HEALTH, SAFETY, SECURITY & ENVIRONMENTAL (HSSE) MANUAL

Attachment to Specifications Section 01 35 23 - Employer HSE Requirements

Periodically Roshn Real Estate will release Amendments to this Manual. In order to maintain the most accurate and up to date Manual, these amendments should be carried out immediately upon receipt and recorded on the following record.

REVISION AMENDMENT RECORD			
Amendment Number	Amendment Date	Section Changed	Authorized by

Table of Contents

Annexures of Procedures & Standards

Safety Standards

Environmental Standards

1. Introduction

1.1 The purpose of this document is to set out the general Health, Safety, Security and Environmental (HSSE) requirements for all Contractors working on projects either directly for Roshn (The Employer) or under the management of Consultants.

1.2 All Contractors are required to deliver, as far as reasonably practicable, the requirements set out in the Roshn HSSE Manual which contains Procedures and Standards.

2. Legal & Contractual Requirements

2.1 Where legal requirements conflict with those set out in the HSSE Manual, then the more stringent requirement shall apply.

2.2 Specific HSSE requirements set out in contract documents shall be applied where relevant. This may include prescribed reporting mechanisms or the use of specific formats.

3. Duties and Responsibility

3.1 Contractors shall ensure that key personnel are made aware of their duties and responsibilities as set in the HSSE Manual.

3.2 Consultants shall ensure that projects under their management are in compliance with the HSSE Manual and relevant legal and contractual requirements for HSSE.

4. Project HSSE Documents

4.1 The Contractor shall prepare the following HSSE documents. Guidance can be found within this Manual. These shall be submitted to the Consultant for review and approval within thirty (30) days of Contract award.

- Construction Phase OH&S Plan
- Construction Environmental Management Plan (CEMP)
- Emergency Preparedness and Response (EPR) Plan
- Covid-19 Pandemic Management (CPM) Plan
- Traffic & Logistics Management (TLM) Plan
- Security Management Plan
- HSSE Organization Chart

- Certifications for key HSSE personnel.

4.2 Early or enabling works and Site mobilization will require a site-specific method statement complete with risk assessment if the Works commence in advance of HSSE document submissions.

4.3 During the life of the project, other supplementary documentation developed such as Critical Lift Plans etc. shall be incorporated into the Construction Phase OH&S Plan.

4.4 Emergency Preparedness and Response Plan can address both occupational health & safety incidents and environmental incidents, or two (2) separate Plans may be submitted to aid maintaining relevant ISO accreditation purposes.

4.5 Contractor shall develop an HSE File to be handed over to the Employer during the handover phase as part of handover documentation which shall contain certain information to alert future users and those carrying out work to the OH&S risks present, whilst providing “as-built” information and pertinent O&M manuals.

5. Project HSSE Staffing

5.1 Contractor shall within fifteen (15) calendar days from the Contract Award, appoint an HSE Manager, an Environmental Lead, and Security Lead who shall all be based on Site on a full-time basis. All positions shall be approved by Employer or its Representative before commencement of duties.

5.2 Contractor and/or Sub-Contractor shall elect and appoint a Health, Safety & Environment (HSE) representative in all cases where 15 or more people work on a Project, and at a rate of one (1) for every fifty (50) employees thereafter. The number of HSE Staff supplied must be proportional to the number of Contractor and Sub-Contractors present on site.

5.3 All HSSE personnel shall be competent to carry out their duties; competence is a combination of qualification, training and experience.

5.4 Contractor site personnel who provide emergency assistance (first aid / medical / fire-fighting / spill response) shall be properly trained and qualified with a copy of their current certifications maintained on site. All emergency contact information shall be prominently displayed in all active areas on site.

6. HSSE Communication, Coordination & Cooperation

6.1 After award of the Contract and prior to Works commencing, the Contractor shall participate in a kick-off Health, Safety, Security & Environmental (HSSE) review and alignment session with the Consultant to ensure specific risks are addressed prior to commencement of the work, to align all parties on HSSE expectations of the Employer, the key performance indicators (KPI) for the Project, and to facilitate a consistent approach on all HSSE issues.

6.2 The Contractor shall develop and implement a process to ensure cooperation, coordination and timely communication with all other parties who may operate within, or immediately adjacent to, the area of the Works.

7. HSSE Induction, Training & Instruction

7.1 All Contractors shall ensure that all persons on site attend a project specific induction prior to carrying out any works. Contractors shall also ensure that all visitors attend a brief induction prior to entering the work area.

7.2 Third party certification / qualifications will be required for certain trades / functions (e.g. welders, mobile plant operators, crane operators, lifting supervisors, scaffolding supervisors etc.) All such requirements will be specified within local regulations or can be found in this HSSE Manual.

7.3 Contractors shall establish and deliver ongoing training and instruction to workers through regular tool box talks.

7.4 Contractors shall ensure that daily pre-start safety briefings are held with workers prior to commencement of Works.

8. HSSE Audits & Inspection

8.1 Contractor Management shall conduct regular work area HSSE Assessments, document findings and implement corrective actions for any non-compliance to the Contractor Construction Phase OH&S Plan and Construction Environmental Management Plan.

8.2 Employer or its Representative reserves the right to monitor, inspect and formally assess the work Site, laydown and fabrication yards, warehouses, clinics and welfare areas for compliance to HSSE requirements.

8.3 Observations made during inspections by Employer or its Representative shall be closed-out within the following timeframe linked to RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00001 Accident Notification, Reporting & Recording Procedure:

- Likely to cause a Category 1 Incident 12 hours
- Likely to cause a Category 2 Incident 48 hours

- Likely to cause any other incident 96 hours

8.4 Contractor must submit weekly report to Employer on its HSSE performance in accordance with agreed protocols of the project.

9. Procedures

9.1 An Index of HSSE Procedures is as follows:

Reference	Title
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00001	Accident Notification, Reporting & Recording
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00002	Hazardous Work Permits
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00003	Stored Energy - Lockout / Tagout

10. Occupational Health Standards

10.1 An Index of Occupational Health Standards is as follows:

Reference	Title
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00004	Construction Site Welfare
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00005	Control of Substances Hazardous to Health
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00006	Hot & Cold Injuries
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00007	Manual Handling Operations
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00008	Medical Services & Management
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00009	Noise & Vibration Management
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00010	Occupational Health Surveillance

11. Safety Standards

11.1 An Index of Safety Standards is as follows:

Reference	Title
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00011	Confined Space Management
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00012	Construction Plant & Vehicle Management
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00013	Detection of Buried Services
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00014	Engineering & Vehicle Workshops
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00015	Excavations & Trenching
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00016	Fall Arrest & Work Restraint Systems, Nets & Rope Access
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00017	Fire Prevention & Protection
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00018	General Safe Working Practices
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00019	Hot Works

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00020	Lifting Operations
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00021	Lightweight Staging, Trestles, Ladders & Steps
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00022	Man-Lifts
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00023	Office Safety
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00024	Personal Protective Equipment
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00025	Roofing & Fragile Surfaces & Openings
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00026	Scaffolding
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00027	Stability of Structures
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00028	Storage of Materials
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00029	Temporary Electrical Safety
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00030	Working at Height
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00031	Working Platforms

12. Environmental Standards

12.1 An Index of Environmental Standards is as follows:

Reference	Title
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00032	Air Quality
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00033	Conservation
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00034	Environmental Monitoring
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00035	Noise & Vibration Protection
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00036	Soil & Groundwater
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00037	Waste Management
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00038	Water Quality

13. Security Standards

13.1 An Index of Security Standards is as follows:

Reference	Title
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00039	Access Control
RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00040	Traffic Management

14. Guidance on HSSE Documentation Requirements

14.1 *The majority of Works conducted on behalf of Roshn is managed by Project Management Companies, Consultants or Principle Contractors. The intent of this section therefore is not to provide standard HSSE templates to be used, but to stipulate the principal requirements and give guidance on minimum contents of the documents, so that companies may carry on using their own formats so as not to interfere with existing ISO accreditation, so long as the following minimum requirements are met:*

Construction Phase OH&S Plan

14.2 Contractor shall produce a Construction Phase OH&S Plan specific to the work included in the contract, and submit for approval during the mobilization / pre-construction works phase. Contractor's Construction Phase OH&S Plan shall be written in accordance with Employer's HSSE Standards as a minimum, and shall consist of, but not be limited to:

Project Description

- Project Description;
- Details of any Sub-Contractors and Consultants to be used;
- Extent and location of existing structures and utilities on site;
- Drawing of Site and lay-down area layout, including traffic management system.

Management of the Works

- Policy Statement of Intent;
- Organization Chart;
- Management & Supervisor Responsibilities;
- Selection and control of Sub-Contractors;
- Arrangements for regular liaison between all parties concerned with the Works;
- Arrangements for exchange of information between all Contractors on site;
- Internal Auditing, Assessment & Inspection Procedures.

Hazardous Identification & Control Measures Required

- Risk Assessments, Safe Method Statements and Arrangements for controlling significant risks particular to the contract, e.g.:
  - ❖ Protection of General Public;
  - ❖ Traffic Management and vehicle operations;

- ❖ Structural steel erection;
- ❖ Working at height;
- ❖ Scaffolding;
- ❖ Control of Lifting operations (including mobile and tower cranes);
- ❖ Excavations and trenching;
- ❖ Piling Operations;
- ❖ Confined spaces;
- ❖ Welding operations;
- ❖ Electrical operations;
- ❖ Formwork / False-work Operations;
- ❖ Camp Management;
- ❖ Welfare Arrangements, including off-site accommodation and facilities;
- ❖ Any other significant specific risks.

Plant and Equipment

- Register of construction plant and vehicles;
- Register of competence of key operators;
- Arrangements and facilities for statutory inspections and calibration;
- Equipment Servicing & Maintenance Program.

Materials

- Procedure for delivery, receipt, handling and disposal;
- Storage of materials (including flammable solids, liquids & LPG);
- Security of Offices, Personnel & Equipment.

Means of Communication

- Mode(s) of communication around the site;
- Training Procedure including orientation, toolbox talks and pre-task briefings.

Construction Environmental Management Plan

14.3 In addition to Contractor's Construction Phase OH&S Plan, Contractor shall produce a Construction Environmental Management Plan (CEMP) specific to the work included in the Contract, which will define mitigation measures needed to minimize the impacts to the natural environment and the local community, and submit for approval during the mobilization / pre-construction works phase. Contractor's CEMP shall be written in accordance with Employer's HSSE Standards as a minimum, and shall consist of, but not be limited to:

Project Description

- Introduction;
- General Project Information including site and project description and project milestone schedule.

Management of the Works

- Management Environmental Responsibilities;
- Environmental Management Controls;
- ESIA / EIA for the project and related mitigation matrix;
- Environmental Awareness Training;
- Environmental Compliance Reviews, Coordination and Communication;
- Environmental Compliance Inspections and Documentation;
- Environmental monitoring report submittals.

Environmental Requirements

- Environmental Requirements, Plans & Procedures

  - Storage;
  - Discharge to Water & Site Drainage;
  - Noise and Vibration;
  - Air Quality;
  - Erosion and Sedimentation Control;
  - Construction Storm Water Management;
  - Protection of Sensitive Resources;
  - Unanticipated Discoveries;
  - Hazardous Materials Management;
  - Solid Waste Management;
  - Reduce, Reuse, Recycle program;
  - Spill Prevention and Response;
  - Clean-up & Restoration;
  - Environmental Incident Reporting;
  - Training of Initial Response Team;
  - Incident Reviews;
  - Record Keeping Details.

Emergency Response Plan

14.4 Contractor shall develop an Emergency Response Plan to cover all potential emergency situations relating to HSSE that could occur during the life of the construction project, and develop procedures to address these emergencies; this may be included as an Appendix in the Construction Phase OH&S Plan, or as two (2) separate documents (one for OH&S and one for Environmental). Development must include the following considerations:

- Hazard identification/assessment;
- Emergency resources;
- Communication systems;
- Administration of the plan;
- Emergency response procedure;
- communication of the procedure;
- Training of Initial Response Team;
- Debriefing procedure;
- Record-keeping details.

14.5 The Contractor shall initiate regular exercise drills to review the effectiveness of the emergency response plan at intervals not less than 3 months; Employer or its Representative has the right to attend these emergency drills.

HSE File

14.6 An HSE File is required to be handed over to the Employer or it's Representative at the end of the project as part of the handover documentation, which shall contain certain information to alert future users and those carrying out work on the structure, to the health and safety risks present, whilst providing "as-built" information and pertinent Operation & Maintenance manuals. The exact information to be included will depend on the size and complexity of the project, but generally, information that it should contain includes:

- Brief description of the work carried out;
- Any residual hazards which remain and how they have been dealt with;
- Key structural principles (for example, bracing, sources of substantial stored energy – including pre- or post-tensioned members) and safe working loads for floors and roofs, particularly where these may preclude placing scaffolding or heavy machinery there;
- Hazardous materials used (for example lead paint; pesticides; special coatings which should not be burnt off etc.);
- Information regarding the removal or dismantling of installed plant and

equipment (for example any special arrangements for lifting, order or other special instructions for dismantling etc.);

- Health and safety information about equipment provided for cleaning or maintaining the structure;
- The nature, location and markings of significant services, including underground cables; gas supply equipment; fire-fighting services etc.;
- Information and as-built drawings of the structure, its plant and equipment (for example, the means of safe access to and from service voids, fire doors and compartmentalization etc.).

Risk Assessment

14.7 A Risk Assessment is a systematic method of looking at work activities, considering what could go wrong, and deciding on suitable control measures to prevent loss, damage or injury in the workplace. The Assessment should include the controls required to eliminate, reduce or minimize the risks, with the aim to reduce the risks as much as is 'reasonably practicable'.

14.8 The Contractor's Construction Phase OH&S Plan must contain the Company's general Policy and Procedure for conducting risk assessments, including nominating those persons competent to perform the assessment for each task, the form to be used, and how the findings are to be communicated to the workforce that will perform the task.

14.9 The Construction Phase OH&S Plan shall contain a risk assessment for every hazardous construction activity where there is a risk to life, injury, health, property or the environment envisaged during the Contract.

Typical hazardous construction risks include, but are not limited to:

- Working at height;
- Confined spaces;
- Lifting operations;
- Working with electricity;
- Collapse of structures;
- Collapse of excavations;
- Striking buried services;
- Working near construction plant & vehicles;
- Street & road-works;
- Environmental spillages;
- Fire & explosion.

14.10 There may be circumstances (i.e. a change in the scope of work), where a Risk Assessment may be required during the course of the Contract after the Construction

Phase OH&S Plan has been submitted and approved. In this event, the risk assessment must still be submitted and approved by Employer or its Representative at the time the event occurs.

The risk assessment must contain the following elements:

- ✓ The task to be performed;
- ✓ What is the hazard(s);
- ✓ Who/what might be harmed;
- ✓ What is the control measure(s) you are doing;
- ✓ What further action is necessary;
- ✓ Who will do this further action, and by when;
- ✓ The person's name that performed the risk assessment;
- ✓ The date the assessment was carried out.

Safe Sequence of Works (also known as a Method Statement)

14.11 A Safe Sequence of Works is a written document that essentially details a safe system of work to be followed addressing the hazards identified during the preparation of the risk assessment for a specific work activity.

14.12 Safe Sequence of Works need be no longer than is necessary for them to be effective. They are for the benefit of those carrying out the work and so should be clear, not be over complicated, and should be illustrated where necessary. They should explain in detail the work that is to be undertaken and the necessary remedial measures that need to be in place in order to protect the site workforce, the environment, and members of the public who may be affected by work actions.

14.13 Safe Sequence of Works must be written by a competent person who is familiar with the process/task being described and must be approved by Employer or its Representative before work commences. The Contractor's Construction Phase OH&S Plan must contain the Company's general Policy and Procedure for conducting method statements, including nominating those persons competent to perform the assessment for each task, the form to be used, and how the findings are to be communicated to the workforce that will perform the task

14.14 Contents of a method statement will vary with the work process being described, however as a minimum, the must contain:

- Basic Contract Information
  - ❖ Contractor;
  - ❖ Project Number;
  - ❖ Location.

- Work details
  - Intended start date;
  - Brief description of the activity;
  - Supervisor responsible for the activity;
  - Number of operatives involved in the activity;
  - Anticipated completion date of the activity.

- Method of work
  - Description of how the works are to be carried out in relation to the task and site-specific hazards;
  - Schedule of the Works including a step-by-step sequence of the operation or tasks;
  - Details of whether the Works location requires segregation by barricades;
  - Where applicable, the inclusion of details regarding other Sub-Contractors who may affect the Works, or details of how the Works may affect other Sub-Contractors;
  - For high risk works, a detailed description of intended emergency procedures.

- Risk / Control of Substances Hazardous to health (CoSHH) Assessments
  - Inclusion of Risk Assessments & CoSHH Assessments which assisted in the identification and management of the task specific hazards.

- Plant & Equipment
  - Inclusion of details regarding any equipment or plant that is to be provided for the works.

- Operator Competence
  - Provision of copies of any qualifications, training or card schemes that the operatives undertaking the works currently hold.

- Drawings / Sketches
  - Inclusion of simple illustrations that can communicate tasks or procedures to the operatives where necessary or possible.

- Monitoring & Review
  - Details of how the works will be monitored supervised and evaluated;
  - Handling and storage of materials and pollution prevention;
  - Details of the person(s) who will communicate the safe sequence of works to the relevant operatives and when this communication will take place;
  - Procedure for changing the proposed method of work if necessary.

Pre-Task Briefings

14.15 The purpose of the pre-task briefing is to ensure that the Contractor Supervisor and potential workers understand the scope of the work to be performed by discussing the tasks involved based on the Risk Assessment and Safe Sequence of Works already conducted.

14.16 Pre-task briefings are required for all construction activities, and are to be conducted daily, immediately before work starts, and in addition:

- If changes occur to the work task process;
- Additional personnel join the activity;
- After an accident, incident or near miss.

14.17 The Contractor Supervisor should clearly define personnel roles and responsibilities, precautions, limitations, stop/pause work procedures, critical steps and contingencies. The pre-task briefing should allow everyone on the team to raise questions over a lack of understanding, or raise concerns over HSSE issues.

Annexures

Procedures & Standards

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00001 - Accident Notification, Reporting & Recording Procedure

1. Definitions

1.1

Accident	Any undesired and unplanned circumstance which gives rise to injury or illness, damage to property, equipment, materials or the environment.
Incident	Any unwanted circumstance which gives rise to injury or illness, damage to property, equipment, materials or the environment.
Security Incident	Any attempted or actual unauthorized access, violence, theft or destruction of property, including information, regardless of Categories below.
Near Miss	An unplanned or uncontrolled event, that in certain circumstances, could have caused injury, damage to property, equipment, materials or the environment.
Category 1	Fatality; Major injury; Dangerous Occurrence; Major Environmental Damage; Major Property Damage; Any accident / incident that involves potential for significant liability, including but not limited to, personal injury lawsuits, business interruption claims, consequential damages, or significant impact on the general public; Any accident / incident resulting in immediate hospitalization of 3 or more persons for more than 24 hours; Any accident / incident resulting in a Government investigation or citation; Any accident / incident involving a third party or member of the general public.
Category 2	Any accident / incident resulting in immediate hospitalization for less than 24 hours; Property damage of value greater than SAR 150,000 but less than SAR 250,000; Medical Treatment beyond First Aid; A serious complaint concerning actual or potential impact by construction activities taking place, by residents in the vicinity, or those working or doing business in adjacent areas of the construction site.
Fatality	The death of a person resulting from an accident arising out of any work activity.
Major Injury	Any defined injury requiring notification to Kingdom of Saudi Arabia (KSA) enforcing authority;

	Any fracture; Amputation; Dislocation; Temporary or permanent loss of sight; Any damage to eyes; Any electrical-caused injury to body; Loss of consciousness; Any injury requiring cardio-pulmonary resuscitation (CPR).
Medical Treatment beyond First Aid	Any injury that requires further medical treatment in a hospital or clinic.
Medical Treatment	Provision of body-invasive treatment; or provision of prescription medicine
Dangerous Occurrence	Collapse, overturning, and/or failure of any load-bearing part of any type of lifting device or construction plant or vehicle; Contact with electrical overhead power lines; Fire and/or explosions; Collapse of scaffolding; Collapse of any type of structure, building, false-work or formwork.
Major Environmental Damage	Spills, discharges, or release of hazardous materials into waterways or harbors; and any environmental incident requiring the assistance of external agencies and/or companies.
Major Property Damage	is damage to, or the destruction of, public or private property, caused either by a person, equipment, accident or by natural phenomena over the value of SAR 250,000.
RTC	Road Traffic Collision – (also known as a road traffic accident, motor vehicle accident, car accident etc.); when a vehicle collides with another vehicle, pedestrian, animal, road debris, or other stationary obstruction, such as a tree or utility pole.
First Aid	Emergency treatment administered to an injured or ill person before professional medical care can be administered.

2. Planning

2.1 The purpose of this procedure is to establish guidelines for the notification of accidents, incidents and near misses occurring on any Employer managed premises or project construction sites.

2.2 The requirements of this Procedure shall apply to all work-related accidents, incidents and near misses occurring to Employer staff, Consultants, Contractors, Sub-Contractors, Suppliers and Visitors to its' works on premises or project construction Sites.

Roles & Responsibilities

Roshn Chief Projects Officer

2.3 Roshn Chief Projects Officer is responsible for:

- Immediately notifying Roshn CEO, and/or Corporate Communications and/or Legal Department where the situation dictates when notified of a Category 1 accident / incident;
- Immediately notifying Roshn Risk Department (Insurance) and/or Corporate Communications where the situation dictates when notified of a Category 2 accident / incident.

Roshn HSSE Director

2.4 Roshn HSSE Director is responsible for:

- Providing technical HSE advice on accident investigation;
- Conducting accident trend analysis;
- Ensuring retention of all Project HSE accident / incident documentation.

Site Roshn Representative or Consultant

2.5 The Site Roshn Project Director, (or where not assigned to a project and located on site), the Project Director of Consultant is responsible for:

- Verbally notifying, and submitting follow-up initial notification report to Roshn HSSE Department within the specified timeframe all category 1 & 2 accident / incidents;
- Providing technical advice to the accident / incident investigation.

Principal Contractor

2.6 The Contractor is responsible for:

- In the absence of a Site Employer Representative and/or Consultant, verbally notifying, and submitting follow-up initial notification report to Roshn HSSE Department within the specified timeframe all category 1 & 2 accident / incidents;
- the handling of any accident / incident;
- the formal investigation of the event;
- the reporting to any KSA government agencies of the injuries as per legislative requirements;
- the formation of an Accident / Incident Review Board;
- the investigation;
- preparing and submitting the Accident / Incident Investigation Report for all category 1 & 2 events to Roshn HSSE Department;

- implementing all recommendations, corrective and preventative actions identified within the Accident / Incident Investigation Report, and any other comments or instructions supplied by Roshn or Consultant HSE Directors or Managers;
- retaining copies of the Accident / Incident Investigation Reports for Category 1 & 2 events, and site accident/first aid registers until project handover and acceptance, and then hand over as part of acceptance documentation.

3. Equipment

3.1 RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00008 Medical Services & Management Standard shall be referred to for medical equipment requirements.

4. Environment

Accident / Incident Principles

4.1 Should any accident / incident occur, regardless of Category, the immediate response principles are:

- Any unsafe conditions are remedied / isolated
- Provision of proper medical treatment of all injured individuals
- Relevant personnel are contacted
- The scene is controlled, secured and not disturbed
- Unauthorized persons are prevented from accessing the scene
- The environment is protected (if applicable)
- Potential witnesses are identified and contact information obtained
- Relevant evidence is preserved, including:
  - Photographs
  - Work control documents
  - Tools
  - Equipment

5. Training

5.1 All Consultant and Contractor Staff involved in HSE, Security, Emergency Response and those with specific relevant roles and responsibilities shall be made aware and trained in this Procedure.

6. Operations

Initial Notification

6.1 Category 1 accidents / incidents shall be verbally notified (WhatsApp messaging or SMS preferred) to Roshn HSSE Department within 30 minutes, with a documented initial notification report (Appendix 1) to be submitted within 2 hours.

6.2 Category 2 accidents / incidents shall be verbally notified (WhatsApp messaging or SMS preferred) Roshn HSSE Department within 2 hours, with a documented initial notification report (Appendix 1) to also be submitted within 2 hours.

6.3 No other categories of accidents / incidents need to be notified to Roshn Corporate, apart from statistics required within the standard end of month Project HSSE Performance Reports.

6.4 In the event of any confusion as to the category of the accident / incident, the event shall always be assumed as a Category 1, and Roshn HSSE Director shall define the correct category based on the information supplied at the time of initial notification.

6.5 The category status of the accident / incident may be changed (only) by Roshn HSSE Department during the course of the investigation process.

Accident Investigation & Reporting

6.6 Accident Investigations including the submission of Accident Investigation Reports are to be conducted as per Contractor own HSE Management System Procedures.

6.7 The Contractor shall be responsible for the handling of any accident / incident, for formal investigation of the event, the reporting to any KSA government agencies of the injuries as per KSA legislative requirements (seeking advice and support from Employer or Consultants where applicable & available).

6.8 The Contractor is responsible for the formation of a formal Accident / Incident Review Board, the investigation, and preparing and submitting the Accident / Incident Investigation Report for all category 1 & 2 events to Roshn HSSE Department within 7 days, seeking advice and support from PM/CM's or Consultants where applicable & available.

6.9 The Contractor shall be responsible for implementing all recommendations, corrective and preventative actions identified within the Accident / Incident Investigation Report, and any other comments or instructions supplied by Roshn or Consultant HSE Director or Manager.

6.10 Contractor shall develop a sanitized “Lessons Learned” brief for sharing with other Contractors working on Employer Projects and submit to Roshn or its Representative within 5 days of completion of the Accident / Investigation Report. No personal, medical or confidential information shall be included within the brief.

Accident Recording

6.11 Copies of the Accident / Incident Investigation Reports for Category 1 & 2 events, and site accident/first aid registers shall be retained by Contractor until project handover and acceptance, and then handed over as part of HSE file for retention purposes.

Appendix 1

HSSE ACCIDENT/INCIDENT INITIAL NOTIFICATION

PROJECT:		**CONSULTANT:**	
LOCATION:		**CONTRACTOR:**	

1.0 – INJURY TYPE

CATEGORY	√	CATEGORY	√
Fatality		Major Environmental Incident	
Major Injury		Major Property Damage	
Medical Treatment beyond First Aid		Security Incident	
Dangerous Occurrence		Other	

2.0 – INCIDENT DETAILS

EVENT	DETAILS
Date of Incident	
Time of Incident	
Location of Incident	
Name of Injured Person(s)	
Company Injured person working for	

3.0 – BRIEF DESCRIPTION AND ACTION TAKEN

Prepared by (Name): Date & Time Report prepared:

Signature: Job Title:

Employer: Mobile Phone Number:

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00002 – Hazardous Work Permits Procedure

1. Definitions

1.1 Supervisor: Person who is given the responsibility for planning, organizing, coaching, and guiding the manpower and resources to accomplish the objectives and tasks to complete the job.

1.2 Permit Issuer (Issuing Authority): A Permit Issuer must be a person who is trained, competent and authorised to issue a Permit to Work after ensuring that all of the hazards, associated with the work being done, have been identified and all necessary safety precautions are being implemented to ensure that the work can be completed safely.

1.3 Permit Receiver (Permit User): The Permit User is the tradesman, foreman or contractor who is responsible for the work being completed as described in the Permit to Work. The Permit Receiver must ensure that the work being done has been adequately described so that all associated hazards and risks can be identified.

2. Planning

2.1 Hazardous work permits (Permit to Work) are a formal management system used to control high risk activities. These enable an assessment of risks to be made and to specify control measures which will be put in place in order to minimize the risk.

2.2 It shall be a requirement for all projects or works to implement a Permit to Work procedure, where activities pose an increased risk of serious injury or illness. Examples of activities that shall require a permit include:

- Electrical works;
- Confined space entry;
- Hot Works;
- Cold Works
- Excavations/Trenching;
- Lifting Operations
- Chemical, biological or radiological exposure of significant risk;
- Processes containing stored energy;
- Any other works determined by HSE representatives to be significantly hazardous.

2.3 The Permit to Work shall indicate the hazardous conditions, required protective measures, and approvals to work within controlled areas, specifically:

- Description of work being completed;
- Employees involved in the works;
- The type of Permit to Work (hot work, cold work, confined space entry, excavation, electrical etc.) being issued;
- Hazards associated with the work;
- Required control measures such as: isolation requirements; gas testing; emergency response procedures; personal protective equipment; purging; stand-by personnel; barriers; and,
- Times that the Permit to Work will be valid.

2.4 The Permit to Work shall be signed by a Permit Issuer and the Permit Receiver.

3. Equipment

3.1 Specialist equipment such as emergency rescue equipment, fire-fighting or first aid equipment, or measuring and monitoring equipment shall be recorded on the Permit to Work.

4. Environment

4.1 Every Supervisor shall ensure by physical inspection that the work area is safe before work starts, and that the area is returned to its original condition after work has been completed.

5. Training

5.1 All those employees whose work may involve the use of Hazardous Work Permits shall receive formal documented training on the actual Permit to Work document in use.

<u>Pre-task briefing</u>

5.2 Before the work starts, a pre-task briefing shall be held with the Permit Issuer, Supervisor and Permit Receiver to:

- Review all hazardous conditions that are expected during the work;
- Review all safety procedures that will be followed while completing the work;
- Ensure that all persons completing the work are aware of and accept their responsibilities while completing the work;

- Ensure that all other persons in the general work area are aware of the potential hazards and safety procedures that must be followed;
- Ensure that all of the hazardous conditions and appropriate safety procedures are identified and documented on the Permit to Work;
- Document the results of the pre-task briefing (who attended the meeting, what was discussed and what procedures were agreed upon).

6. Operations

Process Principles

Issue of Permit to Work

6.1 Once all of the work tasks, hazards and safety procedures have been identified and documented on the Permit to Work, the Permit Issuer must ensure that the appropriate risk controls (e.g. isolations, purging, emergency response preparations, personal protective equipment) have been implemented and that the work site is in a safe condition before the Permit to Work is authorised. The Permit Issuer must be satisfied that all of the specified Permit to Work conditions have been complied with before the Permit is authorised and issued.

6.2 A signed copy of the Permit to Work will be given to the Supervisor, the Permit Receiver, and a copy will be kept by the Permit Issuer. A copy will also be given to the work site HSE representative.

6.3 The Permit copy provided to the Permit Receiver must be kept at the job site while the work is being done.

Permit to Work Validity

6.4 Permit validity is the time period, specified on the Permit to Work, for which the permit is valid. A Permit to Work cannot be valid for more than 12 hours or for more than the normal work shift; **whichever is the least time**. If the work must continue for a period longer than 12 hours or longer than the normal work shift, the Permit to Work must be closed and a new Permit to Work must be prepared. A Permit to Work is valid only for the work that is described on the Permit to Work. No one can issue a Permit to Work to himself or herself.

6.5 A Permit to Work is not required for normal, routine duties by the Contractor, but a Permit to Work is required for any and all work done by a Sub-Contractor.

Work Conducted With a Permit to Work

6.6 After the Permit to Work has been issued, the Supervisor is ultimately responsible for ensuring that the Permit to Work conditions are complied with. The Supervisor is responsible for arranging periodic inspections of the work by himself and/or the work Site HSE representative to ensure that the Permit to Work conditions are being complied with by the Permit Receiver.

6.7 If continuous or periodic gas tests are required while the work is being completed, the authorised gas tester will perform these gas tests and record, on the Permit to Work copies, the gas readings and the times that the gas tests are completed.

Temporary Removal of Isolations

6.8 There are situations where isolations must be temporarily removed (e.g. when testing equipment during the work). When isolations must be temporarily removed, the Permit to Work issuer must be informed and checks must be made to ensure that the isolation removal does not create any hazards for the work site and workers before the isolations are removed. After the requirement for the temporary isolation removal has been completed, the isolations must be replaced and the Permit Issuer must be informed that the isolations have been replaced.

Suspended Work

6.9 There are situations where work being done with a Permit to Work must be suspended. Some examples of when this may occur are:

- High risk, hazardous situations occur and for safety reasons, the work must stop;
- The work requires more time than is allowed on the Permit to Work;
- An accident occurs while the work is being completed;
- An emergency (e.g. fire alarm) occurs at the site;
- The work scope changes significantly from what was originally planned when the Permit to Work was prepared and authorised.

6.10 Whenever these and similar situations occur, the work must stop immediately; the work site must be made as safe and secure as possible. Once works is authorised to proceed, a new Permit to Work must be prepared and authorised, and in all cases, safety procedures must be implemented to make the work site safe before work starts again (eliminate the hazards or reduce the risks to acceptable levels). Once the safety procedures have been implemented and a new Permit to Work has been issued, work can start again.

Monitoring the Work

6.11 Work that is being completed with a Permit to Work must be regularly monitored by the Supervisor and/or the Site HSE representative to ensure that the specified safety procedures are being complied with by the Permit Receiver. The Supervisor must make a schedule for determining how often the work should be monitored. For tasks where there are potentially high risks, the work should be monitored more frequently, particularly when critical tasks are being completed. Whenever specified safety procedures are not being complied with, the work must be stopped until the Supervisor and/or the HSE representative determines that the correct safety procedures/site conditions are compliant; if the non-compliance is serious, the Employer non-conformance process is to be followed.

Completion of the Work

6.12 When the work has been completed, the work area must be left in a safe, operating condition with all locks, tags and isolations removed. All rubbish, surplus materials, tools and equipment used for the work must be removed from the work site. To the extent possible, the work site must be restored to its original condition before the work started, unless the work was intended to change the work site condition.

Closing the Permit to Work

6.13 After the work has been completed and left in a safe operating condition, the Supervisor must inform the Permit Issuer. The Permit Issuer and Supervisor must then inspect the work and ensure that:

- The work was completed as it was specified;
- All locks, tags and isolations have been removed;
- The work site was returned to a safe, operating condition;
- All rubbish, surplus materials, tools and equipment used for the work has been removed from the work site;
- The work site has been restored to its original condition.

6.14 Once the above criteria have been completed to a satisfactory standard, the Permit Issuer shall then close out the Permit to Work.

Records Retention

6.15 Original Permit to Works are to be retained on file for the period of the construction project, or for Roshn Facility Management, a minimum period of two years.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00003 - Stored Energy – Lock-Out / Tag-Out Procedure

1. Definitions

1.1 **Affected employee**: An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lock-out or tag-out, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

1.2 **Authorized employee**: A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

1.3 **Capable of being locked out**: Energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lock-out can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

1.4 **Energized:** Connected to an energy source or containing residual or stored energy.

1.5 **Energy isolating device:** A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

1.6 **Energy source:** Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

1.7: **Isolating:** A process to prevent the unintentional release of energy (e.g. electricity, forceful release of gases or liquids) or materials. Electrical isolations are usually achieved with disconnection, opening circuits and using locking mechanisms to prevent unintentional re-connections or circuit closures. Mechanical isolations are usually achieved through:

- closing valves and/or inserting “blanks”, “spades” or “blinds” in flange connections for pipes;
- using pins or chains with padlocks to lock in place movable, mechanical parts such as valve handles, crane booms or conveyors;

- disconnecting (turning off switches and/or removing wire connections) and locking electric motors.

1.8 **Lock-Out:** The placement of a lock-out device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lock-out device is removed.

1.9 **Lock-Out device:** A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

1.10 **Tag-Out:** The placement of a tag-out device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tag-out device is removed.

1.11 **Tag-Out device:** A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tag-out device is removed.

2. Planning

2.1 It shall be a requirement at all projects and Employer premises to implement a Lock-Out / Tag-Out procedure that provides effective controls against the release of hazardous energy of all types, including, but not limited to:

- Pressure (pneumatic, hydraulic etc.);
- Mechanical (dynamic and kinetic);
- Electrical;
- Thermal (steam, heat etc.).

2.2 Lock-out Tag-out is a planned safety procedure that disables the energy supply of machinery and equipment whilst servicing, maintenance work or repairs are in progress. The aim of this system is to effectively protect workers from the dangers created by live machinery, systems or electricity, therefore lowering the overall level of risk when working with this equipment. The procedure shall require that hazardous power sources be isolated and rendered inoperative before any servicing, maintenance or repair procedure is started.

2.3 Lock-Out Tag-Out procedures at project level shall be written by a competent person familiar with the equipment and systems to be worked upon.

2.4 A Permit to Work system shall be a mandatory requirement of Lock-Out Tag-Out procedures to ensure a single-point of contact is coordinating all hazardous works activities.

2.5 The authorized employee shall refer to the plant/equipment/system manufacturer's manual and/or drawings to identify the type and magnitude of the energy that the plant/equipment/system utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.

2.6 The authorized employee shall then document specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy, including the steps for the placement, removal and transfer of lock-out devices or tag-out devices and the responsibility for them and the specific requirements for testing to determine and verify the effectiveness of lock-out devices, tag-out devices, and other energy control measures.

2.7 This procedure shall then be submitted to Facilities Manager for approval before work may proceed, or in the cases of construction sites, the Equipment Manager & HSE representative.

Use of Sub-Contractors

2.8 Whenever outside servicing Contractors are to be engaged in activities covered by the scope and application of the local Site Lock-Out / Tag-Out procedure, the On-Site Contractor and the Sub-Contractor shall inform each other of their respective Lock-Out / Tag-Out procedures.

2.9 The On-Site Contractor shall ensure that his/her employees understand and comply with the restrictions and prohibitions of the Sub-Contractor's Lock-Out/Tag-Out process.

3. Equipment

Hardware

3.1 Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by the Contractor for isolating, securing or blocking of machines or equipment from energy sources.

Lock-out devices and tag-out devices shall meet the following requirements:

- be singularly identified;
- shall be the only devices(s) used for controlling energy;
- shall not be used for other purposes;
- Tag-out devices shall be constructed and printed so that exposure to weather conditions, corrosive environments or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible for the maximum period of time that exposure is expected;
- Lock-out and tag-out devices shall be standardized within the facility in at least one of the following criteria: Color; shape; or size; and additionally, in the case of tag-out devices, print and format shall be standardized;
- shall be substantial enough to prevent removal without the use of excessive force or unusual techniques or prevent inadvertent or accidental removal;
- Tag-out device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie;
- Lock-out devices and tag-out devices shall indicate the identity of the employee applying the device(s);
- Tag-out devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following:

    - Do Not Start;
    - Do Not Open;
    - Do Not Close;
    - Do Not Energize;
    - Do Not Operate.

4. Environment

4.1 Where possible, a safety barrier creating a safe working zone shall be erected around the machine/equipment to be worked upon with suitable and sufficient signage.

5. Training

5.1 All personnel authorized to do maintenance and affected associates (those using or capable of starting a machine or any equipment) shall be trained annually on the Site's Lock-Out/Tag-Out procedure.

5.2 All new associates shall be properly trained on the site's Lock-Out/Tag-Out procedure before working in an area where lock-out or tag-out devices are in use.

5.3 Supervisors must document that associate training has been accomplished. Copies of this documentation are to be sent to the Facilities Manager or in the cases of construction sites, the Equipment Manager & HSE representative.

5.4 Documentation must include the names of all associates participating, the date of the training, a copy of the curriculum and the name of the trainer.

5.5 To ensure that the necessary information has been learned a written test shall be administered by the 3rd party trainer and the results recorded. Associates who do not achieve at least a 75 percent score on the written test must be retrained.

5.6 Written test results are to be retained by the Facilities Manager, or in the cases of construction sites, the Equipment Manager & HSE representative.

5.7 Training should include the following:

- Ensure that all associates know the details of the site's Lock-Out/Tag-Out procedure and that they know what to do and what not to do when they encounter a lock or a tag on a switch or a device they wish to operate;
- Associates must be aware that a tag is not a physical restraint. They must be aware of the false sense of security that tag-out systems can present.

5.8 Retraining should take place:

- When an associate is re-assigned to a different area or machine;
- When there is a change in the Lock-Out and Tag-Out procedure;
- When there is a change in equipment or machinery;
- When a periodic inspection or audit reveals inadequacies in the associate's knowledge or use of the site's Lock-Out/Tag-Out procedure.

6. Operation

Process Principles

Lock-out/Tag-out

6.1 The authorized employee shall notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.

6.2 A Permit to Work system shall then be implemented.

6.3 Where possible, a safety barrier creating a safe working zone shall be erected around the machine/equipment to be worked upon.

6.4 If the plant/equipment/system is operating, shut it down by the normal stopping procedure.

6.5 De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s). Lock-out the energy isolating device(s) with assigned individual lock(s).

6.6 If an energy isolating device is not capable of being locked out, the authorized employee shall utilize a tag-out system, attached where the lock-out device would have been attached. Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

6.7 Where a tag-out system alone is implemented, additional elements as are necessary to provide the equivalent safety available from the use of a lock-out device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energization.

6.8 Lock-out devices, where used, shall be affixed in a manner to that will hold the energy isolating devices in a "safe" or "off" position. Tag-out devices, where used, shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.

6.9 Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.

6.10 Electrical circuits shall be checked with proper and calibrated electrical testing equipment. An electrical failure could energize the equipment even if the switch is in the off position. Stored energy in electrical capacitors shall be safely discharged.

6.11 Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate.

6.12 The plant/equipment/system is now considered to be locked out.

Group Lock-Out or Tag-Out

6.13 When servicing and/or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lock-out or tag-out device.

6.14 Group lock-out or tag-out devices shall be used in accordance with the above procedures including, but not necessarily limited to, the following specific requirements:

6.15 Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lock-out or tag-out device, including single or multiple Permits to work.

6.16 Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lock-out or tag-out of the machine or equipment.

6.17 When more than one crew, craft, department, etc. is involved, assignment of overall job-associated lock-out or tag-out control responsibility to an authorized employee designated to coordinate affected work forces and ensure continuity of protection.

6.18 Each authorized employee shall affix a personal lock-out or tag-out device to the group lock-out device, group lock-box, or comparable mechanism when he or she begins work, and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.

Shift or personnel changes

6.19 Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of lock-out or tag-out protection, including provision for the orderly transfer of lock-out or tag-out device protection between off-going and oncoming employees, to minimize exposure to hazards from the unexpected energization or start-up of the machine or equipment, or the release of stored energy.

Restoring Equipment to Service

6.20 When the servicing or maintenance is completed and the machine, equipment or system is ready to return to normal operating condition, the following steps shall be taken:

6.21 Check the machine or equipment and the immediate area around the machine to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.

6.22 Check the work area to ensure that all employees have been safely positioned or removed from the area.

6.23 Verify that the controls are in neutral.

6.24 Remove the lock-out devices and reenergize the machine or equipment. Each lock-out or tag-out device shall be removed from each energy isolating device ONLY by the employee who applied the device.

Note: The removal of some forms of blocking may require re-energization of the machine before safe removal.

6.25 Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for use.

6.26 Close Permit to Work.

Inspections

6.27 The Consultant shall conduct a periodic inspection of the Site's Lock-Out/Tag-Out procedure at least annually to ensure that the procedure and the requirements of this standard are being followed, or on arrival of new equipment, modifications of existing equipment, etc.

6.28 The periodic inspection shall be performed by an authorized employee other than the ones(s) utilizing the energy control procedure being inspected, and shall be conducted to correct any deviations or inadequacies identified.

6.29 The Consultant shall certify that the periodic inspections have been performed. The certification shall identify the machine or equipment on which the Site's Lock-Out/Tag-Out procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00004 – Construction Site Welfare Standard

1. Definitions

1.1 **Hygiene:** conditions and practices performed to maintain health and prevent the spread of diseases.

2. Planning

Toilet & Washing Facilities

2.1 The following table indicates the minimum toilet & washing facilities that must be provided on both lay-down area and Site:

No. of Persons on Site	No. of Toilets	No. of Washbasins
1 – 5	1	1
6 – 25	2	2
26 – 50	4	4
51 – 75	5	5
76 - 100	6	6

Note: An additional 1 Toilet & 1 Washbasin should be provided for every 50 people above 100.

3. Equipment

Toilet & Washing Facilities

3.1 Toilets should be well lit, ventilated and kept clean at all times. Contractor shall introduce a cleaning and maintenance regime to ensure that good hygiene standards are maintained. In the instance where portable toilets are hired for site, Contractor shall ensure that cleaning and maintenance is provided by the Supplier as part of the contract agreement.

3.2 Where toilet facilities provided are the Contractor's own, Contractor shall supply appropriate PPE to workers expected to clean toilet facilities, this shall include safety glasses, dust mask, rubber gloves, coveralls etc.

3.3 External pipe work and effluent tanks are to be visually checked on a daily basis for leakage.

3.4 Contractor management shall inspect toilet and washing facilities on a daily basis and maintain records which shall be made available to Employer or its Representative on request.

3.5 Contractor shall ensure an adequate supply of toilet paper, soap and a means of drying hands, at all times.

Rest Areas

3.6 Contractor shall provide designated rest areas that are sufficient to hold the number of employees working in that area.

3.7 The rest area shall be completely shaded from the sun, and allow fresh air to circulate constantly; if indoors, heating, ventilation or air-conditioning (as applicable to the season) is to be provided.

3.8 No construction materials, chemicals or flammables are to be stored within the rest area.

3.9 Seating and tables are to be provided in proportion to the size of the workforce.

3.10 Rest areas are to be designated as “No Smoking”, along with Covid-19 distancing and other measures.

3.11 It is strongly recommended that an adequate amount of HSE awareness posters are on display within the rest area, changed on a regular basis.

Facilities for Prayer

3.12 Contractor shall make adequate arrangements for prayer.

Storage Facilities

3.13 In Semi-permanent facilities (workshops etc…), Contractor shall provide adequate storage and changing facilities in accordance with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00024 Personal Protective Equipment Standard.

4. Environment

4.1 In the case of sites that are extended over a long distance where employees are spread over this entire distance, the welfare facilities shall be located no more than 500m apart. Where workers are only operating in construction plant or vehicles, the

distance between welfare facilities may be extended to 1 km. Welfare facilities are only required where workers are actually working; it is strongly advised in these cases that Contractors investigate the feasibility of mobile facilities.

4.2 Welfare areas are to be kept clear of construction traffic at all times.

5. Training

5.1 Contractor shall provide awareness training on hygiene principles and use of facilities through Induction training, and Toolbox Talks on a quarterly basis.

5.2 Cleaners of toilet facilities will require more specific training including control of substances hazardous to health (CoSHH) and the use of PPE.

6. Operations

Drinking Water

6.1 Only Potable water shall be used for drinking.

6.2 Contractor shall supply cooled water at all times during the day for the entire workforce.

6.3 For permanent sites, only approved potable water systems shall be used for source. In the event of a water supply interruption due to a break in the line, a water quality test must be conducted before the line is placed back in service.

6.4 Contractor shall ensure a water quality test is conducted on a monthly basis; records are to be kept and made available to Employer or its Representative on request.

6.5 Contractor shall supply disposable cups for all drinking water; single-use cups and the sharing of cups are prohibited.

6.6 Thermos drinking water coolers are to be cleaned and disinfected every 2 days.

6.7 Static cooled water dispensing machines and ice making machines shall be installed by a competent electrician ensuring that no electrical circuits, sockets & plugs etc. be located in such a way that water can come into contact with the circuit. All machines shall be cleaned, disinfected and maintained as per Manufacturer's instructions.

6.8 All types of "water service areas" shall be kept clean, well-drained and maintained on a daily basis.

Food

6.9 Projects shall comply with all requirements of Kingdom of Saudi Arabia Ministry of Health Public Health Codes, Food hygiene Standards et with regards to food on construction sites, including acquisition on required licenses and qualifications for eating facilities and food handling staff.

6.10 The preparation and cooking of unprepared food is strictly prohibited on all Employer construction sites.

6.11 The preferred method is for the Contractor to arrange delivery of food from a valid government licensed outside source at a specific time, for the food then to be consumed in a designated eating area, and then all waste, including the food waste, to be removed from site by the same deliverer immediately at the end of the mealtime.

6.12 There must be an area where food (brought in by employees for consumption the same day) can be stored in a cool environment (i.e. fridge) to prevent contamination, and/or the food becoming spoiled.

6.13 The designated eating area shall have an impermeable floor to enable adequate cleaning and disinfecting. Shelving and tables are to be impermeable, or as a minimum, to be covered in a vinyl wipe-clean plastic table covering material.

6.14 There shall be a means for the washing and drying of hands situated in the proximity of the eating area.

6.15 Facilities must be cleaned and disinfected on a daily basis, with a cleaning schedule on display in the area. Tables shall be cleaned 15 minutes prior to the scheduled meal time, and immediately at the end of the mealtime, with all food waste being disposed of in a correct manner.

6.16 Food waste receptacles shall have close-fitting lids to prevent rodent and insect infestation, with all food waste being taken off site on a daily basis. Food waste receptacles shall be regularly cleaned and disinfected.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00005 - Control of Substances Hazardous to Health Standard

1. Definitions

1.1 **Bloodborne Pathogens**: infectious microorganisms in human blood that can cause disease in humans. These pathogens include, but are not limited to, hepatitis B (HBV), hepatitis C (HCV) and human immunodeficiency virus (HIV).

2. Planning

2.1 Contractor is to ensure that all materials, whether in solid, liquid or gaseous form that are procured for the Project are supplied with Safety Data Sheets (SDS) by the Vendor and passed onto the Senior Store man.

3. Equipment

3.1 All employees shall be provided with the necessary personal protective equipment (PPE) as identified in the SDS and/or risk assessment for the particular work activity. Supervisor is to ensure compatibility between different types of PPE when more than one is to be worn at the same time (i.e. eye and hearing protection).

3.2 All substances hazardous to health must be stored in their Manufacturer supplied container, and be suitably identifiable by label in both English and the language common to the workforce.

3.3 Respiratory Protective Equipment (RPE) will be used, stored and maintained in accordance with the Manufacturer's instructions.

4. Environment

4.1 Contractor Senior Store man is to ensure the correct storage of all hazardous materials in accordance with the relevant SDS.

4.2 Contractor Medical Staff shall have copies of all SDS within the First Aid Facilities, and be familiar with the emergency treatments for the products.

5. Training

5.1 Contractor Senior Store man is to ensure that employees withdrawing chemicals are made aware of the relevant PPE requirements, how to use the product safely, and First Aid treatments from the SDS.

5.2 Supervisor shall provide the necessary information and instruction relating to the effective use of the products and PPE to all employees through regular Toolbox Talks.

5.3 The Contractor HSE Manager is to ensure that he is aware of relevant PPE requirements, how to use the products safely, and First Aid treatments from the SDS.

6. Operations

6.1 Contractor Medical Staff shall report all injuries caused by substances hazardous to health immediately to Employer or its Representative.

6.2 Contractor Medical Staff shall immediately report and forward to the appropriate Medical Authority all suspected cases of infectious diseases, Bloodborne Pathogens and other similar transmittable diseases, and immediately inform Employer or its Representative.

Asbestos

6.3 Asbestos has been widely used in the past in the construction industry in building products, insulation materials, asbestos cement and sprayed coatings. Current International legislation prohibits the use of asbestos for these purposes, and these have now been replaced by alternatives.

6.4 However there still remains the problem of the removal of existing asbestos in refurbishment and demolition work, and previous illegal dumping and burial of asbestos on unexploited land.

6.5 During the planning stages for any Project, or if during normal Works asbestos is identified, or if original building plans or specifications identify the presence of asbestos, the Employer or its Representative must be informed immediately. Each Project will be dealt with on a case-by-case basis.

6.6 On the discovery of Asbestos, no Contractor is to conduct any form of work involved with Asbestos without prior written approval from Employer or its Representative.

Lead

6.7 Lead, dust, fumes and vapor constitute a major health hazard to workers. Some types of construction work with Lead are liable to result in significant exposure unless adequate controls are provided:

- Working with metallic lead & alloys (welding & soldering);
- Abrasive wheels work on lead products;
- Any work with petrol, tanks & containers;
- Spray-painting;
- Hot-cutting;

- Demolition works;
- Recovering lead from scrap;
- Ceramic glazes.

6.8 Other operations involving lead which do not usually produce significant levels include:

- Plumbing;
- Handling of lead sheets and pipes;
- Painting.

6.9 Inhalation is the major source of absorption, and therefore adequate ventilation must be provided in all workplaces where lead is worked.

6.10 Respiratory Protective Equipment (RPE) will be selected on the basis of hazards to which the employee will be exposed. Protection will be selected following a risk assessment of the work to be performed and based on the information provided on the SDS associated with the substance to be used. Specific standards for the RPE identified by the SDS are to be met.

6.11 Eating, drinking and smoking are strictly prohibited in all areas where lead is worked; adequate washing facilities must be provided within walking distance from the place of work.

6.12 Supervisors shall provide the necessary information and instruction relating to working with Lead to all Metalworkers and Plumbers through regular Toolbox Talks.

<u>Hexavalent Chromium VI</u>

6.13 Hexavalent Chromium VI Cr(VI) is a known carcinogenic, targeting the respiratory system, kidneys, liver, skin and eyes.

6.14 A major source of worker exposure to Cr(VI) occurs during "hot work" such as welding on stainless steel and other alloy steels containing chromium metal.

6.15 Where the Contractor has identified the requirement of stainless-steel welding on site, engineering and work practice controls shall be implemented and documented in a safe method of work to ensure exposure to chromium (VI) to or below the permissible exposure limit (PEL). Supplementary use of respiratory protection shall be prescribed to enhance protection to the workers.

6.16 OSHA Standard 1926.1126 shall be used for permissible exposure limits for chromium (VI).

All Other Hazardous Substances (i.e. Cadmium, Mercury, etc…)

6.17 It is not anticipated that any employees will be exposed to any other substances or processes hazardous to health during construction works.

6.18 In the event where such substances and hazards exist, or are suspected, work is to cease, and Contractor is to immediately contact Employer or its Representative for further guidance.

Bloodborne Pathogens

6.19 All Contractor Medical Staff are to practice the Universal Protocol as recommended by the US Center for Disease Control (CDC) and the World Health Organization (WHO).

6.20 Universal Protocol requires all medical staff to assume that all blood and other potentially infectious materials are infectious and must be handled accordingly.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00006 – Hot & Cold Injuries Standard

1. Definitions

1.1 **MHRSD**: Ministry Human Resources & Social Development

2. Planning

2.1 Contractor's Construction Phase OH&S Plan shall contain a general procedure for reducing exposure to heat and cold injuries (whichever applicable) for work conditions of the project.

2.2 Contractor is to comply with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00004 Construction Site Welfare Standard, specifically provision of shade and cooled potable water.

3. Equipment

3.1 Any employees who have symptoms of any heat or cold injury shall receive immediate first aid treatment within the site first aid facility, and then be forwarded for medical attention from a professional medical service provider.

4. Environment

4.1 The following factors shall be considered when developing the general procedure for reducing exposure to heat and cold injuries:

- Mean temperatures;
- Wind speeds;
- Personal Protective Equipment PE and clothing that must be worn;
- Type of work (especially confined spaces);
- Nationality of the workforce;
- Health of the workforce;
- Level of heat & cold injury awareness of the workforce.

4.2 Contractor is to be reminded on the annual (MHRSD) Ministerial Decision concerning summer working hours restriction during 15 June to 15 September, prohibiting work in direct sunlight between 1200 – 1500hrs.

5. Training

5.1 Supervisors are to provide awareness training on symptoms and first aid treatment for heat and cold injuries (whichever applicable) on a regular basis.

6. Operations

6.1 It is to be noted, that environmental weather conditions alone should not be considered for this Standard; certain work processes also contain the hazards of heat and cold injuries (welding, bitumen laying, use of liquid nitrogen, dry-ice blasting etc.); Contractor Medical staff are to be fully aware of symptoms and treatment for all heat and cold injuries.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00007 - Manual Handling Operations Standard

1. Definitions

1.1 **Manual Handling**: the transporting or supporting of a load (including lifting, putting down, pushing, pulling, carrying or moving) by hand or by bodily force**.**

2. Planning

2.1 Designers must design work methods to eliminate, as far as reasonably practicable, the need for employees to manually handle loads during the construction process.

2.2 Contractors must ensure the provision of mechanical aids to eliminate, as far as reasonably practicable, the need for employees to manually handle loads during the construction process.

2.3 Contractor management are to ensure storage areas are designed to reduce risk from to employees from moving delivery vehicles, mechanical handling equipment, and from carrying heavy loads.

3. Equipment

3.1 Every employee shall make full and proper use of any appropriate equipment provided for the safe handling of loads, and they shall make full and proper use of any system of work provided to promote safety during the handling of loads.

3.2 It is the responsibility of the Contractor Vehicle / Equipment / Workshops Manager to ensure that all mechanical equipment in use on the site and lay-down area is inspected annually as per Manufacturer requirements, or as per RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00012 Construction Plant & Vehicle Management Standard.

3.3 Where the Contractor cannot obtain on the local market specialist mechanical aids, locally site-manufactured will be acceptable only if calculations are available to show that the aid is capable of carrying / supporting the intended load, and the mechanical aid is suitably marked with the safe working load (SWL) of the equipment.

4. Environment

4.1 Where manual handling is unavoidable due to the environment or load, Supervisors shall conduct a risk assessment, and take appropriate steps to reduce the risks identified to the lowest level that is reasonably practicable. Supervisors are then to follow up with a pre-task briefing before work starts.

5. Training

5.1 All Supervisors shall be trained in manual handling and risk assessment techniques, and conduct risk assessments on all manual handling operations where harm to health exists.

5.2 All employees are to be given training on manual handling techniques, on a quarterly basis as a minimum.

6. Operations

6.1 All employees that are involved in manual handling of construction materials shall be provided with suitable hard-wearing gloves as highlighted in the risk assessment.

6.2 Materials when stored on shelving above head height shall not individually weigh more than 5kg; when stored on shelving at waist height, materials shall not individually weigh more 15kg.

6.3 Materials when stored directly on the ground shall be stacked no more than waist height.

6.4 The recommended maximum weight limit of 25kg to be manually handled by a single male at waist height should be achieved; 16kg for a female.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00008 - Medical Services & Management Standard

1. Definitions

1.1 **First Aid**: immediate assistance given to any person suffering from a serious illness or injury, with care provided to preserve life, prevent the condition from worsening, or to promote recovery

2. Planning

2.1 Every Contractor shall assign one or more medical staff to be responsible for administering First Aid at all times during all working hours.

2.2 For more than 500 workers, where the worksite is at least 10km away from the nearest medical treatment facility (hospital), the Contractor shall provide an ambulance for transporting injured workers.

2.3 Copies of all relevant Kingdom of Saudi Arabia Ministry of Health medical and health requirements shall be on display within the medical facility.

3. Equipment

3.1 Employer who employs less than 50 persons shall provide on-site a First Aider and a first aid kit containing:

a. Not less than 12 sterile small size finger dressings;
b. Not less than 6 sterile medium size hand dressings;
c. Not less than 6 sterile large size dressings;
d. Not less than 200g of cotton wool in 25g packages;
e. Not less than 2 x 500g cotton wool;
f. Not less than 12 gauze bandages 7cm width;
g. Not less than 12 gauze bandages 11cm width;
h. Not less than 4yds of 1cm wide adhesive tape in rolls;
i. Not less than 100g of mercurochrome in aqueous solution;
j. 2 x 10g shakers of sulfa powder;
k. 100g of aromatic ammonia solution in a glass bottle with stopper;
l. Medium sized Thomas thigh splint;
m. Wooden posterior leg splint;
n. Wooden elbow splint;
o. Wooden Carr forearm splint;
p. Wooden palm splint;
q. Not less than 6 triangular bandages;
r. 12 safety pins;
s. Ointment for burns containing disinfectant and analgesic;
t. Not less than 10 70 x 70 burn bandages;

u. 1 pair of blunt end scissors;
v. Not less than 1 stretcher.

3.2 A separate first aid kit shall be supplied if work is carried out at different locations more than 300m apart.

3.3 A Contractor that employs more than 250 persons shall provide a full-time Paramedic, and a First Aid Room with sufficient first aid materials and supplies that are no less than detailed in paragraph 3.1 above.

3.4 Contractor shall provide an additional on-site First Aider and first aid kit for every additional 50 employees.

3.5 Contractor's medical staff are to maintain an accurate inventory of all medical supplies, including a register of all items that have an expiry date, so that these items may be replenished before expiry.

3.6 Supplies of any item in the first aid kits and rooms shall be replenished whenever they fall below levels specified.

4. Environment

4.1 First Aid room shall be of adequate size and have finished interiors, covered floors, toilet, hot and cold water, air-conditioning / heating (as applicable), and adequate lighting. The facility should enable medical staff to function professionally and should be easily accessible to employees and emergency transportation. An examination table must be provided. No smoking is permitted in the First Aid room.

4.2 Refrigeration must be supplied for all medical supplies that have storage temperature requirements

4.3 Evidence must be readily available of the cleaning schedule for the first aid facility, which is to be on an adequate frequency to suit local site conditions.

4.4 Suitable containers must be supplied for all medical waste, including correct containers for medical sharps; medical waste shall be disposed of according to Kingdom of Saudi Arabia environmental legislative requirements.

5. Training

5.1 All Medical staff shall be properly trained and qualified as per Kingdom of Saudi Arabia requirements.

6. Operations

6.1 Contractors are responsible for providing primary on-site first aid and emergency medical treatment for injured employees, and shall provide transportation for any off-site medical treatment required, and associated costs.

6.2 Where Contractor has less than 500 workers, a vehicle capable of carrying a stretcher-laden casualty, shall be designated for the transportation of the workers to off-site medical facilities requiring treatment.

6.3 Contractor's medical staff are to maintain accurate first aid treatment registers which shall be available for inspection by Employer or its Representative at any time. All injuries requiring First Aid must be reported on a monthly basis to Employer as per RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00001 Accident Notification, Reporting & Recording Procedure.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00009 - Noise & Vibration Management Standard

1. Definitions

1.1 **Vibration:** A vibrating motion can be oscillating, reciprocating, or periodic. Vibration can also be either harmonic or random

1.2 **Action level:** the levels of exposure to noise averaged over a working day or week or maximum noise to which an employee is exposed in a working day

1.3 **Decibel (dB)** - the unit of measurement for the loudness of a sound

1.4 **First Action Level**: 85 dB (A); Second Action Level: 90 dB (A); Peak Action Level: 140 dB (A)

2. Planning

2.1 During construction activity it is not anticipated that any person will be exposed to noise levels that are in excess of 85 dB (A) on an 8- or 10-hour time weighted average (TWA).

2.2 The regular and prolonged use of rotary and percussive tools can cause users to suffer various forms of physical damage, a condition known as “hand-arm vibration syndrome” (HAVS), the most common form of which is called “vibration white finger” (VWF).

2.3 An important factor in preventing HAVS is by reducing the time which employees are actually exposed to vibration. The daily exposure limit value for whole body vibration is 1.15m/s2 and the daily exposure action value for whole body vibration is 0.5m/s2. The daily exposure limit value for hand-arm vibration is 5m/s2 with the daily exposure action value for hand-arm vibration is 2.5m/s2

2.4 Contractor Supervisors are to ensure a vibrating tool is shared between a team of employees, as opposed to it only being used by one person all day; by rotating such personnel to other areas of work will considerably lessen the effects of vibration on the actual user, lessening the chances of ill-health effects by the use of the vibrating tool.

3. Equipment

3.1 Typical sound levels of construction equipment are as follows, however information must be sought from the Manufacturer or Construction Plant Hire Company regarding specific machines:

	Sound Level dB (A)
▪ Hand Tools – electric	95
▪ Hand Tools – air	100
▪ Forklift Trucks	101
▪ Hammer Drill	102
▪ Dumpers	103
▪ Concrete Mixer	104
▪ Hand Tools – petrol	105
▪ Tower Cranes	106
▪ Circular Bench Saws	107
▪ Medium Trucks	108
▪ Excavators	109
▪ Crawler Cranes	110
▪ Haulage Trucks	111
▪ Ready-mix Concrete Trucks	112
▪ Rock Drills	115
▪ Batching Plant	116
▪ Generators	117
▪ Drop Hammer (sheet piles)	118
▪ Cranes	119
▪ Compressors, Compactors	120
▪ Bulldozers, Graders	121
▪ Vibrating Hammer (sheet piles)	125
▪ Single acting air hammer (pre-cast)	128
▪ Double acting air hammer (sheet piles)	138

3.2 Correctly installed and smooth-running machines will, in time, vibrate as the machinery parts become worn. The lack of maintenance and lubrication will also produce increased noise and vibration levels.

3.3 Construction plant, vehicles and equipment must therefore be maintained by the Contractor at regular intervals, and any detected faults rectified as soon as possible, as per RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00012 Construction Plant & Vehicle Management Standard.

4. Environment

4.1 All First Action Level areas of 85 dB (A) or higher must have adequate hazard warning signage indicating the hearing protection requirements.

4.2 Suitable disposable hearing protection must be supplied by the entrance to all high-noise level areas of 85 dB (A) and above for visitors etc.

4.3 Consultant and Contractor are to note that there are additional environmental requirements for noise and vibration in RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00035 Noise & Vibration Protection Standard.

5. Training

5.1 Contractor Supervisor is to provide information by Toolbox Talk on the signs and symptoms of noise-induced hearing loss and HAVS on a quarterly basis as minimum.

6. Operations

6.1 Acute short-term exposures to impact noise exceeding the threshold may be experienced during some activities, which shall be managed by the Contractor by reducing employee exposure, and enforce the wearing of personal protective equipment when working in proximity of the operations as per RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00024 Personal Protective Equipment (PPE) Standard.

6.2 It is anticipated that some static equipment situated on lay-down areas may produce a noise level in excess of 85 dB (A). Supervisor must therefore locate any potential noise sources a minimum distance of 30m away from offices and other facilities normally occupied. For all maintenance staff of these equipment, permanent and suitable hearing protection must be provided.

6.3 When areas have been identified that meet the above criteria in paragraph 6.2, Contractor must conduct a noise level survey and risk assessment by a competent person for that area using a calibrated noise/sound level meter; records to be kept and made available to Employer or its Representative on request.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00010 - Occupational Health Surveillance Standard

1. Definitions

1.1 **Health Surveillance**: ongoing systematic collection, analysis, and dissemination of exposure and health data on groups of workers

2. Planning

2.1 All Contractor workers during the orientation/ induction process shall be required to complete a health assessment questionnaire, which shall be kept on file within the site first aid facility.

2.2 The health assessment questionnaire shall be in the language of the workforce, along with an English translation. The format for answers shall be a “Yes / No”, with space available for further information when the answer is completed as “yes”.

2.3 Questions within the health assessment questionnaire shall be based on typical construction work activities that will encountered on the project, examples are, but not limited to:

- Are you taking any medication which may affect your capacity to do your job safely?
- Are you waiting for any medical investigations, treatment or admission to hospital?
- Has a doctor ever advised you not to be exposed to a particular chemical?
- Do you suffer from vertigo?
- Do you suffer from reoccurring back problems?
- Do you have any skin problems (e.g. eczema, psoriasis, dermatitis etc?
- Do you suffer from asthma?
- Do you have any blood disorders which may prevent you from providing medical treatment / working with food?
- Does your eyesight prevent you from driving/operating vehicles and/or machinery?
- Do you suffer from tinnitus or any other associated hearing loss condition?
- Do you suffer from diabetes?

2.4 The completion of the health assessment questionnaire shall not be used as grounds for dismissal; every opportunity is to be afforded to the worker for reassignment of work duties.

NOTE: the purpose for this requirement is so that known illnesses of employees are known by site medical staff and HSE staff for when conducting / reviewing risk assessments for recognized ill-health hazardous activities.

3. Equipment

3.1 Where reasonably practicable, the health assessment questionnaire should be conducted in a first aid facility and in the presence of Contractor medical staff to assist in queries during the completion.

4. Environment

4.1 The health assessment questionnaire once completed shall be considered as medical-in-confidence, and all Kingdom of Saudi Arabia legislation pertaining to equality, control of records and confidentiality shall be complied with in the first instance.

5. Training

5.1 On-site medical staff should be thoroughly knowledgeable on the worksite activities being undertaken and the associated health risks of the processes.

6. Operations

6.1 Workers assigned to the following full-time duties are to receive occupational health surveillance within the timescales specified:

WORK PROCESS	HEALTH HAZARD	TEST	BY WHOM	FREQUENCY
Heavy vibrating tools (pneumatic drills, concrete breakers etc.)	Hand-arm vibration syndrome, upper limb disorders	Visual	Occupational Health Professional	Annual
Processes creating fumes, dusts & mists etc. (e.g. welders, paint sprayers, sand blasters etc.)	Lung function reduction	Spirometry / Pulmonary Function	Occupational Health Professional	Annual
Piling Rig, Heavy Auger, Horizontal Directional Drilling (HDD) and Tunnel Boring Machine (TBM) Operators;	Noise induced hearing loss, Tinnitus	Audiometric	Occupational Health Professional	Annual
Non-destructive testers (NDT) using non-ionizing radiation devices	Radiation, cancer, leukemia	Consultation	Occupational Health Professional	Annual or when dosimeter dose limit exceeded

Welding	Radiation & photochemical burns to eye; chemical burns from fumes to nose & mouth	Eyes, nose & mouth – Visual	Supervisor / Site medical staff	Monthly
Petrol, Oils, Lubricants & Chemical users (painters, mechanics, cement workers etc.)	Dermatitis	Visual	Supervisor / Site medical staff	Monthly

6.2 It is the responsibility of the project Medical staff to be fully aware of, and implement, any additional health-related legislative requirements not mentioned (e.g. drivers and heavy equipment operators requiring annual eye tests).

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00011 - Confined Space Management Standard

1. Definitions

1.1 Confined Space: a place which is substantially enclosed (though not always entirely), and where serious injury can occur from hazardous substances or conditions within the space or nearby (e.g. lack of oxygen)

2. Planning

2.1 Contractor must appoint a competent person (Entry Supervisor) to supervise entry into confined spaces; this person by the very nature of works should be a competent mechanical or chemical engineer.

2.2 Contractor shall submit the risk assessment, Safe Sequence of Work and a copy of the Confined Space Entry Permit to be used within the Construction Phase OH&S Plan, to Employer or its Representative for approval.

2.3 No entry into confined spaces is to commence before approval of the Construction Phase OH&S Plan by Employer or its Representative.

Special Precautions

2.4 Depending upon the scope of work, location and results of the risk assessment, the following precautions may be required:

- Co-ordination with other employers (i.e. Sub-Contractors);
- Co-ordination with Property Owners;
- Co-ordination with Service providers (electricity, utilities etc.);
- Lock-Out/Tag-Out procedures of energy sources;
- Isolation of processes and process lines;
- Hot work required;
- Pre-approval by Employer or its Representative for nighttime work.

2.5 Under no circumstances should work be performed under the sole protection of entry permit procedures other than those issued and controlled by the Supervisor. Other entities (electricity/utilities companies etc.) who wish to implement their own permit procedures in addition to this Standard will be permitted to do so as a means of control over their own activities and facilities.

3. Equipment

3.1 The following equipment must be made available by the Contractor, and where the risk assessment or Safe Sequence of Work require, used during work in confined spaces:

Communication system

3.2 An effective continuous means of communication between Attendant and those in the confined space shall be provided by the Supervisor. Pre-work checks must be conducted prior to entry. Equipment may consist of radios, portable phones; video equipment etc.; an alternate means (whistles, bells, flashing lights etc.) must be in place in case of failure of the primary system.

Personal Protective Equipment (PPE)

3.3 PPE shall be worn as identified by the risk assessment.

Hand & Power Tools

3.4 All confined spaces will be evaluated for specific hazards relating to hand/power tool usage. The use of low-voltage (12V) or GFCI-equipped electrical tools shall be required. Any compressed air-powered tool used shall be powered by Grade D breather air or its equivalent.

Signage

3.5 "Danger – Permit to enter required – Confined Space – Do Not Enter" signs must be posted to ensure adequate warning of the existence and location.

Barriers

3.6 Barriers shall be erected around the confined space site to ensure that persons have to come into contact with the Attendant, and cannot accidentally enter the confined space. Barriers shall also protect the opening to the confined space preventing accidental fall through and to protect the persons inside from falling objects.

Non-entry rescue equipment (to be available on site)

3.7 Full body harness with retrieval line attached, and a mechanical device for lifting (i.e. tripod) positioned immediately outside the space in such a manner that rescue can begin immediately.

Other equipment

3.8 Ladders, scaffolding or working platforms, shoring devices will be used as necessary to provide safe conditions for entry. Suitable and sufficient fire-fighting equipment shall be available.

4. Environment

Ventilating equipment

4.1 Where the existence of dangerous air contamination and/or oxygen deficiency is suspected or determined, forced air or exhaust ventilation shall be implemented. Ventilation will continue whilst employees are in the confined space and until all have exited. Air supply shall be from a clean source and must not increase the hazards in the space. The atmosphere within the confined space shall be monitored continuously.

Temporary Lighting

4.2 Temporary lighting shall be supplied as necessary to ensure an adequate degree of illumination for the safe performance of the work task.

5. Training

5.1 Confined Space Entry training shall be mandatory for all personnel who will control entry, enter, supervise works in a confined space, or are dedicated members of the Contractor's emergency Initial Response Team (IRT). This training shall be conducted before employees are first assigned their duties and works in the confined space, whenever there is a change to procedures or duties, or when activities are not continuous and there has been a lapse of time between confined space works.

5.2 Records of training are to be kept for the entire Contract on site, and made available to Employer or its Representative upon request. Details to be recorded are the date of the training, employee's name, employee's signature, trainer's name and a summary of the training contents. Training Provider (internal or external) is to have a valid internationally recognized "Confined Space Trainer" certification.

5.3 Training delivered to **all** persons must consist of the following topics:

- Functions of the Attendant;
- Means of communicating with the Attendant;
- Entry & explosive atmosphere hazards;
- Signs, symptoms and consequences of exposure;
- Testing and monitoring equipment to be used;
- Correct use of communications, ventilation and lighting equipment;
- Evacuation signals and alarms;
- Signs and symptoms of heat stress injuries.

5.4 Additional training to be delivered to the Attendant and Entry Supervisor must include:

- Behavioral effects of hazard exposure of the entrants;
- How to communicate with entrants to monitor their status;
- How to alert entrants of the need to evacuate the confined space;
- How to monitor activities inside and outside of the space to determine if it is safe for entrants to remain;
- How and when to order an evacuation;
- How to summon the IRT and emergency services;
- How to prevent unauthorized access to the confined space.

5.5 Additional training to be delivered to the Entry Supervisor must include:

- The tests, procedures, and equipment required by the permit system;
- How & when to endorse the permit to allow entry;
- When to terminate the entry and cancel the permit;
- How to determine that acceptable conditions are maintained.

5.6 Training to be delivered to the IRT must include:

- Training on the Respiratory Protective Equipment (RPE) provided and rescue equipment;
- Simulated rescue operation at least once every six (6) months from the actual confined space, or a representative space that simulates the type of confined space being worked in;
- Basic first aid and cardiopulmonary resuscitation (CPR).

6. Operations

Process

Pre-Entry

6.1 The Contractor HSE Manager and Entry Supervisor shall visit the confined space and review their risk assessment and Safe Sequence of Work to the actual conditions. The Safe Sequence of Work shall be revised to correct any deficiencies identified and approval for any amendments sought from Employer or its Representative before entry is permitted.

6.2 The Safe Sequence of Work shall be reviewed whenever there is a reason to believe that measures taken may not be protecting the employees, or causing other hazards to arise.

6.3 A pre-task briefing must then be conducted by the Entry Supervisor to all persons involved with the entry to the confined space, including the IRT members; the following topics should be covered and checked:

ACTION	RESPONSIBILITY
Obtain other relevant permits (electricity/water etc...)	Works Supervisor
Account for all entrants	Attendant
Co-ordinate with owners, operators, sub-contractors	Works Supervisor
Verify training and assign roles	Entry Supervisor
Verify availability of emergency personnel (IRT)	HSE Manager
Obtain Hot Work Permit or Permit to Dig signature (if applicable)	Entry Supervisor
Initiate Confined Space Permit	HSE Manager
Assemble equipment / materials	Works Supervisor
Test Atmosphere	Entry Supervisor
Assess and evaluate Safe Method Statement	Entry Supervisor
Initiate ventilating equipment as required	Entry Supervisor
Secure Area	Attendant
Check PPE	HSE Manager
Discuss actual work task	Works Supervisor
Sign the Confined Space Permit	All involved
Authorize the Confined Space Permit	Entry Supervisor & HSE Manager
Account for entrants	Attendant
Commence works	All involved

Entry Testing and Monitoring

6.4 The Contractor Entry Supervisor and HSE Manager must then perform pre-entry testing to determine if acceptable entry conditions are present prior to entry. Instruments will be of sufficient sensitivity and specificity to identify and evaluate hazardous atmospheres that may exist or arise. Calibration checks shall have been performed in accordance with Manufacturer's instructions. Records of atmosphere testing shall be recorded and made available to Employer or its Representative upon request.

6.5 If it is necessary to enter a hazardous atmosphere to perform testing, a positive pressure, pressure demand self-contained breathing apparatus, or, supplied air full face respirator with 5-minute emergency escape pack must be supplied and worn. Additionally, a rescue person with similar protection shall be immediately available.

6.6 The Contractor Entry Supervisor and HSE Manager shall test the internal atmosphere of the confined space before any employee enters, with a properly functioning direct-reading instrument for the following conditions, and record findings:

CONDITION TO BE TESTED	ACCEPTABLE PARAMETERS
Oxygen content	More than 19.5%, but less than 23.5% of oxygen
Flammable gases & vapors	Less than 10% of the lower explosive limit
Toxic gases & vapors	Less than the permissible exposure limit for known contaminants, or less than 1 part per million for unknowns
Radiological hazards	Less than 10% of the derived air concentration

6.7 OSHA Permissible Exposure Limits (PEL) shall apply, and a full list can be found at:

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9992&p_text_version=FALSE

6.8 OSHA Lower Explosive Limits (LEL) shall apply; the Safety Data Sheet (SDS) for the flammables concerned will detail this limit, and more guidance can be found at:

http://www.osha.gov/dcsp/ote/library/flammable_liquids.pdf

Permit to Work (Confined Space) System

6.9 A confined space entry Permit must be completed prior to any work in a confined space.

6.10 The Contractor Entry Supervisor and HSE Manager are the only employees authorized to sign the Permit and authorize entry.

6.11 The completed and signed Permit should be posted at the entry of the confined space prior to the time of entry so that entrants can confirm control measures are in place.

6.12 The duration of the Permit must not exceed the time required to complete the task, or one shift, whichever comes first.

6.13 The Entry Supervisor shall terminate entry to a confined space and cancel the permit when:

- the authorized time of the permit has expired;
- works has been completed;
- a condition not allowed under the permit arises in or near the confined space;
- an emergency or incident requiring evacuation of the area.

6.14 The Attendant must monitor the internal atmosphere of the confined space at a minimum of every 15 minutes, with a properly functioning direct-reading instrument for the conditions previously mentioned and record findings.

6.15 In the event a hazardous atmosphere is detected after entry operations have begun, the Entry Supervisor and Attendant must:

Step	Action	Responsibility
1	Order an immediate evacuation of the confined space	Attendant
2	Account for all entrants	Attendant
3	Prevent anyone from re-entering	Attendant
4	Evaluate the space to determine how the hazardous atmosphere occurred	Entry Supervisor
5	Implement engineering controls to reduce the hazardous atmosphere to an acceptable level	Entry Supervisor
6	Document the event on the Permit	Entry Supervisor

6.16 The original cancelled permit will be kept and maintained with the Construction Phase OH&S Plan.

Emergencies & Emergency Services

6.17 Contractor HSE Manager shall co-ordinate with off-site rescue services before the start on **any** works on the Project to determine:

- Availability and extent of emergency services;
- Back-up arrangements;
- Response time;
- Emergency phone numbers and contacts;
- Availability of standby services for complicated entries;
- Any special requirements of the emergency services.

6.18 Contractor HSE Manager shall provide the off-site rescue services with the following ` information:

- Full extent of the confined space works;
- Hazards expected including details of known hazardous substances;
- Details of emergency arrangements;
- Details of emergency practice drill they may want to participate in.

6.19 Contractor medical staff shall have copies of all Safety Data Sheets

6.20 Where feasible, entry rescues will only be performed by qualified off-site emergency personnel. If off-site emergency services are deemed too far away from the work site, Contractor's personnel must be fully trained and equipped to perform entry rescue activities.

6.21 Only employees fully trained in Attendant duties shall perform non-entry rescues.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00012 - Construction Plant & Vehicle Management Standard

1. Definitions

1.1 **Construction Plant**: heavy machinery, large equipment and appliances that although usually mobile (e.g. bulldozers, cranes, excavators etc.), can also be static (e.g. generators, compressors, dewatering pumps etc.)

2. Planning

Worksite Layout

2.1 The Site layout shall be addressed by the Contractor in the Construction Phase OH&S Plan during the mobilization stage of each project for both the lay-down area and construction site. The focus must involve the separation of pedestrian and vehicle routes and the use of one-way circuits. Other factors that must be addressed include:

- Physical barriers between pedestrian and vehicle routes;
- Safe crossings for pedestrians;
- Site speed limit;
- Adequate and sufficient warning signage;
- No tight bends or blind spots in the circuit;
- Minimization of reversing operations (turning points);
- Firm surfaces with adequate drainage;
- Avoidance of excavations, watercourses and structures under construction;
- Site entrance;
- Parking.

Loading / Unloading

2.2 Site layouts should be planned to minimize vehicle operations, avoid unnecessary deliveries and double handling of materials. The location of storage and loading / unloading areas must be carefully considered. Factors that must be addressed include:

- Excluding pedestrians as far as reasonably practicable;
- One-way system;
- Safe entry / exit point;
- Sufficient room for vehicle maneuvering;
- Adequate lighting;
- Adequate warning signage;
- Manual / mechanical (un)loading of vehicles;
- Security.

2.3 Contractor is to develop a set of project specific driving & plant operating rules, including a procedure for restricting / revoking project drivers and operators that disobey site rules, which is to be included in the Contractor's Construction Phase OH&S Plan.

2.4 Contractor is to provide traffic management details within a separate Traffic Management Plan whenever construction site operations interfere with public highways / roads. This shall be submitted for approval from the government department (where required), and Employer or its Representative, and must comply with all applicable Kingdom of Saudi Arabia laws, road safety codes and standards.

3. Equipment

Construction Plant

3.1 All Construction Plant shall be fit for purpose and maintained in a safe manner as per Manufacturer's recommendations. All construction plant shall be operated in accordance with the Manufacturer's operation manual.

3.2 Provided safety equipment fitted to construction plant shall not be removed; this includes protective cabs and rollover protection.

3.3 Mobile construction plant shall be fitted with a hazard flashing beacon, an audible and operational reversing alarm.

3.4 All mobile construction plant must be equipped with either seat belts or other restraint device. The number of occupants in the equipment must be limited to the number of seatbelts / restraint devices fitted.

3.5 Exhaust fumes shall be vented to atmosphere in a safe area.

3.6 Fuel tanks, when not an integral part of the plant, shall be positioned in a safe area. All fuel tanks must be bunded to prevent damage to the environment through fuel and oil spills.

3.7 All compressors must be fitted with securing devices (whip-checks) on hoses.

3.8 All generators, including lighting towers and electric welding sets, must be grounded / earthed.

3.9 All construction plant must be inspected by the operator before each use and recorded. At the end of each week, or on the discovery of an urgent repair, a copy of this form must be then forwarded to the Contractor's Transport / Equipment Manager

for retention; these shall be made available to Employer or its Representative for inspection.

Vehicles

3.10 All vehicles must be registered, licensed, and maintained in a road worthy condition.

3.11 All vehicles must be operated in a safe manner in accordance with Manufacturer's recommendations.

3.12 All passenger carrying vehicles must be equipped with seat belts. The number of occupants in the vehicle must be limited to the number of seatbelts fitted.

3.13 All vehicles must have working lights (head, tail, brake, turning indicator, hazard warning), fitted with rearview mirrors (internal & external) and have an audible and operational reversing alarm. All vehicles must carry a spare tire, emergency repair tools and a fire extinguisher.

3.14 All vehicles that are to be used for highway works are to be fitted with a hazard flashing beacon.

3.15 All tires must have visible tread across the whole tire surface.

3.16 All vehicles must be inspected by the driver before each use and recorded. At the end of each week, or on the discovery of an urgent repair, a copy of this form must be then forwarded to the Contractor's Transport / Equipment Manager for retention; these shall be made available to Employer or its Representative for inspection upon request.

3.17 There should be no visible leaks of fuel, oil or hydraulic systems from any vehicle.

3.18 All loads on trailers must be secured and evenly distributed. No vehicles shall be overloaded that the maximum allowable gross vehicle weight is exceeded. When loads extend beyond the sides, rear or front of a vehicle trailer, red flags must be placed on these "extensions".

3.19 The trailer's 5th wheel assembly must be securely bolted and in good working order.

4. Environment

4.1 Adequate consideration shall be given to the location and ground conditions when setting up construction plant.

4.2 Ground conditions must be a firm level surface for all trucks involved in tipping operations. No trucks must travel whilst the load carrier is in the elevated position.

4.3 All vehicles reversing must be controlled by a banks-man (flag-man) who is to be positioned in front of the vehicle with clear line of sight to the driver. Banks-men must be physically protected by a barrier at all times.

5. Training

Operator Qualification

5.1 All drivers of heavy goods road transport vehicles must have a Kingdom of Saudi Arabia driver's license for heavy goods vehicles, this includes, but not limited to:

- All Haulage Trucks (including dump-trucks, over 3500kg);
- All Trucks with Hiab's (loader crane);
- All Transporters;
- All Tankers (fuel or water);
- All refueling vehicles;
- Concrete Mixers;
- Concrete Pump Trucks.

5.2 Crane Operators shall:

- Hold a valid and in-date Kingdom of Saudi Arabia heavy equipment operator's license;
- Also, be trained to operate the specific crane by examination and hold a current approved certificate / license from an approved and internationally recognized source.

5.3 All operators of heavy construction plant must have a Kingdom of Saudi Arabia heavy equipment operator's license for the specific equipment that they are operating, this includes, but not limited to:

- Bulldozers;
- Motorized Graders;
- Heavy, medium & light wheeled tractors (Front end loaders & JCB's);
- Wheeled or tracked excavators;
- Heavy tracked Augers.

5.4 All operators of light construction plant must have a recognized 3rd Party training license / certificate of training for the specific equipment that they are operating, this includes, but not limited to:

- Articulated self-propelled boom platforms (man-lifts / MEWP's);
- Lightweight Dumpers;
- Heavy & Medium Vibratory Rollers;
- Bitumen layers;
- Bobcats;
- Generators;
- Compressors.

5.5 All drivers of vehicles must have a Kingdom of Saudi Arabia driving license, this includes, but not limited to:

- Buses / coaches;
- Cars;
- Pick-ups;
- Minibus;
- SUV's;
- 4 x 4's;
- Ambulance.

Training

5.6 Toolbox Talks are to include defensive driving techniques which are to be delivered to all project personnel on a minimum of a quarterly basis. The toolbox talk must cover:

- Project driving rules;
- Safe driving basics;
- Defensive driving techniques;
- Accidents and emergencies;
- 4-wheel / off-road driving;
- Driving in poor visibility or adverse driving conditions;
- Causes of Road Traffic Accidents;
- Breakdown Procedures.

6. Operations

6.1 For all mobile construction plant and vehicle operations where a banks-man is required, the banks-man must be positioned in front of the equipment with clear line of sight to the operator.

6.2 Seat belts (where fitted) must be worn at all times.

6.3 No driving / operating shall be allowed when using a mobile phone, reading, eating or drinking. No operating of vehicles or construction plant if medication has been prescribed to the driver/operator.

6.4 All speed limits must be obeyed, and there must be no overtaking on site.

6.5 Headlights must be used at night or in poor visibility.

Inspection, Servicing & Maintenance

6.6 Inspections, servicing and maintenance schedules shall be carried out in accordance with the Manufacturer's recommendations. All servicing and maintenance records shall be made available to Employer or its Representative for inspection upon request.

6.7 Only competent persons are to conduct scheduled maintenance at recognized workshop facilities.

6.8 Repairs to tires are only to be made by competent persons at recognized workshop facilities; they are not to be performed by the driver / operator at the side of the road.

Defect Reporting

6.9 Drivers and operators are to be held accountable for reporting defects and completing the checklists on a daily basis.

Accident Reporting

6.10 All accidents on public roads involving vehicles and /or Construction Plant must be reported in the first instance to the relevant authorities as per Kingdom of Saudi Arabia laws and codes.

6.11 It is Employer Policy that **all** accidents are reported in accordance with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00001 Accident Notification, Reporting & Recording Procedure.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00013 - Detection of Buried Services Standard

1. Definitions

1.1 **Buried Services:** All underground pipes, cables and equipment associated with the electricity, gas, water (including piped sewage) signaling and telecommunications industries. It also includes other pipelines which transport a range of petrochemical and other fluids

2. Planning

2.1 Contractor shall conduct a Risk Assessment and Safe Sequence of Work for all excavation operations which will include the detection of buried services; for Contractors, this is to be included in the Construction Phase OH&S Plan.

2.2 Contractor shall obtain as-laid (built) drawings showing where services exist, for verification.

2.3 Once approval for works has been received, a site visit shall be conducted by the Contractor and using the as-built drawings for reference, attempts shall be made to trace buried services.

2.4 When using as-laid (as-built) drawings, it should be borne in mind that reference points may have been moved, surfaces may have been upgraded, services moved without authority or consent, and that not all service connections or private services are shown.

3. Equipment

3.1 Scanning equipment must be appropriate to the type and complexity of the underground services and those using the equipment must be trained in the specific equipment being used.

4. Environment

4.1 Local knowledge of a particular site or area of land (for example, from the landowner, nearby houses etc.) may be needed to assist in establishing the existence of any underground utility that might not otherwise be documented.

5. Training

5.1 All scanning equipment operators should be trained in their use. The best locators in the most skilled hands will not find every service every time. The majority of detectors cannot distinguish between services running parallel close together and will only record the one service.

5.2 Before work commences, a pre-task briefing must be given by either the Site Supervisor or the nominated (excavations) competent person.

6. Operations

6.1 Using scanning equipment, utilities should be marked out with paint, tape or markers.

6.2 Other indicators that buried services exist should also be used, such as the presence of street lighting, illuminated traffic signs, manhole covers, fire hydrants, valve pit covers etc.

6.3 Cables or pipes may be laid loose in the ground, run in concrete, metal or plastic ducts, or be buried in loose sand. Polythene tape or plastic mesh marked "danger – services buried below" may have been used, however these could have been removed, damaged or laterally displaced by ground water movement; the absence of tape should not be taken as evidence that there are no services at that location.

6.4 Planned excavations should then be marked out, using paint, tape or markers.

6.5 Once the approximate location of a service has been identified, where the service is in the vicinity of the planned excavation, trial holes should be dug carefully by hand using round-nosed shovels to establish the exact location and depth of the service.

6.6 A utility clearance form (Permit-to-Work/Dig) must be then be issued.

6.7 Digging may then commence in accordance withRRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00015 Excavations & Trenching Standard.

6.8 Mechanical excavators and power tools must not be used within 0.5m of the indicated line of services. Care and consideration must also be given to overhead power lines. During excavation, closed, capped, sealed, loose services must always assume to be live or charged until proven otherwise.

6.9 When a service is exposed in the bottom of a trench or excavation, it must be protected with suitable timber to prevent it becoming damaged. Services across a trench or running along a trench off the bottom must be supported by slings or props to avoid unnecessary stresses.

6.10 Cables and services must never be used as anchorage points, footholds or climbing points.

6.11 If a service pipe or cable needs to be moved to allow work to progress, the owner must be consulted.

6.12 All excavations and trenches shall have suitable edge protection in accordance with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00015 Excavations & Trenching Standard.

6.13 If services are not found to be in the location shown on the as-laid (as-built) drawings provided by the utility company, Supervisor shall inform the said Company so the as-laid drawings can be updated to reflect where the services are actually located.

6.14 Contractor must update Site drawings to show where services have been laid.

6.15 Any damage to buried services must be reported.

6.16 Surplus concrete, hard-core, rock and rubble etc. must never be tipped onto a service while backfilling a trench or excavation.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00014 - Engineering & Vehicle Workshops Standard

1. Definitions

1.1 **Engineering Workshop**: a building containing stationary and mobile machinery and tools for manufacturing or repairing wood and metal items

2. Planning

2.1 Prior approval must be sought from Employer or its Representative by Contractor for construction of an engineering & vehicle workshops on site.

2.2 Protection of the Environment shall be the prime consideration on initial setting-up of all workshop facilities.

3. Equipment

3.1 Workshop machinery is to be installed, tested, commissioned, maintained and serviced by a competent person. Records are to be kept and made available to Employer or its Representative upon request.

3.2 Any tools, equipment or measuring devices must be calibrated on an annual basis that is required by the Manufacturer; records to be kept and made available to Employer or its Representative on request.

3.3 There must be sufficient and suitable quantities of fire-fighting equipment and first aid kits located throughout the workshop facility.

3.4 All tools, machines and equipment must be inspected for defects by the operator before each use. All defects are to be immediately reported to the supervisor and taken out of use.

3.5 Repairs to vehicles and equipment are only to be performed by competent persons in a dedicated workshop environment unless an emergency situation arises. All welding operations are to comply with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00019 Hot Works Standard.

3.6 There is to be an adequate supply of material to soak up all fuel/oil/lubricant spills; this is to be disposed of in accordance with Kingdom of Saudi Arabia Environmental standards. Where fuel, oil & lubrication systems are being worked upon, drip-trays must be provided.

4. Environment

4.1 Floors around all fixed woodworking and metalworking machines must be kept in a good and level condition, being kept free from tripping hazards and changes in height. Electrical power supplies should be either routed above head height or set in the floor.

4.2 There must be adequate space around each fixed machine to accommodate work-pieces ready for working, finished items and waste materials, without obstructing the operator whilst working the machine.

4.3 Adequate ventilation and lighting must be provided at all fixed woodworking and metalworking machines.

4.4 There are to be washing facilities nearby, with adequate hand drying facilities; barrier cream is to be made available to all workshop staff.

4.5 There is to be a “No Smoking or eating” Policy in all workshops.

5. Training

5.1 Workshops must have a full-time dedicated and appointed competent person in charge.

5.2 There should be a sufficient amount of qualified and trained first aiders within the workshop full-time staff.

5.3 Employees using any workshop machinery (including machinery to run the workshops) must be trained and competent in its use, and operate it according to the Manufacturer’s instructions.

5.4 Abrasive wheels must only be changed by a trained, qualified and competent person.

6. Operations

<u>Engineering Workshops</u>

6.1 All fixed woodworking and metalworking machines must be fitted with a means of isolation from the electrical supply. The isolator switch must be lockable and conveniently positioned close to the machine.

6.2 All fixed woodworking and metalworking machines must be fitted with an emergency stop button within easy reach of the operator whilst at the work position of the machine; this must be separate from the start/stop button.

6.3 All fixed woodworking and metalworking machines must be fit for purpose, manufactured (no home-made), and operated as per Manufacturer's instructions.

6.4 All fixed woodworking and metalworking machines must be switched off when not in use and must not be left unattended until the "cutter" has stopped turning.

6.5 Access routes and means of escape must be kept clear at all times.

6.6 Waste material must be stored in suitable scrap bins and emptied at regular intervals.

6.7 Wood dust is harmful to health and flammable. After each and every task, woodworking machines are to be cleaned by the operator to prevent build-up of wood dust.

6.8 Relevant personal protective equipment (PPE) must be worn when operating all fixed and portable woodworking and metalworking machines as per the Manufacturer's instructions and SDS for materials being worked upon. There is to be an adequate supply of PPE including non-permeable (rubber) gloves for all workshop staff.

6.9 All tools that present a risk of eye injury (i.e. saws, planers, grinders, pillar drills etc.) must have guards in place during operation.

6.10 Push-sticks must be used when operating all woodworking machines.

6.11 Grinders will be provided with hood-type guards with side enclosures that cover the spindle and at least 50% of the wheel. All wheels will be inspected before each use for signs of cracks.

6.12 All moving parts of machinery that pose a risk of entanglement or crushing must be fitted and operated with a safety cover.

6.13 Workers are not permitted to wear loose clothing or jewelry when operating machinery and equipment that poses a risk of entanglement.

Vehicle Workshops

6.14 Vehicle workshops Manager is responsible for managing servicing and maintenance schedule and records of all vehicles, construction plant and equipment. These documents are to be made available to Employer or its Representative upon request.

6.15 Serviceable equipment or vehicles must not be stored in workshops; it is to be assumed by all persons that every equipment or vehicle is defective and requires repair.

6.16 All equipment and vehicles are to be drained of fuel before repairs commence. Normal routine maintenance and scheduled servicing of a vehicle is exempt from this requirement. All drained fuels and oils are to be stored in correctly labeled containers.

6.17 All vehicles being worked upon must be chocked. All cabs and load carriers in the open position must be mechanically locked or chocked into position; gravity, balances or hydraulic rams are not to be relied upon.

6.18 No persons must be in a vehicle inspection pit or under a vehicle inspection ramp whilst a vehicle is being positioned, or whilst the engine is running (unless during testing, the exhaust fumes are being artificially directed away from the area).

6.19 All vehicles being positioned over a pit or onto a ramp must be guided by a banks-man.

6.20 Whilst not in use, the vehicle inspection pit must be covered with sturdy covers, or adequate arrangements are made to prevent persons or vehicles accidentally falling in.

6.21 There is to be a Lock-Out / Tag-Out system for all hydraulic inspection ramps.

6.22 Only approved vehicle jacks are to be used for propping up vehicles; home-made jacks are strictly prohibited.

6.23 Only vehicles and construction plant from that specific Project can be serviced in the vehicle workshop; it is forbidden for private vehicles to be serviced, repaired or maintained in project facilities.

6.24 There must be a safety cage around all tire changing machines, and the mechanic must be outside of the cage during the operation. It is preferred that a safety trip-switch is fitted to the cage door to prevent operation of the machine whilst the door is open.

6.25 Only 1-days' supply of oils and lubricants are to be stored in workshops. Waste fuels, oils, lubricants and rags are to be removed on a daily basis.

Spray-Painting & Sand-Blasting

6.26 There must be a dedicated area for spray-painting and sand-blasting; during planning and set-up, adequate attention must be paid to the vicinity, proximity of other workers, known wind direction and traffic routes.

6.27 All electrical supplies, equipment and fittings within the designated area must be flameproof.

6.28 The area where spray painting / sandblasting is to be conducted must be screened off with non-flammable material, a controlled access point, and adequate warning notices 25m away around the entire area.

6.29 There must be no smoking, eating, drinking or welfare area allowed within 25m of the vicinity.

6.30 There must be adequate storage facilities for PPE / Respiratory Protective Equipment (RPE) and clothing for all operatives within the vicinity. RPE must have a safety factor of 20 ASF or higher.

6.31 Only 1 day's supply of material, paints, thinners, additives, chemicals etc. can be stored within the spray-painting facility. Suitable and adequate fire-fighting equipment must be at hand.

6.32 Sand used for sand-blasting must be non-silica.

6.33 There must be Safety Data Sheets (SDS) for all materials, paints, thinners, additives, chemicals etc. used within the facility. Adequate First Aid supplies must be immediately at hand specific to the task, including a method of eye wash.

6.34 PPE and RPE must be inspected by the operator before each use, and formally by the Supervisor on a weekly basis. Records must be kept and made available to Employer or its Representative on request.

6.35 No person may enter a sand-blasting or spray-painting area without wearing RPE, irrespective whether the task is being performed, unless in an emergency situation.

6.36 Compressors, hoses and tools must comply with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00012 Construction Plant & Vehicle Management Standard, specifically that all hose connections shall be fitted with whip-checks.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00015 - Excavations & Trenching Standard

1. Definitions

1.1 **Competent:** the ability to undertake responsibilities and perform activities to a recognized standard on a regular basis. It combines practical and thinking skills, qualifications, knowledge and experience

2. Planning

2.1 A competent person to supervise excavations, trenching, and backfilling shall be appointed by the Contractor; this person by the very nature of works should be a competent civil engineer.

2.2 A geotechnical report shall be acquired to determine the characteristics and properties of the soil materials that will be encountered during excavations and provide geotechnical conclusions and recommendations for the design of control measures for the project.

2.3 The geotechnical report should provide valuable information for use in determining:

- Dewatering requirements;
- Slope stability;
- Soil classification;
- Ground support requirements;
- Shoring requirements;
- Ground hardness;
- Suitability of materials for excavation;
- Guidelines for equipment selection;
- Ground pressure guidelines by depth;
- Estimated swelling adjusting factor;
- Location of aquifers;
- Soil contaminants
- Other related issues to support site earthwork activities.

2.4 In some instances, it may be necessary to perform additional borings or subsurface investigations to identify subsurface utilities, obstructions and soil conditions; RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00013 Detection of Buried Services Standard is to be followed.

2.5 Contractor shall identify areas for material lay-down of items such as culvert & drain material, trench-box and shoring equipment, gravel, sand and rock or any other material required for earthworks.

2.6 Contractors shall submit the risk assessment, Safe Sequence of Work and geotechnical report within the Construction Phase OH&S Plan to Employer or its Representative.

2.7 Contractor shall use non-potable water and borrow-pit sources for earthworks activities supplied by Employer or its Representative.

2.8 No Excavation operations are to commence before approval of the geotechnical report and the Construction Phase OH&S Plan by Employer or its Representative.

3. Equipment

Material Testing Laboratories

3.1 Contractor shall be responsible for the prequalification and selection of material testing laboratories. The material testing laboratory shall be capable of meeting requirements for soil testing required by the engineering specifications.

Excavations

3.2 Where excavations are deeper than 4 feet (1.2m), the Contractor must use a recognized protective system:

- Shoring Systems (Sheet Piles / Secant Piles / Hydraulic Shoring etc…)
- Sloping
- Benching

3.3 Sloping or benching for deep excavations (20 feet / 6.08m or more) must be designed by a registered professional engineer.

3.4 All shoring systems must be installed as per Manufacturer's instructions by competent persons under the direct supervision of the excavations competent person or a competent civil engineer.

3.5 At all deep excavations (20 feet / 6.08m or more) access must be restricted, and a means of monitoring access and egress at the entrance must be established. All deep excavations must have 2 means of access/egress no more than 25 feet apart (7.6m).

Trenches

3.6 Trenches 4 feet (1.2m) or more in depth must be timber-shored, have a trench ground support system (shields / dragboxes / plateliners / speedshore etc…) or walls cut back to the appropriate slope.

3.7 All trench ground support systems must be installed by competent persons and Manufacturer's instructions followed.

3.8 Conventional timber-shore (shuttering) props may be supported by mechanical (jacks or acrows) or hydraulic.

3.9 Trenches 4 feet (1.2m) or more in depth shall be classed as a confined space, and controls put into place in accordance with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00011 Confined Spaces Management Standard.

4. Environment

Dewatering Operations

4.1 If the excavation is expected to encounter water through groundwater, leaking pipes, storm water, or other sources, a dewatering system must be provided. The Construction Phase OH&S Plan shall include a dewatering plan detailing the pumps to be used, well-point system, availability of power, water discharge locations and discharge permits if applicable, including a drawing showing locations of pumps, generators and discharge locations. Dewatering operations should normally be started 24 hours before excavation work commences.

4.2 Contractor must consider erosion control measures when using dewatering operations.

5. Training

5.1 A competent person to supervise excavations, trenching, and backfilling shall be appointed by the Contractor; this person by the very nature of works should be a competent civil engineer.

5.2 All workers involved in excavations / trenching shall be trained in hazard awareness and best practices relevant to the site-specific works.

6. Operations

Permit to Work/Dig

6.1 RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00013 Detection of Buried Services Standard must be adhered to for all excavation and trenching operations.

6.2 Prior to initiating excavation or trenching operations, the excavation competent person is to verify work site conditions, including location and detection of all utilities and services, availability of equipment to be used as detailed in the risk assessment and Safe Sequence of Work, the construction plant equipment certification, and operator qualifications.

6.2 The excavation competent person is then to issue a Utility Clearance form (excavation Permit to Work/Dig), which shall be valid for up to a maximum period of 1 month, after which a new permit shall be required.

6.3 The excavation competent person shall ensure that the latest revision of as-laid (as-built) drawings have been used to locate all underground installations and buried services in the area to be excavated.

6.4 The excavation competent person shall note on the Utility Clearance form any special requirements and control measures required for the excavation (i.e. sloping, benching, shoring or trench ground support system).

6.5 Slopes of all excavations and trenches shall be cut at the angle of repose for the soil conditions (i.e. dry sand 38 degrees; wet sand 22 degrees).

6.6 All spoil material excavated must be kept a distance away from the edge equal to the depth of the excavation (i.e. for an excavation 2m deep, the spoil must be 2m away).

6.7 A means of access & egress shall be provided every 25 feet (7.6m) for all excavations and trenches.

6.8 All excavations and trenches shall be appropriately identified with signs, warnings and barricades. If adjacent to roads or general public access these must conform to all relevant traffic regulations and also be adequately lit at night.

6.9 Barricades must be a minimum of 6 feet (1.8m) away from the open edges of the excavation or trench. Height of barricades must be the same as guardrails for a working platform.

6.10 Whilst in an excavation or trench, no employees are permitted within 8m of construction plant working, vehicles unloading into, or a lifting operation overhead.

6.11 Where vehicles are used for tipping materials into an excavation or trench, well anchored stop-blocks must be used to prevent the vehicle overrunning the edge 1.8m from the edge. These must be placed at a sufficient distance away from the edge to avoid the danger of it breaking away under the vehicle weight.

6.12 All persons shall establish positive eye contact with the construction plant operator before moving around or behind the equipment.

6.13 If an unexpected item of archeological interest is encountered, work must be stopped and Employer or its Representative informed.

Inspection

6.14 A weekly inspection of excavations and trenches shall be performed by the excavation competent person. The inspection form shall be kept with the Utility Clearance form; both documents shall be made available to Employer or its Representative upon request.

6.15 The Contractor Supervisor responsible shall conduct a daily inspection of all excavations and trenches for signs of a possible cave-in, failure of protective systems and equipment, leaking equipment, polluting land or water, hazardous atmosphere or any other hazardous conditions. All defects shall be addressed before work is allowed to commence in the excavation / trench concerned.

6.16 Excavations and trenches must also be inspected by the excavation competent person after any event likely to have affected the strength or stability, and after any cave-in.

Backfill Operations

6.17 Prior to the start of backfilling, the excavation competent person shall confirm that all utilities have been inspected, tested as required and adequately protected.

6.18 The excavation shall be cleaned of all waste and slurries and all other unacceptable materials.

6.19 Supervisor shall ensure the correct grade of backfill is used, and arrange for compaction testing as required.

Specialist Operations

6.20 Contractor must appoint a competent Sub-Contractor for all Tunnel Boring Machine (TBM) or Horizontal Directional Drilling (HDD) Operations. The proposed Sub-Contractor must be approved by Employer or its Representative before start of the Works.

6.21 The Construction Phase OH&S Plan will contain the detailed, Risk Assessment and Safe Sequence of Work of the TBM or HDD Operations specific to the Contract.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00016 - Fall Arrest & Work Restraint Systems, Nets & Rope Access Standard

1. Definitions

1.1 **Primary Fall Protection**: the use of guardrails or other barricades to prevent a person from falling

1.2 **Secondary Fall Protection**: a form of fall protection measures that stops a person who has fallen

1.3 **Fall Arrest**: a class of personal protective equipment that stops a person who has fallen

1.4 **Fall Restraint**: a class of personal protective equipment to physically prevent a person from falling

2. Planning

2.1 All planning for working at height shall include risk assessments and Safe Sequence of Works, proving the selection of equipment has followed the following principles for working at height:

- Contractor must always use primary fall protection in the first instance that complies with working at height and other associated Standards;
- Where primary fall protection cannot be used, are inadequate or incomplete, or there is still a risk of injury from a fall, secondary fall protection must be used;
- In some cases, a combination of both primary and secondary fall protection may be required;
- Proper planning must be undertaken when setting up fall arrest systems, and the minimum height that the system will be effective must be considered (i.e. the height of the person, the length of lanyard, length of shock absorber, elasticity of the running line etc. usually approximately 6m);
- Personnel travelling to an elevated area more than 6 feet (1.83m) above ground level where a fall exists shall make use of secondary fall protection;
- Vertical impaling objects (i.e. rebar) shall have the ends capped with a wooden block 2 x 4 inch (5 x 10cm), rebar mushroom cap, or similar which

adequately covers the impaling end of the object, and will withstand an impact from a fall.

3. Equipment

Horizontal Lifelines / Running Lines

3.1 Horizontal and running lifelines are to be manufactured of either double-braid fiber rope, kern mantle rope (non-stretch) or webbing; synthetic rope must not be used in horizontal position for fall protection (because of stretch and sag of the line). They shall be a minimum of 16mm diameter with a breaking strain of 5000lbs (2268kg).

3.2 Where wire rope is used as a horizontal lifeline, the cable shall be of ½ "(12mm) diameter and shall be secured on each end by 3 cable clamps.

3.3 Horizontal and running lifelines shall be installed and maintained by persons competent in the rigging practices necessary to ensure adequate lifeline systems. A minimum safety factor of 2 must be maintained at all times.

3.4 Lifelines in use shall be inspected weekly by the competent person that installed them.

3.5 Lifelines shall be of a unique color to ensure they are easily identifiable and are only used as lifelines. Lifelines shall be used for no other purpose.

3.6 Horizontal lifelines should be positioned so as to provide points of attachment at least waist level or higher.

3.7 Intermediate supports shall be adequate to minimize sag and vertical deflection under loading, a maximum of 10m between attachment points must be achieved.

3.8 There are numerous systems available for anchorage points on the general market ranging from webbing slings and strops, to eyebolts and chemical anchor sockets. Whichever system is chosen as the anchorage system, anchorage points for horizontal and running lifelines must be capable of supporting 10800lbs each.

3.9 Softeners shall be used where lifelines contact sharp edges to prevent damage.

3.10 Lifelines shall be arranged to provide adequate mobility in all areas, whilst maintaining 100% fall protection.

Vertical lifelines / retractable lifelines

3.11 Used for personnel fall protection when vertical mobility is required, they must be made of synthetic fiber rope or cable equipped with rope grabs, or they may consist of self-retracting reel type lanyard attached directly to a safety harness.

3.12 Static rope lifelines with rope grabs are required for each person working from suspension scaffolds or for scaffold erection and structural steel erection where tie-off points are limited.

3.13 Static rope lifelines must be anchored independent of all other systems at the top and must be capable of supporting 5000lbs (2268kg).

3.14 Sliding rope grabs, retractable lifeline devices, shackles, karabiner and slings must be manufactured to an internationally recognized standard (i.e. EN 362 / ANSI Z359.1). All knots in the fiber rope used must be a double-figure of 8.

3.15 Sliding rope grabs approved for the size of rope are the only method for securing a safety lanyard to a vertical lifeline. Lanyards shall not be attached to lifelines by means of knots or loops.

3.16 Rope grabs shall be positioned on the lifeline at least above shoulder height.

3.17 Retractable lifeline devices shall be secured by means of shackles, karabiners and wire rope chokers or synthetic slings capable of supporting 5000lbs (2268kg). Rope (synthetic or natural fiber) shall not be used to secure these devices. Each retractable lifeline device shall be equipped with a rope tag line for extending.

<u>Rope Access</u>

3.18 Rope access (static rope technique & abseiling) is only suitable for general light work and inspection, and should not be used for construction works.

3.19 If access from a working platform, man-lift or man-basket is impracticable, Contractor must submit risk assessment and safe sequence of works to Employer or its Representative for approval prior to any works commencing.

3.20 Only persons trained in rope access equipment and procedures to an International Standard (i.e. IRATA) shall be allowed to conduct such activities.

3.21 All rope access equipment must be 3rd Party inspected on a six-monthly basis; records to be kept and available Employer or its Representative upon request.

Safety Harness & Lanyard Systems

3.22 Safety Harnesses and lanyards must be manufactured to an internationally recognized standard (i.e. EN 361 / ANSI Z359.1 / ANSI A10.32) and labeled with the following information:

- The Standard it conforms to;
- Manufacturer's name;
- Year of manufacture;
- Maximum safe drop (usually 2m);
- Manufacturer's serial number.

3.23 Lanyards should preferably be permanently attached to the harnesses so that others cannot be substituted. The fall protection lanyard must be attached to the "D" ring located in the middle of the back of the safety harness.

3.24 Full-body safety harnesses with thigh and shoulder straps must be worn. The lanyard and anchorage point should limit the maximum drop to 6 feet (1.83m).

3.25 Full-body safety harnesses must be secured to a secure anchorage point, running line or arrestor device. Anchorage points must be capable of supporting 5000lbs (2268kg).

3.26 Shock absorbers must be provided with the harness system. The maximum distance a person should fall before an arrest is 6 feet (1.83m).

Safety Belts

3.27 Safety Belts are strictly prohibited as secondary fall protection.

3.28 Safety Belts may only be used in conjunction with full body harnesses for specialist tasks (structural steel erector, linesman etc.) where the worker is required to remain in a stationary position for a period of time, and the belt takes the workers weight; the full body harness acting as the fall protection.

Safety Nets

3.29 Safety Nets must be manufactured to an internationally recognized standard (i.e. EN 1263/1 / ANSI A10.11), erected in accordance with an internationally recognized standard (i.e. EN1263/2 / ANSI A10.11) and labeled with the following information:

- The Standard it conforms to;
- Date of manufacture;
- Net type, class and size;
- Manufacturer's serial number.

3.30 Only qualified personnel shall install nets in accordance with the net Manufacturer's specifications.

3.31 Nets must be fitted as close to the working surface as possible, but in any case, must not be lower than 6 feet (1.83m) from the lowest point of the net.

3.32 Initial sag of the net should be ¼ to 1/5 of the total span of the net; there must also be a further clearance of 6 feet (1.83m) from the lowest point of the net to the ground.

3.33 Nets must be inspected after any fall, prior to each use, and at weekly intervals.

Other

3.34 It is not envisaged that a construction activity will require the use of Boatswain's chairs, cradles etc., but in the unlikely event, Contractor is to contact Employer or its Representative for guidance and approval prior to works commencing.

Not every situation in which fall exposures can appear will have been addressed in this Standard, nor has every type of different secondary fall protection device been covered. In all instances where a Contractor is planning to use a practice or specific equipment not specifically mentioned in this Standard, Contractor is to contact Employer (or its Representative) for guidance and approval.

Employer or its Representative reserves the right to prohibit a practice or piece of equipment in connection to this Standard.

4. Environment

4.1 Contractor shall ensure that all work at height is carried out only when the weather conditions do not jeopardize the health or safety of persons involved in the work. Standard Industry practice recognizes working at height should not be conducted when wind speed is over 35 km/hr (20mph).

5. Training

5.1 Employees required to work at heights shall be trained in fall hazard recognition, fall protection equipment and the requirements of this, and related Standards.

5.2 Training on secondary fall protection equipment shall be in accordance to the Manufacturer's instructions. It should cover the fitting, adjustment, attachment and

inspection of the equipment, and be delivered by a competent person; records are to be kept and made available to Employer or its Representative upon request.

5.3 A pre-task briefing must be given by the Contractor on a daily basis for all working at height.

6. Operations

6.1 When personnel are required to gain access to, move across, move up or down, and work on skeletal / open structures where there are no working platforms, a safety harness with 2 lanyards must be worn. 1 lanyard must be attached to a lifeline capable of supporting 5000lbs (2268kg) at all times to achieve 100% fall protection. In lieu of lifelines, personnel may secure safety lanyards to substantial, stationary structural steel members, pipe and pipe supports. Lanyards must not be secured to cable trays, conduit, or small-bore pipe.

6.2 All secondary fall protection shall be inspected for damage and deterioration prior to each use. Defective equipment shall be removed from service and destroyed immediately.

6.3 Any secondary fall protection device subjected to shock-loading imposed during a fall arrest shall be removed from service and destroyed.

6.4 A competent person must inspect all secondary fall protection equipment every 3 months; records are to be kept and available to Employer or its Representative upon request.

6.5 Contractor is to have emergency procedures in place for rescue of a conscious or unconscious casualty from a horizontal, vertical lifeline or a safety net.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00017 - Fire Prevention & Protection Standard

1. Definitions

1.1 **NFPA:** National (USA) Fire Protection Association

2. Planning

2.1 Contractor's Construction Phase OH&S Plan must contain the Company's general policy and procedure for fire prevention and protection measures which must contain as a minimum the requirements of this Standard.

2.2 Contractor is reminded that an Emergency Response Plan is a requirement which is the site-specific document required to address emergency procedures during the life of the Works, which will also include fire prevention and protection measures.

2.3 A key item of the policy and procedure is the "Actions to be taken on the outbreak of a fire". This document must be clearly displayed in prominent locations and communicated to all employees, Contractors, Sub-Contractors, Visitors and Suppliers during induction training and at regular intervals. It should also be translated into the main language of the workforce.

Means of Escape

2.4 All means of escape from a building or area are to be kept clear and free from obstruction.

2.5 All escape routes are to be clearly signed and indicate the most direct route to a place of safety.

2.6 Doors on designated escape routes shall not be locked with a key, or blocked so as to prevent escape, and open in the direction of (escape) travel.

2.7 Escape routes shall be adequately lit, with either natural light or domestic lighting, and if necessary, with emergency lighting.

3. Equipment

Fire Alarm/Detection Systems

3.1 An effective means of providing a warning to staff in the event of a fire is required for all locations. Types of alarm can include:

- Verbally (shouting "fire", 'fire", "fire");

- Hand-held bell, or hand-rotating bell;
- Electric break-glass call points;
- Visual alarm (flashing beacons normally used in noisy locations);
- Automatic fire detection (heat/smoke detectors) – **must** be used for all offices;
- Any other pre-arranged effective means of warning.

Fire-Fighting Equipment

3.2 An adequate and sufficient amount of relevant fire-fighting equipment shall be located throughout lay-down areas, offices and construction sites at designated, prominent "Fire Points" on the following principles:

- 1 per building (or **3000 square feet**);
- For every floor of a building;
- 1 within **50 feet (15.2m)** where more than 5 US Gallons (18.9 liters) of flammable or combustible liquids are being used;
- 1 within **50 feet (15.2m)** where more than 5 pounds (2.3kg) of flammable gases are being used;
- 1 every **75 feet (22.9m)** in open offices and storage yards;
- 1 every flammable or combustible liquids storage area;
- 1 every fuel dispensing or vehicle servicing area;
- For every motorized vehicle or equipment.

3.3 External Fire Points are to be easily identifiable and shaded against the sun to ensure fire extinguishers are not over-charged by the heat.

3.4 Each fire extinguisher shall be replaced immediately after discharge with a fully charged fire extinguisher of the same size and type.

4. Environment

Plants & Undergrowth

4.1 Plants & Undergrowth is to be kept short and removed for a distance of not less than **15m** from:

- Vehicle & Engineering Workshops;
- Bulk fuels, oils & lubricants;
- Fuel dispensing areas
- Gas cylinder storage areas (including LPG).

Water Supplies

4.2 Contractor Project Site Manager or designate is to know the location of the nearest source of fire water mains to the office, lay-down or site areas, and ensure details are kept with security staff that control access to the area (so that in the event of a fire the information can be relayed to emergency services upon arrival).

Offices

4.3 There shall be a minimum of **5m** between all temporary buildings and structures.

4.4 All offices shall be fitted with smoke detectors and there shall be a “no smoking” policy in all offices.

Stores

4.5 All shipping (iso) storage containers that have electrical supplies (lighting, sockets and/or air-conditioning) must be grounded/earthed.

4.6 Storage areas shall be kept clean and housekeeping strictly maintained.

4.7 Materials shall not be stored in a manner so as to obstruct access to fire prevention/protection equipment (detectors/alarms/panels), fire-fighting equipment, control valves, doors, motors, aisles or hallways that serve as a means of escape.

4.8 Aisles and hallways shall be a minimum of **36 inches (91 cm)** wide.

4.9 There must be a minimum clearance of **18 inches (46cm)** between materials and sprinkler heads (where fitted).

4.10 Materials shall not be stored within **6 feet (1.8m)** of any doorway or opening.

4.11 Materials storage shall comply with the separate RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00028 Storage of Materials Standard.

Vehicles, Sheds, Garages & Workshops

4.12 The Standards on RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00019 Hot Works and RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00014 Engineering & Vehicle Workshops shall be complied with.

4.13 Tires shall not be stored in any location where any type of hot works is to be conducted.

5. Training

5.1 All Managers shall ensure on a regular basis that all staff including Contractors, Sub-Contractors, Visitors and Suppliers are made aware of the actions to be taken on the

outbreak of fire, the method of raising the alarm, the location of assembly points, and the location of fire-fighting equipment.

5.2 Contractor shall ensure that on a quarterly basis, training is delivered to all staff on all principles of fire prevention and protection, including emergency escape arrangements.

5.3 Contractor shall ensure that an adequate amount of staff is competent to use the fire-fighting equipment provided, and these staff are to form an Initial Response Team for fighting fires.

5.4 All Supervisors are to be trained and practiced in emergency escape arrangements.

5.5 Staff not trained in the use of fire-fighting equipment are not to attempt to fight fires.

6. Operations

Housekeeping

6.1 Accumulation of rubbish and waste materials shall be kept to a minimum, and is to be cleared away at regular intervals, when required, or as a minimum, each day on the cessation of works.

Smoking & Naked Flames

6.2 Smoking shall be prohibited within **25m** of all refueling activities, and flammable/combustible stores.

6.3 No equipment shall be refueled whilst the engine is still running.

6.4 Those involved in refueling operations shall be trained in safe refueling activities and fire-fighting measures.

6.5 The use of cellular phones, pagers etc. shall not be permitted during any refueling activities.

Electricity

6.6 Electrical installation must be performed by a competent electrician and conform to Kingdom of Saudi Arabia electrical codes and standards for both temporary and permanent electrics. Alterations and additions to wiring or fittings are only to be carried out by a competent electrician.

6.7 All electrical equipment must be isolated after working hours or when not in use.

6.8 All defective electrical appliances are to be taken out of use until repaired by a competent person.

6.9 All electrical wiring, flexible leads and plugs are to be maintained in a good condition.

6.10 All distribution panels and isolation switches are to be securable to prevent unauthorized access.

6.11 Mains electrical switches, distribution panels and boards are to be clearly marked, so that identification and traceability of electrical circuits and cables can be conducted.

6.12 The use of multi-plug adaptors and home-made extension leads on a construction site are forbidden.

6.13 Only plugs compatible with the electrical receptacles (sockets) are permitted.

Gas Appliances

6.14 Portable gas appliances shall not be home-made.

6.15 Portable gas rings shall be situated at table height on a fire resistant, non-heat conducting surface.

6.16 No gas appliances shall be left unattended.

Gas Cylinders

6.17 Compressed gas cylinder valves shall be closed whenever:

- Work is finished
- Cylinders are empty
- Cylinders are being moved

6.18 Gauges will be removed and valve protection caps in place before moving any cylinders, except when cylinders are secured in a carrier designed for such use.

6.19 Contractor shall provide cradles/cages for lifting cylinders, and ensure that cylinders being transported are secures in the upright position. Cylinders must never be lifted by rope, chain, slings or magnets. Cylinders must never be dropped when being unloaded or loaded from a vehicle.

6.20 Cylinders will not be rolled, dragged or slid. A suitable hand-truck/cylinder trolley shall be supplied suitable for the transportation of cylinders.

6.21 Cylinders shall not be placed where they may become part of an electrical circuit.

6.22 Cylinders shall not be taken into a confined space.

6.23 Cylinders shall be stored in a safe manner. Cylinders shall be segregated by type, full or empty.

6.24 Cylinders are to be stored in a well-ventilated and shaded location, **25m** away from all other flammable stores.

6.25 LPG cylinders are to be kept in a separate storage area either **6.1m (20')** away from all other gas cylinders, or a physical barrier a minimum of **5'** high must separate the two.

6.26 All cylinders must be protected against shock, especially falling, and high temperature extremes.

6.27 All cylinders (unless manufacturer instructions state otherwise – e.g. special gases) must be stored and secured by means of a substantial chain or cable in the upright position, and fitted with valve protection caps.

6.28 All cylinder storage areas shall be properly signed, and a "no smoking" policy within **25m** enforced.

6.29 All welding and cutting operations shall conform to RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00019 Hot Works Standard.

6.30 A fire extinguisher with a **30lb (13.6 kg)** Class A, B, C rating (as applicable) shall be at the work location for all hot works.

Flammable Liquids

6.31 Combustible liquids, including oils & greases, shall be stored in original containers or in storage tanks, labeled with contents and capacity.

6.32 Flammable/combustible liquids and solvents are not to be used near ignition sources.

6.33 Only approved containers, safety cans and portable tanks shall be used for the storage and handling of flammable and combustible liquids.

6.34 Approved, properly labelled storage cabinets (or drums) shall be used to store flammable liquids in excess of **15 US Gallons (57 litres).**

6.35 Permanent fuel storage tanks shall be maintained in a bunded area, with provisions made for the handling of spills and groundwater protection.

6.36 All fuel lines shall be equipped with valves capable of stopping the flow of fuel at source, and all piping valves and fittings shall be capable of withstanding working pressures compatible with the type of liquid being stored.

6.37 All permanent fuel storage tanks and dispensing units shall be protected against collision damage.

Maintenance, Inspection & Records

6.38 All fire-fighting equipment (prevention and protection) shall be inspected, tested and maintained in accordance with Kingdom of Saudi Arabia legislative requirements, or as a minimum, to International Standards (e.g. NFPA etc.); records shall be kept and made available to Employer or its Representative upon request.

Fire Prevention Checks

6.39 A fire prevention check shall be conducted at cease works on a daily basis, and, if Hot Works have been conducted, **1 hour** after the termination of hot work.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00018 - General Safe Working Practices Standard

1. Definitions

1.1 **Horseplay**: rough or boisterous play

2. Planning

2.1 No construction stores will be placed on any structure or portion of a structure unless a structural engineer has determined that the structure is capable of supporting the load.

2.2 All protruding reinforced steel onto and into which an employee could fall will be guarded to eliminate the hazard of impalement.

3. Equipment

3.1 Use of a mobile phone is not permitted by any employee engaged in a work task or operation.

3.2 Radios, CD players, cassette tape players or any other such equipment shall not be played on the construction site.

4. Environment

4.1 Publishing photographs of unsafe acts or unsafe conditions is prohibited.

5. Training

5.1 All construction plant, vehicles and equipment should only be used by suitably qualified or trained persons authorized to use such equipment.

5.2 Employees must be competent on the tool or equipment they are operating, and must use it for the purpose intended. Manufacturer's instructions or the operating manual must always be followed.

6. Operations

6.1 No person shall interfere or misuse any equipment or device which has been provided for safe working, including disabling, bypassing, modifying or removing any safety protection device.

6.2 Employees who engage in horseplay, fighting, gambling, or who disobey and disregard the laws of the Kingdom of Saudi Arabia must be removed from Site.

6.3 All personnel are required to wear clothing appropriate for the work being performed (shirt and trousers); both the "kameez & shalwaar" (“wzaar”) and "thobe" are unacceptable for manual construction activities.

6.4 Shirts worn by personnel must have sleeves at least 4 inches (100mm) in length. Sleeveless shirts and sleeves rolled up onto the ball of the shoulder are prohibited.

6.5 Clothing soaked with grease, paint, thinners, solvents or similar materials must not be worn.

6.6 All operatives must wear safety footwear, safety helmet, safety glasses and any other personal protective equipment (PPE) appropriate for the work that they are undertaking.

6.7 Food and drink should only be taken in designated welfare areas.

6.8 Smoking is only permitted in designated areas.

6.9 All workers shall immediately report to their Supervisor or the Safety staff anything that is unsafe.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00019 - Hot Works Standard

1. Definitions

1.1 Hot Works: any procedure that might involve or have the potential to generate sufficient heat, sparks or flame to cause a fire. Hot work includes welding, flame cutting, soldering, brazing, grinding and the use of other equipment incorporating a flame, e.g. tar boilers, etc.

2. Planning

2.1 All welding operations must be performed on a hot work permit, unless in a dedicated welding bay facility and under the supervision of an Engineering Workshops Manager.

3. Equipment

3.1 Operators must use all equipment associated with the operation as directed by Manufacturer's instructions, and operate safely in compliance to International recognized codes of practice.

3.2 Welding and cutting apparatus must be inspected by the operator before each use.

3.3 For all welding operations, a welder’s mask or hand-held welders mask complete with the relevant filters conforming to an International recognized standard (ANSI Z49, EN 175 etc.) must be used.

3.4 For all cutting operations, the minimum eye protection required are welder’s goggles complete with the relevant filters conforming to an International recognized standard (ANSI Z49, EN 175 etc.) must be used.

3.5 Welder's heavy-duty gloves or gauntlets must be used conforming to an International recognized standard, along with coveralls or aprons.

4. Environment

4.1 All welding operations shall be conducted in a well-ventilated area. Ventilation can be either natural or forced.

4.2 Work shall be placed at an optimal height where reasonably practicable to avoid back injuries.

4.3 Welding booths or screens must be used around all welding operations.

4.4 Hazard warning signage must be prominently displayed warning of the welding operation, and "no smoking with 25m".

4.5 Where work is undertaken in a confined space, RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00011 Confined Spaces Management Standard must be strictly adhered to; Where work is undertaken at height, the relevant working at height standards in this Manual must be strictly adhered to.

5. Training

5.1 Employees who perform welding and cutting operations must be competent and have proof of training.

5.2 Employees must be trained in, and familiar with the Hot Work Permit in use.

5.3 Contractor must provide Toolbox Talk training to all welders and assistants on the hazards of welding, including eye protection and signs and symptoms of eye damage on a monthly basis.

5.4 Contractor must provide manual handling training to any workers involved in the handling of full or empty gas cylinders.

5.5 Contractor shall provide the required personal protective equipment (PPE) and the necessary information and instruction relating to the effective use of the equipment.

6. Operations

6.1 All welding or cutting operations require a dedicated "fire watch" equipped with fire-fighting equipment that must remain in the vicinity 60 minutes after work ceases.

<u>Gas Welding</u>

6.2 Cutting torch assemblies must be equipped with pressure relief valves, back-flow prevention devices and flash-back arrestors.

6.3 Color coding of compressed gas cylinders shall not be relied upon. Contractor is to introduce a best practice of a cylinder labeling program.

6.4 Any damaged cylinder or valve, or contents that are not satisfactorily identifiable must not be used.

6.5 Gas hoses must be inspected for damage before each use. All hose connections are to be jubilee clips or similar; the use of wire or string is prohibited.

6.6 Defective valves or safety relief devices should not be tampered with, nor any attempt made to repair by the worker.

6.7 Any damaged or defective equipment should be tagged "Danger – Do not use" and reported immediately to the Supervisor and Senior Store man. All such equipment should be returned to the Vendor, and no attempt is to be made to repair within the Contractor's facilities.

6.8 Contractor shall provide cradles / cages for lifting compressed gas cylinders, and ensure that cylinders being transported are secured in the upright position. Cylinders must never be lifted by rope, chain slings or magnets. Cylinders must never be dropped when being unloaded or loaded from a vehicle.

6.9 Cylinders will not be dragged, rolled or slid. Contractor shall supply a suitable hand-truck/cylinder trolley suitable for the transportation of cylinders.

6.10 Each gas cylinder is to be provided with a key wrench.

6.11 When using individual oxygen cylinders, the pressure regulator must be located directly on the cylinder.

6.12 No oil, grease, or pipe compound shall be used on any fixture or fitting associated with oxygen.

6.13 Cylinders are uniquely threaded by cylinder type to minimize contamination. The use of adaptors or systems that compromise this safeguard is prohibited.

<u>Arc Welding</u>

6.14 All generators shall be "fit for purpose". They shall be fitted with all necessary safety equipment including over-speed trips and fire extinguishers.

6.15 Maintenance of all arc welding equipment shall be carried out in accordance with Manufacturer's instructions; records shall be kept and made available to Employer or its Representative upon request.

6.16 All generators must be grounded / earthed with no moving parts exposed.

6.17 Exhaust fumes shall be vented to atmosphere in a safe area. Consideration must be given to the build-up of fumes in adjacent trenches and action taken to ensure the safety of personnel and any others that may be affected.

6.18 When arc welding operations are completed or temporarily stopped, all electrodes will be removed from the holders, and the holders carefully positioned to prevent accidental contact. Spent electrodes are to be disposed of in a metal container.

6.19 Contractor is to have Safety Data Sheets (SDS) for the welding rods in use, and are to comply with the Manufacturer's instructions in their use.

Personal Protective Equipment (PPE)

6.20 All employees shall be provided with the necessary PPE as identified in the risk assessment for the particular work activity. Contractor is to ensure compatibility between different types of PPE when more than one is to be worn at the same time (i.e. eye and hearing protection). PPE specific to the task must be worn by all operators and assistants.

6.21 All persons involved in the welding or cutting operation (i.e. welder's assistants) must be using the same eye protection as the welder they are aiding.

Storage

6.22 Contractor shall store gas cylinders in a safe manner. Gas cylinders shall be segregated by type, full or empty.

6.23 Cylinders are to be stored in well ventilated and shaded location, 25m away from all other flammable stores.

6.24 LPG cylinders are to be kept in a separate storage area either 20 feet (6.1m) away from all other gas cylinders, or a physical barrier a minimum of 5 feet high must separate the two.

6.25 All cylinders must be protected against shock, especially falling, or high temperature extremes.

6.26 All cylinders [unless Manufacturer instructions state otherwise – i.e. special gases] must be stored and secured by means of a substantial chain or cable in the upright position, and fitted with valve protection caps.

6.27 All cylinder storage areas shall be properly signed, and a "no smoking" policy within 25m enforced.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00020 - Lifting Operations Standard

1. Definitions

1.1 Lifting Operation: the lifting or lowering of a load by mechanical means

2. Planning

2.1 **Any** lift where the payload weight is 20 tonnes or less requires only a Lift Calculation Sheet; a single page document requiring sign-off, as a minimum, by the Contractor Appointed Competent Person and Crane Operator prior to work commencing.

2.2 **Any** lift where the payload weight is over 20 tonnes and less than 50 tonnes requires an industry-standard Lift Plan to be submitted to and received by Employer or its Representative for approval a minimum of 2 working days prior to work commencing.

2.3 For all Lifts that are "Critical", Lift Plans must be submitted to and received by Employer or its Representative for approval a minimum of 7 working days prior to the lift taking place.

"Critical" Lifts are defined as:

- All lifts where the payload is over 50 tonnes;
- Any tandem lifts (including unloading of delivery vehicle);
- Any lift regardless of payload weight, where the crane capacity is 85% or over;
- Any lift over live feedstock pipelines, unclosed roads & carriageways or occupied facilities;
- Barge cranes.

2.4 All tower cranes are to have a Lift Plan containing separate lift calculation for average lift and worst-case scenario lift.

2.5 All tower crane Lift Plans are to contain an emergency procedure for extracting an injured tower crane operator. This procedure must be tested by emergency drill on a quarterly basis during the life of the Contract and documented; documentation will be made available to Employer or its Representative on request.

3. Equipment

Lifting Operation Equipment Requirements

3.1 All cranes shall be inspected by a 3rd party on an annual basis. All cranes shall display a sticker corresponding to the 3rd party inspection certificate, or a copy of the 3rd party inspection certificate shall be available in the cab.

3.2 Cranes having their configuration changed, dismantled or re-erected shall be 3rd party tested before lifting will commence.

3.3 Every crane shall be fitted with an appropriate load radius indicator.

3.4 Automatic safe load indicators must be tested and thoroughly examined after erection and/or installation of the crane before use.

3.5 All cranes shall be fitted with hazard flashing beacons.

Specific to Tower Cranes

3.6 Contractor must seek prior approval from Employer or its Representative to install, erect and use any tower crane for construction contracts. Proposed tower crane details are to be included in the initial application.

3.7 Once approval has been given in writing, Contractor must submit foundation design, including calculations to Employer or its Representative for documented approval.

3.8 Prior to the concrete pour of the foundation for the tower crane, Contractor must contact Employer or its Representative to confirm that the construction complies to the approved design, where written approval to proceed will be issued.

3.9 After curing of the foundation, the Contractor must contact Employer or its Representative to confirm the foundation meets quality control standards, where written approval to proceed will be issued.

3.10 Once the tower crane has been constructed and inspected by a 3rd party, before any works may commence, Contractor must contact Employer or its Representative for a final inspection, where written approval to proceed will be issued.

3.11 All tower cranes shall be fitted with applicable aerial (height) warning lights in accordance to local regulations.

Specific to Mobile Cranes

3.12 Outriggers must be used as specified by crane Manufacturer and fully extended on all sides when performing static lifting operations.

3.13 Sound timber packing or metal plates shall be positioned under each outrigger pad to distribute the load.

3.14 The outer edge of crane outrigger pads must be a minimum of 2m from edges of excavations or any other bearing surfaces.

3.15 A safety clear zone consisting of the full length of jib + 5m should be identified 360 degrees around all cranes, (or where impracticable around the working arc of the lift zone). No persons apart from banks-man and rigger are allowed in the safety clear zone during a lifting operation.

3.16 Fly jibs on telescopic cranes shall only be erected or dismantled by a competent crane operator.

3.17 Crane operator is to ensure that counterweight and housing swing radius of all mobile cranes are barricaded to prevent accidental direct contact by the crane or load.

Lifting Operation Ancillary Equipment

3.18 All lifting operation equipment shall be 3rd party inspected on an annual basis.

3.19 All lifting operation equipment shall be inspected on a minimum 3-monthly basis by a competent rigger / slinger and a register of all equipment shall be maintained, identifying serial number, date of last inspection and name of inspector.

3.20 All lifting operation equipment shall be fitted with tags containing identifying serial number, and color coded by either tape or paint, which shall be clearly visible and durable.

3.21 Lifting operation equipment will conform to the following color coding following satisfactory completion of inspection:

- Yellow January, May, September;
- Green February, June, October;
- Red March, July, November;
- Blue April, August, December.

3.22 All lifting operation equipment shall be inspected by a competent rigger / slinger before each use.

3.23 All lifting operation equipment when not in use shall be stored off the ground.

3.24 Defective lifting operation equipment shall be made unusable immediately and clearly marked "defective" in all applicable languages to the workforce. Defective equipment shall be removed from site immediately for disposal.

Excavators

3.25 Excavators will only be approved for lifting operations when:

- supplied with manufacturer's lifting point and check valves;
- supplied with a safe load indicator;
- the safe working load (SWL) clearly displayed;
- has a 3rd party inspection certificate [for lifting];
- a task specific risk assessment has been completed.

Loader Cranes (Hiab)

3.26 Loader cranes may **only** be used for loading and unloading of vehicles, unless prior approval has been sought from Employer or its Representative. In these exceptional circumstances, approval will only be given when:

- The driver / operator holds a valid and in-date KSA driving license, and is trained to operate the specific Hiab by examination, holding a current approved certificate / license from an approved and internationally recognized source;
- The safe working load (SWL) of the Hiab is clearly displayed;
- The Hiab has a 3rd party inspection certificate;
- All other requirements for lifting operation equipment and mobile cranes are met.

4. Environment

4.1 All lifts **must** consider wind conditions and rated load and boom lengths must be reduced according to Manufacturer's specifications.

4.2 Contractor is to ensure all relevant Encroachment Permits where applicable have been approved and are available for inspection on site before lifting commences.

4.3 It is strictly forbidden to move any crane boom or load line within the following distances of overhead power lines, unless the line has been de-energized:

- up to 25000 volts 35 feet (10m);
- over 25000 volts 60 feet (20m).

4.4 Any lifting operations that are within the above distances of any other electrical power lines may require a Kingdom of Saudi Arabia National electrical company encroachment permit.

4.5 Once voltages have been identified height restrictors (goal posts) must be erected at both sides of overhead lines to indicate the safe working distance.

4.6 Any lifting operations that are within 15m of any water lines may require a Kingdom of Saudi Arabia national water company Encroachment permit.

4.7 Unless in an emergency situation, no lifting operations may take place on roads and highways unless coordinated and approved through Kingdom of Saudi Arabia road and Police Departments, and the correct signage and barricades are in use.

5. Training

Lifting Personnel

5.1 Appointed Competent Person (Lifting & Rigging) shall:

- Be either a competent civil or structural engineer nominated by the Contractor to control and manage all Contractor Lifting Operations, or hold an internationally recognized lifting operations qualification;
- Assess and plan all lifts with regard to selection of crane, lifting tackle, load, instruction and supervision;
- Devise and compile all lift calculation sheets and/or Lift Plans;
- Be in overall control of all lifting operations;
- Ensure that an effective procedure is in place for inspection and maintenance of all lifting operation equipment;
- Ensure that an effective procedure is in place for reporting of defects and all subsequent remedial actions for all lifting operation equipment;
- Be present on site for all lifts over 20 tons;
- Be authorized to cancel / postpone lifts if there are safety concerns.

5.2 Crane Operators shall:

- Hold a valid and in-date KSA heavy equipment operator's license;
- Be trained to operate the specific crane by examination and hold a current approved certificate / license from an approved and internationally recognized source;
- Be competent and authorized to operate the crane;
- Be physically fit and capable of operating the crane safely;
- Be authorized to cancel / postpone lifts if there are safety concerns.

5.3 Banksman / Slingers / Riggers shall:

- Be trained, experienced and hold a current approved certificate / license from an approved and internationally recognized source;
- Be able to determine the weight, center of gravity and characteristics of a load;
- Be able to inspect and determine whether associated lifting equipment is damaged;
- Be familiar with different and correct slinging techniques;
- Know correct hand signals;
- Be authorized to cancel / postpone lifts if there are safety concerns.

6. Operations

6.1 Crane operators shall check on a daily basis for oil and hydraulic leaks; records shall be kept and made available to Employer or its Representative. Crane Manufacturer's manual will be adhered to for ongoing maintenance requirements.

6.2 During all lifting operations, the use of mobile cell phones and pagers by anyone considered essential to the operation (crane operator, banks-man, slingers, and rigger) shall not be permitted.

6.3 Crane operator must have clear line of site with the banks-man/slinger/rigger at all times.

6.4 Only a qualified rigger / slinger is to rig the load to be lifted.

6.5 Tag lines are to be used on all lifts.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00021 - Lightweight Staging, Trestles, Ladders & Steps Standard

1. Definitions

1.1 **Lightweight Staging / Trestle**: A Trestle consists of 2 or more trestles (of either the folding "A" type or fixed telescopic steel type), supporting scaffold boards to be used as a working platform. Lightweight staging is of the same type, but uses proprietary staging to form the working platform.

1.2 **Ladder**: a series of steps/bars between two uprights used for climbing up or down

1.3 **Steps**: a small raised platform on which to place one's foot when moving from one level to another

2. Planning

2.1 All planning for working at height shall include risk assessments, proving the selection of equipment has followed the following principles for working at height:

- Contractor must always use primary fall protection in the first instance that complies with the other working at height references.
- Where primary fall protection cannot be used, are inadequate or incomplete, or there is still a risk of injury from a fall, secondary fall protection must be used.

2.2 Lightweight staging, trestles, ladders and steps are designed, manufactured and intended for light work of short duration only.

2.3 Lightweight staging, trestles, ladders and steps must be in a good condition at all times. Bends, dents, cracks, loose or missing rivets, broken or missing rungs, split side rails, bad corrosion or damaged in any other way shall not be used, taken out of service immediately, and destroyed.

2.4 All lightweight staging / trestles must be fitted with standard guardrail system and full working platforms as per RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00031 Working Platform Standard.

3. Equipment

Lightweight Staging / Trestle

3.1 All lightweight staging / trestles must be manufactured to an internationally recognized standard and marked with the maximum permitted distributed loading.

3.2 Trestles should be spaced at the following maximum distances apart:

- 1 m when using 32mm thick boards;
- 1.5m when using 38mm thick boards;
- 2.6m when using 50mm thick boards.

3.3 Scaffold boards used on trestles as the working platform must be of a consistent length and equal thickness and must be compatible with the trestle.

3.4 The amount that the end of any board may overhang any trestle should not exceed 4 times the thickness of the board used for the working platform.

Ladders

3.5 Job-made ladders are strictly prohibited; 3-legged ladders are also strictly prohibited.

3.6 Ladders purchased shall be of industrial class, manufactured to an internationally recognized standard (i.e. EN 131/ ANSI 14-5). Domestic class ladders are strictly prohibited on construction sites.

3.7 All stepladders must have intact spreader bars. Defective or other replacement devices shall render a ladder unsafe and be prohibited from use.

3.8 Straight ladders shall not be longer than 20 feet (6m), Extension ladders shall not be longer than 36 feet (11m). All straight and extension ladders shall have non-skid feet. Stepladders shall not be longer than 12 feet (3.7m).

Steps

3.9 Steps are designed for quick access to a place of height for a very short period of time, and should not be used as a working platform unless equipped with guardrails. They shall be of industrial grade, good condition and conform to the above general conditions of this Standard.

4. Environment

4.1 Lightweight staging / Trestles shall only be used indoors, set on a firm level base and must always be used in the fully opened position.

4.2 Step-ladders shall only be used inside a building where the floor is firm and level. Step-ladders may never be used outside.

5. Training

5.1 All employees who are required to use lightweight staging, trestles, ladders or steps must be trained by Contractor in the correct use, placement, daily inspection, maintenance and safe working loads of the equipment.

5.2 All lightweight staging / trestles must be erected by a competent person in accordance with the Manufacturer's instructions.

6. Operations

6.1 All equipment must be inspected by the User before each use.

6.2 Lightweight staging / trestles must never be used (mixed) with scaffolding open tube & coupler or system scaffolds.

6.3 Lightweight staging / trestles must never be used to support other scaffolding or false-works.

6.4 Where lightweight staging / trestles do not conform to RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00031 Working Platform Standard (i.e. guardrails or working platform width), secondary fall protection must be worn by employees.

6.5 All lightweight staging, trestles, ladders and steps shall be inspected by a competent person on a quarterly basis, and the applicable quarter's color code will be painted on the side rail as follows:

- Yellow January, May, September;
- Green February, June, October;
- Red March, July, November;
- Blue April, August, December.

6.6 All ladders in use must be tied, blocked or otherwise secured to prevent displacement. They must be set at the correct angle of 75 degrees (1 in 4). Ladders that cannot be tied must be footed.

6.7 All step-ladders must have 4 supporting rails or legs and be used in the fully open position. Stepladders must not be adjusted or tampered with so as to enable them to be opened out from the “A” frame position to form a larger one-piece ladder.

6.8 Two or more people shall not work from the same step-ladder or ladder.

6.9 The side rails of all ladders shall extend 36 inches (1m) above the landing where used as access to a working platform.

6.10 Ladders may not be painted, except for the platform (to warn users not to step on it), and the side rail for identification and inspection purposes. All ladders will be identifiable by number and Contractor.

6.11 Ladders over 12 feet (3.7m) long shall be carried by 2 employees.

6.12 Only non-metallic approved ladders will be used during operations where employees may come into contact with electrical circuits or systems.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00022 - Man-Lifts Standard

1. Definitions

1.1 **Man-Lift:** Man-Lifts are also known as "Mobile Elevating Work Platforms (MEWPs)" and "Articulating Boom Platforms". For the purposes of this Standard, the term "Man-Lift" shall be used, and mean any scissor lift, self-propelled boom, vehicle mounted boom, trailer mounted boom, vertical personnel platform and insulated aerial device.

2. Planning

2.1 The work area surrounding the man-lift is to be cordoned off using barricades and signage if the area is used by other workers or vehicles. A full Traffic Management Plan is required for all works involving man-lifts when working on highways. Under no circumstances is any part of a man-lift to extend or swing into a line of traffic.

3. Equipment

3.1 All Man-Lifts shall be inspected by a 3rd party on an annual basis. All Man-Lifts shall display a sticker corresponding to the 3rd party inspection certificate.

3.2 The Manufacturer's instruction manual must be on site for each and every type of Man-Lift in use.

3.3 All Man-Lifts must be equipped with a 5kg (10lb) fire extinguisher.

4. Environment

4.1 It is strictly forbidden to move any Man-Lift within the following distances of overhead power lines, unless the line has been de-energized:

- up to 25000 volts 35 feet (10m);
- over 25000 volts 60 feet (20m).

4.2 Any Man-Lift operations that are within the above distances of any other electrical power lines may require an Encroachment permit, issued and approved by Kingdom of Saudi Arabia national electrical company. If the overhead power line has been de-energized Contractor must have documentary evidence from the relevant electrical company.

4.3 All Man-Lifts are designed to operate in wind speeds up to a maximum which must be marked on the equipment. The generally accepted design wind speed is 12.5 m/second (28mph), but Manufacturer's instructions must be followed.

5. Training

5.1 Man-Lift operators are to be competent and trained to operate the specific Man-Lift by examination and hold a current approved certificate / license from an approved and internationally recognized 3rd party source.

5.2 (Other) responsible personnel on site are to be trained on the use of the Man-Lift ground controls to lower the platform in emergency situations.

6. Operations

Safe Working

6.1 A pre-start daily operator inspection of the equipment will be performed and documented on a daily basis as per the Manufacturer's instructions. The user is responsible for ensuring this has occurred.

6.2 The use of a Man-Lift as, or in lieu of, a Crane is strictly prohibited. Man-Lifts are to be used only for lifting personnel and small tools within the designed Safe Working Load (SWL).

6.3 The platform is not to be loaded in excess of the designed working load; the safe working load of the platform is to be clearly displayed on both the platform, and body of the equipment.

6.4 All persons inside work platforms shall wear a full-body harness attached to the designated anchor point using a work-restraint lanyard. Personnel must stand on the floor of the working platform; standing on the handrails is strictly prohibited. Harnesses must not be attached to other structures outside of the working platform.

6.5 Personnel must stay inside the working platform at all times; the platform must not be used as an access to structures. The use of staging or ladders to extend height is strictly forbidden.

6.6 Securing the boom or work platform to any structure is strictly prohibited. The boom or working platform must not be rested upon on any structure, nor is the Man-Lift to be used as a jack/ prop or tie to support other structures.

6.7 No man-lifts are to be operated that have had safety devices removed or disabled. Daily operator inspections are to include the testing of these devices (limit switches, alarms and hazard flashing beacons).

6.8 Specific Man-Lifts are fitted with outriggers and/or stabilizers which must be used as per Manufacturer's instructions.

6.9 Certain types of Man-Lifts may be traveled with the platform raised for greater operator visibility; Manufacturer's instructions must always be followed.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00023 - Site Office Safety Standard

1. Definitions

1.1 **Temporary**: that which is to last for a specified limited time period

2. Planning

2.1 Contractor shall when setting-up of site comply to RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00039 Access Control, RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00040 Traffic Management, RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00017 Fire Prevention & Protection, RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00004 Construction Site Welfare and RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00029 Temporary Electrical Safety Standards.

2.2 Contractor shall ensure that a one-way circuit is planned around the temporary site offices / laydown area to prevent reversing vehicles where reasonably practicable. Consideration must be taken for loading/unloading area for materials and the use of material handling equipment (MHE).

2.3 Once the site office and laydown area has been set-up, a Fire Safety Management Plan for the complex shall be conducted identifying risks and control measures to be implemented. First aid kits and fire extinguisher quantities shall be in accordance to relevant Standards and Codes.

2.4 Within the temporary site offices, a documented office risk assessment shall be conducted by an HSE professional that shall include electrical, lighting, ventilation, noise, temperature, display screen equipment, sanitation and hygiene elements.

2.5 Latest Government requirements to prevent the spread of infectious diseases for office environments shall be strictly implemented.

3. Equipment

3.1 Temporary site offices shall be of substantial construction and catered to the particular conditions on site. Usually of a prefabricated or modular construction they shall be lifted into place in accordance to RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00020 Lifting Operations Standard, and set-up in accordance to Manufacturer's instructions.

3.2 There shall be a minimum safety distance of 5m around all temporary site offices and stores to provide ease of access to emergency services, and prevent fire from transferring to other structures.

3.3 All emergency exits shall be a minimum of 1-hour rated fire exit doors opening in the direction of evacuation and fitted with a self-closing mechanism. Where more than 15 persons occupy an office facility, there shall be a minimum of 2 fire exits. Emergency assembly point must be located a minimum of 15m away from all offices and stores.

3.4 Documented annual electrical testing shall be conducted on fixed electrical installation of the temporary offices and stores. Electrical installation shall comply to BS 7671.

3.5 All office electrical equipment including, but not limited to, printers, photocopiers, electrical extension leads, kettles, percolators, microwaves etc. shall be manufactured to an international recognized standard. Documented combined inspection and testing by the use of a portable appliance tester (PAT) shall be conducted on all portable electrical equipment on an annual basis. Electrical plug sockets shall not be overloaded, not electrical extension leads be placed directly on the floor.

3.6 All toilets whether included as part of the temporary office, or a separate facility block, shall include washing facilities.

3.7 Shelving and filing cabinets shall be fixed to the wall to prevent falling over. All shelving in offices shall be manufactured to an international standard, with sufficient strength to accommodate materials stored. Portable access to high shelving shall be provided.

3.8 Desks and chairs within the office and store environment shall be manufactured to an international standard, and not homemade.

3.9 Storage facilities must be of substantial construction with means of securing to prevent unauthorized access and theft. Where ISO-shipping containers are used, and fitted with electrical services, these must be electrically grounded / earthed.

3.10 All storage facilities containing hazardous materials shall be suitable secured, signed and provided with the correct means of fighting fire. Safety data sheets (SDS) shall be provided and made available where all hazardous materials are stored.

4. Environment

4.1 Safe access and egress to site offices and laydown areas shall be provided by segregation of vehicle and pedestrians, both at separate access and egress points.

4.2 There shall be a “No Smoking” policy enforced within all offices and stores. Designated smoking areas must be provided, a minimum of 15m from all office entrances, and 25m for all stores containing combustible and flammable materials.

4.3 Workplaces are to have suitable and sufficient lighting with an average illuminance within offices of 200 lux.

4.4 Employers must ensure an adequate supply of fresh air within enclosed spaces of the workplace; this can be provided by either natural or mechanical ventilation. Levels of carbon dioxide shall be kept below 1500ppm of CO2 concentration over the occupied period.

4.5 Tripping hazards within the office environment shall be reduced by implementing electrical cable management. Any defects to floors, carpets etc. shall be reported immediately to the office manager and repaired.

4.6 An enhanced cleaning regime shall be implemented for health and hygiene purposes, as well as the prevention of spread of infectious diseases. Records of the daily regime shall be documented and displayed in prominent locations.

4.7 Care shall be taken over the accumulation of waste paper to prevent fire hazard. Recycling areas for paper shall have addition fire-fighting equipment made available, above and beyond the space requirements of national codes.

5. Training

5.1 Every office shall have sufficient amount of first aiders and fire trained personnel in accordance to Kingdom of Saudi Arabia requirements. There shall be a designated Fire Marshall for the offices responsible for conducting and recording of emergency drills.

5.2 All visitors to site offices and laydown areas shall receive a documented visitors orientation briefing.

6. Operations

6.1 Before occupying any office facility, a Covid-19 management Plan shall be developed and communicated to all relevant staff.

6.2 Site offices shall keep a small stock of personal protective equipment available for visitors.

6.3 Dependent on the site location and environment, Contractor may be required to implement a pest control program; this shall include provisions for reduction of dogs, cats and rodents.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00024 - Personal Protective Equipment Standard

1. Definitions

1.1 **Personal Protective Equipment**: equipment required to be worn even after other (e.g. engineering) controls have been applied to protect against residual risk

2. Planning

General

2.1 The minimum requirements for the wearing of Personal Protective Equipment (PPE) on all construction sites by Contractor, including Visitors and Suppliers, shall be:

- Safety Helmet;
- Safety Footwear;
- Eye Protection;
- High Visibility Vest.

2.2 PPE shall be selected and provided by the Contractor, and used to provide protection for all personnel, including visitors against the following hazards:

- General construction safety;
- Mechanical injury;
- Inhalation and respiratory tract;
- Skin contact;
- Chemical, biological & radiation;
- Environmental.

3. Equipment

Clothing

3.1 Every employee shall wear clothing that protects the body and extremities; trousers, and shirts that comply with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00018 General Safe Working Practice standards. The wearing of short trousers is prohibited.

3.2 Loose clothing shall not be worn where it can contact or catch on energized circuits, moving mechanical parts, equipment or other hazards of this type.

3.3 Rings and necklaces should be removed where there is a danger of catching them on moving parts of machinery.

3.4 Specific and adequate body protection must be supplied for all work activities which present certain hazards to personnel, including but not limited to:

- working in extremes of temperature (furnaces, refrigeration etc.);
- handling, mixing of acids and other toxic, corrosive chemicals;
- clearing up of hazardous waste (asbestos, lead, hydrocarbons etc.).

Head Protection

3.5 Safety Helmets, Hard Hats or "bump caps" must be manufactured in accordance with a recognized international standard (i.e. EN 397, ANSI Z89.1 etc.).

3.6 Head protection must be worn at all times whilst on a construction site, with the following exceptions:

- Welders, when cutting or welding in restricted spaces that make the wearing of a safety helmet impracticable;
- Construction plant and vehicle operators whilst operating from a cab that offers fall/rollover protection;
- Office workers;
- Surveyors whilst working with a theodolite;
- During lunch and break periods in a welfare area, provided that no work is in progress in the immediate area.

3.7 Head protection must be worn in accordance with Manufacturer requirements. The practice of wearing the hat backwards (visor to the rear) is prohibited. Head protection must be worn directly on the head to ensure proper function; the wearing of baseball caps or other headgear underneath the head protection shall be prohibited.

3.8 The painting or applying of many stickers to head protection shall be prohibited.

Safety Footwear

3.9 Safety Footwear must be manufactured in accordance with a recognized international standard (i.e. EN 345, ANSI Z41, ASTM F2412-05 etc.).

3.10 Safety Footwear must be worn at all times whilst on a construction site, with the exception of when it has been identified by risk assessment that it is more practicable to wear Wellington boots (i.e. concreting operations, working in water etc.).

3.11 Electricians must be supplied with Safety Footwear specifically for their trade, manufactured to a recognized international standard (i.e. EN 347, ANSI Z41 etc.).

Eye and Face Protection

3.12 Eye Protection must be manufactured in accordance with a recognized international standard:

- Safety glasses or goggles ANSI Z87, EN 166 etc.;
- Full face masks ANSI Z87, EN 166 etc.;
- Sunglasses ANSI Z80.3, EN 1836 etc.;
- Welding goggles ANSI Z87, EN 1542 etc.;
- Welding masks ANSI Z49, EN 175, EN 169 etc.

3.13 Safety glasses are required at all times on construction sites, with the following exceptions:

- When the task requires the use of other eye protection, such as full-face mask, SCBA, goggles or mask
- Office workers
- During lunch and break periods in welfare areas, provided that no work is in progress in the immediate area

3.14 During daylight, safety glasses should be tinted (i.e. safety sunglasses) with clear safety glasses being worn indoors and at nighttime.

3.15 Employees whose vision requires the use of corrective lenses shall wear one of the following:

- Personal eye glasses whose protective lenses provide optical correction and conform to the requirements of safety glasses requirements;
- Safety goggles over their personal eye glasses;
- "Clip-on" safety over-glasses.

3.16 Safety goggles shall be worn for the following work activities:

- Work involving rotating equipment such as grinders, drills, lathes;
- Chipping, chiseling and caulking;
- Using cartridge-operated tools;
- Using, mixing or working with chemicals, acids, disinfectants, pesticides or other toxic and hazardous fluids;
- All other materials where a safety data sheet require the use.

3.17 For all welding operations, whether arc, gas, MIG, TIG or powered otherwise, Welders must use a full welder's mask or welders shield manufactured in accordance with above standard.

3.18 For all cutting, brazing and soldering operations, Welders must use welder's goggles as a minimum, manufactured in accordance with above standards.

3.19 Welder's assistants are to use the same type and standard of PPE as the welder.

3.20 Certain welding operations require special types of protection, including in some cases, double protection. In any such instances, recognized international standards must be rigidly followed for selection of the correct lens shades.

3.21 Full face masks should be worn for all grinding operations, or safety glasses in conjunction with a face shield.

Respiratory Protection

3.22 Respiratory Protective Equipment (RPE) shall be made available to all persons who are exposed to any situation in which there is a possibility of the atmosphere being, or becoming deficient in oxygen, or containing any harmful substance in gaseous, particle, dust, mist or vapor form, including, but not limited to:

- Work in containers or vessels;
- Shafts, sewers, or enclosed septic tanks;
- Refrigeration plants;
- Sand-blasting operations;
- Spray-painting operations;
- Diving operations.

3.23 RPE will be selected on the basis of hazards to which the employee will be exposed. Protection will be selected following a risk assessment of the work to be performed and based on the information provided on the Safety Data Sheet (SDS) associated with the substance to be used. Specific standards for the RPE identified by the SDS are to be met.

3.24 RPE will be used, stored and maintained in accordance with the Manufacturer's instructions.

Hand and Arm Protection

3.25 Adequate hand and/or arm protection must be made available for all manual labor. The type of protection worn shall be selected according to the hazard to be protected against and/or the SDS relevant to the substances to be used. These include, but not limited to:

- Impacts, cuts, abrasions and infections (EN 388);
- Extreme temperatures (EN 407);
- Chemical, toxic, corrosive and other hazardous substances (EN 374);
- Vibration (EN 10819).

Electrical

3.26 If the work involves, the appropriate Work Plans and Safe Method Statements or Safe Sequences of Work have been approved, and Kingdom of Saudi Arabian national electrical company Permits have been issued, Electrical Protection Equipment shall be worn appropriate for the voltage to be encountered when:

- working on lines, unless they have been de-energized and grounded;
- when changing or moving ground wires or neutrals on energized equipment;
- when working within 6 feet (2m) of exposed energized lines or exposed live parts;
- or whenever Employer or its Representative deems necessary.

3.27 Only competent and highly trained persons are to be used for such activities.

3.28 Manufacturer's classification shall be clearly marked on all electrical protection equipment.

3.29 All electrically insulating equipment shall be inspected for damage on each use, and shall be tested on an annual basis.

Water

3.30 Personal flotation device (life jacket/preserver/vest/saver) must be worn by all personnel when working from a boat, raft, partially constructed berths and piers, above, adjacent to, or near open water where there is a hazard of falling in, or in any place where the danger of drowning exists, including, but not limited to cooling tower basins.

3.31 Persons working on barges, pier legs or accesses to berths or piers that have handrails conforming to RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00031 Working Platform Standard, are not required to wear a personal flotation device.

Working at Height

3.32 RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00016 Fall Arrest & Work Restraint System Standard details the requirements of harnesses and associated equipment.

4. Environment

Hearing Protection

4.1 Suitable hearing protection must be made available to all persons exposed to noise levels of 85 dB (A) or above. As a general guide, 85 dB(A) is when you have to raise your voice standing 1m away from another person to be heard.

4.2 When areas have been identified that meet the above criteria, Contractor must conduct a noise level survey and risk assessment for that area using a calibrated noise/sound level meter; records to be kept and made available to Employer or its Representative on request.

4.3 The wearing of hearing protection is mandatory where the noise level meets or exceeds the following established limits:

Time spent in Area (hours/day	Noise level (dB[A])
12	87
10	88
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4	115

4.4 Areas of 85 dB (A) or higher must have adequate hazard warning signage indicating the hearing protection requirements.

4.5 Hearing protection worn frequently by an individual shall be issued on a personal basis and shall be of the "muff / defender" type conforming to EN-352 standards. It is the Contractor's responsibility to ensure the hearing protection issued is of the correct type giving the sufficient amount of protection.

4.6 Suitable disposable hearing protection must be supplied by the entrance to all high-noise level areas of 85 dB (A) and above for visitors etc.

5. Training

5.1 Contractor shall be held responsible for ensuring that all employees are trained in the use of, are provided with, and are wearing PPE required for the work activity.

6. Operations

6.1 All Contractors shall comply to Employer color code requirements of PPE.

6.2 All employees shall be provided with the necessary PPE as identified in the risk assessment for the particular work activity. Contractor is to ensure compatibility between different types of PPE when more than one is to be worn at the same time (i.e. eye and hearing protection).

6.3 Contractor shall provide the required PPE and the necessary information and instruction relating to the effective use of the equipment.

6.4 All employees shall be held responsible for the proper care and use of any PPE supplied to them.

6.5 Contractor shall replace free of charge to the employee, any PPE that becomes defective.

6.6 Employees not wearing, or refusing to wear PPE issued to them shall not be allowed to work, and Contractor shall apply disciplinary action against the individual.

6.7 Contractor shall provide adequate and sufficient facilities for the storage of all PPE by employees when not in use.

6.8 All PPE shall be inspected by the User prior to each use, and Respiratory Protective Equipment (RPE) formally by the Contractor on a weekly basis; records to be kept and made available to Employer or its Representative on request.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00025 - Roofing & Fragile Surfaces & Openings Standard

1. Definitions

1.1 **Roofing**: replacing, repairing or installation of the roof of a building

2. Planning

2.1 On new builds, Contractor shall follow all design drawing instructions relating to supplied edge protection during roof work, and use all facilities provided. If the designer has omitted provisions, the following requirements within this Standard of temporary protection must be met by the Contractor.

2.2 Before any refurbishment works commences, Contractor shall acquire from the building owner information and details on the integrity of the roof structure, capability for support, and maximum weight allowable during work, including structural calculations.

2.3 Contractor shall conduct a Risk Assessment and Safe Sequence of Work for all roof work, which is to be included in the Construction Phase OH&S Plan.

The following typical hazards should be considered if applicable:

- The capability of the roof to support intended loads;
- Overhead power lines;
- Fragile material;
- Roof lights made of glass or translucent material;
- HVAC or exhaust outlets that may be emitting noxious gases or smoke;
- Antennas / communications equipment.

2.4 The Risk Assessment and Safe Sequence of Work must include all measures to be used to provide fall prevention, fall protection of people and materials, and the protection of workers on lower floor levels, and any others at ground level that may be in the vicinity.

2.5 All fragile surfaces, roof lights and other openings (such as service ducts, risers etc.) must be provided with a physical barrier (i.e. guardrail, mid-rail & toe-boards), or securely covered. Physical Barriers must be provided; tape, rope or string is not sufficient.

2.6 All new roof work will conform to working at height and all other associated Standards, or RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00020 Lifting Operations Standard depending on the method of construction.

2.7 Structural Engineer must have considered during the design of scaffold and calculations any storage requirements of roofing material that may be required to be stored on the working platform.

2.8 Structural Engineer must consult with the Supplier concerning the design of pre-cast or in-situ concrete roofing elements and up-stands for the feasibility of whether these items could accommodate the installation of temporary edge protection requirements during construction, or have built-in anchor points for lifelines and/or harnesses.

2.9 Where structural steel roof elements are used the Contractor must consider the attachment of edge protection and working platform to the roof elements before the roof elements are lifted into position.

2.10 Where covers are provided, they must be clearly marked "Caution – Hole Below – Do Not Move" or "Caution – Fragile Roof Below – Do Not Move" (whichever applicable), in both English and the language of the workforce. Ensure all of these areas are highlighted in the pre-task briefing.

3. Equipment

3.1 For existing roofs, a guardrail system with top handrail, intermediate guardrail & toe-boards (conforming to RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00031 Working Platform Standard) must be installed and maintained at the perimeter of all open sides that present a fall of more than 6 feet (1.8m).

3.2 During the erection of all guardrail systems employees must be protected by a personal fall arrest system as per RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00016 Fall Arrest & Work Restraint System Standard.

3.3 Where it is not reasonably practicable to install full edge protection, mobile anchor points and inertia reels may be used. Installation must be conducted under the supervision of a structural engineer, with consideration given to the load bearing characteristics of the roof and a safe method of installation.

3.4 Guardrail systems must be capable of withstanding a 200-pound (90.7kg) force from any direction without displacement or failure.

3.5 All access and work on fragile roofs must be performed from duckboards a minimum of 17 inches (430mm) wide. Fall arrest equipment must be provided and employees

must wear and attach full body harness using either an inertia reel system or lifeline. The practice of "walking the line of the bolts" is strictly prohibited.

3.6 For existing roofs over a 10-degree pitch, correct roof ladders and crawling boards must be installed and secured for access over the roof. Lifelines or inertia reels must be installed and full safety harnesses worn by employees; a guardrail system at the edge is still required.

3.7 All floor openings shall be covered using as minimum 3/4" (1.9cm) exterior grade plywood, extending a minimum of 4" (10.2cm) from the edge of the entire hole being covered. Covers must be secured in place to prevent them from slipping, and hazard warning signage to be displayed.

3.8 Floor opening covers can run continuously (trenches, pipe chases etc.) so long as the width of the hole is not greater than 40" (101.6cm). Wherever greater than 40" (101.6cm), the opening shall be treated as a temporary floor.

3.9 Wall openings, service ducts, elevator shafts, risers etc., must be barricaded with guardrails of metal or wood as per RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00031 Working Platform Standard dimensions. If they are to be temporarily covered, 3/4" (1.9cm) exterior grade plywood must be used, and be substantially braced to withstand a 200-pound (90.7kg) force from any direction.

4. Environment

4.1 Roofing work activities must stop when wind speeds reach 23mph (37 km/h or 10.2 m/sec).

4.2 Only sufficient material for a maximum of 2 days' work shall be stored on roofs. No materials or tools may be stored within 6 feet (1.83m) of a roof edge unless guard rails, mid-rails & toe-boards and secure netting are erected.

4.3 All material must be secured at the end of each shift, considering forecasted weather conditions. Waste and scrap material must be secure and removed at the end of every shift.

4.4 For access to roofs, a tower scaffold may be provided, however consideration must be given to access for tools, equipment and materials.

5. Training

5.1 All personnel must be given a pre-task brief on a daily basis for all roofing works.

5.2 Employees engaged in roof work shall be trained in safety procedures to be followed to prevent a fall. The minimum content of training shall include:

- The function, use and operation of the safety harness and lifeline system to be used;
- The correct procedures for erecting, maintaining, and disassembling the fall arrest safety system to be used;
- The nature and location of fall hazards in the work area, near a roof edge, all openings and fragile surfaces;
- Limitations of use on the systems to be used;
- Correct procedures for material and tool handling;
- Emergency contingency plan;
- Access & egress (i.e. correct use of a ladder).

6. Operations

6.1 Roof access and work shall generally be prohibited at night.

6.2 Tools used at the leading edge of roof work must be placed in a tool bag/pouch and be attached by a lanyard to the employee to prevent tools from falling.

6.3 Wherever roof works is to be conducted, a safe area shall be cordoned off at ground level to prevent persons being struck by falling objects from height.

6.4 It is not acceptable for open steelwork, plywood sheets, insulation or cladding to be used as a working platform.

6.5 Where work is to be performed at a distance from the roof edge, then barriers erected around the immediate work area will serve as the fall protection.

6.6 Work shall not be carried out on chimneys by resting ladders against them.

6.7 No working platforms or material shall be stored over any floor openings or covers.

6.8 Employees creating an opening in a wall or floor must have authorization from their Supervisor. The Contractor is to arrange for the opening to be covered in accordance with the above requirements

6.9 If a floor opening cover or wall opening cover needs to be removed for a short period of time, an employee must be assigned to guard the area to warn people of the hazard. Covers are to be replaced immediately works have been completed.

6.10 If a floor opening cover has to be removed for an extended period of time, a substantial guardrail must be erected around the opening. Anyone working inside of a barricaded area around an opening must wear and use a safety harness and lifeline system.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00026 – Scaffolding Standard

1. Definitions

1.1 **Scaffolding:** a temporary structure used to support a work crew and materials to aid in the construction, maintenance, and repair of structures

2. Planning

2.1 For all external working at height where the risk assessment shows that scaffolding is to be constructed; only "Open Tube & Clamp" or "System" Scaffold is acceptable.

2.2 Mixing of different systems or types of scaffolding shall not be employed on site.

2.3 For all external working at height where it is calculated that there will be more than 1 Lift Height, only "Open Tube & Clamp" or "System" Scaffold is acceptable.

2.4 For Contractors, all planning for scaffolding shall include risk assessments and safe sequence of work which are to be included in the Construction Phase OH&S Plan.

2.5 All scaffolds over 10m long, over 8m in height, hung, cantilever or suspended scaffolds must be designed by a qualified, professional structural engineer. All calculations and the design drawing(s) must be included in an Appendix of the Construction Phase OH&S Plan, that can be extracted and used as a Scaffolding Plan. Once erected, designed scaffolds must be approved and signed off by the structural engineer as being built to the design.

2.6 Protection of persons against falling materials should be provided by the use of nets, brick guards, toe-boards, fans and by the use of barricades at ground level where practicable. All fans must be designed by a qualified, professional structural engineer. All calculations and the design drawing must be included in the Construction Phase OH&S Plan.

2.7 Special attention must be given to loading and unloading of materials and the removal of waste debris from the scaffold. All loading bays intended to be incorporated into large scaffold structures must be designed by a structural engineer, and the design and calculations made available to Employer or its Representative for approval prior to erection. Waste chutes are considered best practice for large waste removal at height.

3. Equipment

General Requirements

3.1 Scaffolding must be constructed of sound strong material. Tubes should not be split, cracked, rusty, bent or distorted, and ends should be cut square and clean. Scaffold boards must be a minimum of 1,500 lb.-f/in2 construction grade lumber, fitted with end hoop irons for protection. Couplers should be free from worn threads or damaged bolts and excess oil which reduces friction grip.

3.2 Each scaffold and scaffold component must support without failure its own weight and at least four times the maximum intended load applied or transmitted to it. Scaffolds and scaffold components must not be loaded in excess of their maximum intended loads or rated capacities, whichever is less. Where it is necessary to load out scaffolds with bricks, cement and other materials, the scaffold should be checked on a daily basis to ensure that the loads are within permissible limits. These checks must be recorded and made available to Employer or its Representative.

Foundations

3.3 Foundations must be of adequate strength to support and disperse the load of the scaffold. On hard surfaces, such as steel and concrete of sufficient strength and thickness, standards may be placed directly onto the surface using base plates. On all other surfaces, the load should be spread by using sole boards (mudsills) and base plates, once the soil or ground has been leveled and properly compacted. Scaffold boards that have been used as sole boards must not be used on the main scaffold as their integrity has been compromised; best practice is to spray paint all sole boards red so they are easily identifiable.

Bay Length

3.4 The distance apart of transoms must not result in a bay length of greater than:

Very light duty (0.75Kn/m2) – inspection, cleaning, painting	2.7m
Light duty (1.5Kn/m2) – plastering, painting, glazing and pointing	2.4m
General purpose scaffold (2.0Kn/m2) – general construction work, rendering, plastering	2.1m
Heavy duty scaffold (2.5Kn/m2) – block work, brickwork, heavy cladding	2.0m

For system scaffolds, bay lengths are normally set at 2.4m.

Working Platform

3.5 All working platforms must comply with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00031 Working Platforms Standard.

A general guide for platforms is as follows:

Very light duty (0.75Kn/m2) – inspection, cleaning, painting	3 boards wide – 600mm
Light duty (1.5Kn/m2) – plastering, painting, glazing and pointing	4 boards wide – 800mm
General purpose scaffold (2.0Kn/m2) – general construction work, rendering, plastering	5 boards wide – 1050mm
Heavy duty scaffold (2.5Kn/m2) – block work, brickwork, heavy cladding	As designed by a structural engineer; usually up to 6 boards wide – 1300mm

All working platforms, gangways and access points are to be kept free from obstructions to allow easy passage and a clean work area.

Ties

3.6 All scaffolds must be prevented from collapsing or tipping by secure attachment to the bearing surface or to another structure by the means of the following methods:

Reveal tie
A tube may be wedged or jacked tight into opposing faces of an opening. The reveal tie should be attached to the reveal tube within 150mm of the end of the opening face.

Through tie
This type of tie relies on a tube, usually placed vertically inside an opening. The tube should preferably rest as close to one edge of the opening as possible.

Box tie
This forms an assembly of tubes and couplers around columns or other parts of a structure. It must be at the level of a scaffold lift and joined to both inside and outside ledgers or uprights.

Lip tie
An alternative form of tie takes the form of an "L" shaped arrangement of tubes and couplers, which hook the scaffold behind elements of the structure.

Cast-in / drilled-in anchorages

3.7 Purpose designed and sold anchorages for setting into concrete during pouring may be used. Manufacturer's instructions must be followed for spacing distances of anchor points.

Rakers

3.8 When no firm part of a structure exists to tie in a scaffold, the scaffold must be stabilized by the use of rakers, a raker being an inclined load-bearing tube. Movement of the lower end of the raker must be prevented by a foot tie to the main part of the scaffold.

3.9 Rakers must be used in addition to ties when scaffolds have a height to base ratio of more than four to one (4:1).

Bracing

3.10 Ledger bracing should be fitted on alternate pairs of standards, except where the width of the bays is 1.5m or less, and then they should be fitted on every third pair. Bracing should be fitted to ledgers or standards using load bearing fittings with a minimum slip resistance of 5Kn. Bracing should be fitted to the full height of the scaffold and start from base plate level.

3.11 Longitudinal (Façade) bracing must be provided for all scaffolds either as a zigzag from top to bottom, between a pair of standards, or as a continuous diagonal sloping tube.

Access

3.12 Ladders must be used for access to all scaffolds conforming to the 1:4 rule; under no circumstances must any attempt be made to climb up the outside of scaffolding as this makes the structure unstable.

3.13 All Ladders must comply with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00021 Lightweight Staging, Trestles, Ladders & Steps Standard.

3.14 Gangways or "runs" must be a minimum of 600mm wide, preferably horizontal, but where this is not possible, they may slope up to a maximum gradient of 25%. Over a gradient of 25% or in slippery conditions, stepping laths must be provided at 300mm separation. Gangways or runs are only permitted to low level working platforms no more than 500mm high.

4. Environment

4.1 "Sheeted Scaffolds" or scaffolds that have nets or tarpaulins attached to them must have specific calculations and design conducted by a structural engineer to address the issue of "wind-sail" on the complete structure.

4.2 In windy conditions, Manufacturer's instructions must be adhered to for all scaffolding types; usually at 17mph all work should cease on mobile scaffold towers. When wind speed reaches 25mph, all mobile towers must be tied to a rigid structure. If it is forecasted that wind speeds will reach 40mph, all mobile towers must be dismantled.

5. Training

5.1 Only a (scaffold) competent person can erect, modify, move, maintain, inspect or dismantle scaffolding, or if being trained, is being supervised by a (scaffold) competent person.

5.2 Contractor shall provide adequate and suitable tools and suitable training for the erection, modification, moving, maintaining, inspection and dismantling of scaffolding. Records of training and qualifications must be kept on site and made available to Employer or its Representative. Contractor must train each employee who works on a scaffold on the hazards and the procedures to control the hazards before they work commences.

5.3 During erection, modification, moving and dismantling of scaffolding only competent persons are allowed access. A (scaffold) competent supervisor shall maintain control of these works. Before each work shift and after any occurrence that could affect the structural integrity, a competent person must inspect the scaffold and scaffold components for visible defects, and sign scaffold structure off as acceptable. Records of all inspections must be kept and made available to Employer or its Representative.

6. Operation

6.1 Guard rails, toe-boards, brick-guards, barriers and other similar means of protection shall be so placed on the scaffold or mobile tower (specifically the working platform, access & egress) so as to prevent the fall of any person, object or materials from any place of work at height.

6.2 All working platforms or decking should be closely boarded to their full width and free from tripping hazards. They must be kept clean and tidy; mud and sand must not be allowed to build-up on access, landings or the working platform.

6.3 All scaffolds, during the erection, operation and dismantling process must have fitted a scaffold inspection tagging system. No scaffold shall be left partly erected or dismantled unless adequate notices are displayed and access is blocked.

6.4 The scaffold should be "locked-off" at any access points (ladders) at the end of each day to prevent unauthorized access.

6.5 All scaffolds, working platforms and mobile towers must be inspected:

- Before being taken into use for the first time;
- After any modification or other alteration;
- After any event likely to have affected its strength or stability;
- At regular intervals not exceeding 7 days.

6.6 All Inspections shall be recorded, with as a minimum, an inspection tag attached to the access point of the scaffold.

6.7 The Contractor shall develop and employ a scaffolding tagging system based on Scaf-tag system or similar. The minimum color code of any system used shall be:

Red scaffold under construction, dismantling or failed an inspection (**NOT SAFE TO USE**).

Green scaffold erected to a complete and safe standard (**SAFE TO USE**).

6.8 Tags shall be placed at every access point to the scaffold.

6.9 In cases where the Contractor has used a scaffolding Sub-Contractor to erect any scaffolding structures, it is recommended that the Contractor require a handover certificate specifying:

- That the scaffold is complete and complies to the Manufacturer's instructions and/or the design of the structural engineer;
- The distributed loads permitted on the working platforms;
- That all bracing and ties are complete;
- The inspection regime required for the scaffolding;
- If sheeting or tarpaulins are allowed on the scaffold;
- If (and what) minor alterations are allowed to be made by the Contractor's own employees.

6.10 All scaffolds are to be dismantled as per Manufacturer's guidelines. Designed scaffolds must be dismantled as per the structural engineer's instructions.

7. Special Requirements

Specific to Mobile Towers

7.1 All mobile towers should be properly constructed as per Manufacturer's instructions by competent persons.

7.2 The mobile tower structure must be of sufficient strength and rigidity for the works. It must be secured in position, castor wheels locked before anyone accesses the tower, and if the working platform is over 3m in height, the tower must have outriggers added.

7.3 Placing steps, ladders or other platforms on the working platform to gain additional height is dangerous and therefore prohibited.

7.4 Under no circumstances must any attempt be made to climb up the outside frames of a mobile tower, and all access must be made by use of a ladder (on the internal of the structure) or purpose-built frame. No ladder of any description must be leaned against the outside of a mobile tower. To do so would cause the tower to become unstable and add to the risk of overturning the tower.

7.5 No attempt should be made to move tall, fully-erected towers. The tower must be reduced to a safe height appropriate to the ground conditions. Normally as guidance, the height should not exceed 2 1/2 times the minimum base dimension. Move the tower manually from the base only; not by vehicle or construction plant. No persons or materials must be on the tower during movement.

"H" Frame Scaffolds

7.6 "H" Frame Scaffolds may only be used indoors up to the maximum height of 2 lifts.

7.7 "H" Frame Scaffolds may be used outdoors up to a maximum height of 1 lift, on the proviso that sole-boards (mudsills) and adjustable feet are also used.

7.8 All "H" Frame Scaffolds must be manufactured to an internationally recognized standard and marked with the maximum permitted distributed loading.

7.9 Where “H” Frame Scaffolds do not conform to RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00031 Working Platform Standard (i.e. guardrails or working platform width), secondary fall protection must be worn by employees.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00027 - Stability of Structures Standard

1. Definitions

1.1 **Falsework:** any temporary structure used to support a permanent structure while it is not self-supporting.

1.2 **Formwork:** an arrangement of wooden boards, bolts, etc. used to shape reinforced concrete while it is setting (sometimes also called shuttering).

2. Planning

2.1 Any formwork, false-work or temporary structure shall be designed by a competent structural engineer to withstand any foreseeable loads which may be imposed on it during erection, installation, maintenance or dismantling. No part of any structure shall be overloaded as to render it unsafe.

3. Equipment

3.1 All formwork and false-work materials (support frames, jacks, "U"-heads, bearers etc.) are to comply with the relevant specifications required, and are used as per Manufacturer's instructions.

3.2 Scaffolding or lightweight staging must not be used for False-work.

3.3 Components of formwork or false-works shall not be mixed (i.e. pins and braces).

4. Environment

4.1 Contractor shall ensure that during any construction activities, specifically erection or dismantling operations of new or existing structures, (or any part of such structures), and excavations adjacent to structures, shall not result in a temporary state of weakness, instability or collapse of the said structure.

5. Training

5.1 Before work commences, a pre-task briefing must be given by either the Site Supervisor or the nominated competent person for formwork & falsework.

6. Operations

Structural Steelwork

6.1 Contractor shall conduct a Risk Assessment for all erection and dismantling of structural steelwork (including temporary structures); Contractors shall include this within the Construction Phase OH&S Plan.

6.2 Contractor shall submit a Safe Sequence of Works (to be included in the Construction Phase OH&S Plan) for all erection or dismantling of structural steelwork.

6.3 The Safe Sequence of Works must address the following, but not limited to:

- Specific logical sequence of erection;
- Method of erection;
- Preparation of bases, shear keys and anchor bolts;
- Shim packs or leveling nuts;
- Pre-assembly and placement of bents, trusses and frames;
- Constructability issues;
- Alignment checks;
- Allowable specified tolerances;
- Bolting-up / welding of connections;
- Torqueing methodology
- Involvement of Supplier representative;
- Lifting & Rigging Plan;
- Equipment to be used for working at height;
- Fall protection;
- Labor, tools & equipment requirements;
- Delivery & unloading methods of steel;
- Storage of materials on site before erection;
- Requirements for temporary braces and guys;
- Worker training;
- Permits;
- Other safety requirements;
- Cladding fixture methodology;
- Column base grouting;
- Final inspection & commissioning.

6.4 No erection or dismantling of structural steelwork is to commence before the Safe Sequence of Works has been approved by Employer or its Representative.

6.5 Structural steel erection cannot commence until the concrete in the footings, piers and walls and the mortar in the masonry piers and walls (whichever applicable) has

either attained 75% of the intended minimum compressive design strength, or sufficient strengths to support the loads imposed during steel erection.

6.6 Construction activities associated with the erection of structural steel must conform to all associated other Standards.

Formwork / False-work

6.7 All Formwork and False-work shall be designed by a structural engineer, and drawings and calculations submitted to Employer or its Representative for prior approval before works commence along with the Safe Sequence of Works; it should also include the sequence for dismantling.

6.8 Contractor is to ensure that the base the formworks or false-works sits upon is adequate to support the weight of the formwork and concrete and any additional live loads (pumps, vibrating pokers, workers, dynamic force of concrete etc.).

6.9 Erection and dismantling of formwork and false-works shall be under the supervision of a competent civil engineer.

6.10 Partially erected or dismantled formwork or false-work (i.e. at the end of a working day) shall be made secure against overturning.

6.11 Once erected, formwork and false-works should be inspected and certified as ready-for-use.

6.12 Props for either false-works or formwork must be secured in place to prevent accidental dislodgement.

6.13 Usually where formwork / false-works have been used in the construction activity, there is a requirement for a working platform. Working platforms may only be incorporated as a part of the formwork / false-work if it has been included in the design and calculations; otherwise it must be a separate entity.

6.14 All working at height must comply with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00030 Working at Height Standard.

6.15 Only the civil engineer in charge of the particular works may give instructions for the striking for each section of formwork, or the dismantling of each section of false-works.

6.16 Drop stripping is strictly prohibited.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00028 - Storage of Materials Standard

1. Definitions

1.1 **Material Handling Equipment** (MHE): mechanical equipment used for the movement, storage, control and protection of materials, goods and products

2. Planning

2.1 Any storage area where there are mobile equipment or vehicles operating need to have a suitable Traffic Management Plan in place to segregate equipment and pedestrians; turning circles of material handling equipment (MHE) shall be considered to enable the provision of a one-way traffic circuit to prevent reversing vehicles where reasonably practicable.

2.2 All internal storage areas (i.e. shipping containers, warehouses etc.) shall be sufficiently lit by either natural or artificial light. Only competent electricians are to install electrical supplies in these structures which must comply with relevant electrical codes, and structures must be sufficiently earthed/grounded.

3. Equipment

3.1 All home-made shelving or racking that will take a gross weight of 250kg or more shall be designed by a structural engineer. All home-made shelving or racking shall be of sound structure and be capable of supporting the designed load.

3.2 All manufactured shelving shall not be overloaded; Manufacturer's safe working load limit is to be adhered to.

4. Environment

4.1 Where materials are being loaded, unloaded from vehicles, or are being removed from an elevated work location, Contractor is to ensure that the immediate area beneath the load is cordoned off, and that barriers are posted around the area with suitable warning notices to prevent persons wandering into the area.

4.2 Applicable hazardous warning signage shall be prominently displayed for all items hazardous to health when stored in shipping containers, cupboards, lockers etc. "No Smoking within 25m" signs are also to be displayed.

4.3 All hazardous stores are to be well ventilated, and if required by the Safety Data Sheet (SDS), air conditioned. Hazardous stores shall be kept separate from non-hazardous stores. The nominated store man shall have SDS for all hazardous stores.

5. Training

5.1 Every store man shall receive formal documented training on the safety data sheets for all hazardous materials kept; records are to be kept and made available to Employer or its Representative upon request.

6. Operations

6.1 Materials shall be stored and stacked neatly to prevent material sliding, falling or collapsing.

6.2 Materials are to be stored in designated areas; no materials shall be stored in doorways, access/egress, emergency exits or fire exit routes.

6.3 Materials shall be stored at a maximum height of 1.5m in all cases where personnel are required to manual handle to retrieve such materials.

6.4 Materials must never be stacked higher than 3 times the minimum base width.

6.5 Materials shall be stored in such a way to minimize the risk of injury when retrieving them; Store man Supervisor must consider that material stacked by machine may have to be removed by hand.

6.6 All materials must be protected from the elements, especially plastics from the sun.

6.7 Store man shall ensure that all wooden pallets are stored on level ground no more than 3m high.

6.8 Roofing and general structural materials shall be laid out on sleepers within a designated area away from key personnel or vehicle routes.

6.9 Sheet materials shall be stacked flat where possible. Sharp edges (corrugated sheets, reinforcing mesh etc.) shall be protected with packing material.

6.10 Large diameter pipes shall be securely chocked at the base and at subsequent cross bearers.

6.11 Bricks, blocks and palletized materials shall be stacked on a firm level base. If banding is damaged, or materials are displaced in the pack, store man is not to stack other material on top. Used banding and packaging are to be immediately placed in the applicable waste container.

6.12 All material packaging shall be kept to a minimum and removed to the designated waste storage area.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00029 - Temporary Electrical Safety Standard

1. Definitions

1.1 **Temporary electrical supply**: electrical installation erected for a particular purpose and dismantled when no longer required for that purpose

2. Planning

The following standards apply to all electrical cord sets and receptacles not part of the permanent electrical wiring system of a building or structure, and all electrical equipment and tools used in connection with construction activities.

All such equipment must comply with either an Assured Equipment Grounding Program, or the GFCI requirements as specified.

Assured Equipment Grounding Program

2.1 An electrical continuity and polarity test for all circuitry shall be performed by a qualified person on all cords, extension cables and receptacles that are used on site **and** a ground conductor continuity test shall be performed on all electrical equipment that are used on site as follows:

- Before first use of the equipment;
- At intervals not to exceed 3 months;
- Before repaired equipment is returned to service;
- Before equipment is used after any incident that may have caused damage.

2.2 All electrical equipment that is to be plugged into these cords, extension cables and receptacles must have a grounding line. All extension cords and cables are to be fully extended to ensure there is no risk of overheating.

2.3 All tests will be made, recorded and retained by the senior electrician on site, which are to be made available to Employer or its Representative on request.

2.4 All equipment that undergo this test will be marked with electrician's tape and will conform to the following color coding following satisfactory completion of inspection:

- Yellow January, May, September;
- Green February, June, October;
- Red March, July, November;
- Blue April, August, December.

2.5 Any equipment not passing the continuity test will be taken out of service, tagged with a defective tool tag, and sent for repair. All repaired equipment must pass the continuity test before returning to service.

Ground Fault Circuit Interrupter (GFCI) and Assured Equipment Grounding Program Requirements

2.6 Where applicable codes and standards are not more stringent, GFCI's will be provided for all 120V and 110V, single phase, 15-, 20- & 30-Amp receptacle outlets. Receptacles rated other than 120V/110V 15, 20 & 30 Amps that are not part of the permanent wiring of a building or structure, shall have either GFCI protection or the Assured Equipment Grounding Program implemented.

2.7 Where reasonable, GFCI's must be located as near as possible to the equipment being used, with short cords to the tools to reduce unsafe clutter. The use of specialized, construction site grade, temporary power distribution units with integral GFCI receptacles are encouraged.

2.8 GFCI's are to be inspected on a quarterly basis and color coded as per paragraph above. All tests will be made, recorded and retained by the senior electrician on site, which are to be made available to Employer or its Representative on request. Functional check of the GFCI by pressing the trip button shall be made by the craftsman prior to powering equipment from a GFCI receptacle.

3. Equipment

Generators

3.1 All generators and transformers will be maintained in a good condition and all rotating components guarded.

3.2 The area around generators shall be maintained free of fuel and oil spills. Where applicable, external fuel tanks will be located in areas with containment provisions rated to **110%** of the total tank contents as per RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00036 Protection of Soil & Groundwater Standard on Pollution Control.

3.3 All generators (including lighting towers, welding sets etc.) shall be grounded and outlets will be in good condition with no exposed conductors.

3.4 Generator locations are to be shaded and protected from the elements and supplied with relevant fire extinguisher and hearing protection. Adequate hazard warning signage is to be displayed (no smoking within **25m**, hearing protection required etc.)

Distribution (temporary)

3.5 All distribution panels shall carry an international "Electrical Hazard" warning sign consisting of a yellow triangle with a black lightning bolt.

3.6 All distribution panels shall be kept locked and the keys held by the senior electrician.

3.7 Distribution boards shall have a GFCI fitted on the mains breaker, and be weather-proofed and grounded.

3.8 Terminal points will be in an enclosure with feed and outlet cables channeled through the enclosure via rubber/plastic grommets.

3.9 Cables to and from distribution boards shall be clearly identified and labeled the point at which the distribution board may be de-energized shall be clearly noted.

3.10 Temporary electrical power shall not be "tapped" off from any part of a permanent electrical wiring system of a building or structure.

3.11 Cables shall be of a size and rating suitable for purpose. Splicing of cables is not permitted; cables will be extended or repaired using the correct fittings.

3.12 Domestic standard cables and fittings shall not be allowed on site.

3.13 Particular attention shall be given to cable management to ensure that cables are routed in such a manner as to prevent an obstruction, cable damage (from vehicular traffic) or a trip hazard. The method of such routing shall be in a manner that does not damage or affect the integrity of the cable.

Electrical Hand Tools

3.14 Electrical hand tools shall be of 120 or 110V on all construction sites where reasonably practicable.

3.15 In circumstances where 240V tools are used, then only 240V tools that are double insulated may be used.

3.16 Equipment casings will be intact with no loose fittings or exposed cables.

3.17 Plug fittings shall be of an approved industrial type.

3.18 Tools shall be subjective to preventative maintenance schedules as per Manufacturer's recommendations.

3.19 Any electrical tool showing evidence of damage, overheating, worn or poorly repaired power cords, missing grounds or other abnormal condition shall be immediately removed from use, tagged and sent for repair.

3.20 No electrical tools must be used without a plug, and no extension cables may be used with damaged outlets or missing covers. All extension cables are to be fit-for-purpose and have insulating covering.

3.21 Contractor must conduct scheduled inspections of all electrical hand tools, by a qualified electrician, using the color-coded system as within this Standard, to identify electrical tools as having been inspected and fit-for-use.

4. Environment

Overhead Transmission / Power Lines

4.1 Where overhead power transmission lines exist on, or adjacent to, construction sites or access roads to the site, the Contractor shall identify in the Construction Phase OH&S Plan the methods to be used to prevent contact with the overhead lines by the following (applicable to the Works) activities:

- Lifting Operations (including HIAB's);
- Tipper Trucks;
- Construction Plant (including concrete pumps);
- Man-Lifts (MEWPS);
- Scaffolding;
- Ladders.

4.2 As a general rule, a Kingdom of Saudi Arabia electrical company Encroachment Permit must be obtained where works requires construction plant, vehicles or equipment to be closer than:

- Overhead lines suspended from steel towers in any direction 20m;
- Overhead lines supported on wooden poles in any direction 12m.

however, the host nation electrical company will specify clearances required for given voltages specific to the site when Encroachment Permit is initially sought.

4.3 All work to be carried out within the above limits shall be controlled by a Permit to Work System.

4.4 All workers, including delivery drivers, Sub-Contractors etc. must receive specific toolbox talks detailing the hazards and control measures for working under, or adjacent to, live overhead power lines.

4.5 Risk assessments must be conducted by the Contractor to identify control measures to be used, such as goal posts or exclusion zones.

5. Training

5.1 Only qualified electricians may set-up, modify, inspect and repair electrical circuits. All electricians must keep a copy of their qualification on their person.

5.2 All electricians are to be trained in the permit to work and Lock-out/Tag-out procedures applicable to the site.

5.3 Unqualified, unauthorized persons shall not open any electrical enclosure or apparatus, nor shall they energize circuits without authority to do so.

6. Operations

6.1 A Lock-Out/Tag-Out **and** Permit-to-Work system must be in place when changes are being made to electrical circuits and electrical wiring is not terminated (this includes the permanent electrical wiring system of an existing building). The Permit and Lock-Out/Tag-Out system shall ensure that no circuit being worked upon can be accidentally or intentionally energized.

6.2 Lock-Out/Tag-Out will be issued, controlled and closed by the senior electrician on site and a copy of the Permit to Work is to be prominently displayed at the electrical panel being worked upon.

6.3 Permits-to-Work must be kept for the entire length of the Project (or works) or revised when any event occurs that changes the conditions stated in the Permit-to-Work.

6.4 All electrical panels must be physically 'locked-out'. The issuance keys to 'locked-out' electrical panels must be controlled to minimize the risk of an accidental electrocution.

6.5 Employees will visually inspect receptacles (sockets), extension cables, cords and equipment connected by cord and plug before each day’s use in order to determine if there are external defects. Where there is evidence of damage, the damaged item is to be taken out of service immediately, tagged with a defective tool tag and sent for repair.

6.6 Once the building or structure is energized, no exposed wires are permitted on 'live' circuits. All electrical wire circuit ends must have their 'end use' fitting applied (i.e. wall socket cover, light switches) and be screwed securely in place.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00030 - Working at Height

1. Definitions

1.1 **Working at Height**: work in any place where a person could fall a distance liable to cause injury

2. Planning

2.1 Contractor shall ensure that all work at height is:

- Properly planned;
- Appropriately supervised;
- And carried out in a manner which is safe,

and that its planning includes the selection of work equipment in accordance with the following paragraphs.

2.2 All planning shall include risk assessments and safe sequence of works, proving the selection of equipment has followed the hierarchy of control measures for working at height. For Contractors, all documentation, including any work at height (and equipment) procedures shall be included in the Construction Phase OH&S Plan.

3. Equipment

3.1 In selection of work equipment for use in work at height, "collective" protection measures shall be supplied in the first instance over "personal" protection measures (hierarchy of control). The Contractor is to consider the working conditions, access and egress to the works to be conducted at height, the distance and consequences of a fall, the duration of the works, and the work activity.

3.2 Every person shall use work equipment and safety devices provided to him for work at height by the Contractor in accordance with Manufacturer's instructions and training given.

4. Environment

4.1 Every Contractor shall ensure that all work at height is carried out only when the weather conditions do not jeopardize the health or safety of persons involved in the work. Standard Industry practice recognizes working at height should not be conducted when wind speed is over 35 km/hr. (20mph).

5. Training

5.1 Every Contractor shall ensure that no person engages in any activity, including design, in relation to working at height, or erecting and dismantling work at height equipment, unless he is competent to do so, or if being trained, is being supervised by a competent person.

5.2 Contractor shall keep records of qualifications and training for working at height which must be made available to Employer or its Representative upon request.

6. Operations

6.1 Every Contractor shall ensure that work is not carried out at height where it is practicable to carry out the work safely at ground level.

6.2 Where work is carried out at height, the Contractor shall take suitable and sufficient steps to prevent the fall of any person, equipment or materials, and prevent any person being struck by falling material or objects which would be liable to cause personal injury. Every area below where work at height is being undertaken shall be barricaded to prevent unauthorized persons from entering, and that it is suitably signed and maintained.

6.3 Every Contractor shall ensure that no material or object is thrown or tipped from height where it is liable to cause personal injury or damage to property.

6.4 Every person on or visiting site shall report any activity or equipment defect relating to work at height which is likely to endanger the safety of themselves or others.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00031 - Working Platforms

1. Definitions

1.1 Working Platform: any surface from which work can be carried out such as:

- A roof;
- A floor;
- A platform on a scaffold;
- A platform of a man-lift.

2. Planning

2.1 Any surface upon which any supporting structure rests shall be stable, and of sufficient composition to safely support the supporting structure, the working platform, and any load (people, materials or work equipment) intended to be placed on the working platform.

2.2 Any supporting structure shall be of sufficient strength and rigidity for the purpose it is being used, where possible securely attached to another structure, or adequately prevented from collapsing or tipping by other means.

2.3 The space between a working platform and the structure being worked upon must be no more than 300mm.

2.4 All working platforms must be provided with guard rails (hand-rail & mid-rail), toe-boards and other similar barriers to prevent any person from falling where they are liable to cause injury.

3. Equipment

3.1 In the case of scaffolding, the working platform surface must be of scaffold grade timber, free from splits, cuts, excess knots, paint, oil and concrete. The boards must not be painted, and must be either banded or nail-plated at both ends, and compatible with the type of proposed scaffold system. Over-lapping of boards should be kept to a minimum.

3.2 All working platforms that use scaffold as the supporting structure must comply with the requirements of RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00026 Scaffolding Standard.

3.3 The working platform should be of an adequate width to suit the work being carried out, but must be a minimum of 600mm wide.

3.4 No working platform should have a gap of more than 20mm between boards. In the case of cradles and man-lifts (MEWPS), where these have meshed floors, the mesh should be fine enough to prevent all materials from slipping through.

3.5 Where scaffold boards overhang transoms the minimum overhang must be 50mm, but no more than 4 times the thickness of the board. All working platform boards should be securely fixed and present no hazard of causing injury to people.

3.6 Guard rails must be provided at a height between 900 – 1200mm above the level of the platform, and at a height approximately half way between the top edge of the toe-board and the guardrail so that there is no gap larger than 470mm.

3.7 Toe-boards must be provided to accompany all guard rails. They must be a minimum of 150mm high, and fixed in place.

3.8 All ladder access to working platforms must comply with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00021 Lightweight Staging, Trestles, Ladders & Steps Standard. All ladder access to working platforms must be extended to a height of 1m (5 rungs) above the working platform, unless there is another adequate hand hold.

4. Environment

4.1 Every Contractor shall ensure that all work at height is carried out only when the weather conditions do not jeopardize the health or safety of persons involved in the work.

5. Training

5.1 Working platforms must be erected by competent persons, and where identified by the risk assessment, designed by a structural engineer.

6. Operation

6.1 All working platforms or decking should be closely boarded to their full width and free from tripping hazards. They must be kept clean and tidy; mud and sand must not be allowed to build-up on access, landings or the working platform.

6.2 When material is deposited on a working platform, a clear passage must be maintained. A working platform and any supporting structure shall not be loaded to give rise to a collapse or deformation which could affect its safe use.

6.3 If a guard rail is removed for access of materials, fall protection is required, and the handrail must be replaced as soon as practicable.

6.4 All landing areas must be fitted with guard rails and toe-boards, and there should be no storage of materials at these points.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00032 - Air Quality Standard

1. Definitions

1.1 **Air Quality**: the degree to which the air in a particular place is pollution-free

2. Planning

2.1 The following areas and tasks have been identified as potential sources of fugitive dust emissions. At a minimum, dust control techniques shall be employed in:

- Areas of heavy equipment and vehicular traffic;
- Keeping roads clean of tracked soils or excavated fill materials;
- Soil and fill excavation activities;
- Exposed excavation faces or disturbed ground surfaces;
- Soil and fill stockpiles;
- Soil and fill loading and unloading operations; and
- Soil backfill placement, grading, and compacting

2.2 Contractors shall not cause dust levels generated by the works to exceed the Kingdom of Saudi Arabia Air Quality Compliance Criteria.

2.3 Contractors shall undertake adequate planning to minimize unnecessary operation of construction plant and vehicles, including efficiency of trip times and reduction of double handling through appropriate placement of stockpiles, storage and work areas.

3. Equipment

Exhaust Emissions

3.1 Inspections, servicing and maintenance schedules shall be carried out in accordance with the Manufacturer's recommendations to ensure optimum performance and no excess smoke is emitted. If plant or vehicles have an excessive amount of emissions, they shall be taken out of service until repaired. All servicing and maintenance records shall be made available to Employer or its Representative for inspection upon request.

3.2 Construction plant, vehicles and equipment that are idling or being used on an intermittent basis will be shut-off or throttled down when not in use.

3.3 Contractor shall ensure all equipment are in a state of good order and repair, not leaking petrol or oils; volatile emissions shall also be controlled through minimizing unnecessary leaks, spills and over-filling of engines.

4. Environment

Dust Control

4.1 Dust can be generated from natural sources (wind through a site or over an uncovered stockpile) and also through anthropogenic sources (vehicle movements over unconsolidated ground). Contractors are therefore to instigate the following mitigation measures to reduce air quality impacts:

- Paved areas and roads used for, and adjacent to, construction traffic will be maintained free of tracked soil or fill materials. At minimum, paved traffic areas, driveways, sidewalks, and roads will be cleaned on a daily basis by wet spraying and/or washing. More frequent spraying will be provided where necessary. Adjacent paved areas and roads will be left clean at the end of each day;
- Stockpiled material shall be placed in sheltered/covered areas;
- Vehicle speeds shall be regulated on all un-surfaced roads to 25kph;
- Vehicles shall be restricted to defined access routes to minimize dust;
- Temporary access and haul roads shall be dampened down with water to minimize dust from construction plant and vehicles on a frequent basis;
- Temporary access and haul roads shall be regularly inspected for integrity and repair;
- Site exits are to incorporate wheel washes to minimize mud & dust being transported onto public roads;
- Haulage trucks transporting bulk materials to, from and within the site shall be covered with a suitable tarpaulin sheet;
- Road sweeping equipment shall be used to clean up public road adjacent to site that has been affected by mud & dust from the works;
- Drop height of excavated materials onto the ground or into vehicles shall be controlled to a minimum limit;
- Temporary cover and daily maintenance will be provided for soil or fill stockpiles and keep active surfaces moist;
- Exposed excavations, disturbed ground surfaces, and unpaved traffic areas will be maintained in a moist condition;
- Land clearing will be kept to a minimum so as to keep vegetation cover that will stabilize the ground.

Odours

4.2 Odors and volatile emissions can cause nuisance and disturbance to onsite workers and to neighboring sites (e.g. residential areas) and therefore Contractors are to plan to minimize impact of odors on adjacent occupied properties by controlling timings of certain construction works activities (spray-painting operations etc.); the same work activities conducted outside shall be stopped during high winds where the odors may be carried further.

4.3 Emptying of septic tanks, and maintenance or repair works on site sewage lines shall be conducted at low-use times. Septic tank lids shall be kept firmly in place at all times, and arrangements made for the septic/effluent tanks to be emptied on a regular basis.

4.4 Wastewater pipe networks and similar shall be monitored for any leaks that could cause foul odor water to escape, or the build-up of a stagnant water pond.

4.5 Smoke generated by bonfires (often when burning waste) is strictly prohibited on construction sites.

4.6 Food waste receptacles shall have close-fitting lids to prevent rodent and insect infestation, with all food waste being taken off site on a daily basis. Food waste receptacles shall be regularly cleaned and disinfected.

4.7 Long-term storage of wastes will not be permitted on site. In addition, for short-term storage, no wastes are to be stored outside designated areas.

4.8 Contractor shall ensure proper storage of volatile fuels and chemicals in appropriately sealed containers, in cool, covered areas with adequate venting; all containers shall be kept closed when not in use.

5. Training

5.1 Supervisors shall ensure proper and efficient use and operation of construction plant and vehicles by qualified and skilled personnel as per Manufacturer's instructions, and regular refresher training and quarterly toolbox talks on best driving techniques.

6. Operations

6.1 Contractors shall maintain a positive dialogue with all members of the local community to avoid any adverse impacts and/or misunderstandings arising from its activities. Whilst all endeavors will be made by Employer and its Representative to avoid adverse impacts on the local environment and to local residents, it is acknowledged that from time to time such impacts may occur.

6.2 To provide an appropriate and consistent level of reporting, response and follow-up to any protests, a complaints Register shall be maintained. The Register will include the details of the complainant, type of complaint (e.g. excessive dust generation), and the date and time received. The Contractor Project Director will be responsible for addressing the complaint as well as the necessary measures required to address the complaint. A copy of the Complaints Register will be kept by and made available to Employer or its Representative.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00033 – Conservation Standard

1. Definitions

1.1 **Conservation:** planned management of a natural resource to prevent exploitation, destruction or neglect

2. Planning

2.1 The following potential impacts may occur during construction:

- Disturbance of wildlife as a result of construction personnel and lighting;
- Disturbance of wildlife as a result of construction noise and vibration;
- Excavation and earthworks;
- Disturbance or loss of habitat; and
- Movement of construction vehicle and machinery.

2.2 Contractor's Construction Environmental Management Plan (CEMP) shall identify within the site boundary:

- indigenous species and their habitats and ecosystems;
- recreational freshwater fisheries and freshwater fish habitats; and
- threats posed by pests to indigenous species, habitats and ecosystems.

2.3 The CEMP shall cover the ecological controls to be implemented for the duration of construction of the project, which should make provision for fire management, covering fire risk, fire protection, fire control, and fire regimes.

2.4 CEMP should identify activities which reduce the intrinsic values of landscapes, landforms, and geological features and managed so that their adverse effects are avoided or otherwise minimised.

3. Equipment

3.1 Pesticides and/or Herbicides shall not be used without prior written approval from Municipality Authority and Ministry of Environment, Water & Agriculture.

4. Environment

Fauna

4.1 Contractor shall refer to any Environmental Impact Assessment available for the specific project site for identification of any endangered terrestrial animal species

within the boundary. It should be noted that even in the absence of such, there will still occasionally be animals, lizards or birds etc. within the area.

4.2 Contractor is therefore to ensure that employees are instructed not to approach any wild animals, swim or partake in fishing in any bodies of water, nor disturb nests of breeding birds and dens of animals. Hunting and snaring of animals is to be strictly prohibited.

4.3 Lighting at night shall be angled so as not to impact nocturnal animals and birds where reasonably practicable, and noise levels shall be kept to a minimum.

4.4 Contractor shall provide receptacles around site to prevent propagation of unwanted fauna attracted to food waste.

Terrestrial Flora

4.5 Contractor shall refer to any Environmental Impact Assessment available for the specific project site for identification of any rare or endangered terrestrial trees and vegetation within the boundary.

4.6 Contractor to ensure employees do not do any damage to flora within the site, and vegetation clearance will be kept to a minimum and not be undertaken during the bird breeding season. Existing trees and vegetation will be maintained and protected on site wherever possible, and where required, all native trees found within the construction Site are to be tagged, removed and translocated to an alternative location.

4.7 Contractor shall not discharge water near native vegetation on a permanent basis, and shall aim to use indigenous or adaptive plant species in landscaped areas.

5. Training

5.1 Contractor is to brief employees working in protected areas on the importance of the area and provided with working practices to be implemented to prevent damage to fauna and flora.

6. Operations

6.1 Contractors are prohibited, to hunt, kill or capture birds, wild and marine animals. This is to be undertaken through the preparation of ecological controls for the works, which drive compliance with international and local standards and policies. In order to confirm that ecology is not being adversely affected by construction activities, environmental audits, inspections and monitoring shall be undertaken. If sensitive,

protected or endangered species are identified on site, the relevant part of the work will be suspended and Employer or its Representative shall be informed.

6.2 Contractor shall be responsible for rodent, mosquito and pest control on their site, which shall include feral dogs, cats, pigeons and rodents. Contractor shall not attempt to conduct removal of feral dogs and cats themselves and must use services of a government authority.

6.3 Contractor shall comply to RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00037 Waste Management Standard to reduce the attraction of rodents, pests and flies.

6.4 Contractor shall all facilities are well maintained with a regular cleaning regime.

6.5 Ecological Monitoring will be undertaken in accordance with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00034 Environmental Monitoring Standard. Records shall be maintained on site.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00034 - Environmental Monitoring Standard

1. Definitions

1.1 **Environmental Monitoring**: collection of environmental media (air, water, soil) for analysis of the quality of the environment, or may include real-time monitoring using devices that detect exposures to hazardous agents

2. Planning

2.1 Environmental monitoring shall be undertaken by the Contractor to evaluate the effectiveness of controls identified within Contractor's Construction Environmental Management Plan (CEMP), project environmental impact assessment requirement, project environmental permit requirement, or there are known nearby sensitive receptors that may be impacted by the work activities.

2.2 Environmental monitoring shall also be undertaken when formal significant concerns are raised by any parties about the impacts on the environment from the construction activities taking place on project site.

3. Equipment

3.1 Contractor shall decide the methods for monitoring, measurement, analysis and performance evaluation, as applicable, to ensure valid results.

3.2 Contractor is to ensure calibration of the measuring and monitoring equipment and is used and maintained as appropriate; records shall be kept and made available to Employer or its Representative upon request.

3.3 All results from monitoring and measurement shall be analyzed, evaluated and communicated. All monitoring records shall be made available to Employer or its Representative for inspection upon request.

4. Environment

Air Quality Monitoring

4.1 Contractor shall provide equipment for monitoring air quality to ensure compliance to Kingdom of Saudi Arabia legislation, city ordinances and the project environmental permit.

4.2 Where a requirement is identified for air quality monitoring, a permanent automatic monitoring station sampling the contaminants shall be installed. Regular samples shall be taken with a minimum of 14%-time coverage during the entire construction period.

For sites covering an extensive area or located in a particularly environmentally sensitive area, more than one device may be required. In such sites the monitoring stations should be located at the extents of the site and should record simultaneously in both samplers.

Noise Monitoring

4.3 Contractor shall provide equipment for monitoring noise to ensure compliance to Kingdom of Saudi Arabia legislation, city ordinances and the project environmental permit.

Water Quality Monitoring

4.4 Water quality monitoring for pollutants and suspended solids shall be undertaken for those working in, on, or near surface water to ensure compliance to Kingdom of Saudi Arabia legislation, city ordinances and the project environmental permit. Water sampling shall be carried out daily at each discharge point.

4.5 The Contractor shall take immediate remedial action if the threshold levels as given in Kingdom of Saudi Arabia environmental legislation, codes and standards are exceeded. All such incidents and the remedial action taken shall be documented.

5. Training

5.1 Contractor is to ensure training is provided to all operators of monitoring and measuring equipment to ensure accuracy of results. Documented training records are to be kept and made available to Employer or its Representative upon request.

6. Operations

Additional Environmental Monitoring

6.1 Additional monitoring that may be required includes, but is not limited to:

- Light Pollution (such as for night-time work in residential areas);
- Ecology (major earthworks)

6.2 It is Contractor's responsibility to investigate all environmental monitoring requirements for the construction project, and implement an effective program to ensure compliance to Kingdom of Saudi Arabia legislation, city ordinances, project environmental impact assessment, and the project environmental permit.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00035 - Noise & Vibration Protection Standard

1. Definitions

1.1 **Noise:** includes vibration of any frequency, whether transmitted through air or any other physical medium

1.2 **Environmental noise**: unwanted or harmful outdoor sound created by human activities, including noise from transport, machinery and sites of industrial activity

2. Planning

2.1 Construction, building and demolition related noise can impact the health and wellbeing of people and animals (considered to be sensitive receivers) when not managed appropriately. Vibration may also interfere with scientific equipment or damage buildings and underground services. Both noise and vibration are considered as a nuisance by general public and protests about noise and vibration are some of the most common complaints that environmental protection agencies and municipalities receive. Environmental noise and vibration are now recognized as a public health issue with possible serious or long-term health impacts.

2.2 Contractor can identify and adopt actions to minimize noise and vibration risks through:

- Planning;
- Site layout;
- Management, selection and maintenance of equipment;
- Noise reduction;
- Conduct of workers onsite.

2.3 Contractor shall conduct a noise and vibration impact assessment to predict the characteristics of noise and vibration generated by the planned works which should identify people and sensitive environments that could be affected by the Works.

2.4 The results of the impact assessment should be used by the Contractor to:

- Avoid the generation of noise and vibration;
- Assist in choosing alternative equipment or methods that generate less noise or vibration;
- Reduce noise and vibration by using the most appropriate equipment and work practices for the activities;
- Attenuate noise by obstructing the path between noise source and receiver;
- Maintain equipment and vehicles according to manufacturer's instructions;
- Consider alternatives if noise and vibration cannot be reduced through avoidance, reduction or attenuation;

- Organize deliveries and access, with consideration given to combining loads to reduce noise and congestion in surrounding streets;
- Consulting and informing potentially noise-affected residences regarding designated access routes to Site;
- Facilitate construction during normal working hours, where possible;
- Develop a process for managing complaints from the general public.

2.5 Noise and vibration impact assessments can also be useful when providing information to the community and people who could be affected by noise.

3. Equipment

3.1 Contractor shall select equipment that produces lower noise levels where reasonably practicable, such as hydraulic and pneumatic tools and electrically powered equipment. Contractor shall consider choice of work equipment of appropriate ergonomic design, which taking account of the work to be done, producing the least possible vibration.

3.2 Noisy stationery equipment and construction plant shall be sited as far away from noise sensitive receptors as reasonably practicable; where not practicable, establish temporary barriers to minimize noise impacts. Locate Site vehicle access and waiting areas away from people who could be affected by noise and plan vehicle movements to avoid maneuvers and idling at location nearest to nearby people.

3.3 Contractors shall ensure all vehicles, construction plant and equipment are operated efficiently according to the manufacturer’s specifications, by trained, qualified and competent operators.

3.4 Inspections, servicing and maintenance schedules shall be carried out in accordance with the Manufacturer's recommendations to ensure optimum performance and no excess noise & vibration is generated. Equipment and construction plant shall be adequately silenced in accordance with Manufacturer’s instructions, and the removal of mufflers/silencers prohibited.

3.5 In order to control the noise and vibration whilst driving piles, auguring shall be the preferred piling method to be used by the Contractor, with hammering techniques as a last resort.

3.6 Contractor shall implement substitute methods taking into consideration alternatives to rock-breaking work methods, such as hydraulic splitters for rock and concrete, hydraulic jaw crushers, chemical rock and concrete splitting, and controlled blasting such as penetrating cone fractures. The suitability of alternative methods should be considered on a case by case basis, including what potential risks they involve.

4. Environment

4.1 Contractor shall obstruct the transmission path of sound (e.g. using acoustical walls or barrier, flexible noise barriers such as noise curtain or blankets, acoustic sheds or enclosures. Blocking the path between the noise source and people who could be affected can also reduce the potential noise impact. Plan to have as much distance as possible between plant, equipment or other noisy activities and people who could be affected by noise. Prioritize early construction of boundary fencing, make use of existing structures, temporary buildings and material stockpiles so they can be used as early as possible as noise barriers.

4.2 An effective way of reducing noise is to locate noisy equipment behind purpose-built barriers. The barriers can be constructed on the work site from common construction building material (plywood, block, stacks or spoils) or the barriers can be constructed from commercial panels which are lined with sound absorbing material to achieve the maximum shielding effect possible. To be effective, the length of the barrier should be greater than its height. The noise source should not be visible and barrier should be located as close as possible to either the noise source or the receiver.

4.3 Where appropriate, exclusion zones will be created around locations of excessive noise with suitable hazard warning signage.

4.4 Avoid using reversing alarms by designing site layout to avoid. Plan transport and haulage routes to minimize the number of trucks/vehicles. Where there are large numbers of truck movements, consider truck route and truck waiting protocols (e.g. engines on/off and restart requirements).

5. Training

5.1 Early engagement and consultation with community, from planning and throughout the project's development and construction, is key to minimizing the impacts of noise. Early engagement also gives the community an opportunity to better prepare to cope with or avoid noise from the project activities. The community is more likely to understand and accept noise generated by the activities if information is provided in an open and transparent manner and demonstrate how their views and opinions have been considered.

5.2 Contractor shall deliver appropriate information and training for employees, such that work equipment may be used correctly and safely in order to minimize employee exposure to noise & vibration.

6. Operations

6.1 Access roads to the Site shall be positioned such that vehicular movements cause minimum disturbance to residential areas as far as reasonably practicable, and that the access is designed so that the need for the vehicles to reverse is minimized.

6.2 Contractor shall adequately plan operations of vehicles & construction plant to include efficiency of trip times and reduction of double handling of materials. Vehicle speeds shall be regulated on all un-surfaced roads to 25kph.

6.3 Drop height of excavated materials onto the ground or into vehicles shall be controlled to a minimum limit.

6.4 Noise & vibration generating activities (audible at site boundary) shall be scheduled during designated daytime hours only. Schedule the use of vibration-causing equipment such as jackhammers, demolition, earthmoving and ground-impacting operations at the least sensitive time of day, whilst sequencing operations so that vibration-causing activities do not occur simultaneously. Plant and equipment that are idling or being used on an intermittent basis will be shut-off or throttled down when not in use.

6.5 Nighttime working is prohibited without prior approval granted by Employer or its Representative and/or the local municipality authority (where required).

6.6 Where construction sites are located immediately adjacent to residential areas, and approval has been given as per the preceding paragraph, the residents shall be consulted prior to the start of nighttime construction activities to alert them to the possible noise, and explain the reasoning for the activity to obtain general public understanding, and solicit specific concerns and suggestions for mitigation.

6.7 Site buildings and boundary fencing used as noise barriers shall be retained until last phases of the project.

6.8 Contractor shall ensure a contingency plan is in place to deal with any noise & vibration complaints during construction and operation of the site; all complaints are to be investigated immediately to ensure agreed maximum acceptable levels have not been exceeded.

6.9 Contractors will provide personal protective equipment (PPE) designed to reduce the transmission of vibrations to the employees (e.g. anti-vibration gloves, anti-vibration mats, etc.) where after implementation of engineering and administrative controls the risk still remains.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00036 - Protection of Soil & Groundwater Standard

1. Definitions

1.1 **Groundwater**: a body of water located beneath the ground surface in soil pore spaces and in the fractures of geologic formations.

1.2 **Fresh Surface Water**: all fresh waters on the ground and includes water within rivers, streams, lakes, ponds, wetlands, marshes, wadis and man-made reservoirs.

2. Planning

2.1 Contractor's Construction Environmental Management Plan (CEMP) shall contain effective soil and groundwater control procedures in place for every potentially polluting activity carried out on site. This will facilitate Contractors to reduce the overall soil and water impact of their construction activities.

2.2 Employer operates a strict policy of no discharges of any type without a Permit from the relevant competent authority.

2.3 Prior to commencing dewatering or excavation activities, the contamination of the soil and water will be determined and reported in accordance with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00034 Environmental Monitoring Standard. Checks shall also be made to confirm that there are no underground services in the area of the excavation.

2.4 Plant and vehicle maintenance areas will be located in designated impermeable areas with a fall to a central gully. Water and oil will be collected and separated in an adjacent oil trap. The location of these designated areas and oil traps will be presented in the Site layout drawing.

3. Equipment

Construction Plant

3.1 All stationary construction plant & equipment are to have either a secondary containment system (e.g. bunds around semi-permanent generators), or metal drip trays placed beneath them during operation. The drip trays will be regularly emptied to prevent overflow and the hazardous wastes will be dealt with in accordance with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00037 Waste Management Standard.

3.2 Drip trays are to be of sufficient size to contain any breach of primary containment and large enough to extend beyond the outline of the equipment. When used for storage of

oil drums, the drip tray shall have a capacity of 25% of the drum(s) aggregate total storage capacity.

Servicing & Maintenance

3.3 Mobile equipment and vehicles will be removed from site for major maintenance and servicing which will take place off site. On the construction Site, refuelling, oil changing and light maintenance will be undertaken using drip trays. This will prevent any release of materials from accidental spills into the underlying soil and groundwater.

3.4 Metal impervious drip trays must be used at the time of fuel delivery to catch any oil that could be lost during the coupling and decoupling of delivery hose(s).

3.5 If equipments have extensive dripping, the equipment shall be sent for immediate repair and maintenance.

3.6 All vehicle servicing records and vehicle certificates will be held on site and made available to Employer or its Representative on request.

4. Environment

Storage of hazardous materials, fuels and chemicals

4.1 Quantities of fuel, oil and chemicals that pose environmental hazards shall be minimized, with alternatives that have the least potential to impact the environment being preferred. Fuel, oil & chemical stores shall be separated from other construction materials and stored in a designated area, sited away from busy vehicle routes, and a minimum of 30m away from a water surface, waterway, well, borehole or any drains that may ultimately drain into the sea or other surface water.

4.2 The fuel, oil and chemical stores shall have secondary containment, and be stored on impermeable bases within a bund to contain at least 110 % of the maximum capacity of the storage facility (or 25% of total storage capacity where more than one container is stored), in accordance to Kingdom of Saudi Arabian environmental legislation, codes and standards. Bunds shall be emptied immediately after all rain events. All tank discharge pipes, valves and trigger guns will be contained securely within the bund. The contents of any tank will be clearly marked on the tank, and a notice displayed requiring that the valves and trigger guns be locked when not in use.

4.3 The floor of the bund must be slightly graded to drain to one area of the bund, or contain a collection pit for removal of rainwater for controlled and safe disposal; any penetration of the bund wall (for fill/draw-off pipes etc..) shall be adequately sealed to prevent

leakage of spillages, and any valves installed shall be able to be locked in a closed position. The walls of the bund must be positioned a sufficient distance from the walls of the tank, so that spray/puncture leaks will be contained within the bund.

4.4 In addition to secondary containment, all bulk fuel tanks shall be double-skinned and fitted with a sight gauge/view glass. All fuel ancillary equipment shall be fitted with appropriate flow control devices and contained securely within the bund when not in use. In addition, fuel tanks located near vehicle routes shall be protected against collision by hard barriers.

4.5 Incompatible materials shall be separated (e.g. flammables and oxidizers) and shall be kept in different containment areas. Used and waste fuel, oil and chemicals shall be clearly identified and segregated within the containment area.

4.6 All containers of fuel, oil & chemicals shall be in their original containers, labelled and identified with contents and capacity, and copies of the safety data sheets shall be readily available at the storage location.

4.7 Suitable and sufficient signage will be sited, identifying all hazardous materials and the nature of the hazard.

4.8 Adequate spill response kits, medical and fire fighting equipment shall be situated throughout the area.

4.9 Designated areas will be established for vehicle and wheel washing. The wheel wash facility will have an impermeable surface. Vehicle-washing effluent on the construction sites will be routed to a suitable storage facility such that the effluent can be sent for treatment or evaporation if necessary. Highways and roads around the construction sites will be monitored and roads to be regularly cleared to prevent to build up of excess materials.

4.10 Contractor shall undertake regular inspections of all sewage, wastewater tanks, refueling, vehicle/equipment servicing, engineering workshops and chemical storage areas to ensure that serviceability and containment is adequate.

5. Training

5.1 All staff handling hazardous materials shall be trained in spill response, containment, material handling and storage procedures. Personnel designated for the emergency response team shall be trained in the response procedures in the event of a spill, including the use of the spill clean-up kit, and removal of the hazardous waste.

6. Operations

Concreting Operations

6.1 Plastic sheeting shall be placed beneath mobile and static concrete mixers and concrete pump trucks before start-up and during transfer of concrete to delivery location or other receptacles.

Refueling Operations

6.2 For construction plant, the preferred option for refueling activities shall an approved fuel tanker delivering directly to the construction plant at-point-of-work in-situ. The fuel tanker shall be grounded to both earth and the piece of construction plant through the use of crocodile clips and earthing rod. Existing fuel levels of the receiving tank will be checked to calculate how much fuel is required. Fuel lines will be connected correctly and drip trays placed under connecting valves. The refueling operation shall never be left unattended or the delivery valve jammed open. A suitable spill kit will be available in case of spills and leaks.

6.3 Fuel tanks for static plant such as generators, shall be have secondary containment, and be stored on impermeable bases within a bund to contain at least 110 % of the maximum capacity of the storage facility. A suitable spill kit will be available in case of spills and leaks and suitable and sufficient fire-fighting equipment made available. All hoses and valves will be checked on a weekly basis for wear and tear and securely locked and stowed away when not in use.

Spillage Prevention & Control

6.4 Contractor shall provide and maintain spill clean-up kits, which shall be situated at strategic locations across the site, including refueling locations, engineering workshops, fuel, chemical and oil storage areas and maintenance/repair workshops.

6.5 The spill kit must be suitable for the volume and type of fuels, oils and chemicals being stored.

6.6 Spill kits shall be regularly inspected, and items used must be disposed of correctly and contents replaced. Minimum contents of a spill kit shall include:

- Personal protective equipment (PPE);
- Shovels;
- Heavy duty waste bags & sealing tape;
- Metal drip tray;
- Sand bags or booms;

- Universal absorbents;
- Chemical resistant container with sealable lid (for chemical stores).

Spillage Response

6.7 Contractor shall ensure both Construction Environmental Management Plan and the Emergency Response Plan cover a local procedure for emergency spill response that is compliant to applicable Kingdom of Saudi Arabian legislation, codes and standards.

6.8 Spills and leaks will be managed in accordance with the specific safety data sheet (SDS) and in line with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00001 Accident Notification Reporting & Recording Procedure.

6.9 All spillages and leakages resulting in land contamination shall be considered as an environmental incident and must be cleaned up immediately to prevent it from reaching the environment.

6.10 Major Environmental incidents shall be reported to Roshn or its Representative in accordance with RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00001 Accident Notification Reporting & Recording Procedure. Minor environmental incidents shall be reported within statistics required in the standard end of month Project HSE Performance Reports.

6.11 Copies of the Incident Investigation Reports for Major Environmental incidents shall be retained by Contractor until project handover and acceptance, and then handed over as part of HSE File for retention purposes.

6.12 All empty containers, waste and contaminated material (spills) will be collected and treated as hazardous waste, and disposed of in accordance to Kingsom of Saudi Arabian environmental legislation.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00037 - Waste Management Standard

1. Definitions

1.1 **Waste:** material, substance or by-product eliminated or discarded as no longer useful or required after the completion of a process

2. Planning

2.1 Contractors shall introduce practices that minimize waste generation at source, by reducing waste and introducing segregation of waste following the principles of waste management hierarchy:

- Reduce;
- Reuse;
- Recycle;
- Recover;
- Treatment;
- Disposal.

2.2 Contractor shall set aside an area within the site boundary for storage of the following reusable and recyclable material:

- Concrete;
- Blocks, bricks and rubble;
- Timber;
- Metal;
- Green waste (vegetation).

2.3 Contractor should be encouraged to re-use as much material on site as practicable, as bricks and concrete can be crushed by an onsite crusher and the resulting material can then be used as granular fill or aggregate within the project site; green waste and rubble can be used as subsoil for landscaping. rubble can be processed and used for a number of purposes including aggregate for roads; leftover masonry material can be crushed on site and reused in driveways; consider whether existing products (such as wooden pallets) can be reused instead of purchasing new products; clean timber boards and formwork to facilitate reuse; metals can be sent to recycling facilities.

2.4 During the Works, Contractor is to segregate waste into the following categories:

- Municipal Waste;
- Hazardous Waste;

- Medical Waste;
- Electrical and Electronic E-Waste.

2.5 Contractor shall identify in the Construction Environmental Management Plan (CEMP) all activities during the Works that are likely to produce any hazardous waste.

3. Equipment

3.1 Waste generated will be sorted and segregated at source to avoid mixing of incompatible waste materials. All waste on the project must be collected and stored in an appropriate metal skip /containers and where reasonably practicable, separate skips / containers should be identifed as to which waste goes into which receptacle. An adequate number of containers shall be strategically placed throughout the construction areas and temporary facilities.

3.2 Waste containers shall not be allowed to overflow, and regular collection shall be maintained. Containers shall be regularly inspected to ensure containers are kept closed during accumulation, and shall be tightly sealed prior to transportation off-site. There shall be a sufficient number and size of waste containers proportianate to the Works to contain amont of waste generated.

3.3 All food waste shall be properly stored in containers with close-sealing lids to minimize pest infestation and odour control.

3.4 Containers used for lightweight materials such as cardboard shall have tarpaulins or netting in order to stop the waste being blown around site during inclement weather.

3.5 Waste oils, lubricants, paints etc. shall be stored in tightly closed, leak-proof containers compatible to the hazardous waste to be stored. Containers will be clearly labelled to accurately describe their contents and appropriate warning labels to be attached. Wherever possible, chemicals shall be kept in their original containers.

3.6 Hazardous waste will not be placed in containers provided for non-hazardous waste. Such errors may lead to hazardous waste being handled as non-hazardous, putting the handlers at risk, or may lead to the waste being improperly disposed.

4. Environment

Waste Chutes

4.1 Waste shall not be thrown from height to ground level, and the use of waste chutes shall be utilized. Waste chutes usually consist of a plastic or metal tube approximately 1m in diameter through which the waste is dropped. Waste chutes shall deposit waste

directly into pre-positioned skips and not directly onto the ground uncontrolled. The area surrounding the waste skip shall be enclosed by protection barriers and warning signs of the hazard of falling materials. Dust netting shall be provided over the waste skip to contain dust clouds upon impact and to prevent loose waste escaping.

4.2 The area used for reuse and recyclable green waste should ideally be on an impervious concrete base.

4.3 Any drums or containers that held a hazardous substance will be considered hazardous regardless of the quantity of substance remaining in the drum or container. Any container or cylinder awaiting disposal or being discarded that contains a hazardous compressed gas with a pressure greater than atmospheric pressure, will be classified as hazardous waste. The contractor should store used oils in secure bulk containers which are double skinned or have bunds of 110% capacity.

4.4 All areas used for storage of waste shall be a minimum of 30m away from a water source.

4.5 Under no circumstances is Contractor to allow any employees, Sub-contractors or Suppliers to illegally dispose of waste at an unauthorized location (i.e. the side of the road).

4.6 No waste shall be burnt on site.

5. Training

5.1 Contractor shall educate employees through induction and continual toolbox talks on segregation of waste, and the Contractors own reuse and recycle program.

6. Operations

6.1 Contractor shall reuse or recycle general construction waste as described in paragraph 2.2 wherever possible based on best practicable means. All remaining general construction waste must be disposed of at an approved landfill site.

6.2 Contractor shall arrange for collection and disposal of all municipal waste through normal municipality channels.

6.3 Contractor shall recycle, or send to local recycling facilities, all waste metals, tires and oils.

Hazardous Waste

6.4 Any spilled material that is, or contains, any substance that is classified as hazardous or that cannot be identified will be defined as hazardous waste. This is inclusive of any containers used for spill collection and all materials/substances that come into contact with the spilled hazardous material (e.g. cloth, personal protective equipment, absorbent, plastic, sand, etc.).

6.5 All hazardous waste containing bags/containers will be labeled clearly with a completed waste identification label attached. Labels will be marked clearly in English and Arabic with a long-life waterproof marking pen. Any waste that is unidentifiable will be treated as hazardous and isolated.

6.6 Liquid waste, such as greywater, sewage, slurry and other wastewater shall be collected from source (typically a GRP tank or similar) by a designated tanker and taken off-site for disposal at a Regulatory Authority-approved facility.

Medical Waste

6.7 Contractor shall liaise with a local municipality medical services provider to request the use of their medical waste disposal facility, or dispose of medical waste as hazardous waste.

Electrical and Electronic E-Waste

6.8 All discarded electronic / electrical device and malfunctioning/discarded computer hardware will be returned to examine if such materials are still re-usable or parts of it can be recycled and used for other device. All returned or recycled electrical and electronic devices shall be tested to confirm that they are safe to re-use. All materials classified as re-usable but not required should be donated to charities. All materials classified as e-waste for disposal will be sent for segregation and disposal, recognizing that the lead in the solder and other hazardous materials will be present in electronic hardware.

Records

6.9 There shall be a system of record keeping and management reporting to monitor waste management performance to keep a monthly updated summary of waste disposed of, reused or recycled. It should be reported in metric tons only and m3 for liquid wastes.

6.10 Consignment notes for non-hazardous waste if not used or recycled shall be completed detailing type and quantity of waste sent for transportation.

6.11 All waste which has been classified as hazardous will have complete documentation that describes the category and quantity of the waste before it can be removed for disposal or treatment. Waste records are also required by GSAS/LEED programs as part of the accreditation process to confirm that amount of waste being recycled and re-used. A waste tracking system will be developed using a Waste Transfer Note (WTN) or similar. Hazardous waste transfer note and/or chain of custody forms will accompany the waste during transportation to the disposal or treatment site, and duly completed at each stage.

6.12 Contractors will be responsible in providing evidence that waste collectors and transporters have valid permits and licenses to transport waste. Hazardous wastes and medical wastes are prohibited to be handled if they do not have the license to do so. Contractor shall be responsible in recording the waste consignment numbers and the Waste Transfer Notes for a period of at least 5 years.

6.13 Waste records will be audited on a regular basis by Employer or its Representative to monitor the quantity and type of waste being produced in order to analyse where improvements can be made in either reducing the quantity of waste being produced or increasing the diversion of waste from the landfill towards re-use or recycling.

6.14 Contractor shall, on the completion of Works, clear away and remove from site all surplus materials and waste through the approved method and to the correct establishment, and leave the whole of the site in a clean condition to the satisfaction of Employer or its Representative.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00038 - Water Quality Standard

1. Definitions

1.1 **Water Quality**: term used to comprise all the chemical, physical and biological properties of water

1.2 **Groundwater**: a body of water located beneath the ground surface in soil pore spaces and in the fractures of geologic formations

1.3 **Fresh Surface Water**: all fresh waters on the ground and includes water within rivers, streams, lakes, ponds, wetlands, marshes, wadis and man-made reservoirs

2. Planning

2.1 Employer has legal responsibility for managing and maintaining water supplies and is keen to tackle problems of unsustainable use of water resources. Employer therefore operate a strict policy of no discharge of any type without a permit from the relevant competent authority.

2.2 Contractor's Construction Environmental Management Plan (CEMP) shall contain effective groundwater control procedures in place for every potentially polluting activity carried out on site. This will facilitate Contractors to reduce the overall water impact of their construction activities.

2.3 As part of the CEMP, Contractors shall detail all water sources on site and conduct an aspect and impacts register deciding which of their activities may pollute nearby groundwater or freshwater explaining control measures to be implemented. Contractor's Emergency Preparedness and Response (EPR) Plan shall detail the procedure for spill response.

3. Equipment

3.1 If required, all measuring and monitoring equipment shall be calibrated as per manufacturer's instructions. Certification shall be retained and made available to Employer or its Representative upon request.

4. Environment

4.1 In establishing monitoring objectives and locations where the need has been identified, the intended use of the groundwater or fresh surface water is particularly important. Drinking-water sources require higher quality than industrial water cooling

for instance. Agriculture, aquatic life, irrigation each have their own quality standards and relative economic importance.

4.2 While the details and emphases in the selection of objectives vary with circumstances, the fundamental objectives of any water-quality monitoring system are to:

- Provision of information on current water quality and its trends;
- Provision of quantity-quality inventory of water resources;
- Identification of areas in need of improvement and establishment of priorities;
- Provide information on the past, present and future effects of significant natural and anthropogenic activities on the aquatic environment;
- Monitor polluting systems such as industrial complexes;
- Assess the effectiveness of pollution-control measures;
- Detect trends in water quality and provide an early-warning system;
- Determination of compliance with regulations and standards.

5. Training

5.1 Operators of measuring and monitoring equipment should be competent in their use. Documented records of training shall be kept and made available to Employer or its Representative upon request.

6. Operations

6.1 Monitoring of water quality can be accomplished through operation of a network of strategically located stations. Location of stations in either case should consider the following activities:

- Existing conditions;
- Proposed work activities;
- Workforce trends;
- Geography and geology;
- Accessibility of station locations;
- Degree of co-operation with adjacent Sites & Contractors.

6.2 Methods of sampling are determined by a number of factors: the type of material being sampled: ground or surface water, precipitation, bottom or suspended sediment; the type of; the quality parameter being analyzed which in turn determines the kind of container; the amount of sample; whether the sample is analyzed on the spot or sent back to a laboratory; and the method of preservation.

6.3 The sampling schedule should permit the adequate evaluation of the water quality at a given location. The frequency of sampling should be based on knowledge of local conditions.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00039 - Access Control Standard

1. Definitions

1.1 Access Control: the selective restriction of access to a place or other resource

2. Planning

2.1 The Contractor shall be solely responsible to deliver effective and continuous security management and operations throughout the construction project. This will include a management system to support the relevant security operations in order to protect people, material assets and information within the Site security perimeter, and supporting offsite logistical and supply chain protection efforts.

2.2 Not only are construction sites targets for malicious activities where there is a requirement to deter intruders, safeguard against theft, and preserve the assets, but Contractor is to consider that construction sites are also seen as adventure playgrounds by children and therefore protection of the public by Contractor Works shall be of paramount concern.

2.3 Contractor shall develop a Security Management Plan detailing the security system consisting of safety and security monitoring, and access control that shall be provided.

2.4 The Contractor Security Management Plan shall take into consideration the following as a minimum:

- Design, supply, installation, operations, maintenance and decommissioning of physical security systems to enable vehicles and pedestrians be stopped, searched and rejected/returned safely without entering Site;
- Preventing access to personnel that are in non-compliance to Kingdom of Saudi Arabia COVID-19 requirements;
- Resourcing schedule for security guard workforce over the lifetime of the construction project;
- Security policies, standard operating procedures, assignment instructions and Codes of Conduct (protocols) for all security guard force roles;
- Static and mobile guard force patrol schedule;
- Coordination of security throughout the Site, including all security aspects in the case of shared access and egress to the Site with third parties;
- Process for the timely and effective search and screening of material delivery prior to entry at construction site;
- Incident management and reporting.

3. Equipment

3.1 Contractor shall ensure the Site has adequate security by providing hoarding to the perimeter and lockable access gates provided at all access/egress points.

3.2 Contractor shall ensure provision of CCTV surveillance system for all access and egress points including recording, secure recorded data storage/CCTV recorded data archive and retrieval system, PC software and hardware systems, in accordance with Kingdom of Saudi Arabia standards and legislation.

3.3 Contractor shall provide a clear space, free of vegetation, materials and any structures, on both the secure and non-secure sides of the perimeter (up to 3m wide) for the safe walking and vehicle route of security personnel and to ensure there are no aids to climbing.

3.4 Contractor shall be responsible for the provision of all equipment deemed necessary for the proper discharge of the security officer's duties.

4. Environment

4.1 Contractor shall provide sufficient artificial illumination at pedestrian and vehicle access control points, and an even level of illumination where possible to restrict dark areas in which intruders can hide.

4.2 Contractor shall develop and implement a process to ensure cooperation, coordination and timely communication with all other parties who may operate within, or immediately adjacent to, the area of the Works.

5. Training

5.1 The Contractor shall employ security staff in accordance with Kingdom of Saudi Arabia standards and legislation, either providing a suitably qualified in-house professional capability or employing a suitably qualified Supplier.

5.2 Security staff should have a minimum of two years' experience in a similar role, and are capable and competent in the implementation of Contractor's security standard operating procedures.

5.3 The Contractor shall ensure that all security officers are trained to administer first aid, and that an adequate number are trained to undertake fire warden roles and emergency response duties including training of fire extinguishers.

6. Operations

6.1 Contractor shall comply to Employer or its Representative for all procedures related to Site access cards.

6.2 Contractor shall ensure that all Site personnel show a valid entry pass at all pedestrian and vehicle access points. This shall be ensured before personnel/equipment enters the Site, and only issued following recorded attendance at a Site induction.

6.3 Contractor shall ensure that all Visitors sign a visitor's register and are orientated prior to entering the Site. Visitors must be accompanied by a member of Contractor Site inducted personnel having escort authority.

6.4 Contractor shall be solely responsible for ensuring that Site security incidents of any nature, including but not limited to theft and criminal damage, do not impact the construction program, budget or schedule.

6.5 Contractor must submit monthly report to Employer on its security performance in accordance with agreed protocols of the project, including all incidents and events of a suspicious nature.

RRE-HC-HC1-A00-NSP-RRE-HSE-PRO-00040 - Traffic Logistics Management Standard

1. Definitions

1.1 **Construction Plant**: heavy machinery, large equipment and appliances that although usually mobile (e.g. bulldozers, cranes, excavators etc.), can also be static (e.g. generators, compressors, dewatering pumps etc.)

1.2 **Vehicles**: all forms of powered trucks, cars, vans that may be operated by a driver

1.3 **Site Traffic**: all forms of vehicle traffic movements, including material handling equipment or construction plant on site, including visitors

2. Planning

2.1 Contractor shall ensure site traffic and logistics management is:

- appropriately planned, organized and supervised;
- pedestrian and vehicle routes are segregated so far as is reasonably practicable;
- pedestrian and vehicle routes are clearly marked with barriers and signs;
- separate site entrances and exits shall be provided for both vehicles and pedestrians;
- appropriate speed limits for the site enforced;
- visitor movements managed in an appropriate manner;
- all persons involved in site traffic and logistics management are trained and competent.

2.2 Contractor shall ensure that a site-specific Traffic Management Plan is prepared on each site where construction plant or vehicles are operating. The Traffic Management Plan shall include details on the following:

- General site description and details of the type of traffic on site;
- Site specific risk assessment for vehicle routes;
- Site layout drawing clearly showing traffic routes, pedestrian crossing points, signage location and pedestrian routes;
- Estimated volumes of each vehicle traffic type and means of monitoring flow rates;
- Details of traffic control measures at junctions and pedestrian crossing points including arrangements for segregation of pedestrians and vehicles;
- Location of designated site parking areas;
- Location of workforce bus dropping off/picking up points;

- Details of person responsible for traffic and logistics management;
- Details of driver / operator site rules;
- Description of arrangements for visiting drivers.

2.3 The Traffic Management Plan shall be reviewed on a regular basis and updated to ensure it is appropriate for the current conditions and arrangements on site.

2.4 Contractors shall develop as part of the Traffic Management Plan, or as a separate document, detailed emergency procedures to deal with construction plant / vehicle incidents that may arise on site. The following emergency situations shall be viewed as foreseeable and detailed in the emergency procedures for site:

- Vehicle collisions;
- Vehicles overturning;
- Construction plant breakdown;
- Vehicle breakdown in high volume traffic;
- Pedestrians struck by vehicles;
- Workers struck by moving construction plant;
- Construction plant & vehicle fires.

3. Equipment

3.1 Signage shall be provided to clearly indicate the traffic route, direction of travel, and any specific instructions that the driver or operator may need to know. Signage shall be of international standard including coloring, text style and size. Speed limits shall be determined and appropriate signage displayed at frequent intervals displaying the maximum speed limit. Signage shall be checked regularly and maintained so that it can be easily read.

3.2 Where speed bumps are used as determined by the risk assessment, they shall be clearly signposted, physically marked and designed so as not to create additional hazards for the type of vehicles using the traffic route.

3.3 Traffic routes shall be maintained and the surface shall be kept in good condition. Pot-holes and other wear shall be identified through frequent inspections and remedial action shall be taken promptly.

4. Environment

4.1 Contractor shall ensure the following when planning site traffic movements:

- All vehicle routes are planned to minimize the need to reverse by introducing one-way systems wherever reasonably practicable;
- Traffic routes shall be segregated from pedestrian routes wherever reasonably practicable;
- Road construction and surface quality for traffic routes shall be appropriate for the vehicle types that will use them;
- Consideration shall be given to vehicle access route widths and turning radius of bends to ensure clear access for emergency services;
- Appropriate lighting for roads and pedestrian walkways shall be provided;
- Parking areas shall be incorporated away from operational requirements;
- Design of traffic routes shall be in a manner that avoids blind-spots and tight bends.

4.2 Contractors shall ensure that vehicle traffic routes are appropriate and wide enough for the type of vehicle using them. Where two-way traffic is unavoidable, the width of the traffic route shall be wide enough to allow vehicles to pass safely without risk of collision or overturning.

4.3 As far as reasonably practicable, Contractors shall ensure that designated walkways and routes are provided for pedestrians. Pedestrian walkways shall be clearly marked with signage and protected with substantial barricades. Pedestrian routes shall be maintained in good order and kept free from obstructions.

5. Training

5.1 Contractor is to ensure employees required to implement the requirements of this Standard are trained in the management of site traffic and logistics, and understand the risks associated with such activities, and the control measures to be implemented.

5.2 Training for drivers of vehicles and operators of construction plant shall be competency-based and include:

- Information on the safe systems of work identified by the risk assessment;
- Appropriate control measures to be followed by drivers and operators;
- Appropriate orientation training on the specific construction plant and/or vehicle they are operating;
- Appropriate control measures for pedestrians;
- Reporting procedures in the event of incidents involving site traffic.

5.3 Contractor shall conduct additional retraining whenever a periodic inspection reveals, or there is reason to believe, that there are inadequacies in the employee's knowledge of site traffic and logistics management, or whenever a site traffic procedure fails.

5.4 Contractors shall maintain records of all qualifications, training and retraining delivered to operators and drivers.

6. Operations

6.1 Contractors are to plan to check the safe use of traffic routes, including:

- Vehicle speeds;
- Direction of travel;
- Safe driving practices;
- Compliance with overtaking rues;
- Adherence to warning signs, traffic signals and flag-men.

6.2 Contractors shall ensure that appropriately trained traffic marshals are provided on site where the risk assessment has identified the need. Traffic marshals shall be easily identifiable with high-visibility vest or jacket that differs from the remainder of the workforce. Contractors are to ensure they are fully trained and competent to undertake the role.

6.3 Contractors shall ensure that control measures are implemented to prevent the need for reversing vehicles. Where it is not reasonably practicable, Contractors are to ensure that designated reversing areas are to be provided indicated by appropriate signage. Reversing areas are to restrict access to pedestrians through the use of barriers and warning signs, and all vehicles are to be fitted with audible alarms and flashing amber lights.

6.4 Contractors shall ensure adequate arrangements are made to ensure controlled organized delivery and collection of materials. Visiting drivers shall be made aware at point of access by visitor induction traffic management details of the site, including safe driving practices.

6.5 Contractor shall ensure that routine inspections are conducted on the entire site traffic and logistics management arrangements. All inspections shall be recorded, and areas of non-compliance shall receive timely close-out action against this Standard.