor shall conduct all reasonable inquiries with the network service provider to determine whether overhead and underground services can be de-energized and/or relocated.

If work cannot be avoided beneath or adjacent to live overhead lines, the contractor shall ensure adequate clearance to prevent accidental contact with electrical conductors. There may be a need for physical barriers (e.g., goalposts) and signage. Any work that shall be performed adjacent to or in close proximity to these services shall be covered by a method statement and risk assessment that identify the electrical hazards and controls necessary to maintain a safe system of work.

17.10. Lock Out Tag Out (LOTO)

Work shall be prohibited on energized electrical and mechanical systems unless testing and commissioning are required. A LOTO and Permit to Work system shall be implemented to ensure that energized systems are de-energized and locked off prior to any work being performed on them.

When work cannot be avoided, the contractor shall develop and publish a LOTO procedure specific to the project. Before beginning work, the procedure shall be distributed to the Consultant and the employer for review and approval.

The procedure shall cover, as a minimum, the following points:

A. The scope of the procedure.
B. Definitions of terms (sources of energy, isolation, and system).
C. Important personnel (names), roles, and skills.
D. Personnel authority and responsibilities.
E. The permit-to-work system regulates.
F. Arrangements for planning, communication, and coordination.
G. LOTO equipment shall be utilized; a minimum of two padlocks are required.
H. Before-isolation procedures
I. Isolation procedures for all equipment types.
J. Completion of tasks and energy restoration processes.
K. Procedures for unfinished tasks
L. Competency and training requirements.
M. Register isolation-required equipment.

The LOTO system requires at least two padlocks to be installed on the isolation switch, with the keys held by the operator/maintenance/supervisor. On tags attached to the padlock, their name(s) and the reason(s) for the lockout shall be written. After completing the task, the locks and tags shall be removed and power shall be restored.

A. Tags shall be legible and understandable by all employees whose work operations are or may be in the area for them to be effective.

B. Any individual working in an electrically charged area shall ensure that the energy sources are completely isolated.

Tags may induce a false sense of security, and their meaning shall be comprehended as part of the overall energy management program.

18. Temporary Works

Contractors shall have a procedure for temporary works that specify how risks and hazards associated with temporary works are identified, classified, and controlled. The procedures shall adhere to the requirements of BS 5975:2008.

All temporary works shall be designed and inspected according to the contractor's procedures and, if necessary, by independent third parties. Contractors shall submit the procedure of their temporary work for review by the Consultant.

Until a temporary works coordinator is appointed, the project manager of the contractor will serve as the coordinator of the temporary work by default.

Even when standard solutions are employed, a lack of or poorly executed TW can lead to injury or death. Instances involving inadequately executed temporary works may result in monetary loss, delays, contract breaches, or prosecution. The management of all associated risks is thus a fundamental requirement for all TW participants.

18.1. Definition of Temporary Works

Temporary works are defined as all necessary works for the execution, completion, maintenance, and/or demolition of permanent works (including temporary stress states of permanent works) and are typically removed from the site upon completion. Included are the following examples:

A. Construction site office and temporary structures, office canopies, and guarded walkways.
B. Signage and exterior perimeter fencing and hoardings
C. Temporary roads, piles, and mats for cranes, ramps, bridges, and barriers
D. Protective edge guards
E. Retention of the façade and temporary support during demolition
F. Plans for excavation supports, dewatering, and underpinning
G. excavation and rock cutting
H. Foundations, grillages, and ties for tower cranes
I. Temporary stairs, access scaffolding, mobile towers, and access cradles
J. Waste chutes
K. There are loading towers and gantries.
L. Harnesses and winch points are examples of temporary anchor points.
M. Raise ties and bases.
N. Molding, falsework, and shoring
O. Temporary stability of precast and structural frames during Preston platform installation and cantilever works
P. Provisional roofs
Q. Successful TW risk management requires competent personnel, dependable procedures, and high-quality products and materials. Consequently, TW coordination depends on;
R. People requirements:
    - Competence (individual and organisational)
    - Clear, concise, complete communication
    - Cooperation between parties whose roles and responsibilities are clearly defined
    - Coordination of all tasks/functions to ensure there are no conflicts.
    - Diligence and integrity
    - Supply chain conformity
    - Process to acceptable specifications

- All responsibilities shall be distinctly identified and defined.
- Integrated purchasing systems
- Detailed scheduling and planning
- Design management
- Inspection, testing, and verification of plans
- Observation and feedback systems
- Micro detail overview and macro perspective

S. Product meets appropriate criteria
- Compliance, certification
- Condition
- Completeness
- Sustainability

18.2. The Principal Stages of Temporary Works

BS5975 is internationally recognized best practice guidance and is accepted as the appropriate method for companies to develop their own TW systems and procedures, to ensure their implementation in design and on-site, and to ensure the competency and formal appointment of the individuals who will accomplish this. The major phases are as follows:

A. The preliminary concept stage, in which all potential solutions are evaluated, a preferred solution is selected, and all pertinent information (including specific site conditions) is compiled in order to engage a designer or select an appropriate standard solution.

B. Only after this preliminary stage has been completed can the design phase begin. At this stage, the designer delivers a design solution that conforms to the project's concept and brief and has been inspected and approved for construction.

C. The installation phase cannot commence without such approval or until all required equipment and conditions are assembled. This phase continues until a competent individual verifies that the installation is complete and conforms to the design, allowing the TW to be put into service.

D. The TW is then accessed, loaded, or utilized according to the design specifications. Sufficient monitoring is required to ensure ongoing design compliance. If the TW cannot achieve the intended performance or if other changes are required, the work shall be halted and the designer notified.

E. Once the TW has served its purpose, it is permissible to dismantle and remove it, so long as the stability of permanent and temporary structures is maintained at all points. The code reinforces the fact that every element of TW is developed through five self-evident stages. These include:

18.3. Key Roles and Responsibilities

18.3.1. Temporary Works Coordinator (TWC)

The TWC shall be appointed with the following considerations:

A. They will be appointed formally in writing.

B. They shall have no additional responsibilities

C. The TWC will coordinate all TW activities to ensure safety and engineering compliance by ensuring that each of the below-described steps is carried out accurately.

D. The TWC shall serve as the initial point of contact between the designer and the site team for all matters pertaining to temporary works.

E. The TWC shall ensure that permanent works designers accept any loads from temporary works that may impact permanent works.
F. The TWC is responsible for ensuring that the temporary works design is implemented in accordance with all applicable drawings, specifications, codes, and RAMS.
G. The TWC will evaluate TW proposals submitted by the design team and subcontractor/supplier.
H. The TWC ensures that the company's TW procedures are followed.
I. When the condition of the temporary works poses a safety risk, they will stop the work.
J. They will serve as the controller of hold points and will be the only individual on-site authorized to grant permission to proceed.
K. All TW elements and achieved key stages/hold points will be registered and recorded by the TWC.

18.3.2. Temporary Works Supervisors (TWS)

A. The TWS shall be officially designated in writing.
B. They will provide the TWC with a clear and agreed-upon delegation of authority to sign offload /unload permits, the scope and complexity of which shall correspond to the TWS's experience.
C. The TWS will provide planning and design assistance to the TWC.

18.4. Key Principles of the Temporary Works Procedure

18.4.1. Pre-start Activities

A. Appropriate procedures are essential for risk management and operational efficiency. A lucid set of procedures and/or systems is required to ensure organisation-wide completeness, compliance, and uniformity. The code does not provide a standard set of procedures but rather provides guidance on how organizations can achieve this.
B. TWCs and TWSs are required to be appointed.
C. For each site, the prime contractor shall appoint a temporary works coordinator (TWC) responsible for the implementation of their organization's temporary works procedures and those of all other contractors directly or indirectly employed by the prime contractor.
D. One or more TWS may be appointed to assist the TWC provided that the delegation of responsibilities and the scope of their authority are specified in the appointment.
E. The TWC and TWS shall have relevant, up-to-date training, qualifications, and experience commensurate with the project's complexity. As there are only a few types of TW for which there are specialized training programs, evidence of competency will typically consist of:
    - Evidence of the previous success of the proposed TWC
    - Formal instruction in the fundamentals of TW coordination
    - A comprehension of the involved structural engineering principles
    - Appropriate abilities/qualities, including authority/assertiveness, good communication skills, attention to detail, leadership abilities, a procedural approach, etc.
    - Roles and responsibilities: The following are the primary aspects of temporary works for which the TWC shall establish responsibility as soon as possible. Once appointed, the TWC shall guarantee:
        - The required actions for each element of TW have been assigned to a qualified individual.
        - This individual acknowledges the need to adhere to the agreed-upon procedures and communicates with the TWC as required.
        - They are authorized to make and implement decisions on behalf of their organization.

18.4.2. Concept Stage Activities

A. The identification of each element of temporary works can begin during the design phase of permanent works, but it typically becomes more specific during the estimating phase. Detailed planning will facilitate a more exhaustive list of all TW needs on a site following the contract award. Early identification shall ensure that each TW element has the most time possible to develop.

Note: An element of TW is a specific engineered solution required to reduce or eliminate a construction risk, which may be a single design or the selection of a specific standard design or proprietary equipment.

B. Register: If each element of TW is listed in a register, its development can be planned, monitored, and documented, resulting in a single document for all TW on-site.

C. Design Brief
   - This is a summary of the concept stage for each TW element that requires calculation-based design. Consequently, it shall include all documents, information, sketches, site conditions, etc. required for the designer to produce a suitable solution. Therefore, the brief shall be detailed and documented in writing. It is likely that temporary and permanent works designers and TW supervisors will be involved in the preparation of the TW brief.
   - These details are likely to be included in the TW design brief:
     - Parties whose names and responsibilities are associated with the TW element (e.g. TW designer, TWC, Design checker, permanent works designer)
     - Relevant permanent works design drawings and relevant permanent works specification clauses
     - Particular standards or guidance to be used by the TW designer, especially when multiple design approaches are available.
     - Program and schedule for the construction of the TW-related permanent works
     - The TW design schedule for the various phases of the design, design review, and any external approvals, as well as the procurement and installation of the temporary works.
     - The methodology assumptions made on site, such as construction activity imposed loads, access, and working space.
     - Information concerning the preferred timing for the removal or striking of the TW based on the structural integrity of the permanent works.
     - Any needs for access onto, beneath, or around the permanent works
     - Access requirements for installation, maintenance, use, and dismantlement of the TW, as well as other site activities.
     - Any prerequisites for public access or security
     - Available preferred solutions, equipment, or materials
     - Proposals for any relocation or repurposing of TW
     - Topography and location of the site, as well as other information pertinent to the evaluation of wind loads.
     - Site investigation data and reports pertaining to the areas beneath and adjacent to the TW's foundations, including information on all underground and overhead utilities.
     - Any restrictions on the stage construction of the works resulting from the positioning of construction joints, sequencing of pours, pour rates, etc.
     - Any requirements for pre-cambering or residual camber
     - Loads that may have been induced in the TW by the permanent works designer, such as the application of staged post-tensioning, load redistribution, and any significant movements, such as settlements or deflections that can be anticipated from the permanent works as the load is progressively increased.

Typically, the design brief is communicated via a standard form to which all pertinent information is appended. Therefore, it is essential that the form include a comprehensive list of all such information.

The TWC shall ensure that the TW design brief is adequate and comprehensive; any pertinent omission could compromise the sufficiency of the TW, regardless of the designer's skill.

The TWC approves the design brief and sends it to the TW designer so that the design phase may commence.

18.4.3. Design Stage Activities

A. TW design

The TWD shall comply completely with the design brief and "best practices" as described in applicable standards, codes, and guidance. Section 3 of BS5975 provides guidance on the design methods for falsework and provides references to other guidance for different types of TW. The solution produced by the design shall be:

- Sufficient for supporting all identified loads.
- Stable in terms of any transverse loading components
- Susceptible to progressive collapse and capable of toppling
- Safely established on the supporting medium

Design deliverables are the communication of the designer's TW solution to the constructor and may include calculations, sketches, drawings, specifications, design risk assessment (especially any residual risks), and, if required, a designer's method statement for the temporary works scheme or instructions for the assembly and dismantling of the work.

Notably, the design phase includes the selection of simple, standard solutions for temporary works that have already been designed based on standard solutions and loads. A designer is anyone who specifies or modifies a standard design, or who specifies the use of a particular method of work or choice of proprietary equipment.

B. Design Check

Every TW design shall be reviewed by a third party independent of the original designer, and the greater the complexity and risk of the TW design, the greater the independence of the checker. BS5975 identifies four categories of TW and the required independence to help determine who shall conduct the check for each element of TW, taking into account the following:

- Have all factors been taken into account?
- Have appropriate standards and methods of analysis been employed?
- Does the design guarantee stability in every direction?
- Compliance: Are the design brief's requirements met?

For designs in categories 2 and 3, the TWDC shall not rely on the designer's calculations, but instead, conduct an original analysis as described above.

The TWDC shall be as competent (or more competent) than the designer but is not the design's actual approver (responsibility for the adequacy of the design remains with the TWD). The checker informs the TWD of any perceived design flaws or omissions or verifies that there are none. Typically, this is done with a design check certificate, which may include:

- A description of the scheme, the parties involved, and the TW element being designed; a statement from the designer that due diligence has been applied to the design; and a diagram of the element.
- Confirmation of received deliverables and documents for inspection
- The category of design verification
- Any remarks or statements made by the TWDC

- A signed statement from the TWDC attesting that the design has been examined with reasonable care.
- The result of the design review

On confirmation that the design review is satisfactory, the designer shall countersign the document.

The purpose of the check-in cases for simple TW without design by calculation (i.e. standard solutions) is to ensure that the site conditions or work intentions do not exceed the limitations, exclusions, or constraints of the standard design or equipment selected.

C. Illustration of TW categories

Category	Risk	Comment
0	Low risk with no interface with the public	Incorporating standard equipment to manufacturer's recommendations
1	The medium risk or having an interface with the public	Simple designs based on simple methods of analysis and in accordance with relevant standards and suppliers' literature.
2	High risk or where failure would have a major impact on public safety	Complex or involved designs. Designs where a considerable degree of interpretation is required.
3	The risk of failure would be significant.	Complex, innovative designs and those with complex sequences.

D. RA/MS

Specific TW requirements for RA/MS will include;

- Works on both permanent and temporary designers' residual risk assessments (design risk assessments)
- Limitations and restrictions of designs, especially loadings
- Instructions and/or sequence for the installation and disassembly of the TW, including any required inspections and tests.
- Plans for TW installation and dismantling inspection/testing
- Specifics of any proprietary equipment and usage instructions
- Risk assessments related to site operations
- The required protocol for TW inspections during installation and use.

E. Permission to Install

This can be given by the TWC when the design has been approved for construction and the MS is approved and understood by the TWS and installation team.

18.4.4. Installation Stage Activities

A. When the TWC confirms that the design has been approved, procurement of materials and/or equipment shall begin, but pre-installation checks shall include:
- Ensuring that they are supplied according to the designer's specifications, i.e. in accordance with the design.
- Verifying completeness
- Verifying that materials and equipment are undamaged and in excellent condition

- Ensure a competent supervisor is present.

B. Installation: Once installation permission and procurement are finalized and approved, the actual installation can begin under the supervision of a qualified TWS that understands and implements the design and MS requirements. During the installation's partial completion, interim checks shall be conducted with rigor to ensure compliance, stability, and accuracy at all times.

C. Completeness Check: This shall be performed by the most qualified individual, either the designated TWS or TWC. The inspection shall be exhaustive and not merely visual. For instance, falsework that is to be loaded shall undergo a physical bolt-by-bolt, connection, and overall inspection. All checks for completeness shall confirm that all design requirements have been met.

D. Permission to load/bring in use: A TW element's completeness check does not indicate that it can now be loaded/accessed/utilized. Before this can occur, the TWC will be aware of any additional elements or activities that shall be completed. Therefore, only the TWC can allow the use phase to begin once all installation activities have been completed, approved, and/or certified as required. This authorization stage is commonly known as Permit to Load/Bring into Service.

18.4.5. Use Stage Activities

A. Monitoring in use

Continual monitoring ensures that temporary works remain in the same condition and state as after the initial installation inspection and approval. The regime of routine inspections and checks (as indicated on the TWR) shall ensure this, with special attention to the following:

- Degradation of materials or equipment over time Maintenance of the equipment is required.
- Faults or damage incurred during use Misuse of the TW by those with access

In all such cases, the TW shall be taken out of service until the fault is rectified.

Some monitoring intervals may be statutory (e.g. scaffolds at a maximum of 7 days, live excavations at the start of shift), while others are at the discretion of the TWC in discussion with project management, the TW designer, and others. The monitoring regime shall be set prior to the completion of installation at the latest.

B. Alteration

This can occur during the installation or use of the TW (e.g., due to unforeseen obstacles or a change in circumstances from those briefed to the designer) (e.g. variations instructed additional loadings realised). In all cases, the work shall not continue until the designer has been notified of and resolved any new circumstances or requirements. In other words, the designer shall be briefed again, and the aforementioned steps shall be repeated.

18.4.6. Dismantling Stage Activities

A. Permission to Dismantle

Typically, site management, not the TWC, establishes the criteria for determining when a TW can be removed. The permanent works may be complete and snagged, or additional test results may be necessary to confirm that they are self-supporting. Once this is confirmed, the TWC can authorize deconstruction. This stage of permission is known as the Permit to Unload/Strike.

B. Dismantling

This shall be performed under the supervision of a qualified supervisor and in accordance with the method statement so that the stability of both temporary and permanent works is always maintained. Partially dismantled TW is likely to be less stable by definition; therefore, a risk mitigation strategy or temporary support will be required.

19. Demolition

To protect workers from hazardous substances, falling debris, electrical hazards, and exposure to airborne particles, appropriate precautions shall be taken during demolition work.

Before beginning any demolition work, the contractor shall consult all available survey data and drawings that depict the current condition of the building. A competent member of the contractor's team shall identify all hazardous materials that will be encountered during the demolition work, and this identification shall be documented along with the associated risks.

For high-risk demolition projects in which workers are exposed to contamination hazards, shower facilities, and disposable coveralls are required.

Demolition workers shall have adequate training according to a recognized industry standard. In their method statement and risk assessment for demolition works, contractors shall include the following:

A. Scope of work
B. Sequence of work
C. Roles and responsibilities
D. Organisation chart with name and phone numbers (Demolition crew)
E. Health and safety control measures
    - Permit requirements, procedures, and flow chart
    - Schedule of hazardous materials and associated risks
    - Exclusion, protection, logistics provisions, and material removal/management
    - Working-at-height schedule and associated risk management
    - Fall prevention arrangements
    - Plant and equipment management
    - Public and third-party protection
    - Termination/isolation/division of permanent and/or temporary services
    - The stability of remaining structures or part structures, or adjacent structures or excavation
    - Copies of statutory notifications
    - Communication procedures/plan
    - Emergency and rescue plan/procedure
F. Training and competency requirements
G. Health requirements for personnel and provisions for health management (work rota, health check-ups, existing health conditions that could prevent one from taking part, etc.)
H. Task-specific risk evaluation.

20. Hazardous Substances

Any work activity involving a hazardous substance shall be accompanied by a Control of Substances Hazardous to Health (COSHH) assessment that considers the exposure of workers and others who may be affected.

In descending order, contractors shall consider the following control measures for hazardous substances:

A. The elimination of hazardous materials.
B. Changes to the substance, process, and/or work environment.
C. Implementing process controls, including enclosures, splash guards, and local exhaust ventilation.
D. Working in ways that minimize exposure, such as maintaining a safe distance from the skin to prevent exposure.
E. Equipment or devices worn by individuals at risk.

The evaluation shall be based on the information contained in the material safety data sheet (MSDS) for the hazardous substance in question. Before beginning the operation, all employees who will be using hazardous substances shall be briefed on the COSHH assessment's findings.

COSHH evaluations and material safety data sheets shall be included in the method statement package.

Before beginning work, contractors shall brief their employees on the risks and dangers associated with the profession in which they are engaged, such as fire, the risk of vapour or dust from toxic substances, the danger of falling, and occupational diseases. All personnel involved in potentially dangerous/hazardous operations/activities shall receive appropriate training, and such training shall be ongoing/periodic.

Contractors shall post warning signs in all potentially hazardous areas, such as storage areas for chemical and gas cylinders.

All hazardous materials kept on-site shall be stored in accordance with the instructions on the safety data sheet (SDS), and a copy of each MSDS shall be kept in a central file and the first-aid room/medical centre.

All hazardous substances shall be stored in containers that are appropriately designed and labeled.

The manufacturer or supplier shall provide an SDS that is within the last five years and conforms to a recognized standard.

21. Logistics

21.1. Security and Site Access Control

The contractor shall provide appropriate site demarcation hoarding/fencing to prevent unauthorized access to work areas, as well as separate pedestrian and vehicular access points. Each access gate shall be equipped with guard houses, security personnel, and a physical barrier, which shall be guarded by the contractor's designated security services.

21.2. Traffic Management

The contractor shall provide appropriate site demarcation hoarding/fencing to prevent unauthorized access to work areas, as well as separate pedestrian and vehicular access points. Each access gate shall be equipped with guard houses, security personnel, and a physical barrier, which shall be staffed by the contractor's designated security services.

21.3. Segregation from Live Roads

Any organization conducting operations in close proximity to site roads shall implement controls that provide adequate separation between pedestrians and vehicles on the road. Consideration shall be given to the barrier types, working hours, and road or lane closures as agreed upon by the relevant authorities (e.g. RAK Municipality).

21.4. Signage

Signage shall be present at all points of access and throughout each project site. The site's signage, including rules, shall be graphical, accessible in multiple languages, and prominently displayed. Installing signs shall be done for:

- Project details (fixed at entrances in accordance with contractual requirements).
- Statistics on Health and Safety performance.
- Instructive and directional signposts for vehicular and foot traffic within the project area.
- Fire preparations, such as assembly areas, evacuation routes, and equipment, such as hydrants and fire extinguishers.
- Signs prohibiting smoking shall be posted where necessary, especially in high-risk areas.

21.5. Warning Signage

Warning signs, such as No Smoking, No Entry, Personal Protective Equipment (PPE), and other required signs, shall be posted at appropriate locations throughout the site. Utilize pictorial and multilingual signs to overcome language barriers among workers.

There shall be signage throughout the site to ensure that all workers and visitors are aware of the dangers and emergency situations. Signs shall be routinely inspected and kept in good condition.

21.6. Deliveries and Vehicle Movement

In the contractor's logistics management plan, delivery procedures and storage arrangements (including crane loading areas) shall be detailed and communicated. To avoid reversing dangers, a one-way traffic system shall be implemented. When unavoidable and only after a suitable risk assessment, trained traffic marshals/banksmen shall be used to control vehicle movements, including those in confined or congested areas on site.

When exiting their vehicles, all drivers will be required to wear PPE.

Risks associated with vehicle loading and unloading shall be considered.

21.7. Parking

There shall be designated parking spaces for various vehicle types. Commercial vehicles and delivery trucks shall be parked separately from personal vehicles. The following conditions apply to contractor parking lots:

- They shall be established on the site of the project.
- No private or commercial vehicles will be permitted to park on the site access roads of the construction zone; any vehicle parked there will be towed.
- Separated walkways for pedestrians shall be installed.
- Any car park shading structures will be subject to the contractor's temporary works design. Submit the design to the Consultant.
- Parking in reverse shall be encouraged.

21.8. Use of Areas Outside of Project Boundary

When a contractor requires additional space or the use of an area outside their boundary, RAKEZ permission shall be requested. This could include the provision of a short- or long-term laydown area, the use of an external area at the site's perimeter or a temporary access way to facilitate specific works, or the use of an external offloading area.

21.9. Material Storage and Delivery

21.9.1. General Requirements

A. Contractors shall implement the necessary management procedures to ensure the safe unloading, storage, and distribution of materials on their project. All materials shall be stacked securely, away from fences and hoardings, and positioned to reduce double handling and transport distances.
B. It is necessary to maintain areas and keep site access routes clear and separated from construction zones.
C. There shall be as little material storage on-site as possible. Materials shall be stored in suitable containers and secured against collapse. Materials shall not be leaned against walls or other objects in a manner that could cause them to fall. Unsecured material stacks are prohibited.

21.9.2. Material Securing at Height

Always secure any construction materials that could be blown or swept off roofs, exposed floors, scaffolding, or accidentally dislodged.

A. To comply with this requirement, project owners shall be aware of the wind speed at the time of work activity and the wind forecast.

B. All roofing materials, plant and equipment, etc., shall be stored/positioned so that they cannot fall; items shall be secured or stored away from the building's edge.
C. When bad weather is imminent, specific walkarounds are required to ensure the safety of the worksite.

21.10. Housekeeping

The contractor will be responsible for maintaining an acceptable standard of site cleanliness within their area of work.

A. Every day, all waste shall be removed from the worksite.
B. When bins are full, they shall be emptied/replaced immediately.
C. Waste accumulation is not permitted.
D. All contractors will contribute to effective housekeeping through their employees or by employing a specialized service crew.

21.11. Sharp Objects

Sharp objects such as protruding nails and reinforcement bars shall be evaluated, controlled, and mitigated to reduce the risk of cuts and punctures. To achieve this objective, the following steps shall be taken:

A. The exposed ends of reinforcement bars shall be covered or capped with "rebar caps."
B. The bolts or threads that protrude from scaffold clips shall be covered.
C. Cut cable ties shall not be used to secure handrails.
D. Waste wood with protruding nails shall not be left in any location where people can come into contact with them; nails shall be removed at the source.
E. The sharp edges of metal plates and sheets shall be covered, marked, or filed back.
F. All shattered glass shall be removed immediately.

21.12. Lighting Levels

Accessibility and task lighting shall be provided to ensure the safety of operations. The levels of illumination shall correspond with the requirements of the task and the environment.

The level of illumination required to provide conditions in which work can be performed without undue risk or fatigue shall be measured with a calibrated lux meter and shall not be less than the values in the table below.

Typical Areas	Lux Level
Interiors and general movement areas, emergency lighting	5
General exteriors such as handling materials and unloading	10
Interior working places such as clearing sites, general rough work	15
Interior reinforcing and concreting and corridors	50
Bricklaying (except facings) and canteen	100
Benchwork, facing brickwork, and plastering	200
Offices, kitchens, first-aid rooms	250
Interior workshops, fine craft work, decorating	400
Drawing boards	600

21.13. Mobile Phone Usage

Contractors shall ensure that mobile phones are only used in safe areas, such as walkways or designated areas, on the construction site. Contractors shall consider the precautions necessary to prevent employees from wandering

onto roads or into hazardous work zones while using mobile phones. Hands-free or not, all forms of distracted driving are prohibited when operating a motor vehicle.

22. Occupational Health and Hygiene

Occupational Health and Hygiene can be subdivided into the areas outlined below. Contractors shall at least have the following agreements in place:

Contractors shall also ensure that the appropriate health risks are identified through risk assessments and that the corresponding controls are implemented.

Under the influence of drugs or alcohol, no one is permitted to enter the program/project/site/office.

Any prescribed medication shall be subject to an occupational health evaluation when increased risk is identified. Similarly, any individual suffering from an injury or illness that necessitates additional care or support, including in an emergency, shall have a risk assessment in place.

In addition to those required for visa purposes, contractors are required to conduct basic health checks on their personnel at least once a year.

- Safety-Critical Roles – When an individual's ill health may compromise their ability to perform a safety-critical task, additional checks shall be conducted to mitigate this risk. Plant operators, crane operators, mobile machine drivers, drivers, scaffolders, slingers/signallers, traffic marshals, steel erectors, confined space workers, and those working at height are examples of personnel performing safety-critical tasks. Risk assessments or appropriate guidance shall be used to identify additional checks.
- Medical Surveillance – Occupational health monitoring of employees exposed to high-risk activities, such as noise, manual handling, hand-arm vibration, etc.
- Wellness - Each contractor shall have an ongoing health education program for their employees.
- Hygiene – Educating employees on good hygiene practices, such as personal hygiene standards, protection against dermatitis, the use of PPE, etc., is required.

22.1. Fatigue Management

Fatigue is a state of mental and/or physical exhaustion that impairs an individual's ability to perform work safely and effectively. It can be caused by prolonged or intense mental or physical activity, lack of sleep, or disruption of the body's internal clock.

Signs of fatigue include:

A. Tiredness even after sleep.
B. Hand-eye coordination deficits or sluggish reflexes.
C. Problems with short-term memory and inability to concentrate.
D. Vision impairment or impaired visual perception.
E. A requirement for extended sleep on days off.

22.2. Stress

Stress is the negative response individuals have to excessive pressures or other types of demands. Work-related stress is a leading cause of occupational illness and can result in severe physical and mental conditions.

Contractors shall assess the risks from stress associated with activities in consideration of the following factors:

- Issues such as workload, work patterns, and the work environment are examples of demands.
- Control – the amount of influence individuals have over how they work.
- Support – includes encouragement, sponsorship, and resources supplied by the organization, line management, and coworkers.

- Relationships - promoting positive working to prevent conflict and addressing unacceptable behavior.
- Role – Do individuals understand their role within the organization, and does the organization ensure that there are no conflicts between roles?
- Change – how are small and large organizational changes managed and communicated?

Each contractor shall ensure that stress management and positive mental health and well-being are promoted through the implementation of the following control measures:

- Facilitate communication and open conversations to increase awareness of stress and diminish any stigmatization.
- Create action plans for those experiencing stress.
- Provide channels for raising concerns and complaints in confidence.

22.3. Noise

Each contractor shall have plans in place for those who are exposed to noise as a result of their operations. Collective protection shall be prioritized over individual protection whenever possible.

Signage shall be posted and hearing protection shall be available in areas and activities with noise levels exceeding 80 decibels (A). Above 85 dB (A), hearing protection is required, and mandatory hearing protection signage shall be displayed, along with the establishment of an exclusion zone.

22.4. Manual Handling

Before undertaking manual lifting tasks, a risk assessment shall be conducted. Before handling, weights shall be determined, and the proper equipment shall be identified and utilized to move heavy or awkward loads. Workers who perform manual lifting shall be instructed in safe lifting procedures and employ safe lifting techniques.

Typically, contractors shall:

A. Avoid or automate manual handling tasks whenever possible.
B. Consider the transportation of materials in bulk, including the utilization of distribution points, etc.
C. Provide details regarding the load to be transported.
D. Assess any potentially hazardous manual handling tasks that cannot be avoided.
E. Minimize carrying large, awkward, or heavy items up and down stairs.
F. Perform manual handling evaluations.

22.5. Whole-Body and Hand-Arm Vibration Syndrome (HAVS)

Prior to any operation that requires the use of vibrating equipment, the contractor shall comply with the minimum requirements outlined below.

22.5.1. Planning

A. During the work planning phase, the appropriate tool and procedure shall be determined.
B. Contractors and suppliers shall ensure that the MS/RA addresses vibration exposure and includes control measure details.
C. Determine the maximum permissible exposure times for HAVS during a work shift (i.e., the trigger time) for equipment and processes.

22.5.2. Implementation

A. Ensure that all vibrating work tools and equipment are equipped with trigger time tags.
B. Ensure that tools and equipment are routinely maintained and that any defects are reported.

C. Maintain records demonstrating that all tools and equipment are maintained in accordance with the manufacturer's recommendations.
D. Instruct operatives in the proper use of tools/equipment and safe working practices, as well as the recording of usage.

22.5.3. Auditing and Monitoring

A. Monitor and supervise the use of vibrating tools/equipment and processes to guarantee that daily exposure limits are not exceeded.
B. Ensure that vibration-exposed employees are included in the medical surveillance program.

22.5.4. Reporting

A. Ensure that employees report HAVS symptoms.
B. In the event that HAVS is identified through a health screening, contractors and suppliers are required to remove employees from all vibration-related duties until a medical diagnosis is obtained.
C. Any suspected or confirmed cases of HAVS shall be reported by contractors and suppliers through the incident reporting process.

22.6. Weather Working Plan

Contractors are required to have a plan for working in extreme weather. This plan shall be submitted to the consultant at least eight weeks prior to the start of the summer working restrictions mandated by the Ministry of Labour. It shall also include requirements for Summer Working Plans and other weather conditions to which operatives are exposed. The plan shall be reviewed every three months.

The plan shall contain instructions for working under any of the following conditions:

Weather Condition	Example Controls
Hot Weather	• Local statutory requirements shall be met, and contractors shall establish measures for monitoring the weather by providing a thermal working limit (TWL) or another internationally recognized standard-recording project weather station. • Plans shall detail specific action levels and the arrangements to be implemented at each level. • Contractors shall establish a communication and notification system to inform all personnel of changes to the TWL (or equivalent) categories. • Water and/or electrolyte drinks shall be available to all workers performing work in hot weather. • There shall also be adequate shade and methods for monitoring the physical condition of workers. • When employees are required to work for extended periods in hot weather, it is necessary to provide (central and satellite) cool rooms. • Ensure compliance with the Ministry of Labour's midday break rule.
Sandstorms/Fog	• Ensure that arrangements are in place to dynamically evaluate construction projects during periods of poor visibility. • The appropriate PPE shall be provided for the conditions. • Rest and dining areas shall be adequately protected from sand intrusion.

High Winds	• Ensure that all cranes, mobile elevating work platforms, piling rigs, concrete pumps, etc. are operating within the wind speed limits. • Ensure that monitoring arrangements for wind speed are in place. • Ensure that scaffolding and mobile towers are properly secured and tied down. • Ensure that compound/site boundary fencing and barriers are erected/secured in accordance with the manufacturer's instructions and any TSS approvals. • Ensure that adequate measures are in place to secure all loose materials that could become projectiles, whether they are on the ground or in the air. • Remind employees of designated smoking areas, the location of disposal methods/containers, and the ease with which high winds can cause fires by transporting cigarettes to combustible materials. • Ensure a site inspection is performed prior to allowing workers to return to work.
Rain/Hail/Lightning	• Be aware of the possibility of flooding, especially when working on projects involving large excavations or basements. • Ensure that all excavations are inspected for stability after rainy periods (additional inspection regime over and above the start of shift inspection may be required). • During periods of lightning, the use of cranes, MEWPs (cherry picker/scissor lift), and concrete pumps are prohibited. • Ensure that worker welfare/rest facilities are adequately water-resistant. • Ensure that electrical safety systems (such as distribution boards) are ingress protection rated and secured, that ELCBs are installed and tested, that plant is earthed, and that electrical cables are routed as far away from the ground as possible. • Ensure that adequate provisions for dewatering are in place. • Drive with extreme caution, as road surfaces can become extremely hazardous.

The weather working plan shall also address:

- When a project is abandoned.
- Included in the mitigation measures to protect workers from extreme conditions are adequate shelter provisions.
- Return-to-work necessities.

23. Site Welfare Facility

23.1. General Requirements

The provision of drinking water, washing/ablution facilities, prayer rooms/areas, toilets, cool rooms, restrooms, and dining facilities are all mandatory requirements.

Contractors will provide and maintain the facilities from the beginning of mobilization until the conclusion of the construction period. The location of on-site amenities shall be as close as possible to the working areas. Large sites may necessitate multiple facilities to avoid lengthy travel; the maximum distance suggested is 200m. This shall be included in the logistics or health and safety plan.

All structures shall be constructed with fire-resistant materials and equipped with fire detection, alarm, and suppression systems. Facilities will comply with Civil Defense standards. The Consultant shall prepare drawings for

temporary offices, housing, sheds, etc. in accordance with Civil Defense regulations and drawing submission requirements, and submit them to RAK Civil Defense for formal approval.

23.2. Sanitary Facilities

Sufficient toilets with flushing shall be provided. All restrooms shall have adequate ventilation, lighting, and cleanliness. There shall be separate sanitary facilities for men and women.

Where flush toilets cannot be installed, chemical toilets shall be installed; however, they shall be equipped with a water source for hand washing.

WCs shall meet or exceed minimum legal requirements. The required minimum number of restrooms and urinals is outlined in the table below. (In every instance, the minimum provision shall correspond to the higher number mandated by law or listed in the table.)

No. of persons onsite	No. of WCs	No. of urinals
Less than 75 employees	2	2
More than 75 employees	1 per 50 operatives	1 per 50 operatives

23.3. Washing Facilities

A. Washing facilities shall be provided:
   - in the immediate vicinity of each and every sanitary facility in the accommodation unit(s) provided for changing clothes in close proximity to mess facilities
B. People shall be able to wash their faces, hands, and forearms in a wash basin. This indicates that hands and forearms up to the elbow shall fit in the provided basin.
C. In prayer areas, workers shall have access to suitable ablution facilities prior to praying.
D. When necessary due to risk or when working in particularly dirty conditions, such as when using cement-containing products, showers shall be provided.
E. The rooms containing the washing stations shall have adequate ventilation, lighting, and cleanliness.
F. Separate showers and other washing facilities, including sinks, shall be provided for men and women unless they are in a locked room intended for a single user.
G. Shower facilities shall include clean hot and cold water, soap or another suitable cleaning agent, and towels or another suitable drying agent.

For short-term maintenance or project work, it may not be feasible to provide the level of welfare facilities outlined in this section. In such situations, the level of welfare shall be determined in conjunction with the Consultant and contractor.

23.4. Drinking Water

To ensure that every employee has immediate access to drinkable water, offices, mess areas, field rest shelters, and other suitable locations shall be supplied with a sufficient quantity of cooled drinking water.

The contractor is responsible for ensuring that the water is "wholesome" and free of contaminants. Bottled or containerized drinking water shall be protected from potential contamination and periodically replaced to prevent stagnation. Cups or other appropriate drinking vessels shall be supplied.

The contractor shall install water filters, chlorinators, and disinfection units, as well as clean and maintain water storage tanks on a regular basis. The water quality of storage tanks and delivery pipework shall be tested in accordance with local regulations by third-party accredited laboratories prior to the first use of the tank and at regular

intervals of no more than three months thereafter. Filters shall be changed frequently, and records shall be accessible on-site.

The contractor shall follow the following specifications:

A. Water that has been cooled shall be readily accessible to all workers and distributed throughout the construction site. The refilling of water coolers shall be deliberated. Each worker shall be provided with a water bottle or comparable vessel.
B. Whenever possible, water coolers shall be placed in the shade, out of direct sunlight.
C. Drinking water shall be labeled as such in Arabic, English, and the most prevalent workplace languages.
D. Water that is not potable shall be labeled as such.
E. There shall be no cross-connection between potable and non-potable water systems, either open or potential.

23.5. Rest Areas, Meals, and Breaks

The contractor will provide workers with comfortable, weather-protected dining facilities. They shall be cooled as necessary, have an adequate number of tables and chairs, be located away from the site to minimize exposure to dirt, dust, or potentially hazardous substances, and be cleaned daily at a minimum. The contractor shall comply with the following:

A. Mess facilities may be located within the structure under construction; however, the mess area shall be completely enclosed and isolated from the construction site. The contractors shall provide adequate sanitary and refrigerated food storage for the workers. Air conditioning is not an appropriate method for chilling food storage areas.
B. Rest areas shall be adequately shielded from nearby machinery, equipment, roads, etc.
C. Employees shall not prepare or cook food on-site.
D. Contractors shall provide a sufficient number of food waste containers with lids.
E. All temporary structures shall have pest control measures implemented by contractors.
F. Contractors shall ensure that their facilities meet the needs and specific requirements of various cultures.
G. Budgetary provisions shall be made for:
    - Location(s) designated for prayer and associated ablution.
    - Observance of religious requirements such as fasting during Ramadan, with the understanding that Muslim workers who fast cannot compensate for the amount of water lost through perspiration or manage dehydration as effectively as non-Muslim workers.

23.6. Protection of The Public and Third Parties

Throughout the duration of the project, contractors shall make provisions for the protection of the public and third parties. The following are instances where management is required:

A. Nuisance, including noise and dust.
B. Changes in traffic volumes or abnormal loads on roads shared by multiple properties.
C. Works immediately adjacent to boundaries that could endanger personnel at or beyond the boundary, such as piling, lifting, vehicle movement and parking, and material or chemical storage.
D. Where shared walkways or roads exist, it may be necessary to install protection against falling objects.

Contractors shall assess the risk, identify areas where third parties or members of the public may be affected, and implement appropriate controls to mitigate the risk. Contractors shall never depend on their Consultant to:

- Identify public or third-party risks associated with the contractor's activities.
- Provide the necessary precautions for controlling the contractor's operations.

24. Personal Protective Equipment (PPE)

All construction site workers and visitors shall wear the following minimum PPE:

24.1. General Requirements

S.N.	PPE item	Potential hazardous environment	Specification standards
1	Head Protection	• Objects that might fall from above. • Fixed objects, such as exposed pipes or beams. • Accidental head contact with electrical hazards.	✓ NSI/ISEA Z89.1 ✓ EN 397
2	Eye and Face Protection	• Dust, dirt, metal or wood chips enter the eye from activities such as chipping, grinding, sawing, hammering, the use of power tools, or strong wind. • Chemical splashes from corrosive substances, hot liquids, solvents, or other hazardous solutions. • Objects swinging into the eye or face, such as tree limbs, chains, tools, or ropes. • Radiant energy from welding, harmful rays from the use of lasers, or other radiant light (as well as heat, glare, sparks, splash, and flying particles).	✓ ANSI/ISEA Z87.1 ✓ EN 166
3	Hearing Protection	• The loudness of the noise as measured in decibels (dB). • The duration of each employee's exposure to the noise. • If workers move between work areas have different noise levels. • When noise is generated from single or multiple sources.	✓ EN 352-1 standard for earmuff. ✓ EN 352-2 standard for ear plugs.
4	Respiratory Protection.	• Protection against dust, fumes, mists, or microorganisms, including animal allergens.	✓ NIOSH Certified. ✓ N-95 (for Dust Mask)
		• Protection against chemical and organic vapour.	✓ ANSI/AIHA Z88.7 ✓ P100 Filter
		• Working in a confined space, diving, and working in an atmosphere with an oxygen content below 19.5% by volume.	✓ NFPA 1852 (Breathing Apparatus) ✓ BS EN 137
5	Foot Protection	• The presence of heavy objects such as barrels or tools that might roll onto or fall on the employee's feet. • Working with sharp objects such as nails or spikes that could pierce the soles or uppers of ordinary shoes. • Exposure to molten metal that might splash on feet or legs. • Working on or around hot, wet, or slippery surfaces. • Working when electrical hazards are present.	✓ ANSI Z41 ✓ EN 20345
6	Hand and arm Protection	• Thermal exposure – caused by extreme cold or heat or hot work. • Blood-borne pathogens – caused by first-aid or clean-up of blood, body fluids, or other infectious agents. • Chemical exposure – skin contact from working with chemicals. • Skin absorption of harmful substances. • Physical hazards – cuts, punctures, bruises, abrasions, fractures, amputations.	✓ ANSI/ISEA 138 ✓ ANSI/ISEA 105 ✓ EN420 ✓ EN388

S.N.	PPE item	Potential hazardous environment	Specification standards
7	Fall protection	• When working above 1.8 metres. • When working on high ladders • When working on a boom lift or scissor lift. • When working on scaffolding.	✓ EN 361:2002 standard for thefull body harness. ✓ EN 354:2010 standard for lanyards. ✓ EN 355:2002 standard for energy absorbers. ✓ EN 362:2004 standard for connectors.
8	High Visibility Products	• When working off-road, on roadways and temporary traffic control, or engaged in public safety activities. • When working during maintenance or construction.	✓ ANSI/ISEA 107 ✓ ANSI/ISEA 107
9	Uniform	• Workers are required to wear overalls.	

All items of PPE shall be in good condition and properly fit the user. The individual shall have received information, instruction, and training regarding the proper use of the equipment. There shall be adequate provisions for the storage, cleaning, maintenance, and replacement of PPE.

To protect workers and visitors, sufficient supplies of PPE shall be available. All products shall bear the CE mark (the recognised mark for PPE tested and approved to International Standards). "No PPE" or wearing PPE of the incorrect standard will be actively monitored, and anyone not in compliance must be removed from the site until the situation is rectified. There shall be disciplinary measures for repeat offenders.

PPE signage shall be displayed on-site, and any area deemed PPE-free, such as parking lots and project office entrances shall be suitably marked as such.

24.2. Task-Specific PPE

If a risk assessment determines that specific or additional PPE items are necessary for a task, they shall be provided and subjected to the same controls as those listed above.

Consider the following factors when selecting additional task PPE:

A. The environment in which the PPE will be utilized.
B. The inherent dangers of the operation.
C. The personnel who are wearing PPE.
D. Whether specific training is necessary for the fitting and use of the PPE.
E. Rescue/emergency procedures.
F. Additional control measures

In addition to the minimum standards for all personnel, the following minimum task-specific PPE is likely to apply and shall be risk assessed appropriately:

G. On uneven ground, ankle protection is essential.
H. Scaffolders shall wear a full-body safety harness with a double lanyard.
I. Scaffolders and those working at height, including rescue team members and crane drivers, shall have climbing helmets (no peak helmets) and chin straps included in risk assessments.
J. Operators of boom-type MEWPs and users of suspended access platforms (cradles) shall wear a full-body safety harness with a lanyard.
K. Welders are required to wear full-face masks.

L. Workers continuously exposed to loud noises shall wear ear protection.
M. As prescribed by Safety Data Sheets and COSHH assessments, workers handling hazardous substances (such as asbestos) shall wear protective clothing.

25. Waste Management

A. The management and operation of construction sites shall prevent the illegal disposal of construction/demolition waste and materials on the land. The management of construction sites adjacent to occupied residential or commercial establishments is of particular importance.
B. On the basis of how they are generated, the primary sources of construction/demolition waste are typically divided into three categories: construction waste, food waste, and hazardous waste.
C. The aesthetics of the area and the health and safety of the employees can be affected by solid waste.
D. The waste shall not be scattered about the site. Waste collection shall be assigned to specific areas. These three waste types shall not be combined. Food waste shall be collected daily in sealed bags and discarded on-site. The management and disposal of hazardous waste shall adhere to RAKWMA guidelines. On-site disposal records shall be accessible.
E. For the protection of the environment and our communities, it is vital to limit waste production. The contractor shall adopt the following measures (as applicable) to manage construction-related waste:

- Garbage shall not be scattered about the site.
- The cleanliness and orderliness of construction sites shall be preserved.
- At the construction site, the site office, and the storage yards, waste skips/bins shall be provided.
- Contractors shall designate waste collection areas and provide the appropriate signage.
- It is improper to combine construction waste, food waste, and hazardous waste.

F. The contractor is responsible for ensuring that various waste streams are segregated and removed by licensed contractors. At a minimum, the following waste categories shall be separated:

- Regular removal of construction waste, which includes general waste resulting from construction activities, is required.
- Food waste shall be contained in airtight containers and removed daily.
- The handling and disposal of hazardous waste, such as waste oil, paints, thinners, chemicals, and solvents, shall adhere to RAKWMA guidelines.

G. To prevent waste from being blown around a construction site, lightweight waste such as packaging shall be placed in containers or garbage skips and covered. It is strictly forbidden for the general contractor to burn any waste on-site.

Appendix A: Glossary of Terms and Acronyms

Term	Description
Acceptable level	The concentration of an air quality Indicator shall not be exceeded more than once at any location in any 12-month period in order to protect the beneficial uses of the air environment
Air environment	The atmosphere and components of the atmosphere
Air pollutants	Any substances added into the air in sufficient concentration to produce a measurable negative effect on man, animals, vegetation, or materials. Such pollutants may be present as solid particles, liquid droplets, or gases
Approved	Acceptable to the regulatory authority based on a determination of conformity with principles, practices, and generally recognised standards
Audit	A systematic and independent examination and evaluation of data, statements, procedures, records, operations, and performances of an enterprise for a stated purpose, performed by a competent person, to determine the adequacy and compliance with established procedures, the authority regulations, and related documents, and to measure the effectiveness of implementation
Authorised person	An authorised/responsible person to undertake a specific task or tasks and possessing the necessary technical knowledge and experience
Beneficial use	Any use of any segment of the environment which is beneficial to public welfare, health, or enjoyment or of economic significance
Civil Defense	Civil Defense of any of the Emirates of Ras Al Khaimah
Competent person	A person possessing the knowledge and experience required for the performance of a specific duty or duties and acceptable as such to the relevant authority
Confined spaces	Confined spaces are limited or restricted means of entry or exit and are not designed for continuous employee occupancy. Confined spaces include, but are not limited to, any place, including any chamber, tank, vat, silo, pit, trench, pipe, sewer, flue, well, or other similar space in which, by virtue of its enclosed nature, there arises a reasonably foreseeable specified risk
Construction	The building, altering, improving, repairing, or demolition of any structure or infrastructure, or the excavation/dredging and/or reclamation of a water body or land mass
Consultant	Registered consultant holding a valid licence as a consulting engineer from the UAE Economic Departments/RAKEZ
Contamination	The presence of a constituent, impurity, or some other undesirable element that spoils, corrupts, infects, makes unfit, or makes inferior material, physical body, natural environment, workplace, etc.
Contractor	A registered contractor holding a valid contracting licence from the UAE Economic Departments/RAKEZ
Dangerous goods	Implies to any material belonging to any of the classes 1-8 of dangerous goods (explosives, gases, flammable liquids, flammable solids, oxidising substances, organic peroxides, toxic and infectious substances, radioactive material, and corrosive substances) as defined by the UN Committee of Experts.
Dangerous occurrence	Incidents involving, lifting equipment, pressure systems, overhead electric lines, electrical incidents causing explosion or fire, explosions, biological agents, radiation generators and radiography, breathing apparatus, diving operations, the collapse of scaffolding, train collisions, wells, and pipelines or pipeline works.
Disposal of waste	The discharge or deposit of waste into the environment, or the destruction of waste without significant residue
ENAS	Indicates Emirates National Accreditation System
Employer	Any business, organisation, or individual (occupier/tenant/owner/licensee/lessee/developer) that has been granted a legal licence/permission by RAKEZ that occupies and/or operates within RAKEZ jurisdictional areas

Term	Description
Employee	Every male or female who works in return for a wage of whatever type in the service of the employer and under its management or supervision.
Environment	The land area, the water and air associated with it, and the settlements and habitats depend on these physical features. It is also defined as how people use, affect, and are affected by their surroundings
Environmental nuisance	Use of property or course of conduct that interferes with the legal rights of others by causing damage, annoyance, or inconvenience
EPDA	Indicates Environment Protection and Development Authority - Government of Ras Al Khaimah
Facilities	The facilities, buildings, or structures not involving routine occupation by human beings
Fencing	A wall or fence is provided for aesthetic purposes to protect adjacent uses from potential noise, glare, trash, odour, visual disorder, or other detrimental effects
Fire protection	It is concerned with preventing or minimising the direct and indirect consequences of fire on people, and property. It contains all aspects of fire and life safety, including building construction and fixed building fire protection features, fire suppression and detection systems, fire water systems, emergency process safety controls, emergency firefighting operations, and fire prevention. It also includes aspects of the following dangers as they relate to fire protection: explosion, natural phenomenon, and smoke and water damage from fire
Flash point	The lowest temperature at which the vapor of a substance, mixed with air, will ignite when in contact with a source of ignition, but will then go out as there is insufficient vapor being given off to continue burning
Food Outlet	an operation that stores, prepares, packages, serves, vends, or otherwise provides food directly or indirectly for human consumption.
Food safety	Assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use by fulfilling all conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain.
Gas-free certificate	A certificate, on a special form for the purpose, issued by an authorised, duly qualified person confirming that the tank, compartment, or container was gas-free at the time of testing.
Good control practice	Technology and practices are commonly employed in a particular industry to control emissions or minimise waste.
Handling	Producing, mixing, assembling, storing, treating, conveying, transporting, or disposing of a substance or waste or any other way dealing with a substance or waste.
Hazard	Something with the potential to cause harm, covers health, injury, loss of production, and damage to plants and property.
Hazardous waste	Any waste deemed unsuitable for direct disposal to the environment, sewer or conventional landfill or any waste containing any of the components listed below, above a concentration specified by the authority, or any other substance which is considered by the authority to pose a risk to public health or the environment based on its toxic, mutagenic, corrosive, reactive, flammable or radioactive properties.
Health	The protection of people from illness resulting from exposure to hazardous substances and materials
Hot or cold work permit	Document issued by an authorised person permitting hot or cold work to be carried out during a specific period in a clearly determined area within the facility limits
HS&E Department	Indicates Health Safety & Environment Department - RAKEZ
Hygiene	A condition promoting sanitary practices that can prevent illness and maintain health.
Incident	Any unplanned event resulting in or having a potential for injury, ill health, damage, or other loss.
Inspection	A visual examination by a responsible person is carried out to determine whether, in so far as can be ascertained in such a manner, the equipment is safe for continued use

Term	Description
Landscape plan	The design and specifications for the placement of all natural and manmade features (such as plantings, fencing, buildings, parking, drives, walkways, etc.) within a specified exterior space; including the retention of existing viable features, as well as the introduction of new or replacement features to enhance the property and its appearance, minimising the potential for negative impacts upon public senses, and protecting the community environment
MOHAP	Indicates Ministry of Health & Prevention - UAE
MOI	Indicates Ministry of Interior – UAE
NFPA	Indicates National Fire Protection Agency - US: All official definitions contained in NFPA and its companion codes, standards, and publications shall apply.
NOC	Indicates No Objection Certificate issued by RAKEZ or other relevant authorities as an approval
Non-combustible material	a substance that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapours when subjected to fire or heat. Or; a substance that is reported as passing ASTME 136, Standard Test Method for Behaviour of Materials in a Vertical Tube Furnace at 750^{o}C
Person	A natural person or business or corporate body registered and conducting any activity or proposed activity in RAKEZ
Personal Protective Equipment (PPE)	Any device or appliance worn or held by an individual for protection against one or more safety and health hazards and any addition or accessory designated to meet this objective
Planting	The introduction of or retention of hedges, plantings, and natural vegetative covers to beautify and enhance the property, controlling soil erosion and air temperature, reducing glare or noise, and screening adjoining uses
Pollution	Any exceeding of standards or objectives adopted by a relevant authority for any segment of the environment; or any detrimental Impact on legitimate beneficial uses of any segment of the environment, or causing conditions which would be hazardous to health or offensive to human beings and other living creatures or natural resources
Potable water	Water that meets the quality standards prescribed by World Health Organisation (WHO), 1984b, or water, which is approved for drinking purposes
Practicable	A level of duty defined by international law whereby action shall be taken where it is physically possible to do so. If it can be done it shall be done
Premises	The physical facility, its contents, and the contiguous land or property under the control of the permit holder; or, the physical facility, its contents, and the land or property which are under the control of the permit holder and may impact the food outlet personnel, facilities, or operations, if a food outlet is only one component of a larger operation such as a health care facility, hotel, motel, school, recreational camp, or prison.
Project	The construction of a permanent building, or any other civil work on a leased property including any modifications or installations in pre-built facilities within the RAKEZ jurisdictional area
PSD	Public Services Department - Government of Ras Al Khaimah
RAK Municipality	Ras Al Khaimah Municipality
RAKEZ	Ras Al Khaimah Economic Zone - Government of Ras Al Khaimah
Reasonably practicable	A level of duty defined by international law where a decision can be reached based on the level of risk versus the cost which can be in terms of time, money, or effort
Refuse (waste)	Solid waste which is not carried by water through the sewage system
Regulation	Set of rules/laws to be adhered to including these and other regulations issued by the “authority”

Term	Description
Relevant Authority	Any government or similar department, commission, board, body, bureau, agency, authority, or administration body at the national, provincial, or local government level, having administrative jurisdiction over the Parties, the Leased Premises, or the Property.
Relevant Authority	Any government or similar department, commission, board, body, bureau, agency, authority, or administration body at the national, provincial, or local government level, having administrative jurisdiction over the Parties, the Leased Premises, or the Property.
Responsible person	A person appointed by the Employer or the owner of the equipment, as the case may be, to be responsible for the performance of a specific duty or duties and who has sufficient knowledge and experience, and the requisite authority for the proper performance of the duty or duties
Risk	The likelihood that a hazard will cause particular harm in the actual circumstances of use and the severity of the harm
Risk assessment (RA)	The identification, evaluation, and estimation of the levels of risks involved in a situation, their comparison against benchmarks or standards, and the determination of an acceptable level of risk
Safety	The protection of people from physical injury
Sewerage system	The tanker waste disposal sites, pump stations, sewers, and treatment plant operated by PSD or RAKEZ
Site	A location with construction or modification works of any kind within RAKEZ jurisdictional areas
Shall	Indicates mandatory
Stakeholders	Indicates employers, building owners, building managers, facility management, asset management, lessee, occupier, licensee, consultants, contractors, sub-contractors, relevant authority, accreditation agencies, design, and construction team, insurers, investors, neighbours, project management, building operations, and maintenance, tenants, licensees, lessees, and emergency responders.
SDS	Safety Data Sheet
Thorough examination	Means a detailed visual examination by a competent person, supplemented if necessary, by other suitable means or measures, in order to arrive at a reliable conclusion as to the safety of the Item of equipment examined.
Treatment	Change in the physical or chemical composition or concentration of a substance to make it less hazardous or to make it acceptable at disposal facilities
UAE	United Arab Emirates
Waste	Any matter whether solid or liquid gaseous or radioactive which is discharged, emitted, or deposited in the environment in such volume or manner as to cause an alteration in the environment, any otherwise discarded, rejected, abandoned, unwanted, or surplus matter intended for recycling, reprocessing, recovery or purification by a separate operation from that which produced the matter, and any matter prescribed to be waste by RAKEZ.
Waste generator	A person or activity causing the production of waste by any process
3rd party	Any agency, employer, or institution that has undergone the scrutiny of documents and screening procedures that had been deemed suitable to provide services as per the stated type of activity in an awarded certificate of recognition the relevant authority