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CLIENT:	
PROJECT:	

		SIGNATURE	DATE
PREPARED BY:	QHSE Supervisor		21/02/2018
REVIEWED AND APPROVED BY :	Operation Manager	Deme	30/03/2018

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### AMENDMENT RECORD SHEET

Rev. No.	Date	Description of Change		Date of Review by HSE(Site)	Date of Approval by PM
0	31/01/ 2018	Ervcaf Safety procedures		05/03/2018	Manager HSE
1	28/03/ 2018	Project HSE plan		28/03/2018	Manager HSE
HSE	Plan	Prepared & Reviewed by	Approved by Project Manager		-
Name		Engineer	Manager		jer
Date		26/03/2018		28/03/2018	
Signature		Dev	and a second		

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#### 1. GENERAL INFORMATION

#### 1.1. Purpose and scope:

This Health, Safety, and Environment plan has been prepared by ERVCAF as part of the overall project execution plan and related to HSE management for all of the construction works related to the project.

The purpose of this manual is to state HSE Rules, Regulations, Procedures, Objectives & Guidelines that shall be compiled with by ERVCAF and its subcontractors during the project execution and outlines the manner in which these procedures will be implemented, utilized,

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maintained and verified. It sets out requirement to be implemented in the delivery of services to the project to ensure the safe execution of the construction activities on site.

This manual will complement with Client's and any relevant Subcontractors HSE Plan and all related policies and procedures, and will take precedence in case of conflict.

#### **OUR GOAL IS**

"Not to cause injury to any Person or Damage to any Equipment or Environmental or property"

#### Our objective in the project:

- ◆ To eliminate unsafe conditions. Accidents are caused by unsafe behaviors, unsafe equipment and work areas or mechanical exposure in the working environment.
- ◆ To minimize unsafe acts by providing competent workers and supervision to ensure workers use proper techniques and methods.
- ◆ .To avoid , minimize the negative impacts of actions on the natural environment and surrounding communities
- ◆ To ensure compliance to regulatory and industry standards.

#### 1.2. PROJECTS HIGHLIGHTS

Client : CLIENT

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#### 1.3. SCOPE OF WORK

- Civil works
- Petroleum services
- Constructions
- Preparing the rigs platforms
- Making roads and tracks
- Water supply
- Equipment rental
- Transporting
- Waste management
- Manpower providing

#### 1.4. SITE LOCATION WITH MAP

**TBD** 

#### 1.5. MAJOR ACTIVITIES

- > Site Establishment
- Site Survey.
- Access Road Formation.
- Package Units Shifting and Transport and foundation of the package units related to DRILLING
- > Platform Formation.
- Steel Casing transportation.
- > Steel Reinforcement Fabrication.
- Concreting
- Template setting of rig platform.
- Concreting.
- Material Transport.

#### 1.6. LIST OF MAJOR PLANT & MACHINERY

- ➤ 15 Tons Crane and 2 Forklift
- Welding Machine and Gas cutting set.

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- > JCB Back hoe loaders, Excavators, Road Roller and Water tanker.
- Transport Vehicles Trailers, Concrete Ready Mixers and Pump.
- Portable Gen sets.
- > Instruments used for testing of electrical jobs.
- Survey Instruments.
- Vibro Hammer and Hydraulic Units.
- Lighting Set.
- > Support Rollers.
- Megger
- Rescue kit.
- Compressor
- Dozers
- Graders
- > Trucks
- Light vehicles
- Lowboy trucks
- Dump truck

#### 1.7. GLOSSARY OF TERMS

PM - PROJECT MANAGER

FA - FIRST AID

HSE - HEALTH, SAFETY AND ENVIRONMENTAL HSEM - HEALTH SAFETY ENVIRONMENT MANAGER

P&M - PLANT & MACHINERY

HSE M - HEALTH SAFETY & ENVIRONMENT MANAGER

UA - UNSAFE ACT

UC - UNSAFE CONDITION

MSDS - MATERIAL SAFETY DATA SHEET

#### 1.8. TERMS & DEFINITIONS

#### 1.8.1.ACCIDENT

Undesired event giving rise to death, ill health, injury, damage or other loss

#### 1.8.2.AUDIT

Systematic examination to determine whether activities and related results conform to planned arrangements and whether these arrangements are implemented effectively and are suitable for achieving the operation's policy and objectives.

#### **1.8.3.HAZARD**

Source or situation with a potential for harms in terms of injury or ill health, damage to property, damage to the work place environment, or a combination of these.

#### 1.8.4.HAZARD IDENTIFICATION

Process of recognizing that a hazard exists and defining its characteristics.

#### 1.8.5.INCIDENT

Event that gave rise to an accident or had the potential to lead to an accident.

Note: An accident where no ill health, injury, damage or other loss occurs is also referred to as a "near miss". The term "incident" includes near "misses"

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#### 1.8.6.NON-CONFORMANCE

Any deviations from work standards, practices, procedures, regulations, management system performance etc. that could either directly or indirectly lead to injury or illness, property damage, damage to the work place environment, or combination of these.

#### 1.8.7.OCCUPATIONAL HEALTH & SAFETY

Conditions and factors that affect the well-being of employees, temporary workers, contractor personnel, visitors, any other person in the work place.

#### 1.8.8. HSEMANAGEMENT SYSTEM

Part of overall management system that facilitates the management of the HSE risks associated with the business of the organization. This includes the organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the organization's HSE policy.

#### 1.8.9.ORGANISATION

Company, operation, firm, enterprise, institution or association or part thereof, whether incorporated or not, public or private, that has its own functions and administration

Note: For organizations with more than one operating unit, a single operating unit may be defined as an organization.

#### 1.8.10. RISK

Combination of the likelihood and consequence(s) of a specified hazards event occurring.

#### 1.8.11. RISK ASSESSMENT

Overall process of estimating the magnitude of risk and deciding whether or not the risk is tolerable.

#### 1.8.12. SAFETY

Freedom from unacceptable risk of harm

#### 1.8.13. TOLERABLE RISK

Risk that has been reduced to a level that can be endured by the organization having regard to its legal obligations and its own HSE policy.

#### 1.8.14. ENVIRONMENT

Surroundings in which an organization operates, including air, water land, natural, resources, flora, fauna, Humans and their interrelations.

Note: A significant environment aspect is an environmental aspect that has (or) can have a significant environment impact

#### 1.8.15. ENVIRONMENT ASPECT

Element of an organization's activities, products (or) services that can interact with the environment.

Note: Surrounding in this extend from within an organization to the global system.

#### 1.8.16. ENVIRONMENT IMPACT

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, product (or) services.

#### 1.8.17. ENVIRONMENTAL MANAGEMENT SYSTEM

The part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.

#### 1.8.18. ENVIRONMENTAL POLICY

Statement by the organization of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets.

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#### 1.8.19. OBJECTIVES

Goals, in terms of HSE or environmental performance that an organization sets itself to achieve.

#### 1.8.20. ENVIRONMENTAL TARGET

Detailed performance requirement, quantified where practicable, applicable to the organization or parts thereof that arises from the environmental objectives that needs to be set and met in order to achieve those objectives.

#### 1.8.21. PERFORMANCE

Measurable results of the HSE or environmental system, related to an organization's control of health & safety risks or its environmental aspects based on its HSE or environmental policy and objectives.

Note: Performance measurement includes measurement of HSE or environmental management activities and results.

#### 1.8.22. CONTINUAL IMPROVEMENT

Process of enhancing the HSE or environmental management system to achieve improvements in overall HSE or environmental performances in line with the organization's HSE or environmental or HSE policy.

Note: The process need not take place in all areas of activity simultaneously.

#### 1.8.23. INTERESTED PARTIES

Individual (or) Group concerned with (or) affected by the HSE or environmental performance of an organization.

#### 1.8.24. ENVIRONMENTAL MANAGEMENT SYSTEM AUDIT CRITERIA

Policies, practices, procedures or requirements such as those covered by ISO 14001 and if applicable and additional environmental management system requirements against which the auditor compares collected audit evidence about the organization's environmental management system.

#### 1.8.25. PREVENTION OF POLLUTION

Use of Processes, Practices, Materials or Products that avoid, reduce or control pollution, which may include recycling, Treatment, process changes, control mechanisms, efficient use of resources and material substitution.

Note: The Potential benefits of prevention of pollution include the reduction of adverse environmental impacts, improved efficiency and reduced costs.

#### 1.8.26. NORMAL CONDITION

That condition which prevails during the normal course of operations/ activities other than shut down and start up.

#### 1.8.27. ABNORMAL CONDITION

That condition which prevails during shut down and start up of operations /activities other than normal operating conditions

#### 1.8.28. MANHOUR WORKED

The total number of employee-hours worked by all employees working in the premises. It includes managerial, supervisory, professional, technical, clerical and other workers (including contractor labors, security personnel & other casuals).

Man hours worked shall be calculated from the pay roll or time office record including overtime. When this is not applicable, the same shall be estimated by multiplying the total man days worked for the period covered by the number of hours worked per day. The total number of man days for a period is the product of the number of persons engaged multiplied by the man days worked.

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#### 1.8.29. MAN DAYS LOST

The day on which the injury occurred and the day injured person returned to the work are not to be included as man days lost, but all intervening calendar days (including Sundays or days off or days of plant shutdown) are to be included. If after resumption of work, the person injured is again disabled for any period arising out of the injury which caused his earlier disablement, such subsequent disablement is also to be included in the man days lost.

According to the schedule of charges, a loss of 6000 man days is taken for death of a person.

#### 1.8.30. REPORTABLE LOST TIME INCIDENT

An injury causing death or disablement of the injured person for 48 hours or more excluding the day of the shift on which the accident occurred.

#### 1.8.31. CONFINED SPACE

A workplace having limited openings for ingress or egress making it difficult for the person inside the confined space to escape freely at will. This workplace could be oxygen deficient (less than 19.5%) or oxygen enriched (more than 23.5%) & could have (i) Restricted flow of fresh air, (ii) or contain (a) inflammable gases / vapors (b) or toxic gases (c) or other specified physical hazards which could overcome those working inside the confined space and physically or mentally immobilize the affected person.

#### 1.8.32. DANGEROUS OCCURRENCE

An unplanned event, whether or not it is attended by personal injury or disablement, which results in -

- Bursting of a plant used for containing or supplying steam under pressure greater than atmospheric pressure.
- Collapse or failure of a crane, derrick, winch, hoist, or other appliance used in raising or lowering persons or goods, or any part thereof, or the overturning of a crane.
- Explosion or fire or bursting out, leakage or escape of any hot substance (molten metal, liquid or gas) causing injury to any person or any room or place in which persons are employed.
- Explosion of a receiver or container used for the storage at a pressure greater than atmospheric pressure of any gas or gases (including air) or any liquid or solid resulting from the compression of gas.
- Collapse or subsidence of any floor, gallery, roof, bridge, tunnel, chimney, wall, building, excavation or any other structure or formwork or scaffold.

#### 1.8.33. FREQUENCY RATE

Number of Reportable lost time injuries per million man-hours worked.

Frequency Rate = Number of Reportable Lost Time Injuries X 106
-----Man hours worked

#### 1.8.34. SEVERITY RATE

Number of man days lost due to reportable lost time injuries per million man-hours worked.

Man days Lost due to Reportable LTI X 10<sup>6</sup>

Severity Rate = ------

Man hours worked

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#### 1.8.35. FATALITY RATE

Number of fatalities per Lakh manpower engaged.

Fatality Rate = Number of fatalities X 10<sup>5</sup>
Number of Workmen engaged

#### 1.8.36. INCIDENCE RATE

Ratio of number of reportable lost time injuries to the number of persons during the period under review. It is expressed as number of injuries per 1000 persons employed.

#### 2. HSE POLICY

#### 2.1. HSE POLICY

We are committed to providing active leadership and support in order to develop and maintain and industry-leading program.

In order to win the hearts and minds of our people;

- We require leaders who value safety, and lead their people with vision, compassion and inspiration.
- We must integrate HSE throughout the organization, in all of our activities;
- Our people must take a proactive approach to safety in their personal and professional lives:
- We need identify and manage risk by focusing on behaviors ,perceptions and skills that will achieve growth and make us safer;

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- We must mitigate risk at the most fundamental level in project design, constructions and operations.
- We have to remember that any one risk could result in several different outcomes with incident being only one of the possibilities.

Compliance with all applicable OHSE laws and Environmental regulations of morocco will be considered the minimum acceptable standard in all activities we undertake. The following are the established project Health, Safety and Environment, leading and lagging indicators objectives to which all will subscribe and strive to achieve.

- Zero Accident.
- Zero Damage to asset.
- Zero Damage to environment.

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#### 3. HSE MANAGEMENT SYSTEM

#### 3.1 HSE MANAGEMENT SYSTEM

#### 3.1.1 MANAGEMENT CONTROL MEASURE

The Management shall provide strong demonstrable visible leadership and commitments towards HSE by personal example and action. The Management will participate in HSE meetings, conduct site Inspections and HSE Audits, to encourage a positive attitude towards HSE.

No.	TASK	ACTION BY	COMPLIANC E TARGET	VERIFICATION DOCUMENT
1.	Project HSE Committee Meeting: (Review performance against HSE plans, target and any HSE issues)	<ol> <li>Project Manager.</li> <li>Site Manager</li> <li>Site HSE</li> <li>Field</li> </ol>	Min Frequency : 1 month	Minutes of Project HSE Committee Meeting
2.	Project HSE Committee Inspection	HSE Committee Members: 1. Site Manager 2. Project Manager 3.HSE Engineer 4.Field	Min Frequency : 1 month	HSE Inspection Report
3.	QMS Audit of HSE Departments functions	HSEM / Nominated Auditor	Once in Six Months	Audit Report including NCRs, & Site Observation
4.	(Motivation) Giving Safety Certificates, with token gift to the safe man of the month to recognize good HSE practices.	PM/CM	Monthly	Copies of Certificates on Quarterly

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#### 3.1.2 PROACTIVE IN TARGET SETTING

The Site management demonstrates pro-activeness in target setting by

No.	TASK	ACTION BY	COMPLIAN CE TARGET	VERIFICATION DOCUMENT
1.	Jointly developing and discussing improvement targets and indicators for each location with Construction Managers & HSE Engineer	Project Manager	Every Quarter	MOM of Project HSE Committee Meeting
3.	Management involvement in Accident review and target setting.	HSEM	As required / Monthly	Investigation Report

#### 3.1.3 COMPANY CULTURE

The management seeks to create and sustain a Company culture in which Employees share a commitment to HSE.

No.	TASK	ACTION BY	COMPLIANCE TARGET	VERIFICATION DOCUMENT
1.	Task Risk Assessment / Tool Box Meetings / Emergency Response Drills & Exercise	HSE Engineer/ Site Foreman		
2.	HSE as number 1 on the agenda of all review meetings at Head quarters, regions & project sites		All time	MOM
3.	Empowerment to Stop Work Employees are empowered to stop work when the situation warrants immediate action in view of imminent danger to life / property / environment. Project Managers shall appreciate and reward those employees whose prompt action helps avoid potential incident.	All	All time	Verbal Verification with employees

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#### 3.1.4 INFORMED INVOLVEMENT

Senior management demonstrates informed involvement in HSE issues through

NO.	TASK	ACTION BY	COMPLIANCE TARGET	VERIFICATION DOCUMENT
1.	Review Project HSE Performance and plan implementation in consultation with Project Manager & HSE Engineer / Officer.	SPM	Half yearly	Mom – Sector Management Review Meeting
2.	Ensure adequate professional HSE support available for effectively implementing the HSE plan, fulfilling HSE targets and attaining HSE objectives	HSEM	Project Duration	No evidence of HSE discrepancies due to lack of resources
3.	Ensure sufficient support and resources are available to meet HSE targets	Project Manager	Project Duration	No evidence of HSE discrepancies due to lack of resources
4.	Imparting necessary HSE training for the Staff & workmen of the project.	Project Manager	As required	HSE Training record

#### 3.1.5 PRE-CONSTRUCTION ACTIVITY

Implementation of Project HSE Plan is the responsibility of the Project Manager.

To ensure responsibility is fulfilled; a HSE Engineer is assigned with this job, who is reporting to Project Manager directly.

The activities are put in place coinciding with the project mobilization.

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#### 3.2 ORGANISATION & RESPONSIBILITIES

#### 3.2.1 SITE ORGANISATION CHART



#### 3.3 ROLE & RESPONSIBILITIES

#### 3.4.1. RESPONSIBILITIES

HSE management is a line responsibility requiring active participation of all levels of management and supervision. Individual HSE roles and responsibilities, along with task and target shall be distributed to the individuals for action, as described below.

♦ Responsible for completion of the project with total implementation of the company's HSE policy requirement, HSE Management System & requirements of this plan and comply with the relevant statutory rules and regulations.

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- ♦ Ensure that all staff & workmen are competent to perform their tasks safely in compliance with ERVCAFHSE Management System and this plan requirement. He shall nominate adequate capable person who shall:
- ♦ Ensure sufficient resources are available at site. He shall ensure through:
- ◆ Reviewing HSE Plan implementation and discuss any outstanding issues in Project HSE Committee Meeting.
- ♦ Investigating non-compliance and its implementation.
- ♦ Investigate all high potential incidents and non-compliance and ensure immediate remedial action to stop recurrence.

#### 3.4.2. PROJECT MANAGER

- Responsible for completion of the project with total implementation of the company's HSE policy requirement, HSE Management System & requirements of this plan and comply with the relevant statutory rules and regulations.
- ♦ Ensure that all staff & workmen are competent to perform their tasks safely in compliance with ERVCAFHSE Management System and this plan requirement. He shall nominate adequate capable person who shall :
  - Provided HSE Induction for all staff & workmen before deployment by HSE Engineer / Officer.
  - Ensure regular monitoring and organize continuous HSE in-house HSE trainings.
- Ensure sufficient resources are available at site. He shall ensure through:
  - Reviewing HSE Plan implementation and discuss any outstanding issues in Project HSE Committee Meeting.
  - > Investigating non-compliance and non implemented client complaints.
- Investigate all high potential incidents and non-compliance and ensure immediate remedial action to stop recurrence.

#### 3.4.3. HSE MANAGER

- ♦ Supplement Site HSE inspections & relevant HSE training at the jobsites in coordination with HSE.
- ♦ Investigate all fatal accidents, serious accidents / dangerous occurrences & recommend preventive actions at sites.
- ♦ Co-ordinate purchase and quality control activities related to PPE / safety gadgets.
- ♦ Monitor all HSE activities & co-ordinate with Clients, Site In charges
- ♦ Organize safety campaigns, competitions & other special emphasis programs to promote HSE at workplace.
- ♦ Conduct HSE Audit and Inspection during the Project duration.
- ◆ Report HSE activity to HSE to Project Manager

#### 3.4.4. HSE ENGINEER/RESPONSIBLE

- ♦ Disseminate and Communicate ERVCAFHSE Policy, HSE Management System requirements to site personnel.
- ♦ Provide necessary advice, information and support in the effective implementation of the ERVCAFSafety Management System requirements and this HSE plan.

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- ♦ Updating the HSE Plan to the requirements of the activities being carried out when there is a revision.
- ♦ Plan and conduct Internal HSE training programs, initiate drive to promote HSE awareness and performance
- ♦ Carry out HSE inspection of Work Area, Work Method, etc. as per the HSE requirement
- ◆ Creating HSE awareness through TBM talks along with the Site supervisor/workers
- ♦ Associating line management in preparing ERVCAFRisk Assessment for the critical activities.
- ♦ Conduct investigation of all accidents / dangerous occurrences and near misses & recommend appropriate corrective measures.
- ◆ Convene HSE Committee meeting & minute the proceedings for circulation & follow-up action.
- ◆ Advice & co-ordinate for implementation of Work Permit Systems.
- ◆Plan procurement of PPE & safety devices and inspect before use as per laid down norms.
- ♦ Report to HSEM on all matters pertaining to status of HSE and promotional program at site level.
- ♦ Monitoring, Analyzing & administration of First Aid.
- ♦ Conduct Fire Drill, Procure, inspect and arrange to maintain Fire Extinguishers.
- ♦ Organize campaigns, competitions & other special emphasis programs to promote HSE in the workplace.
- ♦ Record, analyze and cascade lateral learning points from First Aid Cases, Near Miss Cases & Accidents to all project personnel and analyze the trends & effectiveness
- ♦ Maintain all HSE related documents.
- ◆ Update HSE training records

#### 3.4.5. SITE SUPERVISOR

- ◆Understanding the HSE requirements of the Project and following the rules in execution of the work
- ◆ Conduct Tool Box talk to the workmen under him
- ♦ Ensuring the workmen under him wear the necessary personal protective equipments respective to the job
- ◆ Eliminating all unsafe conditions in their work area
- ♦ Keeping the work area neat & clean
- ♦ Know the critical activities of his job based on the Group Risk Assessment and ensure implementation of the Risk control measures.
- ◆ Participating with the HSE Engineer / Officer or the committee Members in the Project HSE Inspection
- ◆ To follow all work permit system as per ERVCAFPermit to work requirements.
- ◆ To inform all accidents / incidents/dangerous occurrences at site immediately

#### 3.4.6. SUB-CONTRACTOR

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- ♦ All Subcontractors/ /Third Party performing services at the Project site shall be subject to this plan requirement.
- ♦ Shall understand the safety code of conduct for subcontractors and sign the same as a token of acceptance before starting the activity.
- ♦ His Supervisor and his workmen shall adhere all the laid down ERVCAFHSE rules & Regulations while working at site, follow the instruction / advice of Site engineer & HSE Engineer / Officer from time to time.

#### 3.4.7. ALL EMPLOYEE

- ♦ Be physically fit and alert to hazards.
- ♦ Start work only with a ERVCAFauthorization .When conditions are unsafe, stop work when it is unsafe. Report all unsafe acts and condition to the ERVCAF SUPERVISOR immediately.
- ♦ Operate equipment only when authorized and prescribed manner.
- ◆ Report any injury or accident immediately.

#### 3.4 TRAINING

- Develop and conduct the project Health and safety orientation sessions for all site personal and visitors.
- Put together and conduct HSE training sessions, as required
- Provide HSE information to the different Subcontractors
- Review the project Health and safety orientation sessions for all site personal and visitors.
- Instruct and train safety and security personnel for first aid, fire prevention and accident prevention.

#### 4. HSE PLANNING, STANDARDS & PROCEDURES

#### 4.1 HSE COMMUNICATIONS

The following table says that how HSE plan would be communicated to all sites and the way it would be monitored and enforced in the nutshell.

SI. No	HSE Event/ HSE Activity	Schedule	Action by Whom	Remarks
1	HSE Policy	Throughout the Project.	All	
2	Safety Induction Course to new employee	Before entering the project	HSE Engineer, Project Manager	
3	Driver Declaration Form	Before entering the Project	HSE Engineer	

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4	PPE's Issues to the workmen and staff	After safety induction is over	HSE Engineer & Administration Department	
5	Periodical Inspection of PPE's	Fortnight	HSE	
6	Issue of Dust Masks and Hand Gloves (Daily Consumables)	Depending the job nature and before commencement of the job	Foreman/ Supervisor	
7	Safety Sign Posters, Warning Signs and Safety Slogans	Regularly	HSE	
8	Risk Assessment	Before Commencement of the job	HSE and Foreman	
9	Circulation of Details to all staff	Periodically	HSE and Project Manager	
10	Safety Talks to the workmen	Daily. Before Commencement of the Job	Foreman and Supervisor	
11	Inspection of work place hazards and remedial measures	Daily	Foreman and Supervisor	
12	Following the safety system of the company 1. HSE Report 2. Waste Management Report. 3. Incident Report	Daily Monthly Monthly	HSE and Project Manager	
15	Site HSE weekly Meeting Tool Box Talk Meetings	Weekly	HSE	
		Before starting any new activity	HSE & Site Supervisor	
16	Site Safety Inspection	Fortnight	HSE and Site Supervisor	

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17	Crane Inspection		
17	Crane Inspection	Before corresponding commencement of the project activity	HSE & Site Supervisor
18	Site Housekeeping	Daily	Workmen and Foreman
19	Reporting the incident to HSE responsible, Investigation of the accident and incident.	As early as possible not later than 12 hrs.	Project Manager and all.
	Implementation of HSE Advise and HSE Plan		ALL
20	Implementation. Training plan	As per schedule By E mail and Presentation	HSE
21	First aid training By External Agency  Administering of first aid kits and materials replenishment	Before Commencement of work  Monthly and Whenever Required .	HSE and Project Manager  HSE and Administration Dept and first aid in charge
22	Inspection of Camp and Implementation	Fortnight	HSE , Administration Dept and Project Manager
23	Fire Extinguishers Inspection	Daily	HSE
	Servicing and Certification	Whenever required and Annually	HSE Engineer and Administration Dept.
	Lifting Gear Inspection	Daily	Workmen and Supervisor.

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24	Color Coding	Quarterly	HSE and Site Supervisor	
	Inspection of Tools and Equipments Permit to Work System	Biannually and when is required  Daily	HSE and Site Supervisor  HSE and Site Supervisor  HSE and Site Supervisor	
	System Safety Rules.	Daily	Assigned and Trained Representative.	
25	Contingency Plan for Emergency Situation	As per schedule and Whenever required.  After the incident	HSE /Project Manager Project Manager and Administration	

### 5. RISK EVALUATION AND MANAGEMENT OF THE CRITICAL ACTIVITIES

The risk management system will ensure a comprehensive and systematic hazard identification and proper management (mitigation) of high-risk activities throughout project's life cycle.

#### **5.19 Personal Protective Equipment**

There are many types of PPE from helmets to footwear, each type designed to protect different parts of the body against specific hazards. This chapter explains some of the common types of PPE

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#### **5.20.1** General Requirements

The standard requirements for personal Protective equipment on the project are:

- Hard Hat
- High Visibility Vest
- Safety Glasses
- High ankle Safety Leather Boots.

The risks posed in any particular work activity shall be assessed, and adequate PPE selected in accordance with the following:

- Ability of PPE to provide protection against risk(s) without compromising individual safety;
- Suitability for the user;
- Compatibility with work activity;
- Compliance with a recognized national or international standard of design or construction (e.g., BS, ANSI,CE).

#### In addition:

- All employees shall be provided with the necessary PPE, as identified in the Risk Assessment for their particular work activity.
- L&T will provide the required PPE and the necessary information/training relating to the effective use of this equipment.
- All employees shall be held responsible for the proper care and use of any PPE supplied to them.
- L&T will replace, free of charge to the employee, if any PPE that becomes deficient or defective.
- Supervisors shall be responsible for ensuring that all personnel on the project are trained in the use of, are provided with, and are wearing all PPE required for the work activity.
- Employees not wearing or using the PPE issued to them will not be allowed to continue or commence work.
- Employees shall wear the appropriate PPE supplied to them at all times while working on their assigned tasks.
- Supervisors shall apply corrective actions against any employee who fails to comply with the requirements of this procedure.

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#### 5.20.2 PPE SELECTION

PPE shall be selected and used to provide protection for all project personnel and visitors against the following:

- · Inhalation and respiratory tract hazards
- Skin contact hazards
- Mechanical injury and hazards
- Construction safety hazards
- · Physical agent hazards
- Environmental hazards
- Biological hazards

#### 5.20.3 PPE POLICY

The minimum requirements for PPE on all projects will be as follows:

PPE outlined below shall be worn within all construction work-sites (physical work or presence on the "construction site" on behalf of the company) and whenever there is a significant risk of bodily injury.

#### **5.20.4** HARD HAT

Plastic construction, manufactured in accordance with a recognized national or international standard (e.g., BS, ANSI, or equivalent).

L&T will ensure all employees' Hard Hat color schemes are appropriate for quick recognition of the employee is employed.

No alterations to hard hats are allowed without written consent of the manufacturer.

#### 5.20.5 SAFETY FOOTWEAR

Sturdy leather work footwear having high ankle with an approved Safety toe is required in designated areas and shall be manufactured in accordance with recognized national or international standards (e.g., BS, ANSI, or equivalent).

Alternative safety footwear may be required as per the risk analysis.

Delivery personnel will not be allowed out of vehicles without approved footwear and access badges shall not be issued to repeat offenders.

All footwear provided will be adequate for the work activity and location.

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#### 5.20.6 EYE PROTECTION

Safety glasses (BS, ANSI, or CE), with side shields (or goggles).

#### 5.20.7 HIGH VISIBILITY VEST

Fluorescent colour with reflective strips.

#### 5.20.8 PPE SIGNAGE

These notices shall be written in Arabic, English and the languages of the workforce, Graphic signs can reduce the text required (outline drawing of hard-hat/boots, boots, etc.) Basic requirements for PPE shall be posted at all approaches to the worksite.

They shall be patterned after internationally recognized signage; colour schemes, shapes, lettering sizes and graphics.

Additional PPE signage shall be posted in all areas where a higher level of protection is required (flotation vests, hearing protection, respirators.)

Barricades with tags may be required in some cases if the area should be classified as an exclusion zone (Radiation, powder actuated tools.)

The following exception to the above is considered acceptable:

 Welders, when welding and cutting in restricted spaces that make the wearing of hard hat impractical, and where overhead hazards are eliminated.

#### 5.20.9 WORK CLOTHING

Every employee will, at all times, wear clothing that protects the body and extremities.

Sleeved shirts and trousers/uniform covering the full leg must be worn at all times.

The following additional requirements shall apply:

- Loose clothing will not be worn where it can contact or catch on energized conductors, moving parts, equipment, or other hazards of this type.
- Preference should be given to natural fibres in the clothing worn by personnel.
- Short pants are prohibited as outerwear.
- Sleeveless shirts are prohibited as outerwear.

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- Finger rings or necklaces are prohibited when there is a danger of catching them on moving parts or contacting energized conductors.
- The practice of personnel wearing hard hats or coveralls other than those issued by their employer is prohibited.

#### 5.20.10 EYE AND FACE PROTECTION

Suitable protective goggles, face shield or screens shall be worn by personnel involved in, assisting with or working adjacent to any activity where there may be a danger of projected debris, sparks or other particles, corrosive fluids or mists, excessive heat, light or other harmful radiation (welding arc),

Only approved protective eyewear may be worn. Such work situations include, but are not limited to:

- Working with rotating equipment such as grinders, drills, lathes
- Cutting and welding
- Chipping & chiseling
- Using powder actuated tools (Hilti guns)
- Abrasive Blasting sand and grit
- Working with chemicals
- · Mixing drilling fluids, acids or other toxic hazardous fluids
- Working with paints, disinfectant, pesticides or other toxic or hazardous fluids
- Working with strong sources of electromagnetic radiation, welding, machines, etc
- Working with the risk of windblown particles

Exclusion zones may not be practical or beneficial to the work. Screens, barricades, face shields and goggles providing protection to those close to an exposure point can all play a part in personnel protection.

Discussions during the daily toolbox meeting by the hazard generator should detail specific daily requirements and responsibilities for implementation of control measures to protect others.

Individuals or crews should be aware of changing conditions around them and before any condition becomes hazardous they should attempt to recognize the hazard, eliminate the hazard or reduce the outcome to a acceptable level, or move out of the area and notify their supervisor.

#### a. Safety Glasses Exceptions

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Safety glasses are required on the Construction site, with the following exceptions:

- When vehicle and equipment operators inside enclosed cabs;
- Administration building (office work);
- Lunch and break periods (provided that no work is in progress in the immediate break area);
- Offices and supervisor shacks; (provided that no work is in progress in the immediate area);
- When goggles are worn (unless the activity calls for double eye protection).

#### b. Safety Glasses General

Tinted Safety glasses should be worn in strong sun glare to reduce eyestrain and fatigue, However, caution is warranted when employees must frequently move from outdoor to indoor locations, Wearing of tinted glasses is not permitted indoors. Non light-sensing glasses with tinted Senses are prohibited inside buildings or other structures with limited illumination. This includes prescription glasses.

Personal eye glasses whose protective lenses provide optical correction with permanent fixed side shields, have certified frames and conform to the requirements of a recognized national or international standard (e.g., BS, ANSI, or equivalent) will meet this requirement.

Safety goggles over their glasses, or goggles that incorporate a corrective lens mounted behind the protective lens, or safety over-glasses meet this requirement.

The following requirements apply to the use of eye/face protection on all L&T operations:

- Welding and other construction activities require special types of protection, including, in some cases, double protection.
- Safety glasses will have approved side shields (slip-on side shields are prohibited).
- Employees who work in tight or enclosed spaces where loose materials are air-borne will wear goggles, face shield, and other protective equipment.
- Ali grinding operations will be performed while wearing a full-face shield and safety glasses or goggles.
- Personnel chipping or grinding overhead will wear both goggles and faceshield.
- Welders will wear both safety glasses and a welding hood while welding.

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#### 5.20.11 HEAD PROTECTION

Hard hats protect heads from falling and flying objects and from limited electrical shock and burns,

Hard hats are required at all times while on a construction facility, with the following exceptions:

- · Vehicle and equipment operators inside enclosed cabs;
- Administration building (office workers);
- Lunch and break periods, provided that no work is in progress in the immediate break area;
- Offices and supervisor shacks.

Hard hats are to be worn in accordance with all manufacturer requirements.

The practice of reversing the hat's suspension gear so the hat can be worn with the visor to the rear (i.e., backwards) shall not be permitted (unless written approval from the manufacturer has been obtained and is on file with the project ES&H Department).

Exception; Certain types of face protection used by welders may require the hard hat to be worn in reverse during welding operations only,

Painting of hard hats by companies or individuals shall be prohibited.

Hard hats must be worn directly on the head to ensure proper function and head protection.

Only a single layer fitted sheet, designed for purpose, will be permitted to be worn under a hard hat.

The wearing of baseball caps or other headgear under the hard hat is not allowed.

#### a. Hard Hat Color Coding

Staff - White
H&S, E - Green
Banks man / Signalman - Red
General Laborer - Yellow

Any other hard hat color will be implemented on client approval

#### 5.20.12 RESPIRATORY PROTECTION

Respiratory protective equipment shall be available to all persons who are exposed to any situation in which there is a possibility of the atmosphere being or becoming deficient in oxygen or containing

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unknown or harmful substance/condition (e.g., particle, dust mist, vapor or gas), including the following:

- Work in containers or vessels where a danger of oxygen deficiency or harmful gases may be present;
- Work in sumps, sewers or enclosed septic tanks;
- Work requiring exposure to chemicals or substances
- · Work in refrigeration plants where the danger of escape of refrigerant gas exists;
- Grit or abrasive blasting operations;
- Underwater (diving), construction or repairs.

Respiratory protective equipment will be used, stored, and maintained in accordance with the manufacturer's requirements.

Respiratory protective equipment will be selected on the basis of hazards to which the employee will be exposed. Protection will be selected following a risk assessment of the work to be performed (e.g., JHA, method statement, etc.) A Material Safety Data Sheet (MSDS) is recommended to be used during the assessment if available.

#### 5.20.13 HEARING PROTECTION

Hearing protection will be worn in accordance with the following requirements:

Suitable hearing protection shall be made available to all workers exposed to noise levels of 85 dB(A) or above, When noise levels reach 90 dB(A) for an eight hour work period, implementation of a Hearing Conservation Program requirements is mandatory.

At least two types of models of hearing protectors will be made available to employees as not all hearing protection will fit or be suitable for all employees.

In general, hearing protection worn frequently shall be issued on a personal basis. In addition to personal issue it is recommended to leave suitable hearing protection by the entrance into high-level noise areas.

Other than disposable hearing protection, equipment shall be properly inspected and cleaned. All individuals in areas where the noise exposure meets or exceeds the following established limits will wear hearing protection:

Stay Time (hours/day)	Sound Level dB(A) slow
	response

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12	87
10	88
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4	115

If hearing protection requirements are not posted in an area, but it is suspected that hearing protection is needed there, the matter shall be reported to the ES&H Manager or designee.

Health & Safety Manager is responsible for establishing areas under control of the construction group where hearing protection may be required to be worn.

This includes the use of protective equipment required when operating equipment that produces sound levels above 90 dB(A).

#### 5.20.14 HAND & ARM PROTECTION

Adequate hand and arm protection shall be available for all manual labor, The type of protection worn shall be selected according to the hazard to be protected against.

These include but are not limited to:

- Impacts, cuts, abrasions and infections;
- Extreme temperatures;
- Chemical, toxic, corrosive and other hazardous substances.

The H&S Department is responsible for the selection of appropriate hand protection. Selection will be based upon the hazards and tasks to be performed.

#### 5.20.15 BODY PROTECTION

Specific and adequate body protection shall be supplied for all work activities which present certain hazards to personnel, including but not limited to;

- Working in extremes of temperature, such as fire fighting, heating furnace attendance, working in refrigeration plants, etc;
- Welding, burning, cutting and grinding;
- · Handling of acids and other toxic, corrosive or hazardous chemicals;
- Clean up and disposal of wastes

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#### 5.20.16 SAFETY HARNESS & LIFELINES

Safety harnesses and lifelines shall be provided, worn and properly secured in all work situations where any danger exists that an employee can fall and as a result of such fall, there is a risk of injury to that employee.

Such situations include, but are not limited to:

- Work on incomplete scaffolding
- Work on any high structure and not protected by primary protection, whether in construction or maintenance, including drilling rigs, storage tanks, marine vessels, etc.
- · Work over water where a fall potential exists
- Locations where employees may succumb to toxic atmospheres or oxygen deficiency
- Rescue work, in fire fighting, from high structures and from hazardous atmospheres where conditions and risk can rapidly change

Safety belts **shall not** be used; only safety harnesses with dual lanyard with shock absorber shall be used. All such safety harnesses and lifelines shall be manufactured and inspected in conformance to recognized national or international standards.

#### 5.20.17 ELECTRICAL PROTECTION EQUIPMENT

Electrical protection equipment appropriate for the voltage to be encountered will be worn when working on lines, unless the lines are de-energized and grounded;

- When changing or moving ground wires or neutrals on energized equipment;
- When working within 6 feet (1.83 meters) of exposed energized lines or exposed live parts;
- · Or, whenever a worker considers it advisable.

Manufacture classification will be clearly marked on all electrical protection equipment.

Repairs can be made to electrical protection equipment but must strictly conform to the standard.

The primary zone extends 6 feet (1.83 meters) from conductors and equipment energized in excess of 600 volts.

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Rubber gloves will be worn at all times when a worker is in the primary zone and can contact an energized conductor.

Rubber sleeves will also be worn whenever the worker regards it as advisable for safety reasons.

When racking out 4.16 kV bus breakers, personnel will use safety spectacles or goggles covered by a face shield to prevent personal injury in the event of an electrical flash.

All electrical insulated equipment will be inspected for damage on a regular basis.

The following specific requirements apply to insulating blankets, covers, line hose, gloves, and sleeves made of rubber:

- Insulating equipment will be inspected for damage before each day's use and immediately following any incident that can reasonably be suspected of having caused damage.
- Insulating gloves will be given an air test, along with the inspection.
- Insulating equipment with any of the following defects may not be used:
  - ❖ A hole, tear, puncture, or cut
  - An embedded foreign object.
  - Any of the following texture changes:
  - Swelling, Softening, Hardening, Or becoming sticky or inelastic
  - Any other defect that damages the insulating properties
- Insulating equipment found to have other defects that might affect its insulating properties will be removed from service and returned for testing.
- Insulating equipment will be cleaned as needed to remove foreign substances.
- Insulating equipment will be stored in such a location and in such a manner as to
  protect it from light, temperature extremes, excessive humidity, ozone, and other
  injurious substances and conditions.
- Protector gloves will be worn over insulating gloves, but need not be used under limited-use
  conditions, where small equipment and parts manipulation necessitate unusually great finger
  dexterity. NOTE: Extra care is needed in the visual examination of the glove and in the avoidance of
  handling sharp objects.
- Marking on gloves will be confined to the cuffs and be of non-conducting material.

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#### 5.20 CONSTRUCTION CHEMICALS & MSDS

Shall identify hazardous materials and conditions, which could arise during the course of construction including fiberglass, mineral wool and other potentially hazardous materials. MSDS and COSHH files shall be kept on site and available in case of an emergency. HSE Engineer is responsible for being able to provide proper documentation for medical use during an accident involving chemical exposure.

Storage of fuel, chemicals, paints, solvents, compressed gases is adequately addressed in the environmental protection plan.

In the interest of protecting the Safety, Health & Environment affecting the workers and the general public, Material Safety Data Sheet for all the potentially hazardous materials is retained by the HSE Engineer and store keeper It will be made available at site locations. It covers details about the hazardous substance Handling, Transportation and Storage and mitigating measures in the event of release spill, fire or other untoward occurrence. HSE Engineer disseminates the hazard and precautions and remedial measures to all the employees in the project.

Workmen will undergo training about MSDS details before using in the site Store keeper will know the hazards before issue of chemicals from storage

#### 5.21 House Keeping Task

'HOUSEKEEPING' means an orderly arrangement of operating tools, equipment, storage facilities and supplies and not just cleanliness. Housekeeping should be planned at the beginning of the job and carefully supervised until the final hand over. It is a practical method of increasing production, reducing accident and improving employee morale and public relations. Housekeeping should be the concern of all supervisors and engineers in their area of work and not left for the cleanup crew. Housekeeping should be a part of daily routine & clean up a continuous process.

#### **CLEAN UP CREW**

A cleanup crew will be separately kept to clear the common wastages and regular cleaning of roads, access areas, staircases.

#### **MONITORING OF WASTE GENERATION & DISPOSAL**

The waste generation & disposal of waste material shall be monitored by the Project management. Waste material shall be classified as below

- 1. Municipal waste
- 2. Wooden Waste
- 3. Metal waste

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- 4. Concrete waste
- 5. Glass waste
- 6. Oil waste

Proper disposal of waste shall be insured by the project management as per the Dubai Municipality Code of Construction Safety Practice & EHS Waste management System.

#### 5.22 First Aid Facilities

Hazard to health on site can arise from the use of a number of materials, substances and processes if they are not properly controlled. Some of the more serious risks are caused by the inhalation of dusts, fibers, toxic fumes, by the misuse of chemicals. Excessive vibration and noise can also cause ill health. Many man-days are lost as a result of dermatitis, bronchitis and rheumatism.

Healthy working conditions shall be maintained for all workers. In particular attention to the effects of noise, dust air pollution and the use of chemicals shall be paid. If it is not possible to remove the cause of harm then suitable and sufficient personal protective equipment shall be provided to those workers who could be affected.

If the Personal Protective Equipment is only means of providing protection then it shall be ensured that all workers affected are properly trained in use of the personal protective equipment and that adequate supervision is provided to ensure its proper use.

FIRST AID KIT:- The First aid kit shall be kept at site shall have the following as enlisted below.

List of First Aid Medicines at Site.

ltem	Up to 10 persons	10 to 50 persons	Over 50 persons
Small sterilized dressings	6	12	24
Medium sterilized dressings	3	6	12
Large sterilized dressings	3	6	12
Adhesive wound dressings	12	24	36
Triangular bandages	2	4	8
Zinc oxide plaster	1" x 5 yds	1" x 10 yds	1" x 10 yds
Sterilized cotton wool	1.5 oz	2.5 oz	6.5 oz
Sterilized eye pads	1	4	8
Rubber pressure bandage	1	1	1
Pkt safety pins	1	1	2
Waterproof dressings and plasters	1 set	1 set	1 set
Pocket masks	2	2	2

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Non prescribed tablets as advised by Doctor	Enough qty	Enough qty	Enough qty
---------------------------------------------	------------	------------	------------

First Aid Room should contain the following in addition to the first aid box or cupboard contents mentioned above.

- A Stretcher / wheel chair
- A sink with hot and cold running water.
- Paper towels, soap and nail brushes.
- Smooth topped impermeable work surfaces
- Clinical Thermometer
- One Wash Bottle
- A couch with pillow and blankets.
- Splints of different size.

#### 5.23 Welfare Facilities

#### **Drinking Water**

An adequate supply of wholesome drinking water shall be provided and available in an easily accessible location. The supply shall be conspicuously marked as drinking water.

Sufficient and suitable supply of cups shall be provided and available for use.

A cleaning/maintenance plan to ensure that good hygiene standards are maintained, inspections should be carried out and recorded weekly as a minimum.

#### **Toilet & Washing Facilities**

Adequate toilet and washing facilities for all employees. It includes

- Toilets must be placed within 200m of lateral travel from the work front and be in readily accessible places.
- Enough toilets and washbasins for those expected to use them people should not have to queue for long periods to go to the toilet Where possible, separate facilities for men and women - failing that, rooms with lockable doors
- Clean and orderly facilities to help achieve this walls and floors should preferably be tiled (or covered in suitable waterproof material) to make them easier to clean
- Facilities that are well lit and ventilated
- Facilities with hot and cold potable running water
- A constant supply soap or other washing agents
- A basin large enough to wash hands and forearms if necessary
- A means for drying hands, e.g. paper towels or a hot air dryer
- A cleaning/maintenance plan to ensure that good hygiene standards are maintained

Inspections should be carried out and recorded daily as a minimum.

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The following table indicates the minimum number of toilets and wash basins that should be provided:

No, of People on Site	No. of Toilets	No. of Basins
1-5	1	1
6-25	2	2
26-50	4	4
51-75	6	6
76-100	8	8

Additional washing facilities may be required depending on the nature of the work involved, such as particularly dirty work, those exposed to hazardous substances etc; these will need to be separate from the main facilities.

## **Eating & Resting Areas**

Adequate Eating & Rest Areas for all employees. It includes:

- A designated area that is comfortably big enough to hold the maximum number of employees at any one time at a readily accessible location.
- An area that is completely shaded from the sun.
- An area where fresh air is allowed to circulate constantly.
- If indoors, ventilation or air-conditioners must be provided.
- Proper seating and tables.
- An area that is clean and located where the risk of food contamination is kept to a minimum.
- An area where smoking is prohibited.
- An area that is situated near washing facilities.
- A cleaning/maintenance plan to ensure that good hygiene standards are maintained, inspections should be carried out and recorded daily as a minimum.

High standards of waste management are expected throughout welfare facilities. Controls of food wasted are essential to prevent infestation of vermin, rodents and other animals within eating, washing and drying facilities.

## **Food Storage**

- Adequate storage area for food brought in by employees for consumption on the same day.
   It includes:
- An area that allows food to be stored in a cool environment in order to prevent contamination, or food becoming spoiled. This in turn will prevent illnesses such as food poison.

## **Smoking Areas**

- Smoking is permitted only in designated areas. Clear and legible signs shall be posted
- Smoking will be prohibited at or in the vicinity of operations that constitute a fire hazard, A sign reading "No Smoking or Open Flame," will be conspicuously posted.
- Smoking shall be prohibited where refuelling activities are in progress.

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- Smoking will be strictly prohibited in specific areas and buildings. All No Smoking areas will be clearly identified
- A working environment where people can work without being irritated by tobacco smoke shall be provided.

## Ventilation

There shall be effective and suitable provision to ensure that enclosed workplaces are ventilated by a sufficient quantity of fresh or purified air at all times. The ventilation rate shall be greater than 5 litres of air per person per second.

## Lighting

Suitable and sufficient lighting shall be provided (including the work place and such areas as traffic routes) for all work tasks and activities. Where reasonably practicable, natural lighting will be provided.

Lighting will be maintained and cleaned.

Emergency lighting will be provided where people may be exposed to risk if the primary lighting source fails,

## **Waste Containers**

- All waste containers shall be covered ensuring debris is contained during prevailing weather conditions.
- Where practical, waste containers shall be colour-coded or appropriate signs or labels posted adjacent to or on the waste container, to encourage segregation of waste materials.

## 5.24 Management of Sub Contractors

All the rules applicable to L&T are also applicable to their sub contractors. One copy of project HSE Plan will be issued to sub contractor. The project health, safety & environment rule & regulation shall be fully applicable on subcontractor also. Sub contractor shall be made responsible for following the project HSE plan.

Their monthly subcontractor HSE Performance will be evaluated (**Format: HSE-F43-R0 monthly evaluation of subcontractor on HSE**) by the Project HSE Engineer and will be submitted to Project In charge.

## The following guidelines will be followed.

- 1. No workmen below 18 years and above 58 years of age shall be engaged for a job.
- 2. All workmen/ supervisor shall be screened & safety orientation training shall be given before engaging them on the job. Physical fitness of the person to certain jobs like working at height or other dangerous locations to be ensured before engaging the person on work. The final decision rests with the site management to reject any person on the ground of physical fitness.
- 3. Smoking is strictly prohibited at workplace.
- 4. Sub-contractors shall ensure adequate supervision at workplace. They shall ensure that all persons working under them shall not create any hazards to self or to co-workers.
- 5. No body is allowed to work without wearing PPE required for the job/ activity, ie. safety helmet, foot protection, cover all etc.

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- 6. No one is allowed to work at or more than two meter height without wearing full body harness and anchoring the lanyard of safety belt to firm support preferably at shoulder level.
- 7. Usage of eye protection equipment shall be ensured when workmen are engaged for grinding, chipping, welding and gas-cutting. For other jobs as and when site safety Incharge/ engineer insists eye protection has to be provided.
- 8. All PPE like shoes, helmet, safety belt etc. shall be arranged before starting the job as per recommendation of site safety in charge / engineer.
- 9. All excavated pits shall be barricaded and barricade to be maintained till the back filling is done. Safe approach to be ensured into every excavation.
- 10. Adequate illumination at workplace shall be ensured before starting the job at night.
- 11. All the dangerous moving parts of the portable / fixed machinery being used shall be adequately guarded.
- 12. Ladders being used at site shall be adequately secured at bottom and top. Ladders shall not be used as work-platforms.
- 13. Erection zones and dismantling zones shall be barricaded and nobody will be allowed to stand under suspended load.
- 14. Horseplay is completely prohibited at workplace. Running at site is completely prohibited, except in case of an emergency.
- 15. Material shall not be thrown from heights. If required the area shall be barricaded and one person shall be posted outside the barricade for preventing the trespassers from entering the area.
- 16. Other than the electricians with red helmet no one is allowed to carry out electrical connections, repairs on electrical equipment or other jobs related thereto.
- 17. Inserting of bare wires for tapping the power from electrical sockets is completely prohibited.
- 18. All major, minor incidents and near misses to be reported to Site In charge / Site Safety In charge/ engineer to enable the management to take necessary steps to avoid the recurrence.
- 19. All scaffoldings / work-platforms shall be strong enough to take the expected load. The width of the working platform and fall protection arrangements shall be maintained as per recommendation of Site Safety Co-In charge/ engineer.
- 20. All tools and tackles shall be inspected before use. Defects to be reported immediately. No lifting tackle to be used unless it is certified by the concerned P&M Engineer / Safety In charge/ engineer.
- 21. Good housekeeping to be maintained. Passages shall not be blocked with materials. Materials like bricks shall not be stacked to the dangerous height at workplace.
- 22. Debris, scrap and other materials to be cleared from time to time from the workplace and at the time of closing of work every day.
- 23. Contractors shall ensure that all their workmen are following safety practices while traveling in the company's transport and staying at company's accommodations.
- 24. Adequate firefighting equipment shall be made available at workplace and persons are to be trained in fire fighting techniques with the co-ordination of Site Safety Coordinator
- 25. All the unsafe conditions, unsafe act identified by contractors, reported by site supervisors and / or safety personnel to be corrected on priority basis.

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## 5.25 Permit to Works

Work Permit system is adhered. Format to follow is HSE-F26-R0 to HSE-F30-R0 given in the 'FORMAT' chapter.

## **EXCAVATION, TRENCHING AND EARTH REMOVAL**

- 1. All trenches 1.2 m or more in depth shall be provided with ladder at a suitable spacing. The ladder so provided shall be projected at least 1 m above the surface of the ground. In case ladder is not possible, ramp access will be provided.
- 2. Suitable angle of repose / stepped cutting shall be done to avoid danger of collapse. Where such slope is not feasible, shoring shall be done.
- 3. All excavated material shall be stacked at least 1.5 m from the edge of the opening or half the depth whichever is greater.
- 4. It shall be ensured that all adjacent structures, excavation slopes & are stable and safe.
- 5. All open excavation shall be suitably barricaded and warned by caution signs.
- 6. All open excavation shall be illuminated during night to prevent fall of persons into the pits.
- 7. Wherever manual removal of earth is involved, earth shall be removed from the top by maintaining a proper slope equal to the angle of repose of the earth.
- 8. Adequate DEWAtering arrangement shall be made to DEWAter the excavations and diverted to the drain, pit to prevent damages to near by structure.
- 9. If the excavation is more than 2 mtrs. Depth slope and step preparation shall be made to prevent damages.
- 10. All excavation shall be constantly supervised by a competent person.
- 11. If vehicles are to be reversed through a ramp into an excavation zone or vehicle has to come close to the excavated area, proper trained banks-man will be posted at the area.
- 12. Excavated earth shall be stacked in the approved area for re use or dumped in the approved yard.
- 13. Proper access should be made for workers, either by providing ladders or cutting steps on the wall of the pit or by any appropriate means. More access shall be provided at every 50mts. distance, when the excavated pit is large.
- 14. Proper lighting is required for work at night. Reflectors & caution boards are to be fixed to caution outsiders.
- 15. Electrical cable routing should be laid such that it do not cause tripping hazard.

## **HOT WORK**

- 1. If work is performed inside a confined space that could generate flammable vapor or produces an oxygen deficient atmosphere, continuous monitoring shall be done while work is being performed within the confined space.
- Oxygen and acetylene or 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. Continuous monitoring of oxygen to be done while gas cutting.
- 3. All hoses shall be removed from confined spaces each time personnel exit the space.
- 4. Welding machines shall be located outside of the confined space.

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5. In case of any hot work in confined space responsible HSE Engineer or his rep. shall measure the oxygen presence in the work place and allow the work as per the permit.

## **CONFINED SPACE WORK**

In this project no hazards in confined space work is anticipated however the following precautions were planned to meet the unexpected situations

Before enter into any confined space Permit to be obtained.

A Supervisor should be assigned to ensure that the necessary precautions are taken, to check the oxygen level and other atmospheric gas conditions. Safety person shall be notified for investigating the condition of confined space before entry no one shall be allowed inside any confined space without proper entry permit and work training. Check at each stage and to document the condition a trained standby person to be deployed at the entry point. While work is executed in the confined area where multiple entry points exists require separate standby person. Stand by person will be trained and provided with adequate communication facility to communicate in case of emergency. An emergency response plan with nearby hospital, Fire service, Project Manager and HSE department numbers shall be made and displayed properly close the confined space work area and responsible supervisor will present in the work place to monitor the work.

## **WORKING AT HEIGHT**

As accidents related to Working at height figures very high, proper care shall be taken while people are put in this regard.

- 1. Workmen should wear full body harness safety belt with lanyard for works above 2m high.
- 2. On horizontal movements the lanyard is to be hooked to a static line.
- 3. Workers shall carry the bolts, nuts and tools in a bag / secured method. No loose materials shall be kept at higher elevation.
- 4. The erection area will be cordoned and caution boards shall be displayed to prevent trespassers.
- 5. Proper working scaffold / access scaffold will be made with tag wherever required.
- 6. Proper lashed ladder or staircase will be made available for an access to reach height.
- 7. Employees deployed for height works shall be selected persons who are experienced and screened by the site management.
- 8. Proper access and working platform should be provided to reach the work spot.
- 9. No materials shall be dropped from height. They should be lowered by a headline. An employee should be posted at ground level to clear and caution person from coming under the lowering material.
- 10. For areas where scaffolding has to be prepared for height works, the same has to be inspected. All findings have to be recorded. 'Scaff tag' system for recording inspection to all scaffolding shall be strictly implemented.

## **OVERHEAD WORKING (POWER ZONE)**

No work may be carried out above the heads of people or over gangways/walkways or roads, below the Power line until all precautions have been taken to ensure the safety of persons working below. Each specific area of overhead working will require consent from the site engineer/HSE Engineer. Power to be shut down in the Overhead line or barrier shall be erected to restrict the work carried out in the vicinity of power.

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## 5.26 Lifting Equipment

## **LIFTING GEAR**

- 1. Lifting gear includes chain slings, wire ropes slings, or similar gear and a ring, link, hook, plate, clamp, shackle, swivel or eye bolt. All shall be thoroughly checked and certified by Third party with the safe working load being stamped or clearly displayed upon it. Records of test shall be kept available.
- All lifting gear shall be visually inspected before any use and if any defects are found then it shall be removed from site and cut in to pieces in order to ensure that it is not used in defective state.
- 3. All lifting gear shall be properly stored and not left laying on the ground where it could be damaged or used in an unsafe manner.

## LIFTING OPERATIONS

It shall be ensured that during the course of any lifting operation the following minimum requirements shall be followed.

- 1. Only trained and experienced persons shall be allowed to give directions to crane operators. Care shall be taken not to exceed SWL of hoisting equipments.
- 2. A standard code of hand signals shall be adopted for controlling the movement of the
- 3. The operator of the crane shall respond to signals from only the appointed banks man but shall obey the stop signal at any time no matters who gives.
- 4. Before commencing any lifting operation, the ground conditions on which the crane is positioned shall be investigated in order to ensure that the load bearing capabilities are adequate.
- 5. All cranes hook shall be fitted with an operable safety latch.
- 6. Where ever practicable all loads shall have tag lines attached in order to ensure that the load can be controlled at all times.
- 7. Provision shall be made to ensure that the lifting slings and chains can be safely removed from the load once they have been landed.
- 8. All lifted loads and stacked materials shall be left in a secure and stable condition at all times.

## 5.27 Hand Tools

## **General Precautions – Manual Tools**

- Manual tools by themselves are incapable of causing accidents; therefore, accidents with them tend to arise from human failing, carelessness, lack of common sense, not knowing the correct tool for the job, ignorance of safety precautions, or failure to maintain tools in good working order.
- Manual tools are often used by unskilled or semi-skilled labour. It is, therefore, the duty of Project Management to make available the appropriate tools, to ensure that persons are properly instructed in how to use them and to provide competent supervision to ensure that work is correctly and safely performed.

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- Manual tools should be manufactured from good quality materials and appropriate for the work for which they will be used.
- Purchasing cheap tools are a false economy. They do not last and they can be dangerous.
- Wooden handles of tools should be of hard, straight-grained wood, free from cracks and knots.
- Manual tools should be dressed and repaired by competent persons.
- > The cutting edges must be kept sharp.
- Sheaths should protect sharp-edged and sharp-pointed tools when they are carried and transported.
- Manual tools should only be used for the specific purpose for which they are designed.
- ➤ Tools should not be left lying in places where persons have to work or pass by or on scaffolds or other elevations from which they might fall onto persons below.
- Chisels made from high tensile reinforcement steel must not be used.
- Manual tools and equipment shall be inspected on a monthly and routine basis. Tools that are worn beyond repair must be destroyed and removed from site as soon as possible.

## **General Precautions – Electric Tools**

- Portable electric tools, when used in normal conditions, will be 220 Volts type with singlephase supply. Portable electrical extension leads shall be place away from day to day traffic, and were possible hung over doorways and entrances.
- Temporary electrical supply will be supplied by fixed generators, electrical cable will be of steel wire armour type of appropriate size glanded into distribution panel and protected by ELCB (earth leakage circuit breaker). Each circuit will be protected by a ELCB circuit breaker.
- Where more hazardous conditions exist, i.e., where men have to work within boilers or metal tanks, the power supply, should be 50 volt single-phase from a double-wound transformer having the centre tap of the secondary winding earthed so that the maximum voltage to earth is only 25 volts.
- A cable and plug and socket connectors must be maintained in good condition. Cable must be effectively attached to the plug connectors by efficient cord grips to relieve all strain on the flexible cable. Damaged cables should be Tran placed at once.

## 5.28 Safety Signs

Sign boards shall be placed as per the requirement at site describing the hazard to the workmen in the zone and others. No one shall abuse any signs provided and the site supervisor and foremen is responsible for installation and maintaining the signs.

- Prohibition Signs
- Warning Signs
- Mandatory Signs
- Safe Condition Signs
- Fire Protection Signs

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- > Safety warning signs shall be places to provide adequate warning of hazards. Sign shall be removed or covered when the hazards no longer exist.
- Warning signs shall indicate the cautions to be observed regarding the hazards concerned and the necessary information and, also, actions employees are required to initiate.
- > It is recommended that safety signs on the Project conform with the current national color codes:
- > Signs shall be in English & Local language where located near public highways and facilities.
- > Signs understood by the majority of the workforce will also be put at conspicuous places.
- Sign required to be seen at night should be of fluorescent material.
- Exit sign boards will be posted once the building takes shape, to show the routes towards staircases, ramps, hoists.
- > The maximum capacities of lifting machines like in hoists will be displayed.
- Emergency Numbers will be listed and displayed at conspicuous places.
- Some samples of the poster are given below:
- > Safety Posters shall be placed in the work area to create awareness to the workmen.



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## 6. IMPLEMENTATION AND MONITORING

## 6.1 HSE MEETING

HSE meeting shall be conducted on a monthly basis to review any accidents, Safety Violation, Safety Audits, and other safety specific topics among the Management staff Minutes from these meetings shall be distributed to all parties identifying specific action required.

## 6.2 EMERGENCY HSE MEETING

Emergency safety meetings will be called in response to a stop work notice issuance or a major accident, incident, or near miss. (Attendance is mandatory for Turner, Contractor Project Manager and all levels of subcontractors involved). The purpose of the meeting will be to identify root causes and formulate an action plan for prevention. This meeting shall be successfully completed before work may begin. The place and time for the meeting will be arranged by Turner.

## 6.3 HSE NORM VIOLATIONS

In the event of safety violations either due to unsafe act or conditions a combination of counseling and enforcement through punitive measures is applied.

In case of unsafe practice, the designated work will be stopped either by HSE Coordinator/ site Engineer, who have noticed it first. Work shall be resumed only after corrective measures have been taken.

In the event of an employee committing a serious breach of the Safety Regulations, will full safety violation he shall be issued with a Safety Violation Memo endorsed by Project Manager.

Repeated HSE violation shall be viewed seriously and he will send out of the project without any delay. His entry through the other contractors will be stopped.

First time - Warning and instruction will be given to the person to avoid the reoccurrence.

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<u>Second time</u> -He will be re-trained in HSE requirement and an undertaking will be taken from him and allowed to work under the supervision. (Punitive action shall be taken according to the seriousness of violation)

<u>Third time</u> - Memo will be issued for the unsafe act and he will be sent out of the project. Final decision will be from the Project in charge and HSE Engineer

## 6.4 UNSAFE CONDITIONS AND PRACTICES/NON-CONFORMANCE

Safety violation notices will be utilized to formally notify the contractor of safety issues and act as backup to Work Stoppage Notices. Note that work may be stopped at any time if there is imminent danger present. HSE

## 6.5 WORK STOPPAGE

This notice will be issued for a severe safety problem or failure to comply with a previous Safety Violation Notice. L&TECCD HSE Coordinator, Project Engineers / Managers and client personnel have the authority to stop work if an unsafe, unhealthy practice or non-compliance with safety standards is exists at any of the task. The work shall be resumed as soon as the hazards are eliminated and approved by the HSE Dept. / site in-charges.

Immediate action is required and contractor is to cease work in all related areas until the correction is made. This notice will be delivered to the site engineer immediately with a copy to Project In order for work to begin again the violation needs to be corrected and a safety meeting is to be conducted. The meeting will involve affected company managers and Turner to discuss methods of prevention

## 6.6 REPORTING OF ACCIDENTS

L&T shall immediately report all accidents/incidents and near misses to ADWEA &ADDC Project Representative followed by a report within 24 hours.

Detailed Incident investigation report will be submitted to ADWEA/ADDC within 7 days.

## 6.7 SAFETY SIGNS

Safety warning signs shall be displayed to identify adequate warning of hazards. Sign shall be removed or covered when the hazards no longer exist.

Warning signs shall indicate the cautions to be observed regarding the hazards concerned and the necessary information and, also, actions employees are required to initiate.

It is recommended that safety signs on the Project conform to the current national colour codes. Sign required to be seen at night shall be illuminated.

## 6.8 TOOLS & EQUIPMENT CERTIFICATE

All tools & equipment shall comply with the ADWEA Colour Coding.

## 6.9 DRIVERS & OPERATORS

Drivers & Operators of mobile equipment shall possess a valid UAE Driving License / certificate for operating the equipment. Only trained and authorized personnel shall operate

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the mobile equipments. Banks man shall be deployed for signaling the earth moving equipments and he shall be provided with an orange colour florescent jacket

## 6.10 OPERATION OF VEHICLES

Vehicle shall be strictly limited to the authorized seating capacity. The transportation of personnel in the rear of the pickup trucks or the cargo compartments of any vehicle is strictly prohibited.

Drivers shall ensure that correct safety equipment is carried e.g. desert safety box and that there is always sufficient drinking water for the member of passenger being carried (minimum of 10 litters of water per person). Likewise, red flag with approximately 3 meters high to be provided on each vehicle.

No driving in the desert will be allowed after sunset.

## **6.11 MONTHLY HSE REPORT**

L&T ECCD E&GP OC shall submit a monthly safety report to Client / Consultant within three days of the end of each month. The report shall include a summary of the safety related activities during the month and clients requirements.

Apart from that respective Site HSE in charges should submit following reports to Country Manager HSE

- Monthly EHS Statistics report Refer Format No: HSE-F40-R0
- Monthly First Cases Analysis report
- Monthly HSE compliance report Refer Format
- Monthly HSE 60 Point report
- Monthly HSE Meeting Minutes

## 7. AUDIT & REVIEW

## 7.1. WEEKLY HSE AUDIT

A weekly safety audit will be conducted by Safety coordinator. Attendance by the Safety Representatives, field engineers, and foremen for each site / area will be mandatory.

During the time of audit representative from external / client shall join to ensure:

HSE systems and procedures are communicated and understood by the site-in charge, senior level management at site.

HSE Plan implementation follow-ups

Contractual HSE specifications

HSE document Safety systems and implementation.

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Any safety violations noticed during the weekly audit corrective action to be initiated as per the agreed time schedule. Potential safety hazards will be analyzed for enforcing preventive measures immediately.

## **Audit Report:**

The HSE Coordinator will document all the observations during the audit and reports will be circulated to all the concerned, Site in-charge and the concerned.

Audit Review & Follow-ups:

Audit results including major findings, the site management shall review suggestions and recommendations for corrective actions. A time bound action plan will be made and follow ups will be carried out.

Final corrective action completion report will be sent to HSE in-charge.

## 7.2. HSE AUDITS & REVIEW

HSE audit will be conducted at site by the HSE Committee once in three months. During the time of audit representative from external/client shall join to ensure:

- ➤ HSE systems and procedures are communicated to Project Manager, senior level management at site.
- > HSE Plan implementation follow ups
- > Contractual HSE specifications.
- > HSE document, Method Statements, Safety systems and implementation.
- > HSE inspections and reviews.
- > Training, Safety statistics etc.

**AUDIT REPORT:** All the observations during audit will be documented by HSE Coordinator and reports will be circulated to all the concerned, Project Manager and Area Manager. Audit will be conducted once in three months by HSEM

## 7.3. AUDIT REVIEW & FOLLOW-UPS

Audit results including major findings, suggestions and recommendations for corrective actions shall be reviewed by the HSE Team at site. A time bound action plan will be made and follow ups will be carried

## 7.4. INTER AUDIT PLAN SCHEDULE

	REGION	UAE	PERIOD	JAN-DEC
NAME OF REGION / SITE			MONTHS	
	JANUARY- MARCH	APRIL- JUNE	JULY- SEPTEMBE R	OCTOBER- DECEMBER
	February	June	August	December

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DATE:	Management Representative		

## 8. APPLICABLE HSE LAWS AND REGULATIONS

- 8.1. APPLICABLE LAWS AND REGULATION
- 8.2. APPLICABLE CLIENTS & INTERNAL PROCEDURES
- 8.3. A1 -1 RISK ASSESSMENT & ADWEA/ADDC FORMATS
- 8.4. A1 -2 L&T ECCD E& GP OC HSE FORMAT