



education

Department:
Education
PROVINCE OF KWAZULU-NATAL



OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

PROJECT TITLE

**INFRASTRUCTURE DEVELOPMENT AND MAINTENANCE
HEUWELLAND PRIMARY SCHOOL**

PREPARED BY



PNHUNGASHE HEALTH AND SAFETY CONSULTING (PTY) LTD

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1. PREAMBLE

In terms of Construction Regulations 2014 section 5 (1) (b) the Construction Health and Safety Agent on behalf of the Client must prepare an Occupational Health and Safety (OHS) Specification for the proposed construction project. This OHS Specification has been compiled by Phungashe Health and Safety Consulting (PTY) LTD, the Construction Health and Safety Agent for the Construction of Bhekabantu Secondary School.

The Health and Safety specification establishes the generic and specific requirements to enable the Client and the eventual appointed Contractor to satisfy the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) its Regulations and related legislation.

This specification sets out the requirements for eliminating and/ or mitigating health and safety risks, injuries, accidents and incidents on site. It addresses legal compliance, hazard identification, risk assessment, risk management and promotion of health and safety culture within the project. The specification also makes provision for the protection of personnel other than the employees.

2. LEGAL FRAMEWORK

- Occupational Health and Safety Act no.85 of 1993, Edition 23 and Its Regulations
- Construction Regulations 2014
- Codes of Practice: Managing Exposure to SARS – COV-02 in the Workplace
- Compensation for Occupational Injuries and Disease act no. 130 of 1993
- National Environmental Management Act No. 107 of 1998
- National Building Regulations, SANS 10400
- By-Laws

3. ABBREVIATIONS

- CEO – Chief Executive Officer
- CR – Construction Regulations 2014
- PC – Principal Contractor
- DB – decibels
- DMR – Driven Machinery Regulations
- DSTI - Daily Safe Task Instruction
- EMPr – Environmental Management Program
- ER – Electrical Installations Regulations
- ERW – Environmental Regulations for Workplaces
- FR – Facilities Regulations
- GAR – General Administration Regulations
- GSR – General Safety Regulations
- HCSR – Hazardous Chemical Substances Regulations
- OHS – Occupational Health and Safety

- SABS – South African Bureau of Standards
- SACPCMP - South African Council for Project and Construction Management Professions
- SANS – South African National Standards
- PPE – Personal Protective Equipment
- PTO - Planned Task Observations

4. DEFINITIONS

For the purpose of the OHS Specification, the definitions given hereunder must apply. All definitions as listed under the Occupational Health and Safety Act, 1993 and legislation are applicable

“Agent (Pr. CHSA)” means a competent person Registered with the SACPCMP who acts as a representative for a Client in terms of regulation (5)5.

“Client” means Development Bank of Southern Africa

“Competency” means combination of training, skills, experience and knowledge that a person has and their ability to apply them to perform a task safely;

“Competent person” means a person who-

(a) Has in respect of the work or task to be performed the required knowledge, training and experience and, where applicable, qualifications specific for that work or task: Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualifications Framework Act, 2000 (Act No.67 of 2000),

(b) Is familiar with the Occupational Health and Safety Act No. 85 of 1993 and with the applicable regulations made under the Act;

"Construction Manager (Site Agent)" means a competent person responsible for the management of the physical construction processes and the coordination, administration and management of resources on a construction site;

"Construction Site" means a workplace where construction work is being performed;

"Construction Supervisor" (Site Foreman) means a competent person responsible for supervising construction activities on a construction site;

"Construction Vehicle" means a vehicle used as a means of conveyance for transporting persons or material, or persons and material, on and off the construction site for the purposes of performing construction work;

"Construction work" means any work in connection with –

(a) The construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure; or

(b) the construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work;

"The Principal Contractor" means an employer appointed by the client to perform construction work;

"Contractor" means an employer who performs construction work; in this case the

"Fall Protection Plan" means a documented plan, which includes and provides for-

(a) All risks relating to working from a fall risk position, considering the nature of work undertaken;

- (b) The procedures and methods to be applied in order to eliminate the risk of falling; and
- (c) A rescue plan and procedures;

"OHS File" means a file, or other record containing the information in writing required by these Regulations;

"OHS Plan" means a site activity or project specific documented plan in accordance with the Client's OHS Specification requirements which is based on the Baseline Risk Assessment;

"OHS Specification" means a site activity or project specific document prepared by the client pertaining to all health and safety requirements related to construction work;

"Medical Certificate of Fitness" means a certificate contemplated in regulation 7(8) of Construction Regulations 2014;

"OHS Officer" – a person deemed competent by SACPCMP under the relevant category of registration.

"The Act" – Occupational Health and Safety Act No.85 of 1993

5. PROJECT SCOPE OF WORK

- Removal of Asbestos
- Demolition of condemned structures
- Construction of new multi-story buildings
- Construction of sport fields
- Services installation (electrical, mechanical and water)
- Civil works

6. MINIMUM HEALTH AND SAFETY ADMINISTRATIVE REQUIREMENTS

6.1 OCCUPATIONAL HEALTH AND SAFETY PLAN

The PC/ successful bidder must compile a documented OHS Plan as per CR 7(1) (a) based on the information / requirements contained in this specification and demonstrate to us how he/ she is going to implement health and safety requirements during works. The OHS Plan must be submitted for approval by the Agent prior construction works commencement on site.

6.2 OCCUPATIONAL HEALTH AND SAFETY FILE

The PC must, in terms of CR 7(1)(b) compile and keep on site an OHS file that must include all documentation required in terms of this Specification, Baseline Risk Assessment for the Works, The Act and its Regulations. The PC must submit the OHS file to Health and Safety Agent for perusal and advise within 14 days of appointment.

6.3 CONSTRUCTION WORK PERMIT

The project will require a Construction Work Permit (CWP). The application for the CWP must be conducted by the Agent after approving the PC Health and Safety Plan as per CR 3 requirements.

6.4 OCCUPATIONAL HEALTH AND SAFETY POLICY

The Contractor must prepare a written policy concerning the protection of the health and safety of employees at work, including the description of his organization and the arrangements for carrying out and reviewing the policy. The OHS policy must be signed by the CEO. A copy of the OHS policy must be prominently displayed on site and also be kept on the OHS file.

6.5 LEGAL APPOINTMENTS

The Client shall appoint the PC (successful bidder) for the works as per CR 5 (1) (k). A section 37 (2) agreement shall also be signed between the Client the PC.

The PC must make appointments as per The Act and its Regulations; structured and guided by the scope of works to be performed.

It is acknowledged that the PC may need to allocate more than one appointment to certain staff members. This practice may only take place if health and safety standards will not be negatively affected. If the Agent deem such practice as having a negative effect on health and safety standards; then alternative arrangements will have to be made.

The project will require a full time Construction Health and Safety Officer to implement and manage OHS compliance on site. The Construction Health and Safety Officer must be registered with the SACPCMP under respective categories.

Below is the table containing the legal appointments that the contractor must appoint on site.

Table 1: Legal Appointments

| Item | Regulation | Appointment | Period of Provision | Responsible Person |
|------|--------------|--|-----------------------|----------------------|
| 1. | OHS Act 16.1 | CEO | Prior site handover | Principal Contractor |
| 2. | OHS Act 16.2 | Contracts Manager | Prior site handover | Principal Contractor |
| 3. | CR 8(1) | Construction Manager | Prior site handover | Principal Contractor |
| 4. | CR 8(2) | Assistant Construction Manager | Need to be determined | Principal Contractor |
| 5. | CR 8(5) | Full Time Construction Health and Safety Officer | Prior site handover | Principal Contractor |
| 6. | CR 8(7) | Construction Supervisor | Prior site handover | Principal Contractor |
| 7. | CR 8(8) | Assistant Construction Supervisor | Need to be determined | Principal Contractor |
| 8. | CR 9(1) | Risk Assessor | Prior site handover | Principal Contractor |

| | | | | |
|-----|-----------------|---|-------------------------------------|----------------------|
| 9. | CR 10(1)(a) | Fall Protection Planner | Prior site handover | Principal Contractor |
| 10. | CR 12(1) | Temporary Works Designer | Commencement with works | Principal Contractor |
| 11. | CR 12(2) | Temporary Works Supervisor | Commencement with works | Principal Contractor |
| 12. | CR 13(1)(a) | Excavation Supervisor | Prior site handover | Principal Contractor |
| 13. | CR 16(2) | Scaffold Supervisor | Commencement with works | Principal Contractor |
| 14. | CR 16(2) | Scaffolding Erector | Commencement with works | Principal Contractor |
| 15. | CR 16(2) | Scaffolding Inspector | Commencement with works | Principal Contractor |
| 16. | CR 17(1) | Suspended Platform Supervisor | Commencement with works | Principal Contractor |
| 17. | CR 19(8)(a) | Material Hoist Inspector | Commencement with works | Principal Contractor |
| 18. | CR 20 (1) | Bulk mixing supervisor | Commencement with works | Principal Contractor |
| 19. | CR 23(1)(d) | Construction Vehicle and Mobile Plant Operators | Commencement with works | Principal Contractor |
| 20. | CR 24(d) | Temporal Electrical Installations Inspector | Prior site handover | Principal Contractor |
| 21. | CR 28(a) | Stacking and Storage Supervisor | Prior site handover | Principal Contractor |
| 22. | CR 29 (h) | Fire Equipment Inspector | Prior site handover | Principal Contractor |
| 23. | CR 29 (i) | Fire fighters | Commencement with construction work | Principal Contractor |
| 24. | EMR 9 | Portable Electrical Inspector | Prior site handover | Principal Contractor |
| 25. | GAR (9)2 | Accident/ Incident Investigator | Prior site handover | Principal Contractor |
| 26. | GRS 3(4) | First Aider Attendants – Level 2 | Commencement with works | Principal Contractor |
| 27. | GSR 13 (a) | Ladder Inspector | Commencement with works | Principal Contractor |
| 28. | HCSR 3(3) | Hazardous Chemical Substances Supervisor | Prior site handover | Principal Contractor |
| 29. | OHS Act 8(2)(a) | Hand Tools Inspector | Prior site handover | Principal Contractor |

| | | | | |
|-----|--------------|-----------------------------------|-------------------------|----------------------|
| 30. | OHS Act 17 | Health and Safety Representatives | Commencement with works | Principal Contractor |
| 31. | CR 7 (1) (c) | Sub – Contractors | Commencement with works | Principal Contractor |
| 32. | EIR 6 | Electrical Contractor | Prior site handover | Principal Contractor |

6.6 COMPETENCY OF APPOINTEES

Contractor's competent persons for the various risk management portfolios must fulfil the criteria as stipulated under the definition of Competent Person in accordance with the CR and The Act. All competency certificates must be South African Qualifications Authority (SAQA) accredited. The competency must be subjected to approval by the Agent.

6.7 HEALTH AND SAFETY ORGANOGRAM

An organogram outlining the Health and Safety Management as per appointments under the OHS Act and the Regulations must be provided by the PC and be kept in the health and safety file.

The PC must update the site Health and Safety Management Organogram when there are any changes in the Site Management Structure.

6.8 COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASED

The PC must warrant that all employees are fully covered in terms of the Compensation for Occupational Injuries and Diseases Act 1993 (Act No. 130 of 1993) (COID Act) and that such cover must remain in force for the duration of the project.

All bidders must supply proof of such insurance cover to the Client at the time of the bid.

The PC must ensure that all Sub-Contractors appointed by him are fully covered in terms of the COID Act, and that such cover must remain in force for the duration of their contract.

The PC must also provide Public Liability Cover that must adequately make provisions for any losses and / or his employee's acts and / or omissions whilst working on the Client's premises.

6.9 SUB - CONTRACTORS

All Sub - Contractors will be responsible for their own OHS on site under supervision of the PC. The PC must appoint the Sub – Contractors as per CR 7 (1) (C) (v) and sign a section 37(2) mandatory agreement with them. The OHS requirements for works must form part of Sub - Contractor's tender documents. Selection criteria for Sub- Contractors must include ability to meet health and safety requirements for the works. Sub – Contractor must demonstrate OHS budget allocations for the works.

The PC must issue Sub-Contractors with the OHS Specification for the works. All Sub – Contractors must open their own OHS Files. The PC must approve Sub – Contractors OHS Plan and agree on the files before they commence on site. The files must be updated monthly as per works progress and will be subjected to monthly Audits by the PC. Audits must be emailed

to Sub-Contractors and the Agent must be copied. The PC must monitor all Contractors and ensure closing out of deviations.

The Sub – Contractors must update and provide monthly incidents statistics, pre – employment and exit medicals status to the PC and Agent.

6.10 HAZARD IDENTIFICATION AND RISK ASSESSMENT

The PC must allow for and cause a Site-Specific Hazard Identification and Risk Assessment exercise to be performed by a competent Risk Assessor before commencement of construction work based on his scope of works, activities to be executed on site. The Risk Assessment must include the following:

- A list of activities to be performed and hazards identified for tasks;
- Health, and safety effects from exposure to hazards;
- Risk rating and its methodology / matrix;
- Control / mitigation measures to identified hazards;
- Method statements and safe working procedures for the high-risk tasks intended to eliminate, reduce and/or control the risks assessed;
- A monitoring and review procedure of the risk assessment as the risks change.

The PC must provide a baseline risk assessment to Sub-Contractor for the works they shall be conducting before any work commences and thereafter at regular intervals as the risks change and as new risks develop.

The PC must allow for and be responsible for ensuring that all persons who could be negatively affected by construction operations are informed and trained according to the hazards and risks and are conversant with the safe work procedures, control measures and other related rules (for example “tool box talk” strategy to be implemented).

Should the Agent or other Clients Representative identify alternative hazardous activities performed by the PC or its Sub - Contractors on site for which a Risk Assessment was not performed, works will be stopped and the PC or Sub - Contractors will be required to perform such an exercise before continuing such work.

6.11 SAFE WORKING PROCEDURES

The Contractor must develop, document and implement safe working procedures (SOP) for all activities involving significant health or safety risk. These procedures must detail the control measures required to effectively manage the health and safety risks associated with the work activities.

SOPs must be consistent with the task-based risk assessment completed for the activity.

Every person engaged in an activity for which a SOP has been developed must receive suitable training on the procedure before commencing the works.

Furthermore, the contractor must develop, document, communicate and implement formal procedures, work instructions and / or programmes for the operation, maintenance, inspection and testing of all plant and equipment (including protective systems and devices) brought onto the project site(s).

6.12 HEALTH AND SAFETY REPRESENTATIVES

The PC and Sub - Contractors must allow for and ensure that OHS Representative(s) as per OHS Act section 17 are appointed and trained to carry out their functions as per section 18 of The Act.

The appointments must be in writing and the OHS Representative must carry out regular inspections, keep records and report all findings to the OHS Officer.

6.13 HEALTH AND SAFETY COMMITTEES

When there is more than one Health and Safety Representative on site, a Health and Safety Committee must be developed as per the requirements of section 19 of The Act. The person nominated by an employer on the health and safety committee must be designated in writing by Contractor for such a period as may be determined by him. Health and Safety Representatives shall be members of the committee for their entire period of designation. The functions of the health and safety committee must be as per OHS Act section 20. The PC must ensure that project Health and Safety Committee Meetings are held a minimum of once a month or more as deemed necessary by the project requirements. The following must be in place regarding the meetings:

- Minutes must be kept on record and filed in the site health and safety file.
- Meetings must be organized and chaired by the PC's Responsible Person appointed in writing.

6.14 MEDICAL FITNESS

The contractor must develop and implement a programme to manage employee fitness for work. All employees working on site for whom the contractor is responsible (i.e., direct employees of the contractor as well as the employees of any appointed sub-contractors) must be subject to this programme.

All employees on site must have valid certificates of medical fitness as per CR 7(1)(g).

The results of an exit medical examination / any certificate of medical examination from a previous employment will not be accepted as a pre-employment medical examination for this project.

The medical examinations described above may only be carried out by an Occupational Medical Practitioner (i.e., a medical doctor who holds a qualification in occupational medicine).

A detailed job (role) description and an exposure profile (noise, dust, heat, working at height, working with machinery, etc.) must be provided for each employee. The medical examinations that an employee undergoes must be based on (i.e., the employee's fitness must be assessed against) the information contained in these documents as well as the baseline risk assessment for the work. This information must be made available to the occupational medical practitioner performing the medical examination.

For each role, the medical criteria for fitness must be documented and these must be based on an evaluation of the physical and medical requirements for the role.

The medical examinations carried out for all drivers and operators must include testing / assessment for medical conditions that could affect the safe operation of vehicles or equipment.

Specific testing / questioning must be carried out to determine if an individual:

- Suffers from epilepsy or any other medical condition deemed to be a risk by the occupational medical practitioner.
- Makes use of chronic medication that could affect performance.
- Is colour-blind; or
- Has poor day or night vision.

The medical examinations carried out for employees that are required to work at height must include testing / questioning to determine if an individual suffers from epilepsy, hypertension (high blood pressure) or any other medical condition deemed to be a risk (with regard to working at height) by the occupational medical practitioner.

Electricians must be tested for colour-blindness.

If an individual is found to be medically “unfit for placement”, the doctor will indicate which work activities cannot be performed by the person.

The individual may still be employed on the project if his medical restrictions can be accommodated and provided that no legislation is transgressed.

A process must be established to manage medical restrictions that may be placed on an employee. For every employee with a medical restriction, regular follow up visits with the occupational medical practitioner must be arranged to ensure that each case is proactively managed.

An employee in a safety critical job must report (to his supervisor) any condition that might impair his ability to safely perform the duties associated with his role. A mechanism must be in place for such reports to be referred to an occupational medical practitioner to determine if the employee is fit to continue with his work.

Proof of all medical examinations (i.e., certificates of fitness signed by an occupational medical practitioner) must be kept on site and these records must be readily available for inspection by the nominated project management representative.

An employee's certificates of fitness must be included in his personal profile.

No employee may commence work on site without proof that he has undergone a pre-employment medical examination.

Employees must be subjected to exit medical evaluation when their contract ends on site.

All occupational medical data and records must be retained for at least 40 years.

6.15 HEALTH AND SAFETY TRAINING

6.15.1 Induction

The PC must develop and devise an OHS induction program for the site and highlight specific hazards and risks associated to site. All personnel on site must undergo a site-specific health and safety induction training session before starting work. A record of attendance must be kept in the OHS File. Induction training must also include training on the risks associated with the works to be executed, safe work procedures and emergency procedures.

All visitors to the site must also be subjected to site-specific induction training highlighting items such as site safety and health risks, steps to follow in the event of emergency, restricted areas and on the site health and safety rules upon entering the site.

6.15.2 Displaying of Information

The site must display as a minimum notices and awareness information as per table below:

Table 2: Warning / Informative signs requirements

| Area and/or activity where notice or sign is required | Notice or sign required in terms of |
|--|---|
| Display of notices and signs | GSR 2B and SABS Code 1186 |
| Entry | GSR 2C (2) |
| First-aid | GSR 3(6) |
| Toilets and change rooms | FR 2(5); 4(2)(f) |
| Storage of flammable materials | GSR 4(8)(a)(i) and (ii) (10(e) only applicable to Contractor's yards) |
| Grinding wheels | DMR 8(1)(7) |
| Machinery | General Machinery Regulation 9 (<i>Schedule D</i>) |
| Explosive powered tools | Construction Regulation 21(2)(f) |
| Prohibition on smoking and eating or drinking at the workplaces where high-risk substances are stored or handled | Facilities Regulation 6(b) |
| Non-potable water | Facilities Regulation 7(b) |

In addition to the above requirements; notices, information and instructions must be displayed on site as per risk assessment requirements.

6.15.3 Awareness Training

The PC must ensure that, on site, toolbox talks pertaining to hazards and risks on site take place at least once a week. These talks must deal with risks relevant to the construction work at hand.

6.15.4 Competency

All Competent persons must have the knowledge, experience, training, and qualifications which are specifically applicable to the work they have been appointed to supervise, control, and execute.

The abovementioned competency requirements will be assessed on a regular basis by the Health and Safety Agent by means of Audits.

The PC is responsible for ensuring that competent Sub-Contractors are appointed to carry out construction work.

6.16 DAILY SAFE TASK INSTRUCTIONS

DSTI is a pre-start discussion amongst the members of a work team, led by the appointed supervisor, aimed at anticipating hazards and potential risks associated with the activities planned for the day or shift, and ensuring that the necessary control measures are in place to prevent incidents.

At the start of any work, each appointed supervisor must inspect the work area for which he is responsible and ensure that it is safe. He must then conduct a DSTI with his work team specifically concerning the tasks that they will be performing during the course of the day or shift. The relevant Task-Based Risk Assessment for the activity must be used as the basis for the discussion. The correct work method must be reiterated, and the identified hazards, risks and control measures must be discussed with the team (each team member must be given the opportunity to contribute and participate in the discussion).

Any team member arriving late must first be taken through the information that was discussed (work method, hazards, risks and control measures) before being permitted to start working. If the work method changes after activities have already begun, the DSTI must be revisited and updated with the team, and the changes must be signed off by the relevant Contractor Health and Safety Officer.

Every member of the work team must sign the DSTI attendance register. The attendance records must be kept and maintained in the Contractor's OHS File.

The Contractor's OHS Officer must evaluate the content of the DSTI's daily to ensure that they are task-specific. Furthermore, the OHS Officer must attend at least one DSTI per day prior to the start of work. The OHS Officer may not lead the DSTI discussions, as this is the responsibility of the appointed supervisor.

6.17 PLANNED TASK OBSERVATIONS

All Contractor, Management Supervisors must perform PTO to verify that the control measures that have been identified in Safe Work Procedures (and associated Risk Assessments) are being adhered to and are being properly implemented, and to provide guidance where deviations are noted.

Each supervisor must complete at least one PTO per day involving one or more employees in his work team.

When an unsafe act or condition is identified, the supervisor must coach the work team to correct the act or condition in line with the safe work procedure.

Where valid changes to the work method are identified, the supervisor must ensure that the safe work procedure and risk assessment are updated to reflect the current practice.

The Construction Manager and / other Project representatives will carry out PTO's on contractor employees on an ad hoc basis. Should deviations from the contractor's safe work procedures be observed, the work may be stopped until these deviations are rectified.

6.18 INCIDENTS AND EMERGENCY PLAN

The contractor must develop, implement, test and maintain an emergency response plan (incorporating emergency procedures and evacuation procedure) that focuses specifically on the Contractor's team and work activities. The plan must be risk-based and must detail the procedures that must be followed when responding to all potential emergency scenarios such as:

- Vehicle's accidents
- Strike actions
- Political / community protests
- Falls from heights
- Collapse of structures
- Animals' attacks (snakes, bees, scorpions)
- Spillages of hazardous chemical substances / flammable liquids
- Fire
- Flash floods

The plan must be adequately resourced to ensure effective implementation. Accountability for the Emergency Response Plan must be clearly defined. An emergency response team responsible for the implementation, management and execution of the emergency response plan must be established. the roles and responsibilities of each team member must be clearly

defined in the plan. Each team member must receive appropriate training to ensure that each role is performed competently.

The process for managing incident communication, notification, and reporting must be incorporated into the emergency response plan. The responsible person(s) must be clearly identified, and the protocols for communicating with internal and external stakeholders must be defined.

Emergency evacuation procedures must be developed and included in the emergency response plan.

The emergency response plan must be formally reviewed (and amended if necessary) on at least an annual basis, and following any emergency situation, to ensure that it remains appropriate and effective.

The Contractor must ensure the following:

- A suitable evacuation alarm (siren) is provided. Alarms must be installed in work areas. All persons working in an area where an evacuation alarm is sounded must respond to it immediately.
- Suitable fire-fighting equipment must be provided and maintained, all work stations must be provided with two or more trained in fire-fighting procedures and the use of fire-fighting equipment.
- Suitable first aid equipment and supplies must be providing. First aid station must be established and an adequate number of appropriately trained First Aiders must be in place.
- Emergency assembly points positioned in safe locations away from buildings, plant and equipment must be designated (and conspicuously signposted). In the event of an evacuation, all persons (i.e. personnel and visitors) must assemble and be accounted for at these emergency assembly points.
- All personnel must receive awareness training on the applicable emergency response procedures, and all visitors entering the site must be properly instructed in these procedures.
- The emergency response procedures must be displayed on each notice board.
- A diagram (site plan) indicating evacuation routes, emergency assembly point locations, and the positioning of emergency equipment (fire extinguishers, first aid boxes, etc.) must be prominently displayed in strategic locations; in all offices, on all notice boards, and in other locations on the site as may be required.
- An up-to-date list of emergency telephone numbers must be compiled and maintained. A copy of this list must be posted at each site entrance, in each office, near each telephone, and on every notice board.
- Emergency response drills must be conducted to test the effectiveness of the emergency procedures and equipment, as well as the knowledge and proficiency of the response personnel. A variety of emergency scenarios must be tested including, but not limited to, medical emergencies, fires, rescues, hazardous substance spills and drowning. A drill must be carried out one month after site establishment and six-monthly thereafter.
- Each drill must be monitored and the outcomes (highlights and shortcomings) must be documented. Corrective actions must be identified and implemented to address

the shortcomings, and the emergency response plan and associated procedures must be amended as required.

Potential off-site emergency scenarios must be included (e.g., emergency scenarios related to the transport of personnel).

Consideration must be given to neighbours, and to the availability and capability of local emergency services. Details of any arrangements with external emergency response service providers must be included.

6.19 FIRST AID ATTENDANCE

The PC must appoint in writing a Level 2 First Aider in terms of Regulation 3 of the General Safety Regulations. Additional first aiders can be level 1. The number of first aiders shall be as follows:

- One first aider for up to 50 workers
- one additional for every additional 50 workers

Where there is separate work station, each work station must have a trained first aider.

Valid certificates to be kept on site in the site health and safety file.

Metal box first aid kits are recommended for the works.

Location and quantity of first aid kits must be as follows, it should be noted that the requirements are in consideration high risk activities associated with the project:

- one kit, including specific first aid modules, for up to 50 employees
- one additional kit, with specific modules, for every additional 50 employees
- The main first aid station must be at the site camp and portable kits must be provide in work station, this may include motor vehicles.

The contractor must identify the Hospital to be used in case of medical attention.

6.20 ACCIDENT & INCIDENT REPORTING, INVESTIGATION AND STATISTICS

Injuries sustained on site are to be categorized into the following categories:

- First aid;
- Near misses;
- Medical attendance (Doctor);
- Disabling; and Fatal injuries

All Sub- Contractors must report medical attendance injuries to the PC no later than the end of the shift and disabling and fatal incidents as soon as they occur.

First aid cases must be recorded in the safety files dressing register.

Medical Attendance accidents must be recorded on the safety file as per annexure 1, the PC's competent person (Incident / Accident Investigator) must investigate these incidents / accidents and forward a copy of the report to the Health and Safety Agent without within seven days.

Disabling and fatal accidents must immediately be reported to the Health and Safety Agent telephonically after they occur. The Health and Safety Agent shall manage these accidents investigations. All incidents as described in Section 24 of the OHS Act must be reported in the prescribed period and manner to the National Department of Labour. Copies of Section 24 reports, including WCL 2 forms must be forwarded to the Health and Safety Agent.

Near misses must be reported, recorded and investigated.

The PC must establish a procedure for the management of all health and safety incidents. This procedure must define the responsibilities, methodologies and processes that must be followed for:

- Reporting an incident;
- Investigating an incident;
- Analysing an incident to determine the root cause;
- Identifying and implementing corrective actions to prevent a recurrence; and
- Communicating information concerning an incident to relevant persons and / or groups.

An incident must be reported to the Construction Supervisor and section Safety Representative immediately after they occur. The Construction Supervisor / Safety Representative must report incidents / accidents to the Safety Officer and Construction manager on the same work day or shift on which it occurs and preliminary details must be recorded.

The Construction Manager must ensure that an investigation is completed for each incident that occurs, and that Construction Supervisor and section Safety Representative participate in each investigation. Incident investigations must be facilitated by competent and experienced Incident Investigator who have been trained in the appropriate methodology.

Investigation process for near misses, medical attendance, disabling and fatal incidents must be completed within 7 days. Investigation on first aid kit cases must be done monthly and report to be provided.

Each incident must be analysed to determine the root cause, and corrective actions must be identified and prioritised for implementation to eliminate or reduce the risk(s) in order to prevent recurrence of the incident.

For each corrective action, a responsible person must be designated and an appropriate timeframe (target date) for completion of the corrective action must be specified. Progress on implementing corrective actions (i.e., closing incidents) must be monitored and reported on. The implementation of corrective actions must be verified during monthly audits by the Agent but also no later than 30 calendar days after the conclusion of the incident investigation.

As a minimum, each incident report must include:

- The date, time and location of the incident;
- A detailed description of the incident, including photographs;
- The names of any injured persons;
- Injury details (if applicable);
- A summary of the first aid and / or medical treatment provided (if applicable);
- The current status of any injured persons;
- The root causes of the incident; and
- Detailed corrective actions, including responsible persons and target dates for implementation.

Each significant incident must be summarised for its lessons learnt following the investigation. This information must be reviewed by the Contractor's Construction Manager to assure completeness, accuracy and relevance before it is shared with (communicated to) all project personnel.

Record of monthly incidents / accidents statistics must be provided to the Agent during the time of the Audit.

6.21 NON-CONFORMANCE AND ACTION MANAGEMENT

The contractor must establish a process for identifying and recording corrective actions arising from:

- Incident investigations;
- Hazard identification and risk assessment;
- Measurement and monitoring;
- Improvement plans and suggestions;
- Managing change;
- Audits and inspections; and
- Safety observations and coaching (safety interactions).

The contractor must establish a procedure for managing actions that addresses:

- Identification, categorisation and prioritisation of actions;
- Formal evaluation and approval of actions (management of change process);

- Assignment of responsibilities, resources and schedules for implementation;
- Implementation of actions;
- Tracking and reporting on implementation status; and
- Monitoring and verifying the effectiveness of the actions.

6.22 OHS AUDITS, MONITORING AND REPORTING

The Agent shall during the duration of the contract conduct OHS Audits of the work operations. The audit shall be consisting of a full audit of physical site activities as well as an audit on the administration of health and safety. Copies of the audit reports will be forwarded to the Principal Contractor, Principal Agent, Client and all stakeholders within seven days. Copies of the Audit report must be kept in the site OHS File. The Agent may at any time visit the site for an Audit without prior notification to the contractor.

The benchmark for OHS Compliance is set at 85% to ensure safety. The Contractors overall performance as per Audit checklist assessing physical and administration requirements shall be deemed as acceptable when over 85% benchmark is met. When Contractors fails to achieve the benchmark for two consecutive Audits, that shall be taken as failure to meet compliance and sections with non -compliances will be stopped. All deviations have a critic impact on safety and health on site and shall be closed without delays.

If an Audit identifies high risks with immediate dangers to health and safety, the section / tasks posing the risk or the whole site will be stopped until compliance is met.

The PC must allow for and conduct similar audits on all Sub- Contractors under him/ her, provide reports to the Sub-Contractors within seven days and keep copy of the reports in his on the OHS File.

6.23 GENERAL RECORD KEEPING

The PC must keep and maintain Health and Safety records to demonstrate compliance with this Specification, The Act and with the CR on the OHS File which must always be kept in the site office.

The PC must ensure that every Sub-Contractors opens their individual health and safety files, maintains the files and makes them available on request by any duly authorized person.

7. PHYSICAL REQUIRMENTS

7.1 SITE ESTABLISHMENT

7.1.1 *Public Safety and Security*

Barricading and Access Control

- Bonox fence of minimum of 1,6 to 1,8 meters high must be used to fence off the site / work stations parameters.
- The Contractor is required to maintain fencing intact.
- Lockable gates with warm body security must be provide at the site entrances.

Warning / informative signs

The entrances of the site must have construction safety warning signs which should contain a minimum of the following information:

- Construction site entrances must display the following signs:
 - Name of the PC
 - No unauthorised entry
 - Type of Personal Protective Equipment required for the site as per risk assessment
 - Speed limit (20 km/h)
 - Visitors to report to the site office
- Informative signs indicating following must be displayed in in the vicinity of locations on site:
 - Assembly points
 - Location of fire extinguishers
 - First aid kits and name of first aider
 - Location of lifebuoys

7.1.2 Site Camp Layout

Layout of the site must be in a manner that will ensure sufficient space for the following:

- Material storage
- Construction vehicle and plant movement
- Construction vehicle and plant parking

The PC must ensure that the following is considered in areas selected for site camp establishment:

- Existing services to be located and addressed according to Engineers Specifications.
- Adequate space to be allocated in consideration to facilities to be provided.
- Access roads, office areas, employees' facilities, parking areas, turning areas and stacking areas to be properly designated.
- Ground surfaces to be stable with safe gradient and free from slipping, tripping and falling hazards.

7.1.3 Site Access Management

Access control, procedures and systems must be developed for the site.

Access must be controlled as follows:

- The access to be strictly controlled and managed.
- A system for identifying site employees must be developed.

Visitors

Visitors (including suppliers) must be advised in advance of the mandatory PPE requirements for the site and must arrive with all of this PPE.

Upon arrival, all visitors must report to the Security Office to be signed in.

All visitors must undergo a visitor induction briefing before entering the site.

Whilst on site, visitors must be accompanied at all times by an appropriately senior employee who has been inducted fully. The visitor(s) must be start at the site office and when the visit is over, must be escorted off site.

Alcohol, Drugs and Other Intoxicating Substances

The contractor must ensure that all personnel under his authority do not at any time enter the site or perform any work whilst under the influence of alcohol, a drug, or any other intoxicating substance.

Entering the site possessing drugs, alcoholic beverages or any other intoxicating substance on the site is strictly prohibited.

A drugs and alcohol testing program must be implemented. Persons entering the site must be randomly tested. Any person who tests positive for alcohol or drug consumption will be subject to disciplinary action and shall be permanently removed from the site.

Any person has the opportunity to rather report that he/she is under the influence before accessing the project site – in these cases the employee may only be send home for the day by the responsible project manager representative but will then be tested for the following five days (each day) on his return to the project site. If it is found that the same person is frequently reporting that he/she is under the influence before even accessing the project site. It shall be the responsibility of the nominated project management representative to take disciplinary action and remove such a person's form the project site.

Should the actions and / or demeanour of an employee suggest possible narcosis or drunkenness, the employee must be removed from the site. This may be done without testing. A full disciplinary procedure must be followed by the Contractor concerned and a copy of the disciplinary action must be forwarded to the PC for his records.

Any person on the construction site who is on prescription drugs must inform the safety officer or the safety representative accordingly

All personnel involved in an incident / accident must immediately be subjected to an alcohol test and a drug test as part of the investigation.

Firearms, Ammunition and Offensive Weapons

Firearms, ammunition, and offensive weapons of any kind are strictly prohibited. No person may enter /shall not be permitted to enter the site carrying any such item.

7.1.4 Facilities

The site facilities must comply with Facilities Regulations, 2004 under the Act.

7.1.5 Electrical Connections

All electrical connections on site must be done by a registered electrical contractor and a COC must be provided upon completion of the installation.

Temporary electrical installations must be inspected weekly by a competent person and records must be kept on the health and safety file.

7.1.6 Lighting

The PC must ensure that lighting on site is in accordance with illumination values per specific area / works as per Environmental Regulations, 1987 under the Act.

7.1.7 Ventilation

Ventilation in the workplace must comply with Environmental Regulations, 1987 under the Act.

The PC shall ensure that every workplace in his undertaking is ventilated either by natural or mechanical means in such a way that:

- The air breathed by employees does not endanger their safety
- The prescribed exposure limits for airborne substances as per legislation not exceeded
- The concentration therein of any explosive or flammable gas, vapour or dust does not exceed the lower explosive limit of that gas, vapour or dust.

Where there is a danger of unsafe air in the breathing zone of an employee, the employer shall provide every such employee with, and ensure that he correctly uses, respiratory protective equipment of a type that reduces the exposure of the employee to a safe level and the employer shall, further, inform him of the dangers of and the precautionary measures against excessive exposure.

Risk assessment on ventilation must be done for all areas.

7.2 TRANSPORTATION OF EMPLOYEES

The PC and Sub –Contractors shall meet the following requirements for transportation of employees:

- Transport employees on a road worthy vehicle that also complies with CR 23 requirements and transportation to obey road rules.
- Vehicle to have seats and seat belts.
- Vehicles transporting employees to be not overloaded.
- The PC shall not allow employees to be transported in a goods vehicle unless the portion of the vehicle in which the employees are being conveyed is enclosed to a height of: –
 - at least 350 mm above the surface on which employees are seated; or
 - at least 900 mm above the surface on which employees are standing, in a manner and with a material of sufficient strength to prevent employees from falling from such vehicle when it is in motion.

7.3 PERSONAL PROTECTIVE EQUIPMENT

SABS standards concerning PPE must be complied with at all times.

As a minimum, the following PPE must be issued to all employees and be worn by all persons at all times whilst on a project site:

- Ankle covering safety boots with steel toe protection
- Overalls with reflective taping (long trousers and long-sleeved shirts with collars and cuffs). Each employee to be issued with a minimum of two sets annually.
- Reflector vests to be worn over overalls. Each employee to be issued with a minimum of two reflective vests.
- Helmets
- Additional PPE requirements must be determined through hazard identification and risk assessment which includes the following PPE must be provided and must be worn as required (e.g., when in a certain area, when performing a certain task, or when working with a certain substance);
- Steel toed gum boots for employees working in water / muddy environments
- Sun hats
- Dust masks
- Ear protection
- Face /eye protection
- Leather / rubber gloves
- SANS 50381-5 leg protection for tree fellers
- Safety harnesses for employees working in an elevated position (1.5m or higher) where the potential exists that such employees may fall

The contractor must ensure that correct PPE must always be worn:

- In accordance with site requirements designated areas on the onsite;

- In zoned areas e.g., noise zones
- As required by a Safe Work Procedure, a risk assessment, or a Material Safety Data Sheet (MSDS).

Each Contractor must provide each of his employees with all required PPE (at no cost to the employee). PPE policy must be developed for the site.

Any employee who does not have all of the PPE that is required for him to perform his duties safely will not be permitted to work.

Each employee must care for his PPE, maintain it in good condition, and inspect it on a daily basis.

If an item of PPE has worn out, has become damaged, or is found to be defective in any way, it must be replaced by the contractor.

PPE must be stored in accordance with the manufacturer's requirements and / or recommendations.

Each employee must receive training in the use, maintenance and limitations of the PPE that is provided to him, and must be made aware of why the PPE is necessary as well as the consequences of not wearing it as instructed (i.e., the potential for injury and / or disciplinary action). Training records must be retained.

Any person who refuses to wear PPE as required must be removed from the site.

Symbolic signs indicating mandatory PPE requirements must be prominently displayed at the entrances of site and at the entrances to sections and / or designated areas on the premises where additional PPE is required. These signs must comply with the applicable national standard (if one exists).

Each contractor must appoint an employee to:

- Control the issuing and replacement of PPE;
- Keep an up-to-date register as proof that items of PPE have been issued to individuals (an employee must sign for the items that he receives);
- Ensure that there is an adequate supply of all required PPE (i.e. maintain PPE stock levels on site); and
- Carry out regular inspections to ensure that PPE is being used correctly, is being maintained in a good, serviceable and hygienic state, and is not being shared between employees.

Personal protective equipment should be last resort in control exposure to hazards. PPE should provide protection to the health and safety of employees as follows:

Head Protection

A safety helmet (or hard hat) worn correctly will help protect the head in the event of:

- An employee being struck on the head by a falling or flying object;
- An employee striking his head against a fixed or protruding object; or
- Accidental head contact being made with an electrical hazard.

A safety helmet must be worn at all times on a project site, with the following exceptions:

- Vehicle and equipment operators inside enclosed cabs;
- In offices and in office or administration buildings; and
- At designated lunch and break areas (provided that no work is in progress in the immediate break area).

A safety helmet must be worn in accordance with the manufacturer's requirements.

A safety helmet must be worn directly on the head. The wearing of a cap or other headgear beneath a safety helmet is prohibited unless the items have been specifically designed to be used in combination (i.e., the arrangement is approved by the safety helmet manufacturer).

The suspension system inside a safety helmet (that acts as a shock absorber) may not be removed.

Safety helmets may only be cleaned using a detergent and water. No solvents may be used.

Eye Protection

If an employee is carrying out, assisting with, or working adjacent to any activity where sparks or projectile particles are being generated, where chemical mists or fumes are being generated, where liquids may splash or spray, where harmful electromagnetic radiation (heat or light) is being generated, or where there is a risk of wind-blown particles entering the eyes, then suitable protective eyewear must be worn at all times (i.e. safety glasses, safety goggles, a face shield, a welding helmet, or a combination of these).

Such activities include:

- Working with rotating equipment (e.g., grinders, drills, mills, lathes, and saws);
- Welding and cutting;
- Chipping, chiselling or caulking;
- Using explosive powered tools;
- Abrasive blasting;
- Sanding; and
- Working with chemical substances (e.g., drilling fluids, acids, solvents, paints, pesticides, etc).

For certain activities, special eye protection is required (e.g., a heat-resistant face shield is required when working near molten metal).

Double eye protection is required for activities such as:

- Grinding, cutting, chipping, chasing and reaming (employees must wear both a full-face shield and safety glasses or goggles); and
- Arc welding (welders must wear both safety glasses and a welding helmet).

Screens must be erected to protect passers-by, where practical.

in certain areas may not be suitable because of increased risk to the eye due to dust or heat.

Hearing Protection

Employees should not be exposed to noise levels exceeding 85db.

“Low noise” tools and machinery must be used wherever possible to reduce noise levels.

Where noise cannot be reduced to an acceptable level through engineering and work practice controls, measures must be put in place to minimise the exposure of employees to the noise (i.e., administrative controls and personal hearing protection).

Areas / activities producing noise levels exceed 85dB, or areas where impulse noise exceeds 140dB, must be designated as noise zones. These noise zones must be clearly demarcated and mapped, signs must be posted, and all employees must be made aware of the requirements for working in such an area.

Suitable hearing protection must be worn in all designated noise zones and when carrying out (or working in the vicinity of) any activity where the noise level exceeds 85dB or impulse noise exceeding 140 db.

Where hearing protection is required, a hearing conservation programme (applicable to all personnel and visitors) must be implemented. The programme must include training in the correct use and proper storage of hearing protection devices as well as replacement requirements. Training must be provided when hearing protection is first issued to an employee and refresher training must be carried out at least annually thereafter. Training records must be retained.

Hearing protection devices must be made available to employees. The hearing protection devices must have adequate noise reduction ratings (i.e., must be able to attenuate the noise level to below 85dB.

Personal hearing protection must be issued on an individual basis and must not be shared.

In addition to personally issued hearing protection, suitable disposable hearing protection must be made available at the entrances to all noise zones.

All hearing protection devices (except for disposable hearing protection) must be properly inspected and cleaned on a regular basis.

Respiratory Protection

Suitable Respiratory Protection Devices (RPDs) must be worn in all designated respirator zones and when carrying out (or working in the vicinity of) any activity where the risk assessment has identified the need for respiratory protection.

RPD's must be selected based on:

- The type(s) of airborne contaminants that are present (gases, vapours, and particulates and aerosols including dusts, fumes, sprays, mists, and smoke);
- The potential particulate size distribution;
- Substance toxicity; and
- The likely concentrations.

Compatibility with the work tasks and other PPE, comfort (as it affects wear-time), and the ability to communicate adequately, must also be considered.

The risk assessment and method statement for the work to be performed, the information contained in the relevant Material Safety Data Sheets (MSDSs), and the results of any air monitoring associated with the substances to be worked with or activities to be carried out, must be used to ensure that the most suitable RPD is selected.

Only RPDs certified to a recognised standard and approved by the nominated project management representative may be used.

Where respiratory protection is required, a respiratory protection programme (applicable to all personnel and visitors) must be implemented.

The respiratory protection programme must include:

- Periodic inspection of RPDs, including before each use;
- Periodic evaluation (by competent persons) of cleaning, sanitising, maintenance and storage practices;
- Performance of positive pressure and negative pressure fit checks by RPD wearers before each use to ensure that the respirator is functioning properly; and
- Training at first issue of an RPD and regular refresher training thereafter in accordance with regulatory requirements or at least once every two years (the training must cover fit testing, use, cleaning, maintenance, filter cartridge replacement, and storage). Training records must be retained.

RPDs must be used, maintained, and stored in compliance with the manufacturer's requirements as well as the respiratory protection programme.

Suitable facilities must be provided for the cleaning and sanitary storage of RPD's.

Hand and Arm Protection

Gloves must be worn when handling or working with equipment, materials or substances with the potential to cause injury or illness.

Suitable gloves must be selected based on the task to be performed and the specific hazard against which the employee requires protection, such as:

- Sharp edges;
- Sharp points and splinters;
- Abrasive surfaces;
- Hazardous chemical substances (toxic, corrosive, sensitising, etc.);
- Extreme temperatures; and
- Viruses, bacteria and parasites

Foot Protection

Ankle covering steel toed boots must be worn at all times whilst on a project site.

Safety boots must provide the following protection:

- Steel toe cap to protect against crushing (impact and compression forces);
- Leather uppers that provide resistance against water penetration and water absorption or and also protects ankles from snakes' bites;
- Slip resistant soles;

And where a risk assessment identifies the need:

- Puncture resistant soles (i.e., steel midsoles) for protection against sharp objects;
- Chemical resistant soles for protection against spilt chemical substances (such as solvents, hydrocarbons, acids, and alkalis);
- Heat resistant soles for protection against hot surfaces or molten metal; or
- Electrical shock resistant soles for protection (insulation) against live electrical conductors.
- Gumboots with steel toe caps must be worn when working in water or very wet conditions

Body Protection

Suitable body protection must be provided as required to protect employees against specific hazards. A range of work activities require body protection in one form or another, including but not limited to:

- Hot work (e.g., welding, burning, cutting and grinding);
- Working with hazardous chemical substances (e.g., acids, solvents, pesticides, etc.); and

- A wide variety of protective garments are available, such as, leather aprons, leather spats, chemical resistant aprons, chemical resistant (or hazmat) suits, and disposable coveralls. Suitable items must be selected to provide protection against the specific hazard(s) to which an employee is exposed. Hazards must be carefully identified and characterised to ensure that the correct protection is used.

Body protection must be sized properly to prevent tearing, the parting of seams, tripping, or restriction of movement.

Sun Protection

The contractor must ensure that all personnel are protected in sunlight through the use of loose long sleeve shirts, long trousers and sun hats. Shade structures must also be made available to all employees.

Electrical Protective Equipment

To reduce the risk of electric shock, electrical insulating equipment appropriate for the voltage that may be encountered must be worn when working on energised electrical installations and when working within two metres of exposed energised conductors.

All rubber electrical insulating equipment (including gloves, sleeves, matting, covers, and line hoses) must be inspected for damage prior to and after each use, and immediately following any incident that can reasonably be suspected of having caused damage.

Rubber insulating equipment with any of the following defects and / or damage may not be used:

- A cut, rip, tear, hole, or puncture;
- Ozone cutting or ozone checking (i.e., the cutting action of ozone on rubber under mechanical stress causing a series of interlacing cracks);
- An embedded foreign object;
- Chemical deterioration (texture changes) such as swelling, softening, hardening, or becoming sticky or inelastic; or
- Any other defect that damages the insulating properties.

Rubber insulating gloves must be electrically tested before first issue and every 12 months thereafter as a minimum. Insulating gloves must also be given an air test along with the daily inspection. Essentially, this involves filling a glove with air and checking for any holes or leakage.

Insulating equipment must be stored in such a location and in such a manner so as to protect it from light, temperature extremes, excessive humidity, ozone, and other damaging substances and conditions.

Jewellery

Necklaces, dangling earrings, and bracelets may not be worn on a project site.

No jewellery or other conductive apparel (such as a key chain or watch) may be worn when carrying out energised electrical work.

Task-Specific PPE

In addition to the standard PPE required for a project site (including a safety helmet, safety glasses, safety boots, and high visibility protective clothing), the following task-specific PPE must be used as a minimum by any person carrying out or assisting with such a task:

- Arc Welding – safety glasses and welding helmet (i.e., double eye protection), respiratory protection against the specific airborne contaminants being generated (fumes, gases, dusts, etc.), leather welding gloves, leather apron, leather spats, leather yoke (for work above shoulder height), and knee pads for welders in kneeling positions;
- Gas Welding, Cutting or Brazing – gas cutting or welding goggles with shade 4 filter lenses and full-face shield (i.e., double eye protection), respiratory protection against the specific airborne contaminants being generated (fumes, gases, dusts, etc.), leather gloves (long cuff for welding and cutting, short cuff may be used for brazing), leather apron, leather spats, and leather yoke (for work above shoulder height);
- Grinding – safety glasses or goggles and full-face shield (i.e., double eye protection), hearing protection, respiratory protection where dust or fumes may be generated, leather gloves, leather apron, and leather spats;
- Abrasive Blasting – respiratory protection (air-supplied hood), hearing protection, leather gloves, and leather apron;
- Spray Painting – respiratory protection (air-supplied hood for confined spaces), safety goggles (if the respirator design does not provide this protection), hearing protection (where air compressors are used), chemical resistant gloves, and chemical resistant disposable coveralls.

Visitors PPE

All visitors to wear safety boots, reflective vests and helmets on site. Helmets to be worn when section visited has overhead hazards.

Visitors must be informed to come wearing their own PPE.

Visitors must not be allowed to go to site if PPE requirements are not met. Construction manager and OHS Officer to ensure this compliance is met.

Contractor must inform visitors on PPE requirements before they come to site. Visitors must bring their own PPE to site to avoid sharing of PPE. If the contractor chooses to provide Visitors with PPE, measures to be in place to ensure that such PPE is clean and disinfected.

PPE Policy

PC and Sub – Contractors must have a PPE policy with must outline the following:

- Training on purpose and use of PPE
- Address procedures to be taken when PPE is lost, stolen, worn out, damaged or defective PPE
- Measures to be taken for employees to come to site without issued PPE
- Procedure for issuing visitors with disinfected PPE

7.4 HAZARDS AND POTENTIALLY HAZARDOUS SITUATIONS

The PC must always ensure that works are conducted under safe conditions and environment.

Should a hazardous be identified, works must be stopped, and corrective actions must be applied to ensure safety.

Employees must be encouraged to report condition that seem unsafe to the Safety Representation or Supervisor.

7.5 EXTREME WEATHER CONDITIONS

If the weather condition poses a threat to the health & safety of employees; be it extreme heat, cold, lightning, wet and slippery conditions. The following measures must be in place to address adverse weather conditions:

Heat

Hot areas or activities where employees have experienced or could experience excessive fatigue, muscle cramp, dehydration, dizziness and other symptoms of heat stress must be identified and described.

A thermal stress risk assessment must be conducted in consultation with workers.

The contractor must implement the following measures for works conducted in hot areas:

- Ensure reduction of metabolic heat rate on employees by automation and mechanization of tasks minimize the need for heavy physical work and the resulting build-up of body heat
- Implement administration preventative measure as follows:
 - Allow sufficient acclimatization period before full workload
 - Shorten exposure time and use frequent rest breaks
 - Provide cool – sheltered rest-areas

- Provide cool drinking water, drinking water to be kept in a cool area
- If practical, allow workers to set their own pace of work
- Define emergency procedures. Assign one person trained in first aid to each work shift. Train workers in recognition of symptoms of heat exposure
- Employees to wear loose clothing that permits sweat evaporation but stops radiant heat. Employees exposed to the sun to wear sun hats.

Cold

Cold areas or activities where employees could experience pain or loss of feeling in their hands, severe shivering, excessive fatigue and other symptoms of cold stress must be identified and described.

The contractor must ensure that employees with the following PPE to prevent cold stress:

- Warm clothing for the body.
- Cotton / polyester gloves for cold resistance (such gloves to be worn other gloves required for the task).

Wet Conditions Due to rainy weather

Works must not be conducted on site during rainy weather which has resulted in slippery conditions on the roads and onsite which makes it unsafe.

Thundering Conditions

Changes in weather conditions must be continuously observed on site. When thundering conditions are eminent, works must be stopped and employees must be addressed to take shelter in their rest areas. Taking shelter under poles or tree is prohibited on site.

Visibility

The Construction Manager and the Safety Officer shall ensure that works conducted outside of buildings is not carried out during extreme weather conditions that have resulted in poor visibility. An assessment must be done for tasks during misty/ foggy conditions and works to be suspended in areas that pose risks due to poor visibility until the weather has cleared.

7.6 SITE CLEARANCE ACTIVITIES

All areas where the PC shall be conducting works must be cleared of vegetation, services and be made safe.

Method statement for site clearance must be provided.

Safe working procedures to be in place.

All existing services must be addressed as per engineer's specification.

7.7 LONE WORK

A lone worker is an employee who performs an activity that is carried out in isolation from other workers without close or direct supervision. Such staff may be exposed to risk because there is no-one to assist them. Lone work is therefore forbidden on site.

7.8 PLANT AND EQUIPMENT OPERATION

7.8.1 Selection / Suitability

The construction vehicle and plant selected for the works must be able to be driven without any risks in consideration to site terrains which may contain sharp inclines and declines. Before any plant is selected and used to carry out an activity, it must be checked for its suitability for the task, e.g., accessories available, boom length, reach capability, safe working loads.

Construction plant and vehicle selected for operations in the wet environment which includes construction of the coffer dam must be designed to safely operate in wet and muddy environment without safety risks.

All light duty vehicle to be fitted with buggy whips to ensure visibility to attenuated dump trucks and other construction plants.

All construction vehicle and plant operations to comply with CR 23 requirements.

7.8.2 Speed Restrictions and Protections

The maximum speed limit for construction vehicle and plant on site shall be limited to 20 km/h. Compliance shall always be as per signage displayed per section.

Vehicle movement routes on site must be clearly indicated through signage. Signage to ensure the safe movement of vehicles, as well as to ensure the health and safety of all employees and public around site must be displayed in strategic locations.

Construction vehicle on public roads must comply with requirements of National Roads Traffic Act, 1996.

7.8.3 Safe Parking

Contractor to designate parking areas for all construction plan and vehicle. Such areas must be fenced off and be provided with security (warm body at nigh). All construction plant and equipment should be parked in a safe and designated area when not in use. The following should always be in place:

- The hand parking brake must always be engaged when vehicles are parked.
- Buckets, lifting gear, loads, etc should also be lowered to the ground and keys should be removed from the ignition and stored safely.
- Wheel stoppers must be applied when trucks are parked without operators in them.
- Light duty vehicles parked in sloppy conditions to also apply wheel stoppers.

- No cars or construction vehicles should be left alone with running engines.

7.9 TRAFFIC MANAGEMENT

Traffic management plan for the project must be developed, documented and approved by the site Engineer and Agent. The plan must address accommodation of all traffic on site i.e., site vehicles, delivery vehicles, construction plant and visitors' vehicles.

Traffic routes must be clearly defined, all hazards on the routes which included power lines / any form of obstructions must be identified and controlled on the site roads to ensure safety for all intended traffic on site.

Speed to be maintained at 20km inside the site boundary. If the Contractor requires the speed to be at 40km p/h i.e., at work stations, risk assessment and consultation with the Agent and Project Manager to be done.

Contractor shall ensure that the traffic management plan addressed the following:

- Warning signs and speed control signs to be adequately displayed
- Haul roads to be designed to ensure good visibility for plant and construction vehicles
- Haul roads width to meet permissible standards for the plant and vehicles to be operated on it.
- All personnel on site to wear reflective clothing
- All construction vehicle to have warning lights and audio

Traffic management plan for the site must address all areas of the works and must be constantly reviewed with activities to ensure effectiveness.

7.10 EXCAVATIONS

Prior conducting any excavation, a detailed risk assessment taking into consideration the depth and the type of soil as per Geotechnical Reports must be conducted. Method statement must be provided for all excavation's deeper than 1.5 meters.

All excavations must be carried out as per CR 13.

All excavation work has to comply with the following:

- Excavation work must be carried out under the supervision of a competent person with experience in excavation work who has been appointed in writing
- Before excavation work begins the stability of the ground must be evaluated
- The location and nature of any existing services must be established before any excavation is commenced with and any service that may be affected by the excavation must be addressed as per Engineer's specification.
- Whilst excavation work is being performed, the PC must take suitable and sufficient steps to prevent any person from being buried or trapped by a fall or dislodgement of material.

- No person may be required or permitted to work in an excavation with a risk of collapsing that has not been adequately shored or braced.
- Shoring and bracing design must be approved by an Engineer and be constructed to safely support the sides of the excavation and prevent it from collapsing
- Where uncertainty exists regarding the stability of the soil the opinion of a competent professional engineer or professional technologist must be obtained whose opinion will be decisive. The opinion must be in writing and signed by the engineer or technologist as well as the appointed excavator
- Neighbouring roads that may be affected or endangered by the excavation must be suitably protected; no vehicle / plant or vehicle shall come 1 meter to the edges of excavations.
- Excavated material to also be kept 1 meter from excavation edge.
- Loose material excavated material and stones that could fall from the overhead excavations to be removed and be kept at minimum of 1 meter away from the edges.
- Excavations to be maintained safe and water to be drained away from the face and be mechanically pumped out from inside the excavations continuously.
- Excavations deeper than 1.5 meters must be accessed using a ladder.
- Every excavation, including the shoring and bracing or any other method to prevent collapse, must be inspected by the appointed competent person as follows:
 - Daily before work commences
 - After every blasting operation
 - After an unexpected collapse of the excavation or part thereof
 - After substantial damage to any support
 - After rain
- The results of any inspections must be recorded in a register kept on site
- Every excavation that is deeper than 1.5 meters / any excavation accessible to the public or that is adjacent to a public road or thoroughfare or that threatens the safety of persons, must be adequately barricaded with a net or fenced off to at least 1-meter high.
- Where there are hard surfaces near excavations edges which prevents digging holes for barricading installation, i.e., on roads, the contractor must obtain buckets/containers that shall be weighted down with concrete and barricading poles can be installed in those buckets / containers to ensure all excavations are barricaded.
- Vicinity of the excavation must display signage indicating of open excavations.
- Traffic management should be in place for any works done near / on roads.

7.11 EDGE PROTECTION

All open edges from above 1.5 meters must be guarded with suitable guards that are strong enough to restrain a fully grown human from falls. Open edge protection must be a minimum of 1 m high and be clearly visible.

Vehicles and plant must keep 1 meter away from open edges. Method statements to be provided for works that may require construction vehicles or plant to work in near open edges.

All edges that may be deemed by the Health and Safety Agent pose safety risks must be provided with protection.

7.12 WORKING AT HEIGHTS

All applicable legislation concerning work performed from an elevated position must be complied with at all times.

Fall protection measures must be in place as per CR 10 whenever the potential exists for a person to fall from elevated positions.

Contractor to ensure that all structures that contractor stands on has been assessed for stability and does not pose a risk of breaking while standing on it i.e., roof structures.

7.13.1 Fall prevention

Risk Assessment and Permitting

Prior to commencing with any work at height, an assessment must be conducted to determine if the work requires the use of fall protection equipment, and if so, which fall protection system is the most appropriate for the work.

The following documentation is required for any work where fall protection is required (i.e., where a risk of falling exists):

- A Risk Assessment for the task to be performed;
- A Fall Protection (and Rescue) Plan;
- A Safe Work Procedure for the task to be performed; and
- As part of the Risk Assessment and planning processes, the following must be considered:
 - Hazards relating to accessing the location at height or below ground;
 - The nature of the work location;
 - The nature of the work activities to be undertaken at height;
 - Environmental and weather conditions;
 - The presence of nearby persons who may be at risk due to falling objects (potentially) or who's activities may be affected by the work being performed at height;
 - The selection of fall protection equipment (considering fall clearances) and / or access equipment;
 - The selection of anchorage points;
 - The load ratings of access platforms (scaffolding), work areas, anchorage points, life lines and etc.;
 - The condition of supporting structures
 - Exposure to heat sources;
 - The use of a mobile elevating work platform, man basket, or boatswain's chair; and

- Any other conditions that may affect the safe execution of the task.

Work platform

All work platforms and walkways elevated 2 metre or more must have complete floors, and edge protection must be in place in the form of toe boards and sturdy guard rails properly secured (i.e., bolted, welded, clamped, etc.) to prevent accidental displacement. Safe means of access and egress must be provided.

Guard rails must be capable of withstanding a force of at least 150 kilograms applied in any direction at any point.

The top rail must be positioned at a height of 1 metre above the working surface, and a mid-rail must be provided.

Floor openings, holes and edges

Any opening or hole (temporary or permanent) in a floor, platform or walkway must be protected by sturdy guard rails or a cover to prevent a person from stepping into or falling through the gap. Covers must be strong enough to support the loads that will be imposed on them and must be secured to prevent accidental displacement.

Fall Protection

Whenever there is a risk of falling from elevated position or whenever work must be carried out within 1.5 metres of an opening through which (or an edge over which) a person could fall, no work may commence unless:

- Fall protection by physical barrier / fall rescue plan is in place (prepared by a competent person, who is appointed in writing).
- A detailed task-specific risk assessment has been carried out;
- A safe work procedure is in place for the task to be performed;

Fall Arrest Equipment

The use of fall restraint or fall arrest systems must be avoided wherever and whenever possible through the installation of physical barriers that protect persons from falling. Only if physical barriers protecting against free falls at heights 1.5 meters or more cannot be installed must fall protection equipment be used.

Fall protection (fall restraint or fall arrest) systems are items of personal protective equipment and, if required, must be purchased, installed and provided to employees.

There must be a system for ensuring that fall protection equipment is:

- Tested and certified for use;
- Inspected by the user before use; and

- Destroyed following a fall or where inspection has shown evidence of excessive wear or mechanical malfunction.

Approved full body harness with two shock absorbing lanyards or two short restraining lanyards and secure anchorage points (and lifeline) must be provided as fall arrest equipment.

When selecting fall arrest equipment, care must be taken to ensure that the potential fall distance is greater than the height of the person plus the length of the lanyard with its shock absorber deployed (taking the height of attachment into account).

Anchorage points must, where practical, be above the head of the person, and must ensure that in the event of a fall the person will neither swing nor touch the ground.

All anchorage points and lifeline systems must be designed and approved by a professional structural engineer.

All persons that are required to work at height must first be trained and certified competent to do so. Furthermore, each person must be in possession of a valid medical certificate of fitness specifically indicating that the person is fit to work at height.

All persons required to use personal fall protection equipment must be trained and certified competent in the correct selection, use, maintenance and inspection of such equipment.

All fall protection equipment must be thoroughly inspected on a monthly basis by competent persons appointed in writing and each item of equipment must be tagged to show when it was last inspected. All inspections must be recorded in a register.

On finding defective or damaged equipment, appropriate action must be taken by the competent person (i.e., the destruction of the equipment to prevent further use).

Persons making use of personal fall protection equipment must do so in strict accordance with the instructions or requirements specified by the manufacturer or supplier of the equipment or system.

Specific pre-use inspection, maintenance and fitting protocols must be established in accordance with the manufacturer's requirements or guidelines and these protocols must be followed by all users of the fall protection equipment.

Competent supervision must be in place at all times for all work carried out at height. Supervisors must be appointed in writing.

Emergency response (rescue) procedures for the rapid retrieval of suspended persons in the event of a fall from height must be prepared and tested.

No person required to use personal fall protection equipment may work in isolation (a minimum of two persons working together is required).

A person may climb or descend a ladder without fall protection provided that he is able to use both hands and legs to do so, faces the ladder, and uses one step at a time. The ladder must be tied off or supported at its base.

Prior to any roof work being performed, or prior to persons accessing a roof, a structural engineer must verify that the roof is of sound construction and that it is capable of supporting the weight of the persons as well as any equipment that may be required. Should the engineer's findings be to the contrary, alternative methods of performing the work must be found?

Elevating Work Platforms

Before hiring or purchasing an elevating work platform (e.g., a scissor lift, man lift, boom lift, cherry picker or similar equipment), the certification of the equipment (with regard to suitability of design and construction) must be verified.

Before using an elevating work platform, it must be verified that the equipment is in good working order and has been serviced regularly. The service record and instruction manual must be kept on site. A system must be in place to ensure that the equipment is maintained and inspected as required by the manufacturer and / or local regulations.

Load bearing capacity must be displayed.

Operators must be formally trained through an accredited training provider and certified competent in the operation of the equipment.

Before using an elevating work platform, the operator must inspect the equipment and a pre-use checklist must be completed.

A mobile elevating work platform must not be driven unless the “basket” has been lowered and secured in a stable position.

An elevating work platform must only be operated on a firm surface with the outriggers extended (where fitted).

An elevating work platform must not be operated on a grade or slope beyond the capability of the machine (every mobile elevating work platform that is used must be fitted with an inclinometer which sounds an audible alarm before the maximum safe incline has been reached).

The area beneath the “basket” and the boom must be barricaded.

A second competent operator of the mobile elevated work platform to be in place on the ground level – to ensure that the elevated work platform could be lowered in case of an emergency.

A spotter must be used at all times when moving a mobile elevating work platform and when the “basket” is in an elevated position.

Falling Objects

In the process of planning work activities, the risks associated with falling objects (i.e. materials, tools or equipment) must be assessed and appropriate control measures must be identified, implemented, and monitored taking the following hierarchy of controls into consideration:

- Preventing objects from falling – by using containment sheeting, lanyards to secure tools (to a person or to the structure), ropes or chains to secure equipment (to the structure), lift boxes, cages, etc. and by properly securing loads when lifted by crane or hoist;
- Protecting people from falling objects – by establishing barricaded exclusion zones, installing catch platforms or catch nets, displaying warning signage, and posting safety watchers and / or traffic controllers;
- Personal Protective Equipment (particularly safety helmets and safety boots) – protective equipment is a last line of defence and must be worn.

Where overhead work is being carried out, barricading must be erected around the work area (at the level at which the work is taking place and at every level below including ground level) to prevent persons from entering such an area and potentially being struck by falling objects.

Wherever hazards related to falling objects exist, appropriate warning signage (i.e., “overhead work in progress” and “no unauthorised access”) must be prominently displayed.

No items are permitted to lie loose in elevated positions (e.g., nuts and bolts must be securely stored) and good housekeeping standards must be maintained at all times.

No tools, equipment, material, debris, waste, etc. may be dropped from height. Objects must be lowered or chuted to ground level in a safe and controlled manner.

7.13.2 Scaffolding

Training, Competency and Supervision

Scaffolding used on site must comply with SANS 10085 standards.

Scaffolding must be designed by a competent person to ensure calculations of safe working loads and maximum permissible heights. Scaffolding designs must be available on site.

Scaffolding may only be erected, maintained, altered or dismantled under the strict personal supervision of a competent Scaffolding Supervisor (or Scaffolding Inspector) who has been appointed in writing.

Scaffolding may only be erected, maintained, altered or dismantled by competent and appointed Scaffolding Erectors. It is the Scaffolding Supervisor's responsibility to ensure that all persons carrying out such work are suitably trained and experienced.

A certificate of competency issued by a SAQA accredited and approved training provider must be produced for each Scaffolding Supervisor and each Scaffolding Erector.

Erecting and Dismantling of Scaffolding

Surface which scaffolding shall be erected must be approved by the Scaffolding Supervisor. Where doubt exist, approval from professional engineer must be obtained.

Methodology and safe working procedure to be provided for scaffolding erecting must be provided. Stability of the scaffolding to be maintained at all times, which included during erecting, bracing and dismantling.

Only approved scaffolding components may be used to erect a scaffold. Scaffolding must be erected, modified and used in accordance with the manufacturer's guidelines or recommendations, and in strict compliance with standards and design.

Each person erecting, maintaining, altering or dismantling scaffolding must use fall arrest equipment at all times (i.e., a full body safety harness with two shock absorbing lanyards fitted with scaffold hooks). The work must be planned to enable every Scaffolding Erector to be securely anchored and lifelines at all times.

The area around the base of a scaffold must be barricaded to prevent unauthorised access into the work area. When scaffolding is erected or dismantled on a level, platform, or floor lying above ground level and the potential exists for components to fall to levels below the level on which the scaffolding is positioned, then the area directly below the scaffolding on each of those levels must also be barricaded. Appropriate warning signage (i.e., “overhead work in progress” and “no unauthorised access”) must be prominently displayed.

Methodology for safe lifting scaffolding components must be in place. Hoists, lifts and approved material baskets must be used (where available) to lift scaffolding components to elevated positions.

No scaffolding components, tools, or any other material may be dropped from height or thrown from one level to another. Components, tools and materials must be lowered or lifted in a controlled manner. Use may be made of a chute.

Each tool must be secured to the wrist, harness or structure by means of a lanyard. A tool bag (around the waist or over the shoulder) may be used for carrying tools up and down a scaffold structure. Tools or equipment may not be carried by hand up or down a structure, as both hands must be used for climbing. If necessary, a rope must be used for lifting or lowering tools or equipment.

While a scaffold is being erected or dismantled, no scaffolding components may be stacked on the scaffold structure unless it has been designed for that purpose. Any loading of a scaffold structure must be authorised in writing by a structural engineer.

Scaffolding may not stand on steel grating unless the grating is adequately supported from below. Scaffolding must rather stand on the structure that supports the grating.

Before scaffolding is erected in close proximity to an electrical installation or live conductors, an electrical engineer must inspect the area and determine whether or not the scaffolding must be earthed. Should the scaffolding require earthing, this must be done as soon as possible while the scaffolding is being erected.

Scaffolding may not be erected if it is raining or in strong winds.

Scaffolding must not be:

- Left partially erected or partially dismantled except for normal work stoppages (for example, over weekends) and with approval of the scaffolding supervisor
- Left in an unsafe condition (if scaffolding is unavoidably in an unsafe condition, barricading must be in place to prevent unauthorised access and the required red tags must be prominently displayed on the scaffold structure); or
- Moved or altered while work is in progress.

Mobile scaffolding must be equipped with brakes, which must be engaged at all times when the scaffolding is in use. A scaffold may not be moved if any person is on the structure.

Safe Scaffolding Access

Safe and convenient access must be provided to every scaffold platform by means of properly installed ladders or approved stairways, which must remain unobstructed at all times. Climbing up or down a scaffold on the braces or ledgers is forbidden.

All ladders used to access scaffolding must be securely attached to the scaffold structure.

Hook-on and attachable ladders must be specifically designed for use with the type of scaffolding being used.

If a ladder is used to access a scaffold platform at a height greater than 1.5 metres above the ground, then the ladder must be secured internally (i.e., within the scaffold structure) and there must be an opening (closed with a trap-door) in the platform at the top of the ladder.

If the scaffold platform is at a height of less than 1.5 metres above the ground, then the ladder may be attached externally provided the guard rails around the platform are modified to allow access (the opening in the guard rails must be kept closed using a self-closing gate). No person may climb over or through the guard rails to gain access to a platform.

If a vertical ladder used on scaffolding is more than 5 metres in length it must be equipped with a ladder cage extending from a point 2 metres from the base of the ladder to a height of 1 metre above the platform (or the uppermost platform) that the ladder is providing access to.

Circular ladder cages must have an internal diameter of no more than 700mm. Square ladder cages must have internal dimensions of no more than 700mm by 700mm.

The requirement for a ladder cage may be waived if platforms are provided at height intervals not exceeding 4 metres, with the vertical ladder secured on the inside of the scaffolding framework and an opening (closed with a trap-door) in each platform.

Vertical ladders must be braced at three metre intervals (as a minimum) to prevent undue movement.

All vertical ladders providing access to a platform must be left in place for as long as the scaffold remains in place and must be inspected as part of the scaffold structure.

Any deviation from the requirements stipulated above must be subjected to a risk assessment and the Construction Supervisor must authorise the deviation in writing.

Scaffolding Platforms

Safe working platforms must be provided.

Every work platform must be complete (i.e., from ledger to ledger in order to prevent personnel, materials, tools, etc. from falling through the platform).

Every work platform must be constructed from manufactured steel scaffold boards of equal thickness. Timber boards are not permitted under any circumstances.

Each steel scaffold board must be securely hooked (fastened) onto the ledgers or transoms that support it.

On all sides except the one facing the structure, every scaffold platform must be provided with:

- Sturdy guard rails positioned 500mm above the platform floor (the mid rail) and 1100mm above the platform floor (the top rail); and
- Steel toe boards that are at least 150mm high and securely attached such that no gap exists between the toe boards and the platform floor.

Scaffold platforms must be as close to the structure as is practicable (but not closer than 75mm)

Scaffold platforms must, at all times, be kept free of waste, protruding objects, and any other obstructions. Platforms must be cleaned, if necessary, to ensure that they are maintained in a non-slip state.

Inspection of Scaffolding

Scaffolding to be inspected after erecting for safety, a green tag (displaying the words, “Scaffold Safe for Use”) or a red tag (displaying the words, “Danger: Do Not Use Scaffold”) must be prominently displayed on each scaffold at all times. The tag must be positioned close to the base of the ladder or staircase provided for safe access.

As a minimum, a green tag must display the Scaffolding Supervisor’s name, load bearing capacity, the date that the scaffold was erected, and the date that the scaffold was last inspected.

Hand over certificate to be issued by Scaffolding supervisor to Construction supervisor per scaffolding before use.

Only an appointed Scaffolding Supervisor may attach, change, update the information on, or remove these tags.

Scaffolding must thereafter be inspected weekly, after inclement weather and after altering and records must be kept on the file.

A record of each inspection (date and time of inspection, location of scaffolding, findings, etc.) must be captured in a register. The register(s) must be maintained by the Scaffolding Supervisor(s) carrying out the inspections.

Using Scaffolding

The Contractor must inspect the erected structure prior to acceptance and must ensure, as far as is reasonably possible, that the scaffold is safe and fit for purpose before allowing his team to make use of the scaffold.

In particular, the user must ensure that:

- The scaffold and the platforms have been constructed to meet the loading requirements of the work that is to be carried out (the Scaffolding Supervisor must be consulted in this regard);
- The Scaffolding Supervisor has checked that adequate ties and braces are in place;
- The work platforms are in the correct positions and are complete with toe boards and guard rails;
- Safe and convenient access has been provided (ladders and / or stairways); and
- A green (“Scaffold Safe for Use”) tag has been attached to the scaffold by the Scaffolding Supervisor.

Use of an incomplete or unsafe scaffold is prohibited.

Unsteady or non-rigid scaffolds must not be used and inadequacies must be reported to, and rectified by, the responsible Scaffolding Supervisor.

The user of a scaffold must ensure that every person in his team is aware that no alterations to the scaffold may be made by the team during the course of their work, and that if any alterations are required, they must be made by competent Scaffolding Erectors under the supervision of an appointed Scaffolding Supervisor.

A scaffold may not be used:

- If a red tag is displayed indicating that the scaffold is not safe to use; or
- During inclement weather, defined as wind speeds greater than 40km/h, thunderstorms, or heavy rain (in excess of 40mm/h).

With due consideration of possible educational limitations, the contractor must ensure that all persons understand what green and red tags mean.

The area around the base of a scaffold must be appropriately barricaded to prevent unauthorised access into the work area. Appropriate warning signage (i.e., “overhead work in progress” and “no unauthorised access”) must be prominently displayed.

Loose tools and / or materials on scaffold platforms must be secured using lanyards, wire or fibre rope, or must be placed in secured containers.

Where appropriate, “catch nets” deemed may be installed as an additional safety measure to prevent materials or tools from falling to the ground.

The storage or placement of materials on scaffolding platforms must be kept to a minimum. Debris as well as tools and materials that are no longer required must be removed from all working platforms at least once per day.

Scaffolding platforms must be cleaned regularly.

A heavy load may not be placed on a scaffolding platform unless the scaffold has been designed and constructed specifically for that purpose. Any loading of a scaffold structure must be authorised in writing by a structural engineer.

Scaffolds may not be used as hoisting towers or to support piping or equipment.

Each person working from scaffolding must wear fall protection (i.e., a full body safety harness with two shock absorbing lanyards fitted with scaffold hooks) and must be securely anchored at all times.

All work must be carried out from properly constructed work platforms. Standing on railings or braces in order to perform work is forbidden.

Where work on an electrical system is to be undertaken from a scaffold, an electrical engineer (employed by Project or the client) must determine whether or not the scaffolding structure requires bonding and earthing. The scaffolding may not be used until this has been determined, and if required, until the structure has been bonded and earthed.

Storage of Scaffolding Components

All scaffolding components must be stored in a demarcated storage area in such a manner that they are not exposed to environmental extremes and will not cause injury to persons. Suitable barricading / demarcation must be erected to prevent unauthorised entry to scaffolding storage area.

Each scaffolding stack must be stable and components must be neatly placed to ensure that no ends protrude into any pathway. The various components must be stacked separately.

Any storage area for scaffolding components must be positioned such that it will not interfere with any onsite activity (including the operation of any plant or equipment), block any access way, or obstruct access to any plant or equipment. Before establishing a storage area, the location must be agreed with the nominated project management representative.

7.13.3 Ladders

All ladders used on site must be of sound construction and adequate strength. Ladders must comply with GDR 13A requirements.

The use of makeshift ladders is forbidden.

All ladders must be numbered, listed in a register, and inspected by a competent person on a monthly basis (the results of each inspection must be recorded in the register).

Before using a ladder, the user must inspect it for damage.

Ladders with missing, broken, cracked or loose rungs, split stiles, missing or broken spreaders (stepladders) or any other form of damage or defect may not be used.

A damaged ladder must be removed from service (and tagged, “out of service”) without delay and must then either be repaired (if possible) or destroyed to prevent further use.

Safe working procedures for use of ladders must be communicated to personnel.

Ladders may only be used as a means of access and egress. The use of ladders as working platforms is prohibited, except for inspection and carrying out minor tasks (i.e., light work and short duration).

All portable ladders must be fitted with non-skid safety feet (or some other means to prevent the base of the ladder from slipping) and the feet must always be placed (stand) on a firm level surface.

The use of bricks, stones, wood or any other material to level the stiles of a ladder is prohibited.

Ladders may not be placed on movable bases such as boxes, tables, etc.

The base or foot of a ladder must always be secured to prevent it from slipping. The ladder must be held by an assistant if the base cannot be secured in any other way (e.g., tied off).

A straight ladder must extend at least one metre above its support (or above the working platform that it is providing access to). The top of the ladder must be tied off (or otherwise secured to its support) to prevent accidental movement.

A straight ladder must be placed at a safe angle, i.e., tilted at a ratio of approximately 4:1, meaning that the base of the ladder must be one metre away from the wall (or other vertical surface) for every four metres of height to the point of support.

A stepladder may never be used as a straight ladder. A stepladder must be opened fully and the spreaders must be locked securely.

When using an extension ladder, at least four rungs must always overlap at the centre of the ladder.

Ladders may not be joined together unless they have been specifically designed and manufactured for that purpose.

A ladder may not be placed against a window, glass or any other material which is unlikely to withstand the force exerted on it by the top of the ladder.

Materials and / or equipment may not be placed in close proximity to the base or landing of any ladder.

When ascending or descending a ladder, a person must always face the ladder and use both hands.

Nothing may be carried up or down a ladder if it prevents the person from holding on to the ladder with both hands. Tools must always be properly secured. This can be achieved by attaching them to the wrist using lanyards or placing them in a tool belt around the waist. Tools and materials may also be carried in a bag over the shoulder or hoisted to the landing using a tool bag and rope.

Only one person at a time may use (i.e., be positioned on) a ladder.

No person may stand or step above the third rung from the top of a straight ladder or above the second highest step of a stepladder.

Overreaching from a ladder is prohibited. If the target is not within comfortable reach, the person must climb down and reposition the ladder.

No person may run up or down a ladder, or jump from the lower rungs or steps to the ground.

All ladders must be properly maintained and cared for.

Ladders must be stored under cover and should be hung in a horizontal position from several brackets.

No ladder may be left lying on the ground or be left exposed to the weather. A ladder left lying on the ground presents a tripping hazard and it may be damaged by vehicles running over it.

No ladder may be left in such a position where it may fall over, be accidentally knocked over, or be blown over by the wind.

Ladders may not be painted, as the paint may conceal damage, defects, labels or other markings.

Ladders must be kept clean, as dirt may conceal damage or defects. Oil or grease accumulation on the rungs of a ladder may cause a person to slip.

Before making use of a ladder, each person must make an effort to remove mud, oil, grease, etc. from his boots.

7.13 TEMPORARY WORKS

The PC must ensure that the provisions of CR 12 are adhered to for temporary works to be conducted on site.

All temporary works must be designed by a competent Engineer who is registered with ECSA appointed as Temporary Works Designer as per CR 12.1.

Ground conditions where temporary works structure is to be erected must be tested by a competent person and recommendations implemented.

Temporary works drawings or any other relevant document including construction sequences and methods statements per structure must be kept on site. Drawings to be displayed at the site office.

Temporary works structure must be erected under supervision of a trained and competent Temporary Works Supervisor as per CR 12 (2) who shall ensure that the structure is stable on the ground and support vertical and lateral loads exerted on them without risk of collapse.

All persons required to erect, move or dismantle temporary works structures must be provided with adequate training and instruction to perform those operations safely.

All equipment used in temporary works structure must carefully examined and checked for suitability by a competent person, before being used.

A contractor must ensure that, all temporary works structures are adequately erected, supported, braced and maintained by a competent person so that they are capable of supporting all anticipated vertical and lateral loads that may be applied to them, and that no loads are imposed onto the structure that temporary works is not designed to withstand.

Provision must be made for safe access and egress to temporary works as per site working at heights and fall protection plan.

If after erection, any temporary works structure is found to be damaged or weakened to such a degree that its integrity is affected, it must be safely rectified or reinforced immediately as per temporary works designer and site engineer's recommendations.

Casting of concrete on temporary works shall only be conducted once the Temporal Works Designer has inspected the structure and authorised in writing.

Temporary works structure must be inspected by the Temporal Works Supervisor immediately before, during and after concrete placement, after inclement weather or any other imposed load on a daily basis until temporal works structure has been removed. Results must be recorded in a register kept on site.

Temporal works shall only be removed once the Temporal Works Designer has authorised in writing that the concrete has acquired sufficient strength to support its own weight and imposed loads.

Method and safe working procedure for installation and removing of temporary works must be provided and approved before work commencement.

All certificates and inspection records must be kept in the safety file.

7.14 LIFTING AND TACKLING

The PC and Sub-Contractors must ensure that lifting and tackling is conducted in a manner approved by the Engineer. Risk assessment, method statements and safe working producers must be provided and approved for all lifting and tackling tasks.

Lifting equipment must be designed and constructed in accordance with the manufactures/designer's specifications as well as generally accepted technical standards and operated, used, inspected and maintained in accordance with the manufactures requirements as well as that of the Driven Machinery Regulation 18 of the OHS Act.

The PC and Sub-Contractors must ensure that all lifting Cranes operations are in compliance with CR 22 in addition to compliance with Driven Machinery Regulations, 2008.

The following requirements as per Driven Machinery Regulations must be complied with:

- The lifting equipment must be operated by a competent person who has valid the medical fitness certificate.
- Lifting equipment must be clearly and conspicuously marked with the maximum mass load (MML) that it is designed to carry safely. When the MML varies with the conditions of use, the table of maximum loads should be used by the driver/operator.
- Lifting equipment fitted with a load limiting device that automatically arrest the lift when the load reaches its highest safe position or when the mass of the load is greater than the MML.
- Every hook or load attaching device must be designed such or fitted with a device that will prevent the load from slipping off or disconnecting.
- Every lifting machine must be inspected and load tested by a competent person every time it has been dismantled and re-erected and every 12 months after that. The load test must be in accordance with the manufacturer's prescription or to 110% of the MML.
- All ropes, chains, hooks or other attaching devices, sheaves, booms, outriggers and pads, brakes, load indicating device, safety devices forming an integral part of a lifting machine must have test certificates not older than 3 months.
- All maintenance, repairs, alterations and inspection results must be recorded in a log book and each lifting machine must have its own log book

Qualified slinger & signallers must be appointed for ensuring safe load hooking, guiding load, landing and unhooking loads. They must communicate effectively using approved signalling techniques with the operator of the lifting crane / truck. No lifting operations shall be conducted without slinger / signaller in place.

Section where lifting operations are taking place must be barricaded. Only authorised personnel shall be allowed in the area.

Before a lifted load is moving, a siren must sound to alert all personnel in the area and it should stop when the load has been positioned.

7.15 CONCRETE WORKS

Works to be planned accordingly; temporary works and reinforcement steel to be completed and certified by a competent person before any placement of concrete is done.

Method statement for the works to be provided.

Traffic management plan for the activity to be developed, considering truck routes and parking.

OHS files for the concrete supplier to be approved before the day of the task.

Ground conditions where the pump trucks shall be positioned to be stable, be able to withstand vibrations without safety risk and be approved by a competent person.

Inspection to be done on the structure before concrete pouring.

Personnel involved in the operation to wear PPE; reflective vests, gum boots, long rubber gloves, waterproof aprons, hard hats and goggles. Only authorised, trained and instructed personnel to be allowed in the area.

Operations must be done under supervision and a spotter & signaller who shall clearly communicate with the pump operator to be provided.

When concrete requires to be vibrated, vibrator to be suitable, be inspected for safety before use and be operated by a competent person.

Cleaning of concrete splashes and concrete trucks must be done in manner that will not contaminate the environment.

Method statement and safe working procedures for onsite mixing of concrete must be provided when this mixing is to be done on site. Employees working with cement to wear dust masks, steel toed gum boots and all PPE requirements as per MSDS to be met.

7.16 STRUCTURES

A contractor must ensure the following is in place to ensure safety of structures as per CR 11:

- All reasonably practicable steps are taken to prevent the uncontrolled collapse of any new or existing structure or any part thereof, which may become unstable or is in a temporary state of weakness or instability due to the carrying out of construction work;
- No structure or part of a structure is loaded in a manner which would render it unsafe; and all drawings pertaining to the design of the relevant structure are kept on site and are available on request to an inspector, other contractors, the client and the client's agent or employee.
- Inspections of the structure are carried out periodically by competent persons in order to render the structure safe for continued use.

- Completed structures are inspected at least once every six months for the first two years and thereafter yearly.
- The structure is maintained in such a manner that it remains safe for continued use.
- The records of inspections and maintenance are kept and made available on request to an inspector.

7.17 CONFINED SPACE

A confined space is a space with limited entry and egress. Examples of confined spaces on site include the interior of a storage tank, pipelines and tunnels; occasionally entered by maintenance workers but not intended for human occupancy. Hazards in a confined space often include harmful dust or gases, asphyxiation, submersion in liquids or free flowing granular solids, combustible or flammable substances. Confined spaces entry points must be secured (locked) to prevent unauthorised entry.

Safe working procedures must be developed for entering confined space. The safe working procedure should address the following:

- Identifying work area as confined space.
- Hazard identification before entering space which includes testing for gases, any liquids or solids substances that are present or could gain entry during maintenance.
- Monitoring plan; monitoring plan for entering confined space must be in place, i.e., tags at the entrance with name of person entering, safety watch of the confined space and radio communication
- Rescue plan; plan for rescuing a person in confined space must be addressed i.e., using of safety harnesses. Rescue personnel must be physically capable of carrying out a rescue.
- PPE issue; suitable PPE as per hazard identification must provide and be in good working order.
- Training; person entering confined space must be trained on hazards associated with works, safe working procedure and PPE use.
- First aid and emergency plan for entering confined space must be in place. First aid must be readily available in the workstation and communications must be available at the worksite to emergency response organizations i.e.; Fire Department, Ambulance
- Entry permit; competent person designated by the Contractor to issue entry permits for entering confirmed spaces after ensuring that all above safety requirements are adhered to. Entry permit to indicate name of the person entering space, description of work, communication used, date, time and duration of work.

7.18 LOCKOUT PROCEDURES

Lockout procedure is a planned safety procedure which involves turning off the energy supply of machinery and equipment to ensure safety. This procedure protects workers from the risks posed by live machinery or electricity.

The Contractor should develop set of procedures to cover the requirements of lockout i.e., during the following operations:

- Servicing and/or maintenance of plant, machinery, equipment and electricity
- During breakdowns
- During parking and/or or not using of plant, equipment and machinery
- Prior commissioning of systems, areas
- Refuelling
- Inspections / checklists
- Leaving cab

The contractor must ensure that the following steps for lockout procured are adhered:

- **Pre-lockout** starts with the issue of a lockout work permit by the responsible person. This is followed by the drawing of locks and keys, deactivating the equipment or process through conventional or other means and the securing of the lock on the lockout device. This is accompanied by the completion and hanging of the tag on the lock. This tag must show who is working on the machine and the date on which the lockout was done. It also makes it easy to see if the lockout is currently in use.
- **Mid-lockout** continues by ensuring that the correct control has been locked effectively disconnecting the power. Secure the key on the person who performed the lockout and start the maintenance or other work. This stage continues until all work is complete.
Post-lockout begins with a thorough inspection to remove all tools, loose parts and other maintenance equipment. Replace all the machine guards and other guards. Personnel must all be accounted for and be clear of all moving or hazardous mechanisms. Power is then restored and the necessary tests carried out before resuming normal operation

7.19 GENERAL MACHINERY

The PC must ensure compliance with the GMR, 1988 and amendments thereto, which include inspecting machinery regularly, allowing for and appointing a competent person to inspect and ensure maintenance, allow for supplying and issuing PPE and allowing for training those who use machinery.

7.20.1 Portable Electrical Tools

The PC must ensure that all electrical tools, electrical distribution boards, extension leads, and plugs are kept in a safe working order.

The PC must allow for and ensure the following:

- That a competent person undertakes routine inspections and records are kept on site.
- That only authorized trained persons use the tools.
- That safe working procedures apply.
- That awareness training is carried out and compliance is enforced at all times.

- That PPE is provided and used.
- Tools are inspected by a competent person monthly and records are kept in the register.
- Users inspect the tools daily before use and report any faults.

7.20.2 Compressed Gas Cylinders

The contractor must establish a suitable storage area for oxygen, acetylene, LPG and argon cylinders in compliance with the following requirements:

- The storage area must be located at least 10 metres away from any building, and must be well ventilated;
- The storage area must have a concrete floor;
- The storage area must be enclosed using wire mesh fencing (as this will ensure adequate ventilation). This enclosure must be kept locked. Access into the storage area must be limited and controlled;
- A protective covering or roof must be fitted to the enclosure to provide shade;
- The enclosure may not be used for the storage of any other materials / equipment, and must be kept completely free of all combustible materials at all times;
- Appropriate warning signage (i.e., “no smoking” and “no naked flames”) must be prominently displayed on the enclosure;
- A 9kg dry chemical powder fire extinguisher must be mounted near the entrance to the enclosure
- If electrical lighting is required, it must be of an approved intrinsically safe type;
- Oxygen, acetylene, argon and LPG cylinders must be stored separately in the enclosure. Furthermore, full and empty cylinders must be separated. Separate storage sections must be clearly designated within the enclosure for the different gas types, and for full and empty cylinders, i.e., oxygen – full, oxygen – empty, acetylene – full, acetylene – empty, etc.;
- When a cylinder is empty, the cylinder cap must be replaced to protect the valve. Empty cylinders must be clearly marked (there must be no need to open valves to check if cylinders are full or empty);
- All cylinders must be stored in an upright position and must be secured in this position by chaining, strapping or clamping them individually to a wall, a cylinder trolley, rack or carrier, or some other rigid structure;
- Cylinders must be stored in rows (when necessary due to the number of cylinders) with aisles between the rows to facilitate easy and rapid removal in the event of a fire;
- Oxygen cylinders may never be stored near highly combustible materials, particularly oil and grease, or near fuel gas cylinders. When in storage, oxygen cylinders must be separated from fuel gas (LPG and acetylene) cylinders by a distance of 6 metres or by a 2-metre-high wall made of fire-resistant material;
- The total quantity of gases stored on site must be limited to a 2-week supply.

Compressed gas cylinders must always stand upright (i.e., when being used, stored or transported) and must be properly and individually secured to prevent them from falling over.

Cylinders must be protected from flame, heat and from being struck by moving equipment and falling objects.

When handling gas cylinders (whether full or empty), care must be taken to prevent sudden impacts.

Whenever a cylinder is not in use, the protective cap must be in place to prevent the valve from being damaged.

Gas cylinders may not be carried, dragged, rolled or slid across a floor or surface.

When gas cylinders are to be moved / used, they must be placed in a proper cylinder trolley fitted with a minimum of 4.5kg dry chemical powder fire extinguisher.

Gas cylinders may not be taken into a confined space. Gas hoses that are run into a confined space must be removed during breaks.

A flashback arrestor and a check valve (non-return valve) must be installed between the regulator and the hose and between the hose and the torch on the oxygen line and on the fuel (acetylene) line.

Connection fittings may not be forced, and safety devices associated with cylinder valves or regulators may not be altered / tampered with.

Gas hoses may not be joined. Only approved hose connectors of the crimp type are permitted. Wire and jubilee clamps are prohibited.

Only high-quality ancillary equipment may be used. This includes flashback arrestors, hoses, clamps, spindle keys, nozzles and torches.

Only trained and competent personnel may operate gas welding / cutting equipment and appliances.

When an employee opens the valve to a cylinder, he must stand to one side and open it slowly. Valves may never be left partly open – they must either be closed or be opened fully.

Leaking cylinders must immediately be removed from service and the workplace (if it is safe to do so).

Gas cylinders must be prevented from coming into contact with electrical circuits, e.g., welding leads. Never strike an arc on a cylinder.

7.20.3 Pneumatically Powered Tools and Equipment

When using pneumatic powered tools, the designated tool pressure must be attained by the use of a regulator.

Pneumatic tools to be operated by a trained and competent person.

Pneumatic powered tools must be disconnected when not in use. They must not be disconnected from the air supply until all the residual pressure has been released or contained by a shut-off device. Hoses must not be kinked as a means of containment.

Employees operating pneumatic powered tools, and any potentially affected employee in the vicinity of use, must wear suitable personal protective equipment.

All rotary compressed air tools (e.g., drills) must have the rated revolution per minute (RPM) permanently marked on the casing. Only attachments of compatible RPM must be used with these machines.

The actual RPM of the tool must be checked every three months to ensure that the speed is as rated to manufacture specifications.

Pneumatic powered tools must be secured to the air supply hose by an approved positive means to prevent the tool from becoming accidentally disconnected. Safety clips or retainers must be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

Compressed air must not be used for cleaning purposes to ensure safety. Compressed air must not be pointed at any part of the body or used for cleaning clothing.

7.20.4 Fuel Powered Tools and Equipment

Fuel powered tools must be shut down and allowed to cool before being refuelled, serviced, or maintained. Fuel must be transported, handled, and stored in approved fuel containers. Where possible, diesel driven engines must be used in preference to petrol driven engines. All fuel powered tools must be included on the contractor's Equipment Register only approved equipment to be used on site.

When fuel powered tools are used in enclosed spaces, the space must be ventilated and the atmosphere monitored to measure toxic gas concentrations. This type of activity must only be undertaken in exceptional circumstances and requires the approval by the Safety Agent.

7.20.5 Hydraulically Powered Tools and Equipment

Hydraulic powered tools must use only approved fluid that retains its operating characteristics at the most extreme temperatures to which it will be exposed. The manufacturer's stated safe operating pressures for hoses, valves, pipes, filters and fittings must not be exceeded.

Only manufacturer approved hoses, valves, pipes, filters and fittings must be used.

7.20 HAND TOOLS

Employees required to use hand tools must receive training relevant to the tool and have their competency assessed in the operation, inspection and maintenance of the tool. Where necessary, additional applicable personal protective equipment must be worn when using hand tools.

Wrenches, including adjustable, pipe, end, and socket wrenches, must not be used when the jaws are sprung to a point where slippage occurs. Impact tools such as drift pins, wedges and chisels, must be kept free of mushroomed heads. The wooden handles of tools must be kept free of splinters or cracks.

Correct hand tools for the job must be used, e.g., screwdrivers must not be used as chisels, and pliers must not be used as hammers.

All hand tools used in elevated areas, that may be dropped or fall to lower levels must be fitted with safety lanyards and attached to solid structures or in the case of podges, scaffold keys etc., attached by wrist lanyard to the user.

Purpose built tools and equipment may not be used unless a risk assessment has been conducted and authorised by the nominated project management representative.

All tools must be inspected by the user before, during and after use. If any faults are identified, the tool must be taken out of service and not used until repaired. Faulty tools that are not able to be repaired must be tagged "out of service" and removed from site.

Nuclear Gauge Handling

Before operating a nuclear gauge, a person must pass a Nuclear Safety course and be issued a thermoluminescent dosimeter (TLD) badge. The badge measures exposure to radiation and is to be worn whenever operating a nuclear gauge.

Exposure to radiation must be limited through time, distance, and shielding. Safe storage and use of equipment to be in place. Safe working procedures to be developed and implemented.

7.21 MANUAL HANDLING

Any handling or lifting task that can only be done manually must be planned and rehearsed before the task is done. A risk assessment must be conducted in consultation with employees.

The contractor must plan his work in a manner that shall reduce manual handling as far as reasonably practicable and use by using mechanical means i.e., use of pallet truck, forklift truck, powered hoists.

The following should be considered with conducting the Risk Assessment with regards Manual Handling and also take into consideration the task factors, physical demands and tools involved in the task:

- Load weight/frequency;
- Hand distance from lower back;
- Asymmetrical trunk/load;
- Postural constraints;
- Grip on the load;
- Floor surface;
- Environmental factors;
- Carry distance; and
- Obstacles on route

As a guideline 25 kg is considered to be the limit of what a person can safely handle. Where there are loads exceeding 25 kg the risk of handling the load must be mitigated to assure minimal potential for any injury.

The following measures must be in place when handling loads to ensure safety:

- Reduce carrying distances, material to be delivered as close to the working area as possible
- Assessing the weight to be carried to carried and ensure sufficient man power.
- Ensure proper grasping. Get a firm grip. The roots of the fingers and the palm of the hand should grip the load.
- Ensure good handling and lifting techniques i.e., keep the load as close to the body, waist as far as possible, avoid twisting the back or leaning sideways, keeping the head up, moving smoothly
- Plan for rest midway where the distance is long
- Clear communication & good coordination to be in place
- If more than one person is involved in a task a communication procedure must be agreed in advance. Lowering the load must be done in a controlled manner. Dropping a load is dangerous and must be avoided.
- Extra care should be taken when lifting awkwardly shaped objects

7.22 VIBRATION

As far as possible, exposure to vibration must be eliminated.

However, if this is not possible, short-term solutions to decrease exposure include:

- Reducing the vibration levels;
- Removing the person from the vibrating equipment / tools;
- Reducing the period of time that the person works with the vibrating equipment / tools (at least 30 minutes break after 30 minutes working with a machine that vibrates excessively).

In order to reduce exposure to vibration:

- Consider buying equipment that operates effectively at lower speeds;
- Buy equipment with built-in damping materials;
- Buy lighter tools if they are available - they require less of a grip;
- Maintain the equipment;
- Make sure equipment is balanced and there are no worn parts;
- Use remote controls when they are available;
- Reduce your grip on the equipment when it is safe. The less time you actually have your hands on the equipment the better. Relax your hands during these brief breaks;
- Take scheduled breaks; and
- Do other tasks that allow you to move away from vibrating tools and equipment.

7.23 HAZARDOUS CHEMICAL SUBSTANCES

All employees required to use Hazardous Chemical Substances (HCS) or products containing HCS must be adequately and comprehensively trained with regard to the requirements of the Hazardous Chemical Substances Regulations, 1995 and amendments thereto, the potential sources of exposure and the potential risks to their health caused by exposure.

Only authorised and trained personnel should handle / work in areas with hazardous chemical substances.

No chemical substance may be brought onto site unless it has been approved construction manager and it appears on the approved chemical substances register which will be made available to all contractors.

The register will contain the following information:

- Trade name / product name of substance;
- Manufacturer / supplier of substance;
- Maximum inventory;
- Storage requirements and precautions;
- Inventory of special emergency items held for handling spillages, fires, etc. (e.g., reagents to neutralise spillages, firefighting foam, etc.); and
- Approved disposal methods.

Any chemical substance brought onto site without adherence to the requirements stipulated above shall be removed from site immediately.

The contractor must ensure that a Material Safety Data Sheet (MSDS) is obtained for each chemical substance brought onto site. A file, or files, containing all of the MSDS's must be maintained and must be readily available to all personnel on site (particularly first aiders) as well as other potentially affected parties (e.g., emergency services personnel, persons from the local community, etc.). The MSDS's must be in the language(s) commonly used on site.

The contractor must appoint a trained and competent Hazardous Chemical Substances Coordinator who understands and is able to evaluate the risks associated with a wide variety of substances. This person shall be responsible for:

- Assessing the hazardous properties and risks associated with all chemical substances brought onto site by the contractor and appointed sub-contractors (using the MSDS's);
- Determining precautions and safe practices for transportation, use, handling, storage and disposal (including PPE requirements) (using the MSDS's);
- Determining first aid and emergency response requirements / procedures (using the MSDS's);
- Maintaining the MSDS file;
- Managing and monitoring the consumption of inventory; and
- Providing an "as needed" service to site personnel and suppliers.

The risks associated with the transportation, use, handling, storage and disposal of all hazardous chemical substances brought onto site must be assessed and managed by the contractor through a process that incorporates risk assessment.

Whenever a task-based risk assessment is carried out, consideration must be given to the use of chemical substances (e.g., greases, solvents, etc.).

The contractor must provide safe work procedures for the transportation, use, handling, storage and disposal of all hazardous chemical substances to be used on site.

The contractor must provide his employees with all of the PPE that is necessary to prevent exposure / injury while handling / using the hazardous chemical substances that they will be required to work with. Appropriate PPE must be selected with consideration given to the potential hazards, permeability, penetration, resistance to damage and compatibility with the work tasks.

The contractor's employees must be trained in the safe transportation, use, handling, storage and disposal of the hazardous chemical substances that they will be required to work with or may come into contact with. The training must specifically address PPE requirements (including the correct selection, fitment and use thereof).

All personnel must be trained to understand the potential health effects associated with exposure to hazardous chemical substances and therefore the importance of Safe Work Procedures and PPE. All personnel must be trained on emergency response procedures and first aid measures.

An emergency response plan for incidents involving hazardous chemical substances must be in place. Regular and appropriately staged emergency drills (possibly involving external spill response and ambulance support services) must be held and lessons learnt must be incorporated into the emergency response plan.

The contractor must provide appropriate storage facilities for all hazardous chemical substances to be used on site. The storage facilities must be secure and protected from damage. They must also be designed for easy access for firefighting purposes. Where applicable, the storage facility must protect chemical containers from physical damage due to temperature extremes, moisture, corrosive mists or vapours, and vehicles.

The inventory of hazardous chemical substances stored on site must be kept to a minimum. The quantity of each chemical stored must be justifiable.

Storage and segregation requirements for all hazardous chemical substances to be used on site must be based on:

- The quantities of the substances stored;
- The physical state of the substances (solid, liquid or gas);
- The degree of incompatibility; and
- The known behaviour of the substances.

Access to areas where hazardous chemical substances are stored and handled must be limited and controlled.

Every chemical substance container must be adequately and clearly labelled to identify its contents, to indicate precautionary requirements for the substance, and to indicate the date of expiry (if applicable). Pipes used to transfer / convey / distribute chemical substances must be clearly identified (e.g., colour coding). Directional flow must be indicated where practical.

Before any item, equipment or empty container containing a chemical residue is disposed of as general waste, it must be properly decontaminated (where applicable). Before being disposed of, empty chemical containers must also be rendered unusable for carrying water (by puncturing, cutting or crushing them).

Hazardous chemical substance waste (i.e., redundant / expired hazardous chemical substances, containers containing residues, contaminated items / materials, etc.) must be disposed of in accordance with the EMPr.

A system must be in place to ensure that the risks are assessed before any changes are made to equipment and / or processes for the transportation, storage, handling, use or disposal of a hazardous chemical substance.

A programme must be in place to continually investigate possibilities / opportunities for replacing hazardous substances with safer alternatives.

7.24 FUEL / FLAMMABLE LIQUID

Method statement for refuelling on site must be provided. Construction Manager to approve all fuel storages on site.

If the on-site storage of a fuel or a flammable liquid is approved, the contractor must ensure the following:

- The quantity of fuel / flammable liquid to be stored on site must be kept to the minimum that is required;
- The storage area must be located in a well-ventilated area at least 10 metres away from any building, drain, boundary or any combustible material;

- If more than 200 litres of fuel / flammable liquid are to be stored, the tank must be installed / the containers must be positioned within and be approved by Local Fire Chief Inspector.
- The bund must be impermeable. It must have a solid concrete floor and the walls must be constructed out of brick and must be plastered on the inside;
- The bund must be fitted with a lockable drain valve (for draining away rainwater), which must remain locked in the closed position. The valve may only be opened under supervision and in accordance with a written procedure;
- The fuel / flammable liquid storage area may not be used for the storage of any other materials / equipment, and must be kept completely free of all combustible materials (including rubbish, brush and long grass) at all times;
- Access to the storage area must be controlled
- Appropriate warning signage (i.e., “flammable liquid”, “no smoking” and “no naked flames”) must be prominently displayed at the storage area. The contents and volume of each tank must be indicated;
- In order to contain spillages, the offloading / refuelling bay at the fuel / flammable liquid storage area must have a solid concrete base surrounded by bund walls, ramps or humps and / or spill trenches (covered with steel grating) that lead into a sump;
- Fuel dispensing pumps must be protected against impact damage;
- All fuel / flammable liquid storage tanks and dispensing equipment must be electrically bonded and properly earthed;
- All electrical installations and fittings must be of an approved intrinsically safe type;
- Two 9kg dry chemical powder fire extinguishers must be mounted in an easily accessible position near the entrance gate to the fuel / flammable liquid storage area. Depending on the size of the storage area, additional fire extinguishers may be required to ensure that an extinguisher is no further than 15 metres away from any point on the perimeter of the storage area;
- Smoking or open flames within 10 metres of a fuel / flammable liquid storage / refuelling area is strictly prohibited;
- No petrol- or diesel-powered vehicle or equipment may be refuelled while the engine / motor is running;
- Cellular phones must be switched off in fuel / flammable liquid storage / refuelling areas;
- Spill clean-up kits (containing a suitable absorbent fibre product) must be provided;
- Any spillages must be cleaned up immediately and all contaminated cleaning materials must be disposed of in accordance with the applicable legislation;
- Emergency plan for spillages must be provided. If a flammable liquid is spilt or is leaking from a container / vessel, the area must be cordoned off and appropriate warning signage must be displayed to keep unauthorised personnel away from the affected area. Every effort must be made to contain the spillage. All hot work in the vicinity must be stopped immediately. If the leak or spillage cannot be contained or stopped, then appropriate emergency response procedures must be activated including the evacuation of all persons in the vicinity. Suitable firefighting equipment must be positioned ready for use should the spilt product ignite.
- Drip trays must be used wherever required;
- All tanks, drums, cans, etc. containing flammable liquids must be tightly closed and properly sealed except for when a container is being filled or when a product is being decanted;

- The transport or storage of corrosive or flammable liquids in open containers is strictly prohibited
- Only required quantities of flammable liquids (paints, solvents, etc.) must be stored on site. Each product must be kept either in its original container or in an approved container which must be properly sealed. Each container must be clearly labelled to indicate its contents. When not in use, all such containers must be stored in a well-ventilated steel cabinet which must be kept locked to prevent unauthorised access;
- Safe Work Procedures must be compiled for the transportation (including delivery), offloading, storage, handling and use of any fuel / flammable liquid on site;
- Safe working procedure for vehicles refuelling must be displayed on site
- All personnel that will be required to work with or may come into contact with a flammable liquid must be made aware of the hazards associated with the product and must be thoroughly trained in the safe transportation, use, handling and storage thereof.

7.25 STACKING OF MATERIALS

Stacking and storage of materials must be performed under the supervision of a Competent Person who has been appointed in writing as required by CR.

Storage areas must be designated, kept neat and under control. In addition to the abovementioned the requirements of General Safety Regulations, 1986 must be complied with.

Adequate space stacking, storage and lay down areas must be provided on site.

Stacking, storage and laydown areas must be demarcated and be kept neat.

The base of any stack is level and capable of sustaining the weight exerted on it by the stack. The items in the lower layers can support the weight exerted by the top layers.

The height of the stack must not be higher than 3 times the size of the base.

Stacked material with a risk of rolling i.e., pipes must be secured with roll chocks suitable material.

All site material must be stored within the barricaded site, in the event that material is stored outside the fenced site, it must be barricade with a strong physical barrier that is clearly visible to prevent access.

Hazardous chemical substances must be stored in dry storeroom as per specifications of their material safety data sheets.

All irregular shaped items must be stacked at floor / ground level in designated stacking areas on a level, firm base capable of withstanding the weight of the commodities being stacked and stacked in such a manner that the items do not topple over or change position due to subsidence or weight transfer when being moved.

Where these materials are stacked on shelves or racks, the shelves or racks must be designed to carry the weight of the commodity being stacked.

All racks or shelves where heavy material or commodities are stacked must have a weight carrying limitation clearly marked on the structure and have a safety factor of at least +10% of maximum total carrying capacity.

All materials, which could be damaged due to inclement weather, must be stored under cover.

Waste material that is combustible must not be allowed to accumulate in sufficient quantities to create a hazard.

The storage of material, small equipment, tools, files and general items in cupboards and on shelves must be neat and controlled at all times. Incompatible substances must not be stored in or on the same cupboard or shelf.

7.26 FIRE PROTECTION AND PREVENTION

The Contractor must compile a fire protection and prevention plan for the work that will be carried out on site.

The Contractor must assess / survey his area of responsibility and identify locations where the risk of fire is high. Cognisance must be taken of the fact that certain locations may need to be designated as high risk due to the presence of large quantities of flammable or combustible materials / substances. For all high-risk areas, the contractor must ensure that additional precautions are taken to prevent fires and strict control is exercised over any hot work (i.e., welding, cutting, grinding, etc.) that is carried out.

The contractor must supply and maintain all required firefighting equipment. The type, capacity, positioning, and number of firefighting appliances must be to the satisfaction of the nominated project management representative and must meet the requirements of the applicable legislation.

Firefighting equipment, fixed and portable, must be strategically located with a view to being able to rapidly deploy the equipment in order to bring potentially dangerous and destructive fires under control while still in their infancy.

All fire extinguishers (and any other firefighting equipment) placed on site must be:

- Conspicuously numbered;
- Recorded in a register;
- Visually inspected by a competent person on a monthly basis (the results of each inspection must be recorded in the register and the competent person must sign off on the entries made); and
- Inspected and serviced by an accredited service provider every year (the Agent may require that this frequency be increased depending on the environmental conditions (e.g., high dust levels, water, heat, etc.) to which the fire extinguishers are exposed).

Any fire extinguisher that has a broken seal, has depressurised, or shows any sign of damage must be sent to an accredited service provider for repair and / or recharging. Details must be recorded in the register.

Firefighting equipment may not be used for any purpose other than fighting fires. Disciplinary action must be taken against any person who misuses or wilfully damages any firefighting equipment.

Access to firefighting equipment, fixed or portable, must be kept unobstructed at all times.

Approved signage must be in place to clearly indicate the location of each permanently mounted fire extinguisher, fire hose reel, etc.

The contractor must ensure that all persons working in / entering his area of responsibility are made aware of where all firefighting appliances and alarm points are located.

The contractor must ensure that his employees (and those of any appointed sub-contractors) are trained in firefighting procedures and the use of firefighting equipment.

The contractor must compile an emergency response procedure detailing the actions that must be taken in the event of a fire or a fire / evacuation alarm.

All personnel working within the contractor's area of responsibility must be trained, and all visitors must be instructed, on this procedure. Copies of the procedure must be prominently displayed in the workplace in all languages commonly used on the site.

A person discovering a fire must extinguish the fire if he can do so safely, and then immediately report the incident to his supervisor. If the person cannot extinguish the fire, he must raise the nearest alarm and then report the fire as quickly as possible to his supervisor, the person responsible for the area, and / or Security.

On hearing a fire / evacuation alarm, all persons must make any operational plant or equipment safe, and then proceed to the nearest emergency assembly point and await instructions.

All incidents of fire (including the use or misuse of any firefighting equipment) must be reported to the Agent immediately. Used fire extinguishers must be replaced by the contractor without delay.

No hot work (i.e., welding, cutting, grinding, etc.) or any other activity that could give rise to a fire may be performed outside of a designated workshop without a Permit to Work having been issued.

Wherever hot work is being carried out, a fire extinguisher must be at hand. Where the risk assessment determines that it is necessary, a fire watch must be stationed.

Supervisors must carry out workplace inspections regularly to ensure adherence to fire prevention measures and procedures.

At the end of every working period (i.e., before each tea / lunch break and at the end of every shift / day), the workplace must be thoroughly inspected to ensure that no material is left smouldering and no condition / situation exists that could give rise to a fire.

The contractor must ensure that all supervisors and all employees carrying out or assisting with any hot work or any other activity that could give rise to a fire have been trained in firefighting procedures and the use of firefighting equipment. The training must be conducted by an accredited training provider.

When using electrical equipment, all cables must be in good condition and the nearest convenient socket must be used.

No power socket may be loaded beyond its rated capacity through the use of adaptors, etc.

Makeshift electrical connections are not permitted under any circumstances.

Water-based firefighting equipment must not be used on electrical equipment or burning liquids.

Each construction plant used on site for work purposes and each item of mobile equipment with a diesel or petrol engine must be fitted with a permanently mounted fire extinguisher.

Smoking is only permitted in designated smoking areas. Cigarette ends / butts must be properly stubbed out in the ashtrays provided and never thrown into waste bins.

The contractor must ensure that good housekeeping practices are enforced, as this is crucial to the prevention of fires.

All combustible waste materials must be removed from the workplace on a daily basis (at the end of each shift) and placed in waste receptacles located at least 5 metres away from any structure.

The accumulation of waste materials in out-of-the-way places is prohibited.

Offices, desks, cabinets, etc. must always be kept tidy and uncluttered. Waste paper bins must be emptied regularly.

All walkways, passages and stairways must be kept clear (i.e., must be unobstructed) at all times, as they may need to be used as a means of escape.

The areas around and the routes to all exits, fire escape doors, and fire extinguishers must be kept clear (i.e., must be unobstructed) at all times.

"No Smoking" signs must be conspicuously displayed in and around all storage areas / rooms.

Waste may not be burned under any circumstances.

Whenever any work is carried out involving the use of a flammable substance / material, the area must be cordoned off and appropriate warning signage (i.e. "no unauthorised entry", "no smoking" and "no naked flames") must be displayed.

7.27 INSTALLATION OF SERVICES

Prior to any connection / installation of services i.e., civil, electrical and mechanical services, permission to work must be obtained from the engineer. All works to be conducted as per engineer's drawings / specification.

Method statement for all work to be done on services must be provided and approved prior commencement of works. A lock out procedure must be provided and approved.

Work done in all services to meet / be in line with their respective SANS standard's.

7.28 ASBESTOS REMOVAL & DEMOLITION

Removal of asbestos building components must be conducted in compliance with Asbestos Regulations, 2002 & Asbestos Abatement Regulations, 2020 requirements.

The asbestos work to be carried out on site is type 2 asbestos work as more than 10 square meters of asbestos shall be removed in less than six months, the Client therefore must appoint an Asbestos Approved Inspection Authority (AAIA) for the works as the asbestos.

As the removal of asbestos that shall be conducted on site is classified as type 2 asbestos work, a Registered Asbestos Contractor is required to conduct the work.

The PC must appoint the Registered Asbestos Contractor who must then conduct a risk assessment for the works and issue to the AAIA.

The AAIA must compile the Asbestos Plan for the Asbestos Work and submit the notification of Asbestos Work to the Department of Labour seven days before works commencement.

All employees to be involved in asbestos work must have valid certificates of medical fitness issued by an Occupational Health Practitioner which must include lung function tests and lung X rays.

Asbestos Work safe working procedures, emergency procedure, hygiene management procedures, decontamination procedures for personnel, tools and equipment, PPE requirement, and welfare facilities for the works must be addressed on the Asbestos Plan.

Contractor must issue employees with adequate PPE as per risk assessment for the works and Asbestos Plan.

Contractor to ensure that employees are trained on all safety requirements and procedures for the works.

Asbestos work area must be isolated from other areas by barricading and adequate warning and information signage must be displayed in the area.

Asbestos waste to be temporary stored on site in a manner that will not cause risks of release and dispersal of asbestos fibres, asbestos to be double bagged and labelled and be stored in a temporal storage area. PPE to be regarded as asbestos waste.

Asbestos waste to be transported for final disposal in a manner that will not create safety risks.

Asbestos to be disposed of in an approved asbestos site and Disposal certificates must be obtained and be kept in the file.

AAAI to issue clearance certificate after asbestos work.

Prior to demolishing a detailed structural engineering survey should have carried out on the structure by the contractor. A demolishing method statement should be established based on said survey and it should be fully implemented during demolishing to ensure safety.

Demolishing shall only take place once the demolishing method statement is approved by the Agent.

Personnel that are not involved in the task must not be allowed in the demolishing area.

Section under demolition by me demarcated to be prevent unauthorised entry. Personnel involved in demolition to be trained and wear PPE which included hard hats, safety boots, overalls, gloves, dust masks.

High standards good housekeeping must be implemented and maintained. The area must be continuously cleaned and waste to be removed to dedicated areas that will be demarcated. Waste that can gain flight to be weighted down. Waste management plan must be developed. Waste to not be allowed to accumulate on site and be continuously disposed of in an approved site.

7.29 SMOKING

The contractor must not permit smoking on site except within designated smoking areas selected in accordance with the applicable legislation. Such an area must be clearly demarcated and the required signage must be displayed.

Any person found smoking or discarding a cigarette butt outside of a designated smoking area must be disciplined accordingly.

In all designated smoking areas, adequate non-combustible commercial ashtrays and / or cigarette butt receptacles (butt cans) must be provided.

Ashtrays and other receptacles provided for the disposal of smoking materials must not be emptied into rubbish bins or any other container holding combustible materials.

"No Smoking" signs must be strictly observed.

7.30 HOUSEKEEPING

Housekeeping must be implemented on site as per CR 27.

Housekeeping program must be developed for the site, and be well resourced. Housekeeping supervisor and housekeeping team should be appointed. Housekeeping program should outline procedures for implementing and maintaining good housekeeping on site at all times.

All items of scrap, unsuitable of cuts and rubble should be continuously removed from working to dedicated temporal waste collection areas.

All hand tools and working material are properly store in designated areas.

An area designated for temporal storage of rubble should be demarcated.

Large quantities of waste must not be allowed to accumulate on site. Waste must be disposed of in an approved land fill site.

7.31 WASTE MANAGEMENT

Method statement for waste management plan must be developed.

Waste must be stored on site in a manner that will not create safety hazards and in accordance with Project's EMPr

Separate bins for general and hazardous waste must be provided on site.

Spill kits must be provided on site. Drip trays must be provided for keeping under stationery plant.

Waste should be disposed of properly in approved landfill site as per hazard it contains.

7.32 WELFARE FACILITIES

The PC must allow for and supply:

- Change room facilities, separate for each gender which shall include personal storage facilities and shower facilities; at least one shower facility which must have hot and cold water for every 15 employees.
- Ablution facilities must be provided as per CR 30(1), separate facilities must be provided for males and females. Ablution facilities must be easily accessible from workstations.
- Hand washing facilities with running water and soap must be provided at ablution area.
- Where chemical toilets are used, they must be serviced weekly and slips for servicing must be kept on the file.
- Sheltered eating areas must be provided, eating areas to be adequate for number of employees on site. Eating areas must have sits and table that accommodates all employees.
- Portable water must be provided on site. Employees must be encouraged to bring their own empty containers for collecting drinking water.

8. CLOSE OUT REQUIREMENTS

Upon completion of the project, the PC and Sub –Contractors shall submit a well-documented consolidated Health and Safety file (to be in electronic form) to the appointed Health and Safety Agent, confirming the Health and Safety history of the project.

The following summary of information is required, to be filed in a disc format, but not limited to:

- Monthly Health and Safety Audits by the Health and Safety Agent
- Monthly Sub – Contractors Audits by the PC
- Minutes of the Health and Safety meetings
- Monthly site Health and Safety Reports
- Incidents, Accidents & Injuries on Duty
- Workman's Compensation Claims
- Environmental rehabilitation status
- The PC's / Sub Contractors Project Health and Safety File

Handover of the consolidated health and safety file can only commence once all personnel have been demobilized and nil man-hours are recorded. Electronic submission must be provided to the Health and Safety Agent

The Health and Safety Agent will evaluate the Health and Safety performance of the PC i.e., compliance, performance, quality and refer in a cover letter which will be added to the PCs consolidated file.

9. COST OF COMPLYING WITH THE OHASA AND CR 2014

The rates and prices tendered by the Contractor shall be deemed to include all costs for conforming to the requirements of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) (OHASA), the Construction Regulations 2014, and the OHS Specification for the works.

Should the Contractor fail to comply with any of the provisions of the OHASA, Construction Regulations 2014, or OHS Specification, he shall be liable for penalties as provided for in any of the aforementioned documents.

10. CONCLUSION

Due to fact that this document is based on legislative requirements, the Client requires that all Contractors comply with the requirements of this document and all other relevant legislative requirements not covered by this document.

The Client or its duly appointed representative reserves the right to stop any Contractor or Sub-Contractor from working whenever Safety, Health or Environmental requirements are being violated. Any resultant costs of such work stoppages will be for the relevant Contractor's account.

The requirements as specified by the Client in this document must not be deemed to be exhaustive and the Client reserves the right to make changes as and if the Client deems fit.

The Client will not entertain any claim of any nature whatsoever which arises as result of costs incurred or delays being experienced due to the Contractor not complying with the requirements of this document and/or any other applicable legislative requirements imposed on the Contractor.

DOCUMENT SIGNING

| Compiled by | Accepted by |
|--|--|
| Construction Health and Safety Agent: Phungashe Health and Safety Consulting | Client: Development Bank of Southern Africa |
| Name: Ayanda Buthelezi | Name: |
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