QUALITY, HEALTH, SAFETY & ENVIRONMENT (QHSE) PLAN

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1. PRINCIPLE STATEMENT

The aim of this plan is to have a tool which helps INFRAENERGY SERVICES LIMITED management to deliver, maintain and monitor the Company HSE performance at all work sites and facilities. Also, it is intended to be an effective tool used by employees to continuously improve HSE in the work.

The prime objective of the management and employees of INFRAENERGY SERVICES LIMITED is to provide products and services in a manner, which conforms to our client’s requirements and all applicable regulatory requirements.

INFRAENERGY SERVICES LIMITED management is totally committed to Quality, Health, Safety and Environment and expects all our employee’s to be strictly guided by the systems, procedures and processes laid down within the company. This plan shall be reviewed for its continuing suitability at periodic intervals.

2. HEALTH SAFETY & ENVIRONMENT POLICY

Environmental Policy
As an environment conscious organization, INFRAENERGY Services Limited shall
- Comply with applicable environmental laws and regulations.
- Set internal standards and requirements, as needed.
- Apply practices and control technologies that minimize pollution to the extent possible.
- As appropriate, take corrective action where past practices have harmed the environment.
- Prevent pollution through reuse, recycling, and reduction.
- Ensure prompt actions are taken to situations endangering employees, customers, the general public, and the environment as a result of our activities.
- Ensure continuous improvement in our activities to prevent pollution of air, land and water.

Occupational Health and Safety Policy
As an occupational health and safety conscious organization, INFRAENERGY Services Limited shall
- Comply with applicable occupational health and safety laws and regulations. Set internal standards and requirements, as needed.
- Apply practices and control technologies that minimize risk to the extent possible.
- Ensure prompt actions are taken to situations endangering employees, customers and the general public as a result of our activities.
- Ensure continuous improvement in its activities to prevent personal injury and / or property damage.
INFRAENERGY Services Limited management is totally committed to the Integrated Management System program and expects all the employee’s to be strictly guided by the systems, procedures and processes laid down in our Integrated Management System manual.

It shall be ensured that this Integrated Management System Policy is communicated to personnel at all levels within the organization and to interested parties. This policy shall be the basis for establishing and reviewing Integrated Management System Objectives and Targets, and shall be reviewed for its continuing suitability at periodic intervals.

### 3. INTRODUCTION

This safety plan defines the safety and health requirements required to be implemented in all sites.

This document defines the minimum Safety, Health and Environment requirements, required to be implemented during the execution of the contract. It outlines the techniques, guidelines and procedures to be followed for various operations and it is prepared based on the following:

1. Local Statutory Rules and Regulations as specified in relevant sections by the Ministry of Labor and Civil Defense.

The basic responsibility of enforcing these guidelines rests with the Senior Project Manager of the site and subcontractors Project Manager.

The Project Safety Manager will act as a catalyst in motivating the front-line engineers and foremen/charge hands to fulfill their obligations with regards to Health, Safety and the Environment. He will monitor the HSE activities of the site on a day to day basis and will report to the Project Manager if there is any deviation/violation from the guidelines contained in this document.

Basic responsibility of enforcing these procedures rests with the General Manager of the company through the Safety Manager, Project Manager, foremen and the supervisors. INFRAENERGY SERVICES LIMITED believes firmly that managing safety is a line responsibility and it is a good business practice to provide safe working environment to the employees.
4. SCOPE AND OBJECTIVES OF THE PLAN

The scope of the Safety Plan covers all INFRAENERGY Services Limited staff, sub-contractors, suppliers, and visitors in connection with execution of the contract, to ensure they are protected from risks and hazards arising from the project process.

It is the intent and goal of INFRAENERGY Services Limited to provide a working environment that is free of hazards which may cause injury or illness to our employees. It will be our goal to complete this project without accidents that result in loss of time from the work place. A worker who feels secure (safe) is more productive and content with his work. It is our objective to create an environment where workers can work with peace of mind in knowing that they are conducting construction activities in the safest possible environment in the construction industry. We will continuously improve our practices in light of advances in technology and new understandings in health, safety and environmental issues.

Objective of this Safety Plan is to help the management in striving to achieve the ultimate goal of Zero lost time injury accident.

5. ROLES & RESPONSIBILITY

Organization chart:

Responsibility for implementing this HSE Plan is given below.

| General Manager | 1. Monitor the implementation of this safety plan in close coordination with the line Managers  
2. Allocate funds and resources required for implementing the HSE rules indicated in this plan.  
3. Display his commitment to HSE visibly to ensure that the employees down the line understand the importance he attaches to this.  
4. Assigning equal importance to HSE as any other function in the organization.  
5. Lead by example /set a personal example |  
| Senior Project Manager/Project Manager | 1. Closely monitoring the HSE performance of the factory and sites in the day-to-day activities.  
2. Conducting the HSE review meetings.  
3. Arranging to send new employees for HSE induction and all employees for weekly toolbox talks.  
4. Arranging to take corrective and preventive action on the unsafe observations pointed out by the Safety Engineer.  
5. Initiate the company’s policy for the control of injury, damage and fire.  
6. Administer the policy himself or appoint a senior member of staff to do so. |
### QHSE PLAN

| **Engineer/Superintendent/Supervisory personnel** | 7. Ensure that all Supervisors are qualified and that they receive adequate and appropriate training.  
8. Make sure, at the planning stages and throughout the contract, allowance is made for suitable and sufficient equipment to ensure the job to be done with minimum risk.  
9. Co-ordinate safety activities between individual subcontractors.  
10. Institute a proper system for investigating, reporting and estimating the cost of injury, property damage and fire loss. Initiate analysis to discover accident trends and promote action to prevent recurrence.  
11. Reprimand the Supervisor for failing to discharge satisfactorily the responsibilities allocated to him/her.  
12. Set a personal example. |
| **Safety Engineer** | 1. Understand the Company’s Safety Policy and the responsibilities allocated to each grade of supervisor.  
2. Determine the following at the planning stage:  
a. The most appropriate order and method of performing the job.  
b. Requirement of Personal Protective Equipment.  
c. Storage areas, access etc.  
d. Any hazards identified under the Hazardous Identification Procedure.  
e. Facilities for welfare, first aid and sanitation.  
f. Basic precautions for dealing with fire hazards.  
g. Review all work methods and precautions with supervisors before the work starts.  
h. Create safety awareness by promoting safety meetings, presentations and open forum discussions by safety training.  
i. Ensure that all accidents are reported and investigated.  
j. Set a personal example by using proper Personal Protection Equipment (PPE) at all times. |
| **Engineer/Superintendent/Supervisory personnel** | 1. Assisting the Project Manager/superintendent in implementing the guidelines given in this document in all sites.  
2. Inspecting the site, making on-the-spot corrections of unsafe acts of the workmen and taking suitable steps to eliminate all the unsafe conditions. He will give an inspection report indicating all the unsafe conditions noticed by him in the site, highlighting the status of rectifying the same.  
3. Ensuring that accident report is sent to all concerned as explained in the chapter on “Accident Reporting”.  
4. Maintaining the minutes of the safety meetings.  
5. Providing induction programs for all the new employees before they are allowed to work in the site/ factory and refresher sessions whenever required. He will maintain record of conducting such programs.  
6. Ensuring that all engineers/supervisors/foremen conduct weekly toolbox talks to their respective technicians and maintaining record of the same.  
7. Conducting risk assessment and environmental aspect/impact assessment for all new projects during the mobilization stage itself to identify the possible hazards and the precautions to be taken.  
8. Overall responsibility for establishing, implementing and reviewing the HSE Policy. |
9. Providing visible leadership and commitment to HSE within the Company.
10. Set the annual HSE plan and ensure it is in line with the Company HSE objectives.
11. Define clearly people accountable to implement, achieve and deliver results.
12. Attend clients’ major HSE meetings, conduct HSE tours of facilities and hold regular HSE meetings with all employees.
13. Provide resources necessary to implement and achieve the HSE objectives.
14. Monitoring the implementation and maintenance of approved HSE plan at sites.
15. Plan and manage HSE audits, suggest the corrective actions for the non-conformances and monitor the implementation of corrective actions.
16. Will conduct regular inspections of the site to ensure that only safe and clean areas of work are maintained and all safety requirements are implemented.
17. Shall identify all unsafe practices and unsafe work conditions for taking corrective measures.
18. On identifying any unsafe practices or situations which can lead to an accident or incident, he will first approach the concerned foreman to get it corrected. If there is a dispute or taking corrective measures is beyond the limitations of the foreman, the safety officer will contact the engineer/superintendent/Project Manager. Prepare daily safety inspection reports and send a copy to his Project Manager and Safety Manager.
19. The Safety Manager will assist in training the site safety officers if so required in preparing reports, identifying hazards and investigation of all accidents.
20. Project Safety Officer is authorized to cease the work in case of any ‘imminent danger’.
21. Any ‘imminent danger’ will be immediately brought to the individual concerned and it will also be reported to the Senior Project Manager in the case of work required to be ceased.
22. He shall report all accidents/incidents/near miss/dangerous occurrences immediately to his Project Manager and Safety Manager by telephone and later by a written preliminary report.
23. Shall inspect and make sure that the appropriate types of fire extinguisher/equipment are in place and in working condition.
24. He shall be the co-coordinator to assist the Project Manager and construction team in handling an emergency.
25. He shall conduct safety toolbox talks on a weekly basis to all first line supervisors and will assist them in conducting daily toolbox talks to all workers.
26. With Administration, he will give safety induction to all the new employees before they are placed on the job site.

| Site Engineer / Supervisors | 1. Understanding this safety plan fully and following the same in their day-to-day activities.  
2. Giving safety instructions to their workmen on a daily basis as a part of their job instructions, highlighting the possible hazards in that day’s work and the precautions to be taken. |
## QHSE PLAN

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<td>3.</td>
<td>Keeping their work area neat and clean, especially around the machines.</td>
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<td>Taking an active part in the safety meetings.</td>
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<td>5.</td>
<td>Preventing horseplay of workmen.</td>
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<td>6.</td>
<td>Conducting toolbox talks to their respective technicians every week.</td>
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<td>7.</td>
<td>Rectifying the unsafe conditions pointed out by the Safety Engineer.</td>
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<td>8.</td>
<td>Ensuring that the employees use safety appliances related to the type of job being performed by them.</td>
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<td>9.</td>
<td>Reporting any unsafe conditions, near misses, accidents etc to the Safety Engineer for further investigation.</td>
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<td>10.</td>
<td>Implement the set targets and objectives in the annual HSE plan.</td>
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<td>12.</td>
<td>Coordinate with clients on HSE issues.</td>
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<td>13.</td>
<td>Demonstrate commitment to HSE.</td>
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<td>14.</td>
<td>In coordination with Safety Engineer, review the HSE plan.</td>
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### Employee

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<td>1.</td>
<td>Comply with the HSEMS.</td>
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<td>2.</td>
<td>Take reasonable care of their own Health &amp; Safety and that of others.</td>
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6. THE HSE MODEL

The model Health, Safety & Environment Model followed by is as shown here below:

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<td>Organization, Resources &amp; Documentation.</td>
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<td>Planning.</td>
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6.1. Description Summary on the HSE Model Elements

This part gives the necessary explanation and description to each element of the HSE model.

6.1.1. Leadership and Commitment

Senior Management must provide strong, visible leadership and commitment, and ensure that this commitment is translated into the necessary resources to develop, operate and maintain the HSE plan and to attain the Policy and Strategic Objectives. Management should ensure that full account is taken of HSE Policy requirements and should provide support for local actions taken to protect health, safety and the environment.
6.1.2. Policy and Strategic Objectives

Company Management has defined and documented its HSE Policies and Strategic Objectives as detailed in section 2, 3 & 4 of this HSE plan.

6.1.3. Organization, Resources and Documentation

Successful handling of HSE matters is a line responsibility, requiring the active participation of all levels of management and supervision; this should be reflected in the organizational structure and allocation of resources.

The company shall define, document and communicate – with the aid of organizational diagrams where appropriate – the roles and responsibilities, to implement the HSEMS, including but not limited to:

- Provision of resources and personnel for HSE development and implementation.
- Initiation of action to ensure compliance with HSE Policy.
- Identification and recording of corrective actions and opportunities to improve HSE performance.
- Recommendation, initiation or provision of mechanism for improvement, and verification of their implementation.
- Control of activities while corrective actions are being implemented.
- Control of emergency situations.

It will be stressed to all employees their individual and collective responsibility for HSE performance. The company will also ensure that personnel are competent and have the necessary authority and resources to perform their duties effectively. The roles and responsibilities are defined in section 5.2 of this plan.

6.1.4. Evaluation and Risk Management

6.1.4.1. Hazard Management:

Risk reduction is related to the reduction of hazards. Hazards must be identified and their possible effects evaluated. This allows the proper operations precautions or engineering design out steps to be taken to prevent hazards. However, when an incident does occur damage mitigation and recovery must be addressed through pre-planned procedures.
6.1.4.1.2. Identification of hazards and effects:

Procedures will be developed to identify systematically the hazards and effects which may affect or arise from operations and activities, and from the materials which are used or encountered in them.

6.1.4.1.3. Evaluation:

Procedures will be developed to evaluate (assess) risks and effects from identified hazards against screening criteria, taking account of probabilities of occurrence and severity of consequences for:

- People.
- Environment.
- Assets.

It should be noted that any evaluation technique provides results which themselves may be subject to a range of uncertainties. Therefore, formal risk evaluation techniques will be used in conjunction with the judgment of experienced personnel. Where appropriate, advice of regulators and surrounding community should also be considered.

Risk evaluation should:

- Include effects of activities, products and services.
- Address effects and risks arising from both human and hardware factors.
- Solicit input from personnel directly involved with the risk area.
Be conducted by qualified and competent personnel.

Be conducted according to appropriate and documented methods.

Be updated at specified intervals.

Evaluation of health and safety risks and effects should include, where appropriate, consideration of:-

- Fire and explosion.
- Impacts and collisions.
- Drowning, asphyxiation and electrocution.
- Chronic and acute exposure to chemical, physical and biological agents.

Evaluation of acute and chronic environmental effects should include, where appropriate, consideration of:-

- Controlled and uncontrolled emissions of matter and energy to land, water and the atmosphere.
- Generation and disposal of solid and other wastes.
- Use of land, water, fuels and energy, and other natural resources.
- Noise, odor, dust, vibration.
- Effects on archaeological and cultural sites and artifacts, natural and conservation areas and sensitive marine areas.

6.1.4.1.4. Risk Reduction Measures:

The company will have procedures to select, evaluate and implement measures to reduce risks and effects. Risk reduction measures include both those to prevent incidents (i.e., reducing the probability of occurrence) and to mitigate chronic and acute effects (i.e., reducing the consequences) should be emphasized wherever practicable.

6.1.4.1.5. Implementation:-

In all cases consideration will be given to reducing risk to a level deemed ‘As Low As Reasonably Practicable’ (ALARP) reflecting among other factors, local conditions and circumstances, the balance of cost and benefits and the current state of scientific and technical knowledge.

6.1.5. Planning

There must be within overall work programs, plans for achieving HSE objectives and performance criteria. These plans should include:-

- A clear description of the objectives.
QHSE PLAN

- Designation of responsibility for setting and achieving objectives and performance criteria at each relevant function and level of the organization.
- The means by which they are to be achieved.
- Resource requirements.
- Time scales for implementation.
- Programs for motivating and encouraging personnel towards a suitable HSE culture.
- Mechanisms to provide feedback to personnel on HSE performance.
- Processes to recognize good personal and team HSE performance (e.g., safety award schemes).
- Mechanism for evaluation and follow-up.

6.1.6. Implementation

6.1.6.1. Activities and Tasks:
Activities and tasks should be conducted according to procedures and work instructions developed at the planning stage or earlier, in accordance with HSE policy:
- At senior management level, the development of strategic objectives and high level planning activities are to be conducted with due regard for the HSE policy.
- At supervisory and management level, written directions regarding activities (which typically involve many tasks) will normally take the form of plans and procedures.
- At the work-site level, written directions regarding tasks will normally be in the form of work instructions, issued in accordance with defined safe systems of work (e.g., permit to work, simultaneous operations procedures, lock-off and tag-out procedures, manuals of permitted operations, etc).

6.1.6.2. Monitoring:
Procedures are to be in place for monitoring relevant aspects of HSE performance and for establishing and maintaining records of the results for each relevant activity or area.

6.1.6.3. Records:
A system of records should be maintained in order to demonstrate the extent of compliance with HSE policy and its requirements, and to record the extent to which planned objectives and performance criteria have been met.

6.1.6.4. Non-Compliance and Corrective Action:
Responsibility and authority will be defined for initiating investigation and corrective action in the event of non-compliance with specified requirements relating to HSE, its operation or its results.
Situations of non-compliance may be identified by the monitoring program, through communications from employees, client, sub-contractors, customers, government agencies or the public, or from investigations of incidents.

6.1.6.1.5. Incident Reporting:
Procedures will be maintained for the internal recording and reporting of incidents which affected, or could have affected, HSE performance, so that the relevant lessons can be learned and appropriate actions taken.

6.1.6.1.6. Incident Follow-Up:
Both the immediate circumstances of the incident and the underlying HSE weaknesses which caused it should be identified to enable judgments to be made by those responsible for authorizing the necessary follow-up action.

The mechanism and responsibilities for follow-up of incidents must be clearly defined. The mechanism should be in cases of non-compliance with the HSEMS.

The defined responsibilities for follow-up of an incident should be appropriate to the severity of its real or potential consequences.

7. TRAINING

When people are trained to properly do their job, they will do it safely. Training is one way to influence ‘Human Behavior’ Every supervisor must know:

How to train an employee in a safe and efficient way of doing a job
- Understand company policies and procedures.
- Know how to detect and control hazards, investigate accidents, and handle emergencies.

The Safety Officers will liaise with his Project Manager will ensure that a ‘Safety Education and Training Programme’ is implemented on site.

Safety Manager/Project Manager shall identify the necessary competency of personnel as
- Staff- based on position, new or additional job responsibilities, annual appraisals
- Technicians- based on work requirements
- Accident/incident/near miss reporting
- Need to need basis

Training needs once identified shall be submitted to MD and updated in the Training Plan.
8. ACCIDENT INVESTIGATION

Accident: An unplanned event which has resulted in personal injury and/or property damage.

Near Miss: Any situation that would have resulted in an Accident.


Hazard: Is the potential that lies in anything, person, or situation to cause harm to people, plant, property or the environment.

Risk: Is the probability of the harm being realized

Near Miss/Dangerous Occurrences: An accident or incident that has a potential for a higher severity in terms of injury or damage to property.

First Aid Case: Only first aid treatment provided, without sending to hospital, to any injury case as a result of an accident in connection with work activities. The injured is sent back to work after treatment.

Doctor Cases/Disabling Injuries: Any injury that requires a physician for further treatment at hospital is called a “Doctors Case”. If an employee is still able to perform light duties from his next scheduled shift

Fatalities: Any accident that results in death.

Lost Time Cases. (LTC): An accident/incident where an employee is unable to work any portion of the next scheduled shift subsequent to his injury.

Lost Time Days (LTD): The days an employee is unable to perform his duties and shall start recording the LTD, for recording purposes, the day of the accident is not included in the Lost Time Days but all holidays and weekly day off is taken into account.

All accidents/incidents will be recorded and investigated.

In case of accidents involving a disability of period of more than 48 hours, GM’s office/Service Managers shall be informed immediately. Accident report shall be sent to GM’s office with a copy to Service Manager/ MR within 24 hours and project in charge safety officer shall investigate the accident and issue a report.

All first aid cases shall be recorded in the first aid register. This shall be reviewed during the safety audits and inspections.
Safety Officer shall review and follow-up the corrective and preventive actions proposed in the accident investigation reports. He shall also review the risk assessment of the said activity in the light of the accident/incident data. He shall also consider introducing new features to the HSE management system or to reinforce the features of the management system to prevent similar accidents in future.

The following actions are required upon having an accident:

- Inform the site representative.
- Secure area for investigation and site visit.
- Obtain medical assistance in case of injury.
- Inform local police in case of road traffic accident (do not move vehicle until clearance from police is obtained).
- Inform Company management within 24 hours for major accidents and 48 hours for minor accidents.
- Complete the accident report.

In case of near-misses incident, the following actions are required:

- Inform the site representative and company site manager.
- Complete the near-miss report within a maximum period of 72 hours from the time of the incident.
**ACCIDENT REPORTING**

1. **Accident Occurrence**
   - **MAJOR** *
     - Inform MD’s Office immediately
     - Investigate
     - Forward Investigation Report
   - **Minor** **
     - Enter the details in First Aid register
     - Investigate
     - Forward Investigation Report

* Accident resulting in a disability period of more than 48 hours.
** Includes near miss accidents also.
Investigation Process

In all investigation cases, there should be:-
- No culture blame to people.
- No abuse to procedure.
- Depth look into root causes.
- Detailed report issued.

Following actions shall be carried out during the investigation process
1. Visit accident scene and look for evidences.
2. Meet the victim(s).
3. Interview witnesses.
4. Take some photos of the accident scene.
5. Ask open questions using the words (How, what, why etc).
6. Ask victim(s) and witnesses to explain what happened.
7. Assure victim(s) and witnesses of no culture blame.
8. Obtain copy of policy report (if applicable).

Roles and Responsibilities

The following are the roles and responsibility of the Company organization in accidents reporting and investigation:-

Safety Officer
- Investigate all accidents.
- Complete accident report form.
- Participate in the Management team investigations.
- Define root causes and recommendations.
- Prepare details investigation report for serious accidents.

Site Manager
- Inform Management of the accident.
- Initiate investigation and reporting process.
- Communicate lessons learned to employees.
- Liaise with Police, authorities and client on investigation requirement.
Company Management
➢ Determine the level of investigation required.
➢ Participate in investigation of accidents as outlined in section-5 of this procedure.
➢ Communicate lessons learned to other companies.
➢ Follow up on recommendations until completion.
9. CORRECTIVE / PREVENTIVE ACTION

Corrective Action

All nonconformities on identification shall be recorded in the respective forms as

- Customer Complaints - Customer Complaint Form & Complaint Log Sheet
- Improvement Suggestions & Potential Nonconformance - Corrective & Preventive Action Report
- Audit Nonconformities - Nonconformance Report
- Environmental Nonconformity - Environmental Incident Report
- Occupational Health & Safety Nonconformity - Safety Incident Report

Root causes for the nonconformity shall be investigated by the department head for any nonconformity noticed and appropriate corrective action to prevent recurrence shall be proposed by Department Head and approved by General Manager.

Safety officer/Dept head shall carry out necessary follow-up and monitoring of progress in rectification of nonconformities. Safety officer/Dept. head shall verify all non-conformances and ensure that corrective action undertaken is effective.

Preventive Action

Employees shall raise Corrective & Preventive Action Report on identifying potential nonconformance or improvement actions. Safety Officer/ assigned personnel in coordination with Department Heads shall plan and initiate action to prevent occurrence of the nonconformance.

In addition, Safety Officer /assigned personal shall

- Analyze potential nonconformities on a periodic basis using suitable statistical techniques.
- Discuss with concerned personnel for suitable preventive measures and prepare preventive and improvement action plan.
- Assign responsibilities and provide adequate resources for the implementation of suitable preventive measures.
- Monitor implementation of preventive and improvement action plan.

10. ELECTRICAL SAFETY

Strategy & Equipment Selection

- Work on electrical system will be carried out only by the designated competent electrician.
- All electrical installations must conform to the relevant safety standards.
All machinery and fittings must be effectively earthed.
Electrical cables must be adequately insulated and protected against mechanical damage etc.
The condition of the insulation’s should be checked at least once per year.
Circuit breakers and fuses must be correctly selected.
All portable equipment and tools must be operated if possible at 110 volts.
Where tools are operated from 240 volts supply, the equipment should be correctly earthed and fused.
All portable equipment earth and leads must be inspected and tested regularly.
Sockets should not be over loaded.
Portable tools must be used on the correct power supply as instructed by manufacturer.
The number of connections from a socket are restricted by the current taken from the circuit and must not exceed the value for which the circuit was designed.
Electrical appliance must be disconnected from a circuit when not in use.
All Distribution Boards (DB) must be located in a safe place protected from adverse weather conditions.
Outdoor fittings should be weather proof.
All electrical fittings must have the appropriate label to indicate its name and function/use.
Sockets should be of 3-pin type wherever possible.
All fittings should be of good quality.
Spares should be of good quality.
Spares should be available on site for preventive maintenance and to response to needs at short notices.

Inspection

All the electrical fittings must be inspected periodically at a pre-planned schedule but no further than once per month. When carrying out inspection, look at:-
Damaged sockets, plugs, cable insulation’s etc.
Defective fuses.
In proper connections.
Unsafe layout of cables.
Direct connection to sockets through the wires and without plugs.
Sockets over loaded.
Un-authorized connection or upgrading of electrical fittings.
LCB are in place, tested, operational and recorded.
Electrical sockets and fittings are not creating fire hazard due to storage of flammable or combustible material.
Identification labels and safety signs are in place.

11. **EMERGENCY RESPONSE**

**Emergency Control Team [ECT]**

A dedicated team has been established to manage, handle and control company emergencies. The company emergency control team (ECT) comprises:

- Site Manager
- Safety Officer.
- Fire warden.
- Fire Fighting team.

12. **ENVIRONMENTAL ASPECTS & ASSESSMENT OF ENVIRONMENTAL IMPACTS**

**Identification of Environmental Aspects & Assessment of Environmental Impacts**

The purpose of this part is to explain how significant environmental impacts shall be identified from the impacts due to environmental aspects.

**Environmental Aspect:** Element of an organization’s activities, products or services that can interact with the environment

**Environmental Impact:** Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization’s activities, products or services

**Environmental Aspects & Impacts Identification**

Safety Officer, Site Manager, Site Engineer/Officer shall initiate the process of identifying environmental aspects for company’s activities, products and services. The determination of environmental impacts shall be based on the best professional judgment of the Safety Officer, Site Manager, Site Engineer/Officer and department / section heads with advice and counsel from other professionals, as needed. The process includes soliciting input from department & section heads and examining the activities at each site.
The following is considered:

- Inputs and outputs from routine operations
- Potential for accidents and emergency situations and their effect to the environment

The findings shall be recorded by the Safety Officer in the environmental aspects & impacts checklist

**Significance Rating**

Environmental aspects, which can have significant environmental impacts, are classified as significant environmental aspects. Cumulative ratings are given based on the environmental impacts as per definition chart for ratings.

The aspects that exceed a threshold specified by the management review committee shall be considered significant. Safety Officer, Site Manager, Site Engineer/Officer /Department Heads shall provide adequate controls to ensure that the significant environmental aspects and impacts are controlled to a safe level. Environmental aspects, which have a significant impact, shall be considered in setting environmental objectives and targets.

The environmental aspects & impacts checklist shall be updated at least once a year, and / or when new equipment, processes, products, etc. are introduced in the company in order to keep the information up-to-date.

An environmental monitoring plan shall be maintained by the MR for adequate monitoring of the established controls and to ensure that the controls are adequately implemented.

**Communication of Significant Aspects**

Safety Officer/Site Manager/Site Engineer/Officer /Department Heads shall communicate the list of significant environmental aspects to all department / section heads. The department / section heads shall communicate the significant aspects that pertain to their location to all relevant staff. Any changes to the list of significant environmental aspects shall be likewise communicated.
13. Waste Management

The section covers the handling, treatment and disposal of non-hazardous as well as hazardous waste generated in the course of construction.

- Solid waste shall be stored such that, it does not constitute fire, health, safety or environment hazard.
- All refuse containing food waste shall be stored in covered or closed containers which are designed for safe handling and easy cleaning.
- Construction debris are temporarily collected and stocked at locations allocated. They will be transported and disposed at approved tip off areas as and when required.
- Any hazardous waste generated shall be segregated and disposed as the DM regulations through approved waste disposal contractors.
- Waste generated from the foaming operation

Safety officer / Dept head shall be responsible for the management of the waste streams. The duties are to ensure that:

- A good housekeeping is maintained during day to day operations.
- An estimate of the quantity of waste generated is made.
- All disposal sites used are designated and communicated.

All the disposal waste shall be recorded and documented clearly with date, quantity, type, mode of disposal, method of transportation, destination (disposal area) and people in charge of the waste disposal.

Rules for waste storage:

- Will ensure that the storage area is of sufficient size and is suitably located with the help of main contractor i.e. is away from drains, water causes, etc.
- Clearly label the storage area, and individual containers to advice of contents and hazardous properties.
- Will ensure the storage area is secure and protected from accidental or malicious damage.
- If necessary protect the storage area with bunds.
- Will store different waste separately to avoid confusion.
- Will never store incompatible wastes together.
- Will select the appropriate container for the waste and ensure it is good in condition.
- Will keep the storage of quantities of waste and storage time to a minimum.
- Protect the wastes from elements (sunlight, rain and wind) if necessary.
Do not dispose unusual wastes in general waste skips
Proper housekeeping will be implemented

Housekeeping
Keep the work area and surroundings free of trash, debris and other materials.
All the tools and other protective equipments must be returned to stores each day after completion of work.
All tools, equipment & PPE must be maintained in good working condition.
Keep the work area free of bolts, cables and other materials, which can cause tripping.
Arrange the tools & equipments, cables in an orderly manner.
Do not discard used gloves, teacups etc everywhere.
Maintain PPEs free of dirt and keep them in clean and hygienic condition.
Spills have to be cleaned immediately.
Do not block emergency exits access to emergency services (such as fire hose reel, fire extinguishers, fire alarm) by storage of materials.
14. HAZARD IDENTIFICATION & RISK ASSESSMENT OF OFFSHORE / MARINE ACTIVITIES

Risk assessment is a continuous operation and hence a permanent committee shall be formed to finalize the risk assessments for all the activities to monitor/ review the appropriateness adequacy of the same periodically.

Hazard Identification

Safety Officer, Site Manager/Incharge, Site Engineer/Officer, Department Heads shall initiates the process of identifying occupational health & safety hazard identification of company’s activities. The determination of occupational health & safety hazards shall be based on the best professional judgment of the Safety Officer/Site Manager/Site Engineer/Officer, Department Heads Department / Section Heads with advice and counsel from other professionals, as needed. The process include soliciting input from Department & Section Heads and examining the activities at each site, including conditions and operations in which changes might create hazard.

The following is considered:
- Routine and non-routine activities
- Activities of all personnel having access to the workplace, including subcontractors and visitors
- Facilities at the workplace

Risk Rating

Risk rating of the hazards shall be determined based on probability and severity of risks. The rating is based on the Risk Rating Matrix.

The probability, severity and risk rating shall be recorded in the Hazard Identification & Risk Assessment Form.

Controls

If the risks identified are low, no further action shall be taken. If the risk is medium or high, control measures shall be identified. Once all the control measures are identified, the risk rating with controls shall be determined and recorded in Hazard Identification & Risk Assessment Form.

After the risk assessments are completed and approved, it shall be circulated to all the employees through the toolbox talks and their feedback shall be communicated to safety officer for necessary updating, if found appropriate.

All site engineers will refer to the risk assessment sheets before taking up any new activity. If the said activity is not covered under any of the existing risk assessment sheets, they will refer the matter immediately to safety officer, who will refer it to an expert in the field. On getting the risk assessment from the said member, opinion of the safety officer/ manager will be taken before circulating it to all sites for obtaining feedback from the field. Meanwhile, if the said activity should be taken up immediately, the concerned engineer can carry out the risk assessment himself and proceed with the work after getting a tentative approval from MR.
While identifying the hazards, following shall be considered:

- Electrical hazards
- Work equipment hazards
- Pressurized system hazards
- Harmful substance hazards
- Noise/ Vibration
- Mechanical and manual handling hazards
- Storage hazards
- Environmental hazards
- Access and egress at the place of work
- Fire hazards
- Working at height
- Hazard to non-employees
- Available control measures
- Lifting hazards

Risk assessment is based on two factor and, viz. the severity and the frequency of the hazard occurring.

**Severity**  
(Severity of the hazard will be quantified based on the following scale.)

<table>
<thead>
<tr>
<th>Severity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Negligible</td>
<td>1</td>
</tr>
<tr>
<td>Minor</td>
<td>2</td>
</tr>
<tr>
<td>Reportable</td>
<td>3</td>
</tr>
<tr>
<td>Major</td>
<td>4</td>
</tr>
<tr>
<td>Fatality</td>
<td>5</td>
</tr>
<tr>
<td>Multi-fatals</td>
<td>6</td>
</tr>
</tbody>
</table>

**Probability**  
(Probability of the hazard will be evaluated based on the following scale.)

<table>
<thead>
<tr>
<th>Probability</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Very rare</td>
<td>1</td>
</tr>
<tr>
<td>Remote</td>
<td>2</td>
</tr>
<tr>
<td>Occasional</td>
<td>3</td>
</tr>
<tr>
<td>Regular</td>
<td>4</td>
</tr>
<tr>
<td>Frequent</td>
<td>5</td>
</tr>
<tr>
<td>Almost certain</td>
<td>6</td>
</tr>
</tbody>
</table>

Multiplying the severity and the frequency of the said hazard will give us the net risk rating for the particular hazard. These ratings are arrived at first with an assumption that there is no control measure in place.
Risk Rating

<table>
<thead>
<tr>
<th>1 - 7</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 - 16</td>
<td>Medium</td>
</tr>
<tr>
<td>17 - 36</td>
<td>High</td>
</tr>
</tbody>
</table>

The residual risk will be arrived at by multiplying the revised (reduced) severity and probability offer considering the control measures arrived at in the risk assessment sheets. Risk rating shall be minimized by:

- Reducing the number of persons affected by the hazard
- Reducing the severity of the injury likely to be caused by the hazard and
- Reducing the likelihood of the injury occurring.

The hierarchical process of implementing control measures would be:

- Eliminate the risk by removing the hazard
- Substitute the process with one that is less risky
- Control the risk at source
- Devise safe systems of work
- Provide adequate instruction and training
- Ensure adequate supervision
- Provide suitable personal protective appliances

The residual risk after implementing the control measures shall not exceed (7). In other words, it shall be restricted within the “low” range.

The risk assessments shall be reviewed based on the lessons learnt from accident / near miss, complaints/suggestions and / or safety audit. Safety Officer shall regularize this review based on the above. Whenever new materials are introduced, new machinery is being purchased for carrying out an existing activity or a new activity the said risk assessment shall be reviewed or new assessment shall be made. Purchase department will inform safety officer regarding such occasions and Safety Officer will take necessary action.

Whenever the severity rating of an activity remains 5 or 6, even after the control measures are put in place, (i.e. the residual risk) the said activity will be categorized as “Critical activity.” Such activities will be taken up either with a “permit to work” or with the presence of a responsible supervisor.

Similarly, if the control measures prescribed in the risk assessment form is only the usage of PPE (to reduce the risk rating be make it “acceptable”) it will be classified as a critical activity since non-use of the said PPE or failure of it will directly expose the technicians to an unacceptable level of risk.

Risk assessment committee meeting shall be held at least once a year to review the risk assessment
15. **Contractor Management**

This procedure is applicable to all sub-contractors and their sub-contractors, if any. Any site manager/site in charge shall monitor the safety practices of the contractor using the guidelines given in this procedure to prevent any unsafe practices by subcontractors could expose all employees to injuries and illnesses.

Selection of sub-contractors and their safety performance on site shall be closely monitored by the Project/site Manager.

Tailor-made safety induction training shall be given to all sub-contractor operatives before deploying them on site. Site HSE Representative or Section in-charge (in his absence) shall give the required training and the records of the trainings shall be maintained in the office along with other HSE documents.

Safety performance of individual contractors will be scrutinized through regular monitoring and their performance shall be analyzed before awarding new contracts to each sub-contractor.

All subcontractor personnel must present themselves for a safety induction before they start their work.

While finalizing any new sub contractors, HSE requirements shall be communicated to them along with the scope of work, specifications etc, so that they are well prepared to work in line with the HSE requirements.

The performance of sub-contractors on site on safety related issues shall be closely monitored by the site HSE representative or the concerned section in-charge.

Any improvement / rectification suggestions shall be forwarded to the in-charge of the particular sub-contractor.

Project/Site Manager or HSE representative shall invite the sub-contractors’ representatives for the site HSE meetings if they find it necessary.

HSE representative shall analyze the performance of sub-contractors based on site documents and reports and shall communicate to the Project/Site Managers on the course of action.
Submittals Required by Subcontractors

**Material Safety Data Sheets (MSDS):** Copies of Material Safety Data Sheets for each chemical to be brought to the site by the sub contractor. The contractor is responsible for removal and for cleaning up spills generated by his action as well as the cost associated with the cleanup.

**Test Certificates:** Test certificates of all material handling equipment (e.g., cranes, hoists, powered-industrial trucks, chains, slings, spreaders) to meet all the Federal and Local Codes. The competency certificates (licenses) of all the drivers and operators shall be provided.

**Safety Compliance Statement:** All new sub contractors shall be required to submit a written consent to comply with all the safety requirements issued to them. A responsible person from the contractor shall hold a pre-job safety meeting with the Engineer-in-charge/ Safety officer to agree on all the contractual obligations of the subcontractors with reference to the implementation of the HSE standards at site.

**Communication**

**Safety Rules and Procedures:** Copy of Main Contractor’s safety rules and procedures for subcontractors shall be explained to each sub contractor during the pre-job safety meeting.

**Emergency Response Plan:** Emergency Response Plan of the project shall be explained to all the employees of the sub contractor during the induction training.

**Accident Reporting:** Accident reporting procedure shall be explained and a copy of the accident report form shall be handed over.

**Risk Assessment:** A responsible person of the subcontractor and the concerned engineer shall jointly prepare risk assessment for all activities of the sub contractor before starting the work in consultation with the site HSE representative (if it is not already covered under the existing risk assessments.)

**Safety induction Training:** Safety induction shall be carried out by one of the employees (either the responsible Engineer or the HSE representative) before they start their work to all personnel of the sub-contractor.
Obligations of the Subcontractor

<table>
<thead>
<tr>
<th><strong>Safety Officer:</strong></th>
<th>All subcontractors shall designate a “fulltime” or “part-time” safety officer/inspector at site as per the Local Regulations.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personal Protective Equipment:</strong></td>
<td>All subcontractors are responsible for providing personal protective equipment to their employees. If they do not provide adequate safety appliances, Main Contractor’s will arrange for necessary safety appliances to the sub contractors’ workmen and deduct the cost of the same from the running bills of the subcontractor, as per the contractual conditions with them.</td>
</tr>
<tr>
<td><strong>Trained First-Aider(s):</strong></td>
<td>Subcontractors shall deploy trained first-aider(s) with necessary first aid facilities as per the Local regulations.</td>
</tr>
<tr>
<td><strong>Tool Box Talks:</strong></td>
<td>All subcontractors shall conduct toolbox talks, the frequency of which will depend on the nature of the project, but at a minimum of weekly once.</td>
</tr>
<tr>
<td><strong>Waste Disposal:</strong></td>
<td>All refuse and scraps, which interfere with work flow (blocking aisles, walkways, stairs, etc.) and / or create fire hazards, shall be properly disposed off in a timely manner and not allowed to accumulate.</td>
</tr>
<tr>
<td><strong>Removal of Safety Devices and Protections:</strong></td>
<td>They shall not remove any safety devices (edge protections, covers provided on slab openings etc) at site without prior permission from the concerned Main Contractor’s engineer or the site HSE Representative, if any.</td>
</tr>
<tr>
<td><strong>Equipment Inspection:</strong></td>
<td>All power tools, scaffolds, ladders and any other machinery brought to the site by the subcontractors shall be inspected by the Engineer-in-charge or the HSE Representative before putting them into use.</td>
</tr>
<tr>
<td><strong>Permit to Work System:</strong></td>
<td>All sub contractors shall follow M &amp; E permit-to-work systems, wherever applicable.</td>
</tr>
<tr>
<td><strong>Safety Compliance:</strong></td>
<td>All sub contractors shall follow Main Contractor’s safety rules and procedures.</td>
</tr>
</tbody>
</table>
16. **GENERAL SAFETY RULES**

16.1. **Safety Appliances**

- All workmen will be required to use coveralls on which name of the Company will be prominently displayed while working in the sites. Do not wear long sleeve shirts that do not have button-down cuffs.
- Safety goggles or face shields will be provided to all the employees who are required to do arc welding, drilling, grinding, chipping etc and any other works where flying object hazard exist. Do not continue to work if your safety glasses become fogged. Stop work and clean the glasses until the lenses are clear and defogged.
- Welders will be provided with welding shields with dark glass of suitable shade, leather hand gloves and flame cutters will be provided with goggles with dark glasses. Apron also will be provided to them wherever required.
- Cotton gloves will be provided to all employees who are likely to handle materials with sharp objects.
- Earplugs will be provided to all workmen in the factory since the overall noise level in the factory/site is above the maximum allowable noise limits.
- Dust masks/ facemasks will be provided to the painters.
- All employees shall be required to use safety shoes in the sites.
- Safety helmet shall be used in all erection sites. Do not paint or drill holes in your hard hat. Do not wear hard hats that are dented or cracked.
- Use lifelines, safety harnesses and lanyards when you are working higher than 6 feet off the ground.
- Suitable clothing and work shoes must be worn while on the job.
- Main contractor approved eye protection must be worn when drilling, chiseling, cutting, welding, when use of chemicals and solvents and when working in a dusty or windy atmosphere.
- To protect from flash burns, Main contractor approved non-metallic eye protection shall be worn while working on or near electrical circuits and electrical apparatus.
Main contractor approved respirators shall be worn when grinding, cleaning, sanding, using chemicals or working in an atmosphere that requires respiratory protection.
### Checklist for Safety appliances

<table>
<thead>
<tr>
<th>Safety Appliance</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety goggles/ face shields</td>
<td>Arc welding, Drilling, grinding, chipping, welding helpers</td>
</tr>
<tr>
<td>Welding shields</td>
<td>Welders</td>
</tr>
<tr>
<td>Safety shoes</td>
<td>All employees</td>
</tr>
<tr>
<td>Safety helmets</td>
<td>All employees</td>
</tr>
<tr>
<td>Gloves – cotton</td>
<td>All those who handle structural steel</td>
</tr>
<tr>
<td>Gloves – leather</td>
<td>Welders</td>
</tr>
<tr>
<td>Aprons</td>
<td>Welders</td>
</tr>
</tbody>
</table>

Activities in the factory/site will be periodically reviewed by Safety Engineer to determine the requirement of any additional safety equipment.

#### 16.2. Safety Monitoring

- Safety Engineer will conduct safety inspection in the sites
- Monthly safety meeting shall be held at the factory/sites to monitor all the safety activities indicated in this plan.
- Safety inspection will be carried out as per the following schedule:
  - Safety officer - once in a month
  - In addition to this will attend the weekly and monthly safety meetings as requested by Main contractor

#### 16.3. Welding & Flame Cutting

Any gas cutting or welding work can be taken up only after taking Hot Work Permit & all the precautions mentioned here below.

Concerned supervisors are responsible to arrange all these precautions.

**16.3.1. Arc Welding**

- It is the responsibility of the welder to comply with all the safety requirements given here. If they find any difficulty in complying with any of the requirements, they will have to report it to their supervisor and await further instructions from him.
- Welding machine should be provided with body earthing.
- Welding cable shall be laid in such a way not to cause any tripping hazard. It should not have any joint in between. If there is any joint, it shall be provided with male/ female sockets.
Welding holder should have proper insulation and if the insulation is broken during usage, the holder shall be replaced immediately.

Before the welding work is started, it should be ensured that there are no flammable materials stored or installed nearby. If there is any, it should be either removed or covered with fire resistant cloth.

Welder should use a welding shield, apron, gloves in addition to the safety shoes and coverall.

It is the responsibility of the welder to ensure that there is no trace of hot flux or any smoldering fire caused by it at the place of work before leaving the place.

16.3.2. Flame cutting

Work will be taken up only after taking Hot Work Permit with all the precautions.

Acetylene cylinder will be kept upright always and will be tied somewhere to ensure that it does not topple down during use. Cylinders shall preferably be placed in trolleys and it will be provided with flash back arrestors during use.

Cylinder key will always be kept in the cylinder for any emergencies.

The supervisors regularly to ensure that there is no leakage and it functions properly will inspect the regulators. Leaky or malfunctioning regulators will be removed from service immediately.

Hoses will be laid in such a way not to pose any trip hazard.

Gas cutters will be required to use gloves and goggles.

Before the work is started, it should be ensured that there are no flammable materials stored or installed nearby. If there is any, it should be either removed or covered with fire resistant cloth.

Oxygen acetylene and LPG cylinders shall be stored separately.

It is the responsibility of the gas cutter to ensure that there is no trace of hot flux or any smoldering fire caused by it at the place of work before leaving the place.

Fire blankets to be used for to cover the area

Main contractor permit system to be followed

16.4. Compressed Gas Cylinders

16.4.1. Storage and Handling

Do not handle oxygen cylinders if your gloves are greasy or oily.

Store all cylinders in the upright position.

Place valve protection caps on gas cylinders that are in storage or not in use.

Do not lift cylinders by the valve protection cap.
Do not store compressed gas cylinders in areas where they can come in contact with chemicals labeled "Corrosive".

Place cylinders on a cradle, pallet or cylinder basket to hoist them.

Do not place cylinders against electrical panels or live electrical cords where the cylinder can become part of the circuit.

Shaded storage area will be used for Oxygen and Acetylene gas cylinder

16.4.2. Use of Cylinders

Do not use dented, cracked or other visually damaged cylinders.

Use only an open ended or adjustable wrench when connecting or disconnecting regulators and fittings.

Do not transport cylinders without first removing regulators and replacing the valve protection caps.

Close the cylinder valve when work is finished, when the cylinder is empty or at any time the cylinder is moved.

Do not store oxygen cylinders near fuel gas cylinders such as propane or acetylene, or near combustible material such as oil or grease.

Stand to the side of the regulator when opening the valve.

If a cylinder is leaking around a valve or a fuse plug, move it to an outside area away from where work is performed and tag it to indicate the defect.

Do not hoist or transport cylinders by means of magnets or choker slings.

Do not use compressed gas to clean the work area, equipment or yourself.

Do not remove the valve wrench from acetylene cylinders while the cylinder is in use.

Open compressed gas cylinder valves slowly. Open fully when in use to eliminate possible leakage around the cylinder valve stem.

Purge oxygen valves, regulators and lines before use.

Separate store area for Oxygen/Acetylene, LPG gas cylinders to be used

Shaded store area are to used to store the gas cylinders

Compressed gas cylinders shall be used, transported and stored in an upright position. Material that can be easily damaged or cut shall not be used to secure cylinders.

Acetylene cylinders found lying down shall not be used until sufficient time is elapsed to allow the acetylene in the cylinder to settle sufficiently to allow gas to form in the top portion of the bottle.

Cylinders shall be returned to their main storage area when they become empty. Cylinders shall not be transported in the horizontal position unless they are suitably restrained from rolling about. Protective caps shall be in place during their transportation.

The key wrench that is required to open and close the cylinder valves shall be in place on the valve of the acetylene bottles at all times during their use.
Cylinders lifted from one elevation to another shall be lifted only in racks or containers designed for that purpose. Slings shall not be used to hoist cylinders.

The valves of the compressed gas cylinders shall be completely closed. Gauges removed and the cylinder cap in place when not in use.

The gauges shall be removed from cylinders and protective caps in place during their transportation.

Cylinders must never be taken into any confined space.

Cylinders shall be inspected for damage upon receipt or delivery and frequently during their use. Damaged cylinders shall be taken out of service immediately.

Person shall not temper with or attempt to repair defective valves or safety relief valve on cylinder.

Oxygen cylinders shall not be stored within 6 meters (20 feet) of combustible gas cylinders or near any other substances where a fire could result, unless protected by a wall or barrier at least 1.5 meters (5 feet) high which has a fire resistance rating of at least 30 minutes. Compressed gas cylinders must not be stored with any combustible materials.

It is the responsibility of the concerned subcontractors to provide proper storage areas for areas for compressed gas cylinders. Racks and platforms shall be constructed non-flammable or fire retardant materials. "No smoking or Open Flame" signs shall be posted at the location of the storage area. Storage areas shall have signs designating the contents of the cylinders.

All gas cylinders shall be protected against shock and high temperature extremes.

A suitable hand truck, fork truck, rolling platform or similar equipment shall be used to manually transport cylinders in an upright position.

Contractors shall not attempt to repair or lubricate the valves of cylinders. Oil, grease, lubricants or other compounds must never be applied to valves or hose connectors.

Cylinders shall not be used or stored where they may come into contact with electricity.

16.5. Portable Power Tools

The electrician will check all portable power tools before releasing it to the site use. It will be inspected by the authorized electrician every month to ensure that it continues to be safe to use. (Refer Annexure-5)

If a power tool is found to be unsafe to use during the regular inspection, it shall be marked/tagged to that effect and returned to stores for repair or replacement.

Power cables provided to the tools will not have any joint and the cables will be laid in such a way that it does not present any trip hazard.

All power cables will be provided with industrial plug and sockets for power distribution.

The guards provided in the power tools shall not be removed either by the technicians or by the maintenance electrician.

Do not use power equipment or tools on which you have not been trained.

Keep power cords away from path of drills, saws and grinders.
- Do not carry plugged in equipment or tools with your finger on the switch.
- Do not carry equipment or tools by the cord.
- Disconnect the tool from the outlet by pulling on the plug, not the cord.
- Turn the power switch of an electrical tool to “off” position before plugging or unplugging it.
- Do not leave energized power unattended.
- Do not handle or operate electrical tools when your hands are wet or when you are standing on wet floors or while using wet gloves.
- Do not operate spark-inducing tools such as grinders, drills or saws near containers labeled “Flammable”.
- Turn off the power switch and unplug it from the outlet before attempting repairs or service work. Tag the tool “Out of Service”.
- Do not connect multiple electrical tools into a single outlet.
- Do not run extension cords through doorways, through holes in ceilings, walls or floors.
- Do not drive over, drag, step on or place objects on a cord.
- Never operate electrical equipment barefooted.

**Portable grinders:**

- All portable-grinding machines shall be equipped with safety guards.
- Check the grinding machine for electric cable & plug.
- Check for the grinding wheel for crack & bad edge and for its proper tightness.
- Check for the trial run before working.
- Don’t apply excess pressure on the machine.
- Check for the ON/ OFF switch condition.
- Concentrate on the job when machine is working.
- Grinding wheels shall fit freely on the spindle and shall not be forced on. The spindle nut shall be tightened only enough to hold the wheel in place.
- All employees using abrasive wheels shall be protected by eye protection equipment.
- Do not use the grinding wheel if it wobbles. Tag it “Out of Service.”

**16.6. Hand Tools**

- Storekeeper will inspect all the hand tools before issuing it to the technicians to ensure that they are in good working condition.
- Supervisors will look for defective tools being used on the job on a continuous basis with specific reference to broken handles, blunt edges, worn out heads, cracked parts etc. Any such damaged tools, if found, will be removed immediately and destroyed.
- Homemade, make shift hand tools will not be allowed. Any such tools found in the factory will be removed and destroyed.
Technicians will be reminded regularly during toolbox talks about the perils of misusing hand tools and the necessity of informing the defects found in the tools immediately.

Technicians will be asked to use goggles while carrying out chipping, hammering and similar operations.

Using pliers or wrenches as hammers, using screw drivers as chisels, using screw spanner or pipe wrench instead of double end or ring spanner etc. are unsafe practices and are bound to result in minor accidental injuries. All these will be explained to workmen in the toolbox talks and will be prohibited.

Use tied off containers to keep tools from falling off from scaffolds and other elevated work platforms.

Use a knife that has been sharpened; do not use knives that have dull blades.

Carry all sharp tools in a sheath or holster.

Tag worn, damaged or defective tools "Out of Service" and do not use them.

When handing a tool to another person, direct sharp points and cutting edges away from yourself and the other person.

When using knives, shears or other cutting tools, cut in a direction away from your body.

Do not carry sharp or pointed hand tools such as screwdrivers, snips, scrapers, chisels or files in your pocket unless the tool or pocket is sheathed.

Do not carry tools in your hand when climbing. Carry tools in tool belts or hoist the tools to the work area with a hand line.

Do not throw tools from one location to another, from one employee to another, from scaffolds or other elevated platforms.

16.7. Material Handling, Storage & Transportation

16.7.1. Manual Lifting

Plan the move before lifting; remove obstructions from your chosen pathway.

Test the weight of the load before lifting by pushing the load along its resting surface.

If the load is too heavy or bulky, use lifting and carrying aids such as hand trucks, dollies, pallet jacks and carts, or get assistance from a co-worker.

If assistance is required to perform a lift, coordinate and communicate your movements with those of your co-worker.

Position your feet 6 to 12 inches apart with one foot slightly in front of the other.

Face the load.

Bend at the knees, not at the back.

Keep your back straight.

Get a firm grip on the object with your hands and fingers. Use handles when present.
Never lift anything if your hands are greasy or wet.
Wear protective gloves when lifting objects with sharp corners or jagged edges.
Hold objects as close to your body as possible.
Perform lifting movements smoothly and gradually; do not jerk the load.
If you must change direction while lifting or carrying the load, pivot your feet and turn your entire body. Do not twist at the waist.
Set down objects in the same manner as you picked them up, except in reverse.
Do not lift an object from the floor to a level above your waist in one motion. Set the load down on a table or bench and then adjust your grip before lifting it higher.

16.7.2. Storage & Transportation

- Storage racks shall not have any projections from the stack.
- While transporting finished products to the customers, it will be ensured that undue projections from the vehicle will not be allowed. If there is any projection, the person responsible for the loading operation shall ensure that either red flag or red lamp is tied to the projections to warn the vehicles coming behind.
- If any hired mobile crane is used for handling materials, it will be ensured that the crane is provided with a valid test certificate.
- Material safety data sheet shall be obtained from the supplier for any chemicals procured and used in the sites.
- Flammable material storage area will be clearly identified, barricaded and warning signs posted preventing smoking, hot works etc in the vicinity.

16.8. Scaffoldings and Ladders

16.8.1. Basic Scaffold Erecting Requirements

- Qualified, trained, and experienced scaffolders only must do erection and dismantling work.
- Scaffolds shall not be modified, changed or otherwise damaged by anyone, including the personnel using the scaffold. If changes are required the qualified scaffolders shall make them.
- Guardrails, mid rails and toe boards must be placed on all open sides of platforms more than 1.8 m (6 feet) above ground or floor. The top rail must be placed approximately 1 meter (40 inches) high with mid rail. Netting may be used in lieu of toe boards.
- All scaffolds shall be provided with an access ladder that extends at least 1 meter (40 inches) above the platform, or an equivalent safe access.
- Where persons are required to work or pass under the scaffolds, wire mesh or equivalent will be installed between toe board and mid rail.
Platforms shall be tightly planked with approved scaffold boards 150 – 300 mm (6 and 12 inches.) Boards will be secured in position to prevent movement in high winds.

Scaffolds shall be cleaned off upon completion of work by the crew using scaffold.

Any scaffold accessories such as braces, trusses, legs or ladders that are damaged shall be immediately repaired or replaced.

A rolling scaffold/mobile tower height should not exceed 3 times the minimum base dimension if used outside or 3.5 if used inside. The wheels shall be locked when employees are on the scaffold. Employees shall not ride on rolling scaffold.

Scaffolds shall be erected to spirit level on a firm base.

During the erection, modification and dismantling of scaffolds a red “Scaffold incomplete-Do not Use” scaffold tag shall be affixed to the scaffold. When the scaffold erection has been completed, a green scaffold tag shall be placed at the scaffold ladder indicating that “Scaffold is complete and can be used”.

Scaffold erectors shall use fall protection equipment while erecting scaffolding.

Scaffolds must be erected on surfaces that are leveled and capable of bearing the weight of the scaffold assembly, workers, tools and materials. Metal base plates shall be used on all surfaces including concrete and other floors. Timber sole plates made from scaffold boards will be placed under the metal base plates for structures erected on less firm ground. Bricks, concrete blocks, barrels and other makeshift items are not allowed to be used to level and support scaffold members.

Caster wheels used with mobile tower scaffolds shall have rubber treads and positive locks to hold the scaffold in position. Casters shall be locked when the scaffold is being erected or used.

When erecting a rolling scaffold on dirt, mud, grass or gravel, set the caster wheels on runners (wood or channel iron), to keep the wheels from sinking into the ground.

Screwed leveling base plates can be used to compensate for uneven ground, but must be used with caster wheels. Do not extend adjusting screws beyond 300 mm (12 inches).

In order for scaffolds to be made rigid, they must be braced in 2 places, both cross bracing and along the façade up to the full height and along the full length of the structure. Mobile towers/rolling scaffolds must also be braced with diagonal plan bracing. Installed bracing tubes are no substitute for hand and mid rails.

When the height of a scaffold exceeds four times the smallest width of the base, secure it to the building or structure at every other lift and every 9.1 m horizontally. Use out-riggers or rakers when it is impractical to secure the scaffold to the structure.

Ladders shall be used for access ways to scaffold work platforms. Gates shall be used where necessary to provide fall protection at entryways to scaffold platforms.

Tower scaffolds shall not be moved while occupied by personnel. Remove or secure tools or materials so they cannot fall or roll off with movement.

Split or damaged planks shall not be used for walkways and work platforms. Large numbers of knots in the wood decreases the strength of scaffold boards. Damaged boards can be cut down to serve as sole plates for soft ground.
16.8.2. Ladder Safety

- Read and follow the manufacturer’s instructions label affixed to the ladder if you are unsure how to use the ladder.
- Do not use ladders that have loose rungs, cracked or split side rails, missing rubber footpads, or otherwise visibly damaged.
- Keep ladder rungs clean and free of grease. Remove buildup of material such as dirt or mud.
- Do not place ladders in a passageway without posting warning signs or cones that detour pedestrian traffic away from the ladder.
- Allow only one person on the ladder at a time.
- Face the ladder when climbing up or down.
- Maintain a three-point contact by keeping both hands and one foot or both feet and one hand on the ladder at all times when climbing up or down.
- When performing work from a ladder, face the ladder and do not lean backward or sideways from the ladder.
- Do not stand on the top two rungs of any ladder.
- Do not stand on a ladder that wobbles, or that leans to the left or right.
- When using a ladder, extend the top of the ladder at least 3 feet above the edge of the landing.
- Secure the ladder in place by having another employee hold it.
- Do not place ladders on barrels, boxes, loose bricks, pails, concrete blocks or other unstable bases.
- Do not carry items in your hands while climbing up or down a ladder.
- Do not use a ladder as a horizontal platform.
- An identified person shall inspect all ladders every month. (Annexure-6)

16.8.3. Scaffolding

- Initially inspect scaffold prior to use. Do not use a scaffold if any of its components are visibly worn, cracked, rusted or otherwise damaged.
- Do not use any scaffold tagged “Out of Service”.
- Do not work on platforms or scaffolds unless they are fully planked.
- Use safety harnesses and lanyards when working on scaffolding at a height of 6 feet or more above ground level. Attach the lanyard to a secure member of the scaffold.
- Do not climb the cross braces for access to the scaffold.
- Keep both feet on the decking. Do not sit or climb on the guardrails.
- Do not lean out from the scaffold. Do not rock the scaffold.
- Keep the scaffold free of scraps, loose tools, tangled lines and other obstructions.
- Do not throw anything "overboard" unless a spotter is available. Use debris chutes or lower things by hoist or by hand.
Access ladder to be attached.

16.9. Environmental Protection

16.9.1. Waste Management Program

- Will ensure that waste is managed without endangering human health or harming the environment.
- To promote waste reduction, reuse and recovery so that the waste is moved up to the waste hierarchy.
- Contact the main contractor to create a proper waste management system and follow their instructions.
- Clearly identified collection points should therefore be for each of the categories in each stream.
- Will not mix up the hazardous and non-hazardous waste in together.
- Waste of different disposal route is clearly identified, more effectively handled and efficiently dispatched to the correct repressor or disposal facility and data collected and the completion of all relevant paperwork, legal and otherwise is made simpler.
- A nominated individual should have overall responsibility for waste management for a given area of activity.

16.9.2. Waste storage

- Will ensure that the storage area is of sufficient size and is suitably located with the help of main contractor i.e. is away from drains, water causes, etc.
- Clearly label the storage area, and individual containers to advise of contents and hazardous properties.
- Will ensure the storage area is secure and protected from accidental or malicious damage.
- If necessary protect the storage area with bunds.
- Will store different waste separately to avoid confusion.
- Will never store incompatible wastes together.
- Will select the appropriate container for the waste and ensure it is good in condition.
- Will keep the storage of quantities of waste and storage time to a minimum.
- Protect the wastes from elements (sunlight, rain and wind) if necessary.
- Do not dispose unusual wastes in general waste skips.
- Proper housekeeping will be implemented.
16.9.3. House keeping

- Keep the work area and surroundings free of trash, debris and other materials.
- All the tools and other protective equipments must be returned to stores each day after completion of work.
- All tools, equipment & PPE must be maintained in good working condition.
- Keep the work area free of bolts, cables and other materials, which can cause tripping.
- Arrange the tools & equipments, cables in an orderly manner.
- Do not discard used gloves, teacups etc everywhere.
- Maintain PPEs free of dirt and keep them in clean and hygienic condition.
- Spills have to be cleaned immediately.
- Do not block emergency exits access to emergency services (such as fire hose reel, fire extinguishers, fire alarm) by storage of materials

16.10. Flammable Liquids and Solvents

- When using paints, solvents and Chemicals, read the warning labels and follow the instructions.
- Avoid getting solvents on clothing. If clothing becomes contaminated, it should be changed immediately.
- Flames, sparks and other ignition sources (hot metal or electrical arcs) must be kept away from the flammable liquids and their vapors. Smoking is prohibited in areas where such materials are used or stored, and “No smoking” signs must be posted in these areas
- Warning signs for all Hazardous activities will be kept and a stand by man will be kept to check the unauthorized personals entry into those areas.

16.11. Lifting Accessories & Certification

- Chain pulley blocks, chain slings, wire rope slings, hooks, rings shackles etc the equipments used to connect a load to lifting equipments. The main Hazard associated with lifting accessories are over loading/used above the safe working load, incorrect use, defects (damage, cuts, broken wires etc) damage to sling, rope etc, insecure attachment of load, incorrect slinging method, failure to examine and inspect pre-use etc.
- All lifting accessories should be certified before use by the competent authority.
- All accessories of lifting should be thoroughly examined by a competent person at specified intervals and visually inspected before use or at intervals laid in an examination scheme (during use)
- Repairs of lifting tackles will not be carried out on site. A test certificate should be obtained for any repaired item of lifting tackle.
- Sufficient materials for packaging between sling and load should be provided.
Sufficient training should be provided in safe slinging methods, signals, etc for operatives carrying out this work.

The safe working load (SWL) should be clearly marked on the accessory.

All lifting accessories should be secured and left in a safe condition at the end of each working period.

Ensure that all the lifting equipment is sufficiently strong, stable and suitable for the proposed use.

Thoroughly examined by a competent person

- After installation and before being put into service for the first time, after assembly and before being put into service at a new site or in a new location.
- At least every 12 months a thoroughly examination should be there (6 months when used for lifting persons, and lifting accessories)
- or in accordance with an examination scheme
- each time that exceptional circumstances, which are liable to jeopardize the safety of the lifting equipment, have occurred
- inspected by a competent person at suitable intervals between thorough examinations
- marked accordingly where it is used for lifting people and is safe for such a purpose, all necessary precautions have been taken to eliminate or reduce any risk
- visibly marked, with any appropriate information to be taken into account for its safe use.
- Following a thorough examination or inspection the competent person to the main contractor to take the appropriate action is submitting a report.

Lifting operations are planned, supervised and carried out in as safe manner by people who are competent.
16.12. Confined Space Working

**CONFINED SPACES:** Any location, space or area with a limited means of exit and/or egress which can accumulate toxic or flammable contaminants, or may have an oxygen deficient atmosphere. Confined or enclosed spaces include exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open top spaces that are more than 1.2 m (4 feet) in depth, such as pits, tubs, vessels, vaults and pumps.

**ENTRY:** The breaking of the plane of any confined or enclosed space with any part of the body.

**STANDBY PERSON:** An individual assigned to raise the alarm in the event of an Emergency within a confined space.

- Persons required to enter a confined space must be instructed as to the nature of the hazards involved necessary safety precautions to be taken. And the emergency and protective equipment required prior to entry into the confined space.
- A rescue plan must developed and reviewed with the Standby personnel and all persons entering a confined space. Rescue plans shall include the following:
  - Who and how to call for assistance in case of emergency.
  - How person(s) is to be removal of personnel wearing self contained breathing emergency.
  - Procedures for the removed personnel wearing self contained breathing equipment.
  - Personnel entering a confined space and Standby personnel shall be instructed as to the nature of hazard’s precautions to be taken, and the use of protective and emergency equipment.
  - Prior to entry, all energy systems such as pipe lines shall be physically capped, blanked or disconnected from the confined space, Energy sources shall be locked out.
- Radioactive sources must be shielded. Locked and tagged, or removed prior to the commencement of work
- Low voltage lighting shall be used when inside confined spaces. Equipment requiring more than 12 volts to operate, when permitted, must be used in conjunction with an approved ground fault circuit interrupter. The ground fault circuit interrupter transformer, and disconnects must be located outside the confined space.
- All persons entering a confined space shall wear a safety harness.
- Confined spaces such as vessels shall be cleared of its previous contents. The contractor shall ensure that the necessary ventilation,
- If entry is required to clean a confined space, appropriate protective clothing and equipment must be provided to all personnel. Appropriate test methods must be used.
Either natural draft or forced ventilation must maintain a breathable atmosphere. Compressed air shall not be blown into a confined space.

Clean dry air supplied respiratory equipment with escape provisions is required when entering a confined space whenever the oxygen content is equal or less than 19.5% volume.

A qualified person prior to entry shall test the atmospheric conditions within confined spaces. Atmospheric conditions within confined spaces must meet the following criteria prior to and during the performances of work.

- Oxygen Content by Volume: 19.5% minimum-21% maximum.
- Flammable Gases: 0% maximum or non-detectable
- Toxic Gases: 0% maximum or non-detectable
- Radioactivity: Not to exceed regulatory requirements (7.5uSv/hr) (0.75 mrem/hr).

If work being performed inside a confined space that could generate flammable vapors or produce an oxygen

Vessels and other containers shall be inspected for flammable, explosive, and toxic materials that may have been absorbed into the shell. All surfaces covered with toxic preservatives shall be stripped of all toxic coatings for a distance of at least 0.6 m from the area of heat application or personnel shall be protected by air supplied respirators. If applicable, protective clothing shall be provided to personnel performing the work inside the confined space.

Oxygen and acetylene for burning shall be done with the cylinders located outside the confined space. All hoses and hose connections shall be checked for leakage prior to being taken into the confined space. All hoses shall be removed from confined spaces each time personnel exit the space. Welding machines shall be located outside of the confined space.

All permits and authorizations to enter confined spaces are automatically cancelled when an event occurs which discontinues the work activities? Personnel shall exit the confined space and follow the Project emergency procedures. Permits must be reissued prior to re entry into confined spaces when authorization is received to resume work activities.

16.13. Fire Prevention & Fighting

Welding and flame cutting works will be taken up only after taking all the precautions mentioned Hot Work Permit.

Oxygen and acetylene cylinders will be kept upright always and will be prevented from accidental falling. They will be stored separately in the storage area. All the fuel cylinders will be provided with flash back arrestors.

Flammable liquid storage shall be free from any source of ignition and warning signs shall be installed to prohibit smoking, hot works in the vicinity.

Smoking is allowed in the designated area only.

Training on the use of fire extinguishers will be conducted to all the employees as a part of the induction session and it will be repeated in the toolbox talks whenever required.

In case of major fire inform Civil defense

Control Measures to prevent the fire:
The aim of fire prevention is to keep the three sources of ignition apart i.e. oxygen, fuel and ignition sources.

- Elimination or reduction in the use and storage of flammable and combustible materials.
- Control of ignition sources (insulating hot surfaces, smoking only in the designated area policy, earth bonding of machines to prevent static build up, etc.)
- Keeping materials well clear of sources of ignition, e.g. light fittings and heaters;
- Safe Systems of Work (SSW) involving ignition sources, Permits to work for hot work
- Safe place to work.
- Good housekeeping to prevent the build up of combustible rubbish or flammable residues, control waste (segregation in to waste streams, sealed receptacles and regular disposal, etc)
- Storage of waste flammable solvents a suitable distance from the main workplace, ideally in a chemical store, where safe electrical circuits are installed
- Segregation of highly flammable materials, liquids, gases, etc. preferably using fire resistant compartments for flammable materials like paint, thinner etc and will ensure a safe store management system
- Electrical safety-eg: -correct fuse ratings, inspection of plugs and cables
- Planned maintenance including regular inspection and servicing of plant and equipment.
- Supervisory and inspection procedure to ensure fire prevention
- Housekeeping is a fundamental and necessary activity. All supervising personnel shall make sure that every employee working under their control understand this policy and implement it as a matter of course.
- Appropriate trash containers shall be place strategically at locations as needed and used for disposal of waste materials and other generated debris.
- Materials shall be stored in a manner so as not to obstruct access to fire protection equipment such as fire exits, fire extinguishers and fire alarm call points.
- Aisles and walkways that serve as a means of exit shall not be blocked at any time. A minimum clearance of 915 mm shall be maintained.
- Smoking is restricted only in designated areas where there is firefighting equipment, ashtrays and other appropriate disposable receptacles. Smoking is not permitted in any site office.
- The appropriate number of office/security staff will be assigned with the responsibility to act as fire wardens, with the duties of marshalling and controlling the evacuation of the site facilities.
- All office staff (including new starters) shall be briefed and kept updated on fire and emergency response procedures and assembly points.
- Provision shall be made for adequate metal filing cabinets for documents, stationary and other potentially flammable items.
- In liaise with the Electrical Engineer, smoke detectors and fire alarms shall be checked every one month and recorded.
- Kitchen areas are a particular location for fire hazards and shall be monitored to ensure that electrical fittings are turned off after use and not present a fire hazard. Only electric closed hot plates are to be use coiled electric rings and gas are not permitted.
Training in the use of fire extinguishers shall be given and signs displayed highlighting the emergency procedures.

16.14. First Aid:

- In case of minor injuries, the injured person should be sent to First Aid facility available on site.
- Shall provide adequate number of First Aid box. The actual contents of the first-aid boxes will be determined through the risk assessment once the work is started together with local legislation and guidance.
- Ambulance facilities of the Police department will be called in to handle major injury cases.
- Certified First aider and First aid room
  - Fulltime First aid room should provided where the assessment of first aid needs identifies this as necessary. The first aid room should contain essential first aid facilities and equipment, be easily accessible to stretchers, and clearly signposted and identified. A trained and certified first aider’s (approved by the municipality) availability will be there for all the working hours. If possible the room should be reserved exclusively for giving first aid.

16.15. Health, Welfare & Medical Program

It is the responsibility of the Senior Project Manager via the subcontractor Project Manager to ensure that the following facilities are provided at site during mobilization.

- First Aid & Medical Facilities
  - First aid facilities with full time ‘first aid attendant trained in ‘first aid’ for the initial treatment in the event of an accident.
  - The telephone number of the nearest hospital, and emergency telephone numbers will be displayed in the clinic should the patient need to be transferred for treatment.
  - All accidents, no matter how slight will be reported by the immediate supervisor and recorded. Accident reports will be required for injuries requiring hospital treatment and/or time off work.
  - Every injury case which requires hospital treatment will be brought to the attention of the Site Safety Officer/Project Manager for further investigation, this information will be forwarded to the Senior Project Manager and Safety Manager.

- Sanitary Facilities, Personal Hygiene, Eating, Accommodation (Lunch Rooms etc)
  - Adequate sanitary facilities shall be provided according to regulatory standards (1 toilet seat and 1 urinal per 50 workers).
All employees shall be made aware during safety induction program of their responsibilities to make best use of provided facilities.

Adequate washing facilities shall be provided for personnel who are using or handling materials, chemicals or other substances that could create a health hazard due to ingestion or dermal exposure.

A separate crew shall be set-up and maintained to keep the facilities in a clean and orderly manner. The disposal of used water (water from the kitchen and hand washing facilities, etc.) and other waste material shall meet environmental standards.

It shall be ensured that ‘filter elements’ fixed in water coolers are properly cleaned and changed periodically (Cleaning – Once a week and a replacement based on checking the condition of the filter).

It shall be ensured that adequate cool drinking water is available at each work place during the summer period.

Adequate medical facilities shall be made available in case of medical emergencies due to heat stress.

Canteens with eating facilities shall be made available to all employees and it shall be ensured that they are maintained in a neat and orderly manner.

Appropriate containers shall be provided near the canteens for the disposal of lunch scraps, associated food containers and wrappers and it shall be ensured that these containers are emptied from time to time.

Waste Management

Suitable arrangements shall be in place to ensure the consignment and disposal of waste materials.

Timber and scrap materials with a commercial value shall be separated and stored in segregated areas prior to removal.

Oil and other lubricants shall be collected in drums and disposed off in accordance with the local rules and regulations.

It is to be ensured that the waste materials removed from site is reaching the landfill area or incineration facility and is not overflowing thereby causing environmental damage.

16.16. General Safety Rules for All Site Personnel

Every employee must be made aware of the following rules before he is placed on the job. Compliance with the rules and regulations is mandatory. Failure to comply with the applicable
statutory or company rules and regulations shall be viewed seriously which may even lead to permanent removal of violators from the site.

- Possession or use of alcohol, non-proscription drugs or other controlled substances will be grounds for immediate dismissal.
- Gambling, fighting, horseplay, manhandling each other in areas under company control will be cause for dismissal.
- Hard hats, safety shoes and coveralls are to be worn at all times while on the construction site.
- The wearing of short pants and the removal of upper shirt or trousers is prohibited.
- Always wear your hard hat except when actually inside the offices or rest areas. The hard hat protects against falling objects, flying and projected objects. It also protects eyes and nose from projected and falling objects.
- Only the use of full body safety harness is permitted to be used on site (safety belts will not be permitted). When working at heights more than 1.8 meters above ground level you must wear a safety harness. Keep the harness on your body so that it is immediately available to you to hook your lanyard on any permanent structure while working at height.
- Always hook your safety harness above your working level. Make sure that the lifeline of your safety harness is not defective or damaged before use. An anchorage point should be capable of withstanding your impact load.
- Wear appropriate coveralls with your company logo on it. It will help identify you quickly during an emergency.
- Wear the appropriate eye protection when working conditions present hazards to the eyes such as grinding, chipping, burning welding, any overhead works and blowing sand.
- Use ear mufflers or ear plugs while doing chipping with power tools, using jack hammers, and in the areas where surrounding noise levels is above 85dB.
- Use other personnel protective equipment such as hand gloves, aprons, respirators/dust masks etc. when required.
- ‘Smoking’ is strictly prohibited in the entire site premises except in designated ‘smoking’ areas made at different locations.
- Keep your work area neat and tidy.
- Do not urinate or defecate except in designated areas.
- ‘Eat’ and ‘Take Rest’ only in designated areas. It is strictly prohibited in the work areas. It is extremely dangerous to take rest under scaffold or construction machinery.
- Dispose all your food waste in the rubbish containers which are placed at various locations.
- Do not operate any machine, crane, truck or any other equipment without a proper license and authorization.
- Do not operate any vehicle at speeds exceeding the designated limit.
- Do not ride on loads, hooks, and the construction equipment/machinery where there is no proper seating arrangement.
- Always walk on the side of the road facing the traffic.
- Obey all signs that warn of hazards. They have been placed there for your protection.
- Keep out of restricted areas that are identified by signs, ropes, barricades or other markers.
- If you are in any doubt about the safe or proper way to do the job, contact your supervisor for instructions.
- Know the tools that you are using – use the right tool for the right job.
- Never touch loose or broken wires until you have made certain that they are not hot or live.
- Do not use naked electrical wires. Always use proper plugs.
- Never start any machines, operate valves or switches etc. without first personally making sure that no one can be injured by the operation.
- Never use open fires on the job. Use approved heating devices only, which must be properly vented.
- Know the location of fire extinguishers. Be familiar with their use. Never use a water or water type extinguisher (i.e. foam type) on an electrical fire. Never play with a fire extinguisher. They are kept for your safety during an emergency.
- Do not stand under the lifting/suspended load. Keep clear off any such loads. Use tag lines for proper control of the load.
- Do not throw or drop your tools or materials from height.
- Do not work directly under other personnel who are working above you.
- Do not remove any safety barriers, opening covers and any other safety devices without prior permission.
- Do not ride on mobile scaffold while it is being moved.
- Working inside a confined space shall be under authorization/permission from the safety dept.  Do not make any unauthorized entry.
- Do not cut empty drums for storage of water, rubbish or to store materials without any prior permission. It may explode if a proper precautionary measure such as purging is not properly done.
- Do not keep or allow any loose materials on the structure, near the unprotected edges of the building outside the safety barriers and over planks or scaffolds without making necessary fall protection arrangements.
- When working near power lines be sure to allow proper clearance for men and equipment.
- Advise fellow workers if any imminent safety hazard is discovered.
- Report to the supervisor if you are not well, having height-phobia to work at height, or for correction if any unsafe condition or if and unsafe act of other work groups which lead to a safety hazard for you is observed.
- Know the area where the “FIRST AID” box and “CLINIC” are located.
- Regardless of severity, report to the supervisor immediately when any injury is sustained, material or equipment damaged and “Near Miss” incidents.
- Before commencing any work at higher elevations, you must make sure the safety of other people working/moving below you is taken care of. If there are a possibility of material falling from your working level, the area underneath shall be barricaded with proper warning signage boards posted. Please make sure that one of your fellow workers is posted to keep the area clear.
- Do not take any shortcuts and always use the proper access and stairways.
On hearing the emergency evacuation alarm.
- Do not panic
- Stop work.
- Remove all your power tools and keep everything safe.
- Use designated escape routes (stairs) to your nearest assembly points and report there for the “Head Count”
- Stay calm until your supervisor gives you further instructions.

Do not play with the “Fire emergency equipment” which is kept at various locations. They are for your safety to create alertness during fire’ or any other ‘emergency’

16.17. Safety Requirements - Hazardous Materials

- Written information about hazardous materials such as chemicals and gases shall be obtained from the manufacturer or supplier and communicated to employees.
- Materials, agents, chemicals and other materials classified as hazardous, shall be used, stored, dispensed, handled and disposed in accordance with the local Rules & Regulations. This includes such items such as paint solvents, paint sludge, and greases.
- Prior authorization is required before hazardous materials, chemicals, oils, solvents, paints, thinners, compressed gases and protective insulation or coating materials are used or stored on the project site.
- Each contractor and subcontractor employee, upon employment or assignment to the project, shall receive training relative to the use and potential exposure to hazardous materials. This training shall include the use of personnel protective equipment, and emergency procedures.
- Solvents, empty paint cans, oils, greases. Thinners and any other such material or containers which have contained chemicals or hazardous materials shall be disposed of in accordance with regulatory, owner/client and project requirements.
- Contractors shall maintain an inventory of all potentially hazardous materials and chemicals used and stored on the project. A copy of this inventory shall be submitted monthly upon demand. This includes but is not limited to the following products and items.
  - Paints, thinners, and solvents
  - Cleaning agents
  - Insulating materials such as fiberglass and ceramics
  - Silica sand, cleaning agents, and other sandblasting agents
  - Compressed gases such as oxygen, nitrogen, argon, helium
  - Greases, oils and other lubricants
  - Fuel gases such as gasoline, diesel, kerosene
  - Epoxy resins
  - Sealant
  - Asbestos products such as gaskets and sheeting materials
16.18. Safety Requirements - Cranes

- Cranes and other such lifting equipment shall be inspected for valid certification prior to use on the project. Such inspections shall be in accordance with regulatory and project requirements.
- All lifting equipment shall have the manufacturer load capacity, boom angles, and lift charts posted inside the operator’s cab. The operator shall have been trained in the use of such load charts.
- Operators must take signals from only one person (BANKSMAN). In an emergency, however, a “STOP” signal can be given by anyone.
- Only standard hand signals will be acknowledged as design by regulatory standards.
- Routine maintenance, fueling or repairs shall not be performed while the equipment is in use or the power is on.
- Personnel are prohibited from riding the hook or load.
- The swing radius area of all cranes shall be barricaded to prevent persons and equipment from being struck by the counterweight.
- A fire extinguisher shall be located in the cab of each crane.
- All safety devices and automatic safe load indicators must be fully operational.
- Cranes or other equipment SHALL NOT be operated within 6 meters (20 feet) of energized electrical transmission or distribution lines.
- Cranes booms shall be lowered when they are in transit.
- During transit with no load and the boom lowered, the minimum equipment clearance is 6 meters (20 feet)
- A designated person must observe clearance of the equipment and give timely warning of all operations where the operator’s vision is obstructed.
- Any overhead line shall be considered energized unless a responsible client or utility company representative is present and ensure that it is not.
- Loads shall be guided and prevented from swinging by attaching a tag line to the load.
- Loads shall not be left suspended on an unattended crane.
- Current annual inspection records shall be located on the project, for all cranes in use. A copy will be provided to safety officer and a copy kept in the cab of the lifting equipment.
- Cranes and other lifting equipment shall be inspected daily by the operator and recorded in a Daily Inspection Log. All defects or repairs needed shall be recorded in the log.
- Crane operators shall be trained and competent to operate the particular equipment.
- Guards shall be in place on pullets, sprockets, drums, flywheels, and other such rotating equipment where persons may be exposed to contact or otherwise create a hazard.
Guardrails, handholds, steps or other safe means shall be provided on cranes for easy access to the operating cab.

Platforms and walkways shall have anti-skid surfaces.

Cranes shall be grounded through the superstructure, whenever they could potentially make contact with an electrical energy source.

Cable and sling softeners shall be used to prevent damage to slings and wire rope during their use.

The contractor shall comply with the manufacturer’s specifications and limitations applicable to the operation of any and all cranes and derricks. Attachments used on cranes shall not exceed the capacity, rating, or scope recommended by the manufacturer.

The windshield of equipment shall be clear of obstructions and without breaks or cracks.

Rated load capacities and recommended operating speeds, special hazard warnings or instructions shall be conspicuously posted on all equipment. Instructions posted or warnings shall be visible to the operator while he is at his control station.

A boom angle indicator in good working order shall be provided.

An illustration of hand signals to crane and derrick operators that shall be posted on the outside of the crane, visible to all employees.

A competent person shall inspect all machinery and equipment prior to and during use to ensure it is in safe operating condition. Any deficiencies shall be repaired or defective parts replaced before continued use.

A thorough annual inspection of the hoisting machinery shall be made by a competent person, government representative or private agency qualified to conduct such inspections. The contractor shall maintain a record of the dates and results of inspections for each hoisting machine and piece of equipment.

Steel wire rope shall be taken out of service when any of the following conditions exist.
  o In stranding ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.
  o Wire rope safety factors shall be in accordance with recognized regulatory agencies.

All exhaust pipes shall be guarded or insulated in areas where contact by employees is possible in the performance of normal duties.

Whenever internal combustion engine powered equipment exhausts in enclosed spaces, tests shall be made and recorded to see that persons are not exposed to unsafe concentrations of toxic gases or oxygen deficient atmosphere.

Fuel tank filler pipes shall be located in such a position or protected in such a manner that not to allow spill or overflow to run onto the engine, exhausts, or electrical equipment or any machine being fueled.

No modifications or additions, which affect the capacity and operation of the equipment shall be made without the manufacturer’s written approval.

All jibs shall have positive stops to prevent their movement of more than five (5) degrees above the straight line of the jib and boom on conventional type crane booms. The use of cable type belly slings does not constitute compliance with this rule.

Overhead protection shall be provided for all operators of hoisting equipment (hoisting tower). Support for the overhead protection shall be of equal strength.
16.19. Safety Requirements - Hand, Air and Electrical Tools

- All employees are required to report damaged and defective tools to their supervisor.
- Damaged/defective tools shall be taken out of service and tagged 'DO NOT OPERATE'.
- Tools shall not be altered or operated contrary to manufacturing specifications and instructions.
- Tools such as hand and pedestal grinders shall have guards in place during their operation.
- Persons who operate ground compactors, rollers, chisel impact hammers, and other such tools shall wear protective footwear such as toe caps unless they are wearing approved protective footwear.
- Tools shall not be abused and kept in good operating condition.
- Tools shall be inspected prior to each use for defects such as cracked handles, damaged cutting edges, splitting or cracked parts, broken adjusting components, and worn, frayed, or incorrectly secured power supply leads or hoses.
- Tools shall not be operated which have worn or frayed electric leads, have the grounding plug prong missing, or are not firmly attached to the body of the tool. All electrical power tools must be connected via approved plugs and sockets, bare wires are not acceptable.
- Tools shall be used only for their intended purpose.
- Tools and equipment shall be marked or identified so that ownership may be established.
- Compressed air shall not be used for cleaning any part of the body or clothing.
- Air line hoses for tools and other equipment shall be secured together to preclude uncontrolled whipping in the event hose couplings become separated while under pressure.
- All electrically powered tools shall be properly grounded or double insulated.
- Liquid fuel and gas powered tools shall not be used on unventilated areas. Gasoline and diesel shall be dispensed only in approved safety containers. These containers shall be properly labeled as to their content.
- Portable grinders shall be fitted with hood type guards with side enclosures that cover the spindle and at least 50% of the wheel whenever in use. All cutting and grinding discs shall be inspected regularly for signs of fracture.
- Bench grinders shall be equipped with deflector shields and side covers guards. Tool rests shall have a maximum clearance of 1/8 inch between the wheel and tool rest.
- Air supply lines shall be protected from damage, inspected regularly and maintained in good condition.
- Air sources supplying hoses exceeding 1/2” inside diameter shall be protected by excess flow valves to prevent "whipping" in the event of hose connection separation or failure.
16.20. Safety Requirements - Barricades

- Adequate barricades shall be erected and maintained as required for employee protection, establishing boundaries around equipment or materials to prevent potential damage, and around floor, roof or ground openings.
- Barrier tape shall be used for its intended purpose according to approved methods upon completion of the work being performed, the supervisor who originally installed the tape must remove the barrier tape.
- Barrier tape shall not be used in lieu of hand and mid rails when they are required to be installed around open holes or barricades.
- Road barricades, signs, detours, and other traffic control systems, must be in conformance with regulatory and Project requirements.
- Permanent barricades shall surround permanent hazard areas. Gates will be provided. Permanent warning signs shall be used to adequately mark the hazard.
- Warning barricades are used to call attention to a hazard but offer no physical protection. Personnel may proceed through these areas after they have recognized the potential hazard. For example, a warning barricade may be used to detour traffic.
- Protective barricades shall be provided as physical protection from falling as well as indicating a dangerous condition. Protective barricades may be constructed of wood lumber material or any other rigid material (except rope) which provides equivalent protection. In all cases protective barricades must be capable of supporting 80 kegs of force in all directions.
- Only authorized personnel are allowed within the perimeter area where protective barricades have been erected.
- Appropriate signs shall be used to provide warnings and identify danger.
- Imminent danger areas shall be barricaded using appropriate barrier tape. Only personnel working to eliminate the unsafe condition may be inside area.
- Persons who violate warning signs and barricades may be removed and excluded from entry onto the project.
- The contractor performing the work is responsible for erecting barricades and dismantling them when they are no longer necessary.
- Barricades should be 1 meter high, and surround all open sides of the area when a warning is required or a danger necessary.

16.21. Safety Requirements – Road Usage

- All drivers shall have a valid driving license.
- All drivers shall observe the posted speed limits (on site 25 kph)
- Seat belts are mandatory.
- Seat belts are mandatory for heavy equipment operators if provided by the manufacturer.
- The driver shall ensure that the number of passengers does not exceed the number of available seat belts.
The driver shall not transport any unauthorized personnel in a project vehicle.
No passengers shall be transported on any equipment except in a passenger’s seat with a seat belt.
The site access Road shall not be used for storage of materials and equipment.
The site access Road shall not be used for loading or unloading operations.
The access Road shall not be obstructed by unattended or vehicles which have engine problems.

17. APPENDIX