MAX ESTATES	**HSE PLAN**	rcc

HEALTH & SAFETY MANUAL

Regd. Office : 201 A, Apra Plaza, Plot No. 29, Community Centre, Rani Bagh, Pritam Pura, Delhi – 110034

Regional Office : CS-045 , 2nd Floor, Conscient One Mall, Sector 109, Gurgaon , Haryana201

***Project site*: "MAX-65" sect-65, Gurugram**

SITE SAFETY PLAN

	NAME	SIGNATURE	DATE	
PREPARED BY CONTRACTOR SAFETY ENGINEER				**Reference No:** **AAR CEE/ EHSP/00**
AUTHORIZED BY CONTRACTOR SITE HEAD -				**Revision No: R-0 submitted on 9th Dec-2024**
REVIEWED BY Max HSW MANAGER				
APPROVED BY- PMC HSW MANAGER				

HSE PLAN

HSE PLAN

Annexure	Title
I	Safety Induction
II	Toolbox Talk Attendance Record
III	Safety Training Attendance Record
IV	Daily Site Monitoring Report
V	Walk Through Site Inspection Checklist
VI	Housekeeping inspection checklist
VII (A)	Preliminary Incident Report
VII (B)	Incident Investigation report
VIII	Operational Checklist For First Aid Kit
IX	Site Store PPE Inventory Check sheet
X	Scaffolding Checklist
XI	EHS Committee Meeting Attendance Record
XII	Emergency (Mock) Drill Assessment Report
XIII	Record Of Waste Generation & Management
XIV	Permit To Work Format
XV	Diesel Generator (Dg) Inspection checklist
XVI	Pre—Employment Medical Examination Record
XVII	First Aid Log Book
XVIII	Check List - Portable Ladders
XIX	Fire Extinguishers Inspection /Check List
XX	Electrical Panel & Other Safety Devices Checklist
XXI	Electrical Equipment & Tools checklist
XXII	Site Noise Monitoring Report
XXIII	Site Illumination Level Checklist
XXIV	Instruction For Safety Violation
XXV	Do's And Don'ts
XXVI	Onsite Emergency Plan & Reporting System
XXVII	Hazard Identification & Risk Assessment
XXVIII	Tower crane Checklist
XXIX	Hydra
XXX	Grinding Machine
XXXI	Steel bending machine
XXXII	Builder Hoist
XXXIII	Concerting Pump
XXXIX	Cutting Machine
XXXX	Welding
XXXVI	De Shuttering

MAX ESTATES	**HSE PLAN**	rcc

1. PROJECT HIGHLIGHTS

- Title of the Content: **Health and Safety Plan**
- Client: MAX ABPL-65
- Project Name: MAX-65
- Main Contractor: Aar Cee Contracts Pvt. Ltd
- Location: Sect -65 Gurugram, Haryana

4. Overall scope of work: Structure

5. Budget & period of the project: 128 Cr

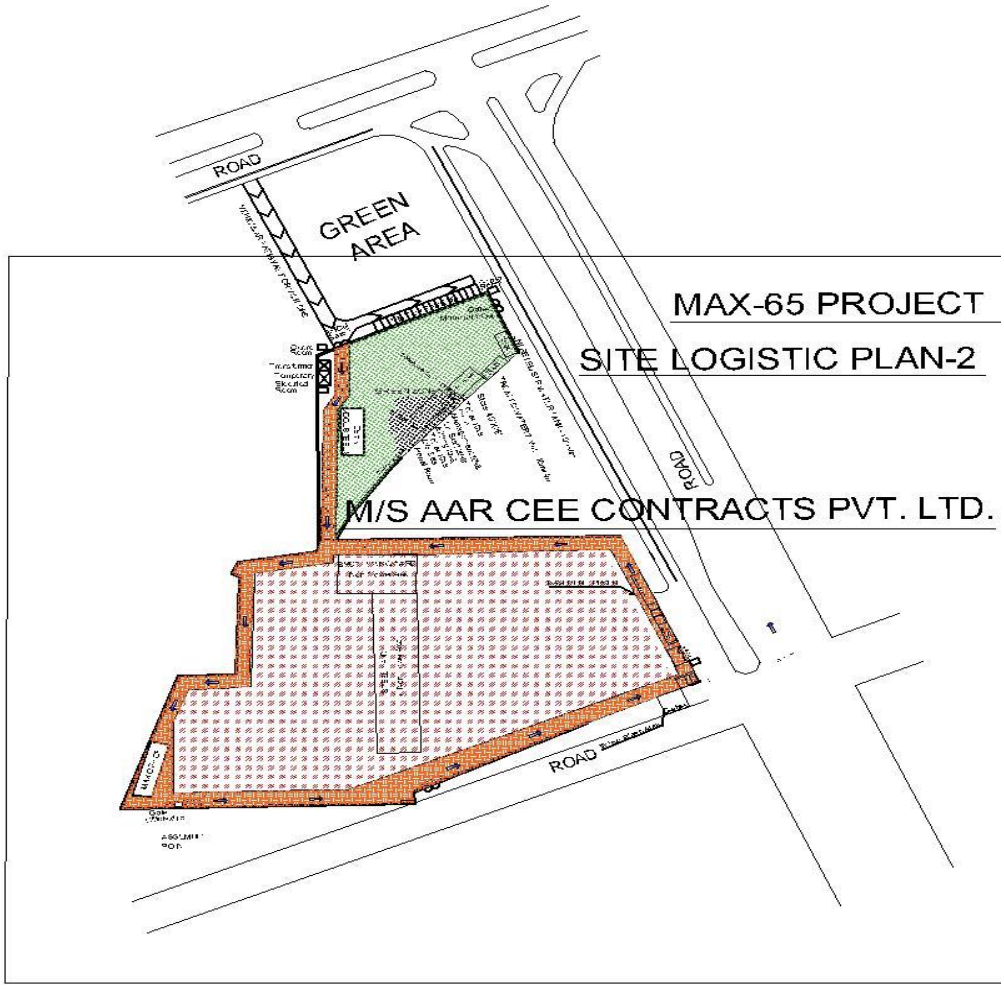
Sl. No.	Description of item with specification	

Key plan: Development of Positive Safety Culture.

- Training and Awareness.
- Working permit System
- Fitness Certification system for P & M Equipment's

Project Layout

HSE PLAN


ROAD
GREEN AREA
MAX-65 PROJECT
SITE LOGISTIC PLAN-2
M/S AAR CEE CONTRACTS PVT. LTD.
ROAD
ROAD

9. PROJECT TEAM

Project In charge

Sl. No.	Name	Designation	Mob No
1.	Rajeswar Sharma	Project Head	9810891324
2	Amar Singh	Sr. Engineer	8800530600
3.	Amit Kumar Thakur	Sr. Surveyor	9891848960
4.	Dilshad Naini	Billing Engineer	
5.	Basant Pandit	Sr, Site Foreman	9971223225

EHS Officer

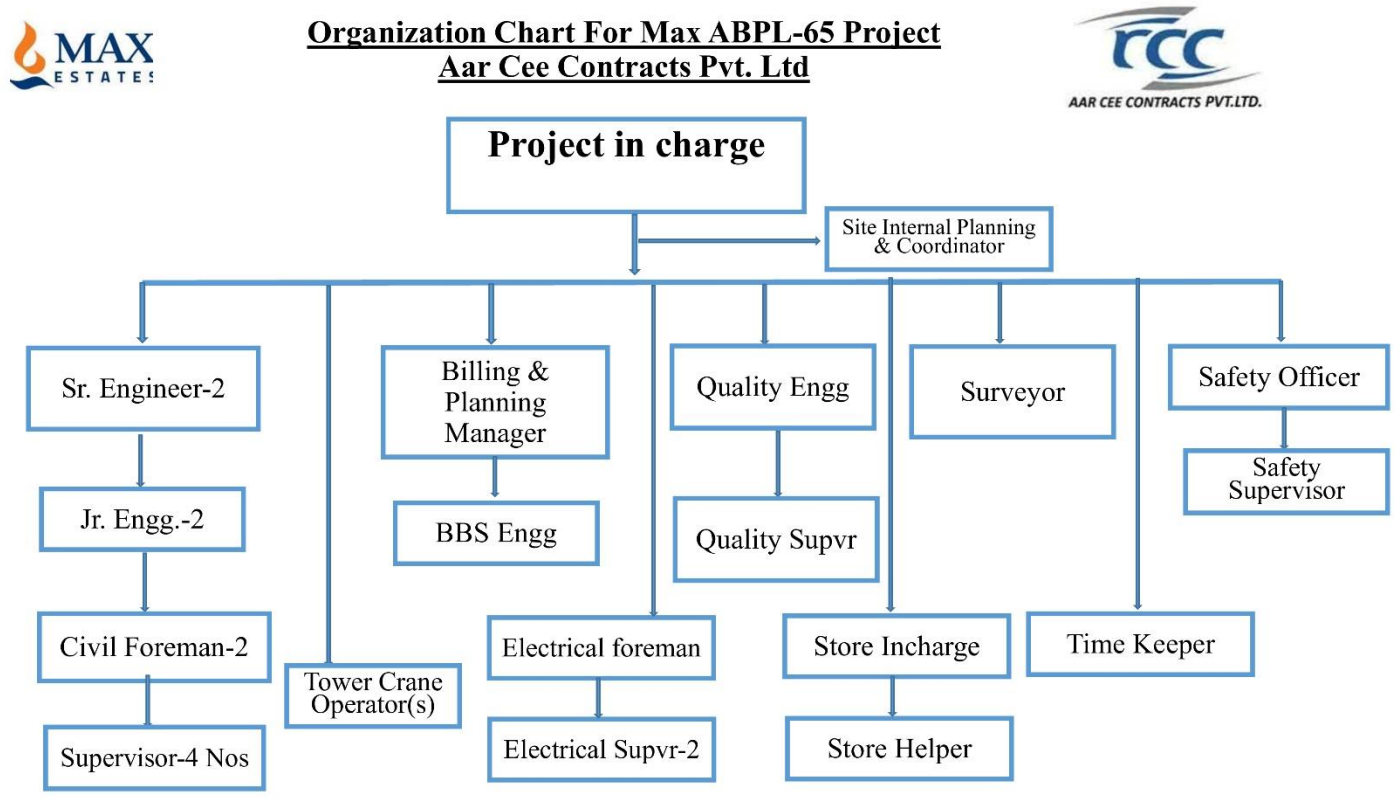
Sl. No.	Name	Designation	Mob No
1.	Umar Khalid Zaya	Manager EHS	9899622891
2.		Safety officer	
3.			

Staff

Sl. No.	Name	Designation	Mob No
1.	Sandeep Kumar	Site engineer	8571034731
2.	Utpal Roy	Store in charge	9319455060
3.		Store supervisor	
4.		Sr.site engineer	
5.		Site engineer	
6.			
7.			

MAX ESTATES	**HSE PLAN**	rcc

9.1 Site Organization Chart



Organization Chart to be submitted separately.

MAX ESTATES	**HSE PLAN**	rcc

IDENTITY CARD

- All AAR CEE Employees, Sub-Contractors & workmen, shall be issued a Photo Identity Card (ID Card) duly signed by authorized AAR CEE representative before they are engaged for any work at site. The ID card format shall be as under:

Front side of the card
(85mm x 55mm)

IDENTITY CARD

rcc **AAR CEE CONTRACTS PVT.LTD**	
NAME…….. CONTRACTER……..... PHOTO NAME OF THE SUB.CONTR…… DATE OF INDUCTION…….. VALID TILL……AGE…… BLOOD GROUP……..... AUTHORISED SIGN…….....	
SAFETY INDUCTED	

MAX ESTATES	**HSE PLAN**	rcc

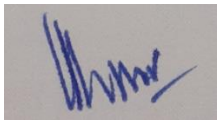
AAR CEE CONTRACTS PVT. LTD.

al health & safety policy

Aar Cee Contracts Pvt. Ltd. Committed To Operation's And Practices Which Prevent Harm To People And Damage To And Property. EHS is An Essential And Integral Part Of Each And Every Activity At Aar Cee Contracts Pvt. Ltd. Therefore, All Work Shall Be Carried Out With Utmost Care Without Compromising EHS Under Circumstances.

THE OBJECTIVE OF THE POLICY IS ACHIVED AT ALL COMPNAY'S LOCATION BY:

- **Complying With All Applicable EHS Laws, Regulations, Stander's And Procedures Of The Respective Clients And Apply More Stringent Standers And Procedures Where It Is Considering To Do So:**
- **Incorporating Appropriate EHS Criteria into Business Decisions.**
- **Providing A Safe and Healthy Work Place For All Its employee's, Including Sub Contractor's Employee's, Through Operational Procedures, Safe System And Method Of Work.**
- **Identifying and Eliminating / Controlling Hazards And Pollutions That Could Cause Accidents, Illness Or al Harm.**
- **Ensuring Suppliers & Contractors to Fallow the Company EHS Rules, Procedures and Safe Practices.**
- **Providing Training to All Employees to Maintain Company EHS System.**
- **Ensuring Appropriate And Adequate Resources Are Billable To Fully Implement The EHS Policy.**
- **Undertaking Reviews to Ensure Continual Improvement In EHS Policy.**



R.C .GUPTA
Chief Managing Director

HSE PLAN

1.0 GENERAL

1.1 Definitions

1. Client: ABPL– MAX-65
2. General Contractor: Contractor, Aar Cee Contracts Pvt. Ltd.
3. EHS - Health & Safety

4. ACTS & RULES – The Acts and Rules of India together with amendments / revisions and regulations of Client; that the Aar Cee and its subcontractors are required to comply with during the contract period.

5. – Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interaction

6. ASPECT – Element of an organization's activities or products or services that can interact with the

7. IMPACT – any change to the , whether adverse or beneficial, wholly or partially resulting from an organization's al aspects

8. HAZARD – source, situation, or act with a potential for harm in terms of human injury or ill health, or a combination of these

9. INCIDENT – work-related event(s) in which an injury or ill health (regardless of severity) or fatality occurred, or could have occurred

10. LOSS TIME ACCIDENT – An injury / accident sustained during work time that results in any person, including subcontractor personnel, being absent from the place of work and/or he./she is unable to carry out their normal range of duties for more than three consecutive full days excluding the day of incident.

11. SERIOUS INJURY ACCIDENT – Fatality, fracture of skull / spine / pelvis, amputation of a hand or foot, loss of sight of eye, loss of consciousness due to electric shock or lack of oxygen, hospitalization due to burns, decompression sickness, loss of consciousness resulting from absorption of any substance by inhalation, ingestion or through the skin, acute illness resulting from exposure to a pathogen or infected material.

12. NEAR MISS – An ACCIDENT that has no loss effect but which under slightly different circumstances could have resulted an accident with loss.

13. AUDIT – Systematic examination to determine whether activities and related results conform to planned arrangements are implemented effectively and are suitable for achieving the organization policy and objectives.

14. OBJECTIVES – Goals in terms of SHE performance that an organization sets itself to achieve.

15. OCCUPATIONAL HEALTH & SAFETY – Conditions and factors that affect the well-being of employees, temporary workers, contractor personnel, visitors and any other person in the workplace.

16. SHE MANAGEMENT SYSTEM – Parts of overall management system that facilitates the management of the SHE risk 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 SHE Policy.

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

18. PERFORMANCE – Measurable results of the EHS management system, related to the organizations control of health & safety risk, based on its SHE policy and objectives.

19. PPEs – Personal protective equipment.

20. RISK – Combination of the likelihood and consequences of a specialized hazardous event occurring.

21. RISK ASSESSMENT – Overall process of establishing the magnitude of risk and deciding whether or not the risk is tolerable.

22. SAFETY – Freedom from unacceptable risk of harm.

23. SUB-CONTRACTOR – Contractors engaged by AAR CEE.

24. CORRECTIVE ACTION – Action taken to eliminate the causes of an existing non-conformity, defect or other undesirable situation.

25. PREVENTIVE ACTION – Action taken to eliminate the causes of a potential non-conformity, defect or other undesirable situation in order to prevent occurrence or recurrence.

1.2 EHS OBJECTIVES & GOALS

- The key safety and protection targets are to provide a workable model to help the site personnel striving to achieve the ultimate goal of

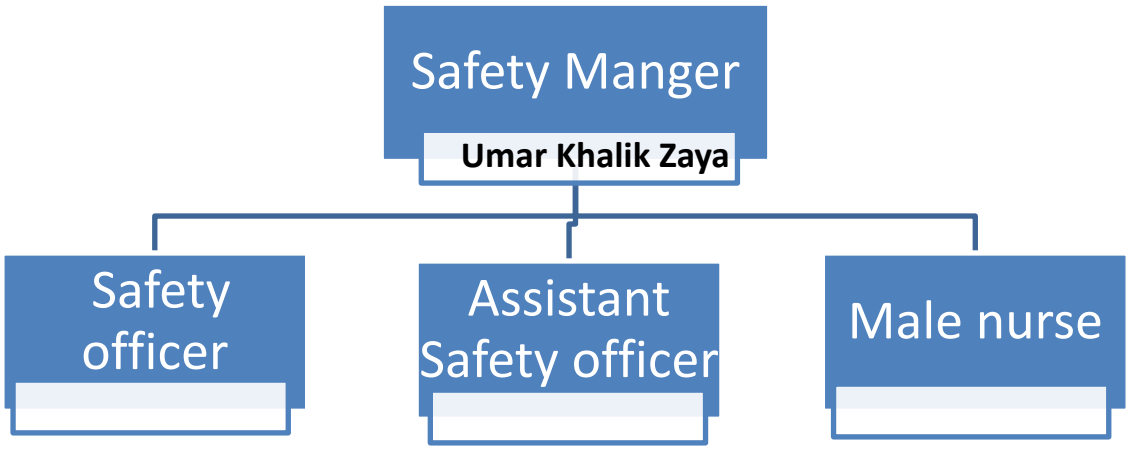
Inducted of personnel : 100%
- Recordable Injuries (LTA) : Nil
- Fire : Nil
- Explosion : Nil
- Reportable al Incident : Nil
- Vehicle / Transport Incident : Nil
- Safety Audits : 2 Minimum (in one year)
- Adherence of usages of appropriate

PPE'S at work :100%

- Total compliance of statutory requirements given under various statues as applicable in regards to the conditions of service; safety, health & welfare measures and other connected matters about the building and other construction workers and client's contractual requirements.
- To carry out the work in accordance with relevant standards, specification and international guidelines on EHS without disturbance to persons working around, general public and the as whole,
- To maintain all equipment, plant, machinery and apparatus brought for use on the site to an acceptable standard such that they are safe and without risk to health and safety of the person & work.
- To maintain records of inspections, examinations by the competent and responsible persons and necessary test certificates at all times.
- AAR CEE employees & workers to conform all aspects of their duties and responsibilities as lay down by the legislation with and adherence of usage of appropriate PPEs at work for successful completion of work.
- The AAR CEE management shall ensure that contractors are aware of their shared responsibilities.

2.0 EHS ORGANIZATION AND RESPONSIBILITIES

2.1 "EHS Organization Chart"



2.2 Responsibilities of Personnel

2.2.3 Project Manager

1) The Project In-charge is responsible for establishing, implementing as well as monitoring and reporting on safety, health and al procedures at work site.

2) He will be responsible for compliance with statutory and regulatory requirements.

3) He will review the overall safety requirements in consultation with Safety Officer and Project Manager prior to finalization of Project contract and issuance of work order.

4) He will issue specific directives to sites concerning safety and health of employees.

5) He will carry out periodically the site safety inspection along with the Sectional heads and the Site Safety Officer.

6) He will periodically review the safety performance / Accident Statistics and the safety measures to prevent recurrence of sites under his control.

7) He will be incorporating the safety requirements in all the method statements before it is submitted to the client /main contractor.

8) He will ensure the selection of experienced and competent project team and establishing a project health and safety training plan for all project personnel.

2.2.4 Safety Manager

1) Manage the EHS function, and claims management in company with site locations and jobsite installations by performing the following tasks, duties and responsibilities personally or through others.

2) Plan and implement safety policies and procedures and budgets in compliance with applicable statutes and local laws and standards

3) Establish (with other company stakeholders) measurable goals for achievement of safety results that exceed industry and peer group standards

4) To ensure that safety procedures are implemented in accordance with the requirement of the agreed specific project safety plan and contract condition.

5) Plan and implement programs to train managers and employees in safe operating procedures, ergonomics, fire prevention, safe handling of hazardous, and other materials and co-coordinating EHS Training.

6) To Co-ordinate and conduct EHS committee meeting.

7) Conduct and coordinate safety inspections in all project locations and construction sites.

8) Lead the investigation of accidents and injuries, and cooperate in the preparation of material for hearings and insurance investigations.

9) Coordinate emergency response procedures; coordinate with others on security practices.

10) Maintain and update Material Safety Data Sheets and train employees in their use.

11) Coordinate injury reports; return to work plans and risk management programs.

12) Communicate with physicians, employees and Insurance in post injury follow up

13) To prepare safety monthly report on the overall Project Safety Performance.

2.2.5 Safety officer /Assistant safety officer /Safety Supervisor

1) To arrange safety induction of staff and workers and to organize refresher sessions whenever required and maintain record.

2) To monitor entire work site on a continuous basis, making on-the-spot corrections of unsafe acts of the workmen, and taking suitable steps to eliminate all the unsafe conditions observed.

3) To record all accidents at site, including minor accidents and ensure corrective actions are implemented to prevent similar accidents in future.

4) To report accident / incidents involving major injury / loss in the prescribed format.

5) To investigate accidents / incidents to find out their root cause and to take necessary actions to prevent recurrence.

6) Inspection of scaffolds to ensure correct erection prior to use,

7) Inspection of ladders, safety harness and power tools at a prescribed frequency and maintaining a record of such inspection.

8) To conduct toolbox talks on regular basis with respect to site base activities including testing and commissioning.

9) To conduct safety training for personnel working at site.

Number of safety personnel

a) No of safety staff of every 300 workers

No of workers	No of safety personnel
Those employing up to 300 workers:	One Safety Manager ,
Those employing up to 300 workers:	Two Safety Supervisor
Those employing up to 300 workers:	One first aider

The appoint safety officers as per the scale laid down in

HBOCW Schedule-XII annexed to these rules. Such safety officers may be assisted by Above mentioned safety staff.

2.2.6 Site Engineers

i) Site Engineers are responsible to ensure that engineering procedures are complied with. They are also responsible for taking initiative to promote and improve EHS performance in all activities under their control.
ii) Monitor the implementation of safety plan on day-to-day basis in close coordination with safety officer.
iii) Display/ Exhibit his commitment to colleagues on a regular basis by addressing the unsafe observations noticed during his site visits.
iv) Demonstrating their commitment and participate in initiatives designed to improve health and safety performance and achieve a “Zero Accident” performance.
v) Implementing the detailed requirement of the Client and Company’s Health & Safety Policy and Security Plan as applicable to work and personnel under their control.
vi) Ensure that site engineers and supervisors attend to safety officer’s recommendations sent through his observation report.
vii) Incorporating the safety requirements in all the method statements before it is submitted to the Client /Main contractor.

2.2.7 Site Supervisor/Foreman

i) The supervisor/foreman should ensure proper supervision, effective communication and adequate instructions on EHS matters; training, and provision of appropriate tools / equipment in carrying out activities.
ii) He is also responsible for ensuring that arrangements are applied effectively within their own work areas
iii) He should know the EHS policy of the Company and keep everyone informed of the policy and what it

specifies as to their responsibility and authority.

iv) He should exhibit interest in Safety by appropriate leadership and must set authority, responsibility and accountability for safety.

v) He should understand the safety plan fully and follow the same in his day-to-day activities.

vi) He must know the hazards and preventive measures and how to handle hazardous materials and dispose generated waste as per guidelines.

vii) He should know which personal protective equipment is necessary on each job and ensuring that the workmen under him use necessary safety appliances and keep his work area neat and clean, especially at heights free from loose materials.

viii) He should ensure that all personnel undergo suitable and sufficient H&S induction training before they are deployed on site and also ensure that all workers working under him implement the relevant requirements of Safety Plan.

ix) He should be able to give safety instructions to his workmen on a daily basis as a part of job instructions, highlighting the possible hazards in that day's work and the precautions to be taken.

x) He should be aware of Site Emergency Preparedness Plan and able to arrange for adequate storage and enforces good housekeeping.

xi) He should promote for continuous improvement of H&S performance and prevent horseplay of workmen. He should organize and conduct toolbox talks to their workmen regularly.

xii) He should identify unsafe conditions in the work area during his visit /inspection every day and initiating suitable corrective measures to rectify the unsafe conditions / and observations as pointed out by the safety officer.

xiii) They should keep continuing to talk safety and impress safety upon his men and sets the example in safety.

xiv) They should keep their eyes open for those who may be safe worker in other job.

xv) They should study the seemingly unimportant accidents and takes corrective measures.

2.2.8 Store Keeper

i) Ensuring a minimum stock of all safety appliances at stores.

ii) Issuing safety appliances to operatives as authorized by the site engineers, supervisors and safety officer and maintaining record of the same.

iii) Obtaining the copies of the test certificates while hiring cranes and while receiving any lifting tools and tackles and maintain record.

iv) Ensure that proper housekeeping is maintained in site stores.

v) Ensure that proper arrangements are made for the storage of highly flammable material.

vi) Ensure to install and maintain proper firefighting equipment in store area.

vii) He shall regularly arrange to remove all scrap and waste material.

2.2.9 Responsibilities of Employees & Workers

All employees and Workers have responsibility to follow the laid down procedures on various aspects of EHS. They also have a responsibility to use their skill, knowledge and experience to improve safety in their work place. They are required to contribute towards safety improvements through safety committees and by participation in promotional activities on EHS. They must correct potentially hazardous situations where they can do so. If they cannot, they must report such hazards to their supervisors.

i) All employees and workers should be familiar with the requirements of Safety plan.

ii) They should exhibit commitment to follow the same.
iii) They will be required to alert their manager, engineer or supervisor if any hazard is observed in their place of work.
iv) It is statutory obligation for all employees & workers to work safely at all times.
v) Employees should assist the employer to comply with the legal obligations by providing information on safety and security hazards and risks and participating in the management of risk control measures.
vi) Employees should ensure that they report all hazards, risks, incidents, injuries and dangerous occurrences according to the employer incident reporting process.
vii) Employees should report any variations to the at the site that may necessitate a review of the service.
viii) They should have thorough knowledge of job and take care of themselves, co-workers and company's property/ materials.
ix) They should follow strictly the Standard Work Procedures (SWP) and 'Permit-To-Work' (PTW) system as applicable.
x) They should be safety conscious and train their body and mind to work safely at all time
xi) They should be aware of hazards associated with work and should participate in safety and health programs.
xii) They should learn to use safety and fire-fighting appliances and know their location.
xiii) They should report immediately any defect discovered in relation to PPE, equipment, lifting machines, tools/ tackles etc.
xiv) They should not spread rumors of accidents that create panic and should not interfere with or misuse anything provided in the interest of safety.
xv) Employees should not:
- Interfere with or misuse any equipment provided;
- Obstruct any attempt to administer aid to prevent serious injury; or
- Refuse a reasonable request to assist in addressing or preventing a serious risk to the health, safety and welfare of persons at work.

2.2.10 Responsibilities of Sub Contractors

The contractors who intend carrying out any work on the Project Site are responsible for complying with all statutory and contractual requirements on construction safety, including the general duties imposed on them under the Laws and Regulations. The Contractor shall

i) Comply with all elements of the EHS Plan and other regulations applicable to the work,
ii) Ensure that their employees designated to work on site are properly trained and competent for their respective jobs,
iii) Employ personnel who are not of careless or reckless behavior, but be able to take positive steps to understand workplace hazards,
iv) To get all plant and equipment brought on site; inspected / tested and serviced in accordance with legal requirement and manufacturers' or suppliers' instructions,
v) Make arrangements to ensure that all workmen designated to work at site have undergone Safety Induction program prior to commencement of work,
vi) Provide details of any hazardous substances to be brought on site, submit proposed safety procedures and construction methods to AAR CEE Safety Manager for review,
vii) Carryout the work in line with the Construction Method Statements and such document provided by AAR CEE in the interests of safety,
viii) Ensure that a responsible person accompanies any of their visitors on site,
ix) In case of non-compliance by the person or Subcontractor, the AAR CEE management shall serve a show-cause notice and instruct the concerned to reply in stipulated time period. After scrutinizing his

reply, the Management shall take suitable action. The person maybe imposed heavy fine or other stricter action.

x) Any person involved in repeated transgression of safety requirements may be removed from the project.

xi) The fines imposed by the Management on employees / contractors will be deducted from their running account bills and such funds collected shall be used for safety promotion.

2.2.11 Quality In-charge

i) The quality manager will champion, support or lead quality improvement initiatives. He is responsible for ensuring that all managers, process owners and supervisors develop and maintain their part of the quality management system.

ii) The quality manager monitors and advises on how the system is performing, which may often include the publication of statistics regarding company performance against set measures.

iii) A key role of the quality manager is that of ensuring that customer requirements and expectations have been accurately identified and that the organization is meeting or exceeding customer expectations.

iv) This role may also extend to determining how customers' expectations will change over time and what the organization needs to do to meet these changing expectations. Additionally, he/she will be responsible for supporting the development and maintenance of a customer-focused culture within the organization.

v) The quality manager will also probably be involved in developing the quality goals and targets in the organization's strategic plan.

2.2.12 Project EHS Committee

i) Attend meeting regularly as per schedule to discuss and decide the ways and means of eliminating the factors affecting EHS
ii) To analyze all the activities of the forthcoming period and identify the possible hazards and finalizes the precaution to be taken
iii) To monitor the EHS performance of the project and suggesting improvements whenever needed.
iv) Actively participate in the EHS Committee Inspections

2.2.13Security

i) Protect company's property and staff by maintaining a safe and secure
ii) Observe for signs of crime or disorder and investigate disturbances.

iii) Act lawfully in direct defense of life or property.

iv) Apprehend criminals and evict violators.

v) Take accurate notes of unusual occurrences.

vi) Report in detail any suspicious incidents.

vii) Patrol randomly or regularly building and perimeter.

viii) Monitor and control access at building entrances and vehicle gates.

ix) Watch alarm systems or video cameras and operate detecting/emergency equipment.

x) Perform first aid or CPR.

2.2.14Vendors – Suppliers &Transporters

i) Include the agreed delivery terms in any relevant documentation.
ii) Decide how quickly the goods need to be delivered
iii) Identify the most cost – effective mode of transport.
iv) Identify and minimize the remaining risks.
v) Organize handling and storage
vi) Ensure that you understand what you responsibilities are.
vii) Check what transport documentation will be required.
viii) Make sure all documentation is present and correct

2.3 Equipment & Facilities Requirements of SHE Personal

List of materials that shall be made available to SHE personals deployed at work site

Sl. No.	Detail of Equipment	Quantity	Remarks
1.	Communication Facility - mobile phone	1 each	for all SHE supervisors
2.	Printer	1	
3.	Laptop Computer	1	
4.	Accident Investigation Kit comprising of – i) Chalk piece, ii) Emergency Phone Numbers List iii) Measuring tapes – 2m, 30m iv) Barrier tape – 20m v) Scale – 30cm vi) Equipment Tags vii) Multipurpose flash light	1 kit each	for all SHE supervisors

	viii) Accident Investigation Forms & Checklists ix) Papers for witness recording		

2.4 EHS Communication

AAR CEE shall take every effort to communicate Safety, Occupational Health and Work al management measures through,

(i) Safety Oath
(ii) Toolbox Talks
(iii) Periodic Talk on Aspects of EHS
(iv) Display of Safety Statistics
(v) Display of Posters / Banners / Slogans and other Safety Signage
(vi) SHE Celebrations – Observance of important day's w.r.t EHS

(i) Safety Oath

Safety Oath shall be taken weekly by every employee and workmen and others working **FOR AAR CEE**

(ii) Toolbox Talk

The Toolbox Talk shall be conducted regularly on every work site before commencement of work by the safety and concerned site supervisors. Safety Officer should conduct talk on specific subjects before the commencement of work.

(iii) Display of Safety Statistics

Safety statistics shall be displayed to appreciate safety performance of the site.

(iv) Display of Posters, Banners, Safety Slogans, and Safety Signage Etc.

Safety Slogans, Posters and Signs of specified size shall be adopted as visual aids for accident and fire prevention. The posters written in Hindi & English shall be displayed conspicuously. The signs that shall be displayed include amongst others the following:

Wear safety Helmet, Permit-to-Work Areas, Wear Safety Footwear, Wear Hearing Protection, Wear Eye Protection, Danger (Electricity), Danger Crane Overhead / Over Head Work, Stop, Look & Listen, No Smoking, First Aid, No Entry, Fire Precautions etc…

2.5 EHS Submittals to CLIENT REPERSENTATIVE

AAR CEE shall submit following reports periodically as under

HSE PLAN

Sl. No.	Report Type	Frequency	Responsibility	Remarks
1.	Reporting of total no of workmen including that of sub-contractors	Daily	Safety Officer	
2.	SHE Report	Monthly	Safety Officer	
3.	SHE Committee Meeting Minutes	Monthly	Safety Officer	
4.	SHE Inspection Reports	As per monthly safety activity planner	Safety Officer	
5.	Noise Monitoring	Monthly	Safety Officer	
6.	Illumination Monitoring	Monthly	Safety Officer	
7.	Method Statement & Risk Assessment	-	Project Team	
8.	SOP for all activities	-	Project Team	
9.	Daily Inspection Reports		Project Team	
10.	Mock Drills reports	Quarterly		
11.	Safety Net testing report		Project Team	
12.	Safety Trackers and evidences		Project Team	
13.	HIRA		Project Team	

14.	Training Records		EHS Team	
15.	Awareness & Motivational Program reports	Monthly	Project Head	
16.	Incident Investigation reports		EHS Team	
17.	Incident Report		EHS Team	

2.6. The AAR CEE CONTRACTS PVT. LTD. shall also maintain the records pertaining to :

a. Safety Organization Chart
b. Site safety plan
c. Safety induction record
d. Training Records for staff & skilled & semi-skilled workers, supervisors
e. Daily pep-talk record
f. Safety event calendar
g. Internal & external safety audits and compliance
h. Register of Accidents, Near-misses, dangerous occurrences etc.
i. Inventory register of hand tools& power tools.
j. Inspection records of temporary structures like scaffold, staging's, weather sheds, tanks etc.
k. Standard operating procedure for various site activities
l. Method statement and risk assessments
m. Record of work permits
n. Records of maintaining and testing of firefighting equipment
o. Medical records of workers and staffs (separate register shall be maintained for injury at work and for general ailments and medical checkup for height passes)
p. Site emergency plan
q. Record of waste disposal
r. Housekeeping inspection record
s. Labour camp sanitation & hygiene up-keep record
t. Minutes of Safety Committee meetings.
u. Monthly safety reports

v. Licenses, consents, test & examination certificates etc under applicable legal requirements
w. Safety day celebration and appreciation scheme records
x. Health & hygiene management plan

2.7 EHS Committee

When 500 0r more workers employed

SHE committee shall be constituted by the AAR CEE CONTRACTS PVT.LTD. management, represented by equal numbers of representatives of managements and workers and shall comprise as under.

1.	Project Manager	Chairman
2.	Client's representative	Invitee
4.	Site Section In-Charge	Member
5.	Store In-Charge	Member
6.	Site Safety Supervisor	Member
7.	Safety Manager	Secretary
1	Worker's Representative	
2	Worker's Representative	
3	Worker's Representative	
4	Worker's Representative	
5	Worker's Representative	
6	Worker's Representative	
7	Worker's Representative	

2.7.1 EHS Committee Meetings

Objective of the EHS committee meeting is to assemble people with assigned responsibilities for safety

so that they can formally address issues and take appropriate actions in relation to the achievement of the site safety management objectives.

The meeting shall be organized once in a month on a fixed day of each month. The EHS committee shall responsible for taking steps to ensure that the project activities are safe and employees and workers are observing safety Rules and Regulation.

The Project Leader shall be responsible for informing all employees of the finding of EHS Committee. The EHS manager shall be focal point of this event.

Purpose of EHS Committee Meetings is to review the implementation of the safety plan by ensuring the following,

- ✓ To create a safe work and to ensure all work activities are done in a safe manner.
- ✓ To find solutions of the safety related issues remaining unresolved.
- ✓ To identify the problem areas and to work out suggestions for the same.
- ✓ To review the EHS performance of the site, discuss incident / accident investigation report, lessons learnt and to plan ways to prevent recurrence of the same.
- ✓ To make an action plan for special EHS requirements for the activities planned in the next month.
- ✓ The meeting shall be Chaired by the Project In-charge or nominated Senior Manager. Safety Officer may preside over the meeting in absence of Project In-charge / Alternate Official.
- ✓ Safety Officer shall be the Secretary of the meeting. He shall prepare agenda of the meeting in consultation with the Project In-charge.
- ✓ The Secretary shall record the points discussed during the meeting and prepare report within 2 working days and send the minutes of the meeting to the concerned personnel for the compliance of action agreed.
- ✓ Safety Officer shall also follow up the implementation of the actions agreed. The minutes shall be displayed on the notice board for information to all.

2.7.2 The Committee Agenda

Agenda for meeting should include

- ✓ Chairman's review of site EHS performance / conditions
- ✓ Review of the previous months report and confirmation of minutes.
- ✓ Review of project EHS objectives and targets
- ✓ Any non-conformance
- ✓ Any significant incident / accident to assess relevant learning points for prevention of same type of accident in future.
- ✓ Actions against findings from EHS inspections
- ✓ Presentation of pre-selected EHS topics to be given by committee members
- ✓ Any particular concerns on EHS matters that employees may want to highlight.
- ✓ Report from Client's Representative
- ✓ Any outstanding issue with the permission of Chair.

The Secretary shall circulate agenda of the meeting at least seven working days in advance of the

schedule date of meeting to all members.

2.7.3 Duties of Committee Members

1) Assist and co-operate with the management in achieving the aims and objectives outlined in its safety and health policy.
2) Deal with matters concerning safety, health and arrive at practicable solutions to problems encountered.
3) Create safety awareness amongst employees.
4) Discuss reports on safety, al and occupational health surveys, safety audits, etc and implement the recommendations contained therein.
5) Carry out safety and health surveys.
6) Look into complaints made on the likelihood of an imminent danger to the safety and health of the employees, causes of accidents etc and suggest corrective measures for implementation.

2.7.4 Tips for Successful Working of Safety Committee

1) There should be genuine acceptance of the participant's approach and commitment to making of EHS committee a success.
2) Policy of openness and sharing information with EHS committee members should be followed.
3) Members should be competent, sincere and suitably trained.
4) Recommendations of the committee should be acted upon quickly.
5) Committee Members should get recognition.
6) Good work done by the committee should be publicized.

2.8 Disciplinary Action

Noncompliance of the as per CLIENT Guidelines of the company requirements will result in disciplinary action as per the procedure below:

- First time violations: Written warning by the Project Manager or representative
- Repeat violations: Imposition of penalty as deemed fit by Project Manager of Company as per degree of violations given in A & B (referred below).
- Frequent Violations and No Improvement with life threatening situation: Removal of sub-contractors defaulting staffs or contracting firm itself from site as deemed fit by the Region Head of Company

In the event of the offender bringing him-self or others in direct life-threatening situation or where he/she creates a large material damage, will result in immediate removal from site. Repeated violations by a contracting company shall lead to termination of contract and removal of contracting firm from the job site. Any losses incurred by the contracting company, whatsoever, shall be the responsibility of contracting company.

A) Penalty against Accident / Incident at site:
The safety violations leading to any type of incident and fatality are in any situation are not acceptable to the company and this will attract heavy penalty immediately at the discretion of Project Manager or Region Head of company including termination of the contract or removal of defaulting employees. The company project manager or region head shall communicate its decision to defaulting contractor officially and proper record shall be maintained. The penalty will be deducted from Contractor's next running bill.

B) Penalty against repeated unsafe act / unsafe condition i.e. non-compliance with Safety AAR CEE Health & Safety Requirements at site:
The AAR CEE is required to comply with all the requirements laid down in the CLIENT Contractual Safety Rules and Regulation and Guidelines of the company, and any other safety requirements as a matter of general judiciousness. Upon failure to comply with any of these, Project Manager of company is authorized to impose penalty on the contractor as per client clause.

3.0 SAFETY TRAINING

The information, instruction, training and supervisions are necessary to ensure health and safety of all persons working at site.

The Good Information System helps the personnel to be aware of what is happening around. Good Job Instructions normally produces more skilled workers, and also impress the person receiving the instruction with the high value that the Company places on safety. Safety Training helps in correcting work practices and is one way to influence human behavior. When people are trained to do their job properly, they will do then safely.

At AAR CEE all managers, Engineers, Supervisors and Workers shall be trained in various aspects of safety with respect to work activities at project sites.

All new employees shall have to undergo Safety training before assuming responsibilities in any area of operation. At AAR CEE systematic training is imparted to individual for execution of job through various forum, displays, discussions, lectures, and seminar etc.

AAR CEE believes that such training programs develop understanding, skills and confidence of individuals. The HR Department and Safety Section impart training to increase awareness of employees & workers on safe working. Retraining of employees and workers is also carried out from time to time depending on need. Such needs arise due to installation of new equipment, improvement in technology and to curb over-confidence in certain individuals.

3.1 System of Assessing the Training Requirements

The training needs shall be identified as under:

a) The identification of training requirements for the workers / employees shall be done by the concerned Engineer and Supervisors on the basis of the performance of workers under their control and also by judging their attitude towards safety.

b) Assessment and recording of training needs with respect to specific work.

c) Re-training on regular basis on the subjects included in Section 3 of this document.

d) Rise in reporting of near misses and accidents and in reporting of non-conformity work affecting product quality in particular work area.

3.2 Training for Supervisors

The immediate job of accident prevention falls upon supervisors, not because it has arbitrarily assigned to him, but because accident prevention, production control or the work out- put are closely associated supervisory functions.
Frequent follow-up and attention on the part the Supervisor to correct work practices also help to create understanding and to eliminate resentment, which is a source of some understandable attitude.

3.3 Training for Workers

No matter how well safety is engineered into a project related jobs, much of the safety of the workers depends on their own conduct. It is necessary to influence the voluntary act of workers by education. AAR CEE believes that quality and safety are important aspect of all jobs at any project site. Believing on the philosophy, regular training programs pertaining to Safety Health & Aspects are conducted at the work site.

All workers shall be regularly trained in use of PPE so they protect themselves and others from untoward hazards. Toolbox training is given on regular basis. They are also trained through conducting mock drills to tackle emergency situations.

3.4 Training Procedure

1.0 **Purpose**:

To define procedure for identifying, imparting and recording of training to employees and workers.

2.0 **Scope:**

This procedure applies to safety training imparted to employees & workman of AAR CEE.

3.0 **Nature of Training Programs:**

a) Safety Induction
b) Toolbox Talk &Work Instruction
c) Safety Training
d) First Aid Training
e) Work at height safety

f) Scaffolding
g) All Job specific trainings

4.0 **Identification of Training Needs:**

a) The identification of training needs for the workers / employees shall be done by the concerned Engineer and Supervisors on the basis of their performance, and also by judging their attitude towards safety.

b) Assessment and recording of training needs with respect to specific work.

c) Re-training on regular basis on the subjects included in Section 3 of this procedure.

d) Rise in reporting of near misses and accidents and in reporting of non-conformity work affecting product quality in particular work area.

e) Monitored by EHS team

5.0 **Methodology:**

a) The training on aspects of Safety, Health & Hygiene and is normally conducted at site by the Safety Department.

b) Tool Box Talks shall be conducted by Concerned Engineer/Supervisor /Foreman.

c) Training on project related subject matters shall be conducted / arranged by the concerned Manager / Engineer and specialists may also be called for training on specific subject.

d) Personal Hygiene and First Aid Training shall be arranged through external agencies.

e) The time and venue of the Training shall be decided in consultation with the Project Manager / HOD.

f) The concerned workmen shall be informed through respective supervisors and by display of notice.

6.0 **Records:**

The records of the training shall be maintained by the EHS Department.

3.4.1 Safety Induction

The staff, technicians and all other workers including that of contractors will go through an Safety Induction program. This is done by EHS Department before the person is deployed at site. The record to this effect is maintained by EHS Department.

HSE PLAN

1) It will be the responsibility of the respective engineers to inform safety officer about joining of new employees and contractors.

2) Induction training shall also be extended to sub-contractors as well and records to this effect will be maintained at site.

3) A “Zero tolerance” culture will be imbibed during the induction to all employees and workers.

4) Employees / workers having height phobia will be identified during the induction and their work area will be restricted suitably.

5) All visitors will be required to meet the Safety Steward at the site office before being taken t site.

6) If any of the visitors is taken to site, i.e. construction area, it has to be approved by the Project In-charge / Designated Officer.

7) The visitor will be required to give an undertaking before taken inside the site. Copy of the format will be available at the site office.

8) It is the responsibility of the concerned engineer to ensure that all visitors are wearing safety helmets and safety shoes.

9) New entrants, Every Visitors, Contractors and their Workers should be communicated the relevant points amongst following,

10) Audio visual facility for induction.

- **Project Information**
  Organization
  General discipline, Work culture & Work ethics.
- **Company’s & Client’s Policies**
  Smoking is restricted at Project sites
  To carrying fire arms and consumption of Alcohol at the project site is prohibition
  To carry out work after obtaining valid Work Permits
  To perform all works as per Method Statements
  To report all accidents / incidents including near-misses
  To carry Badge/ ID cards inside site at all times
  To comply all statutory requirements under the law and client’s regulations
- **Safety**
  Site General Safety Rules
  Hazards at Site and Personal Protective Equipment’s (PPEs)
  Communication protocol in case of an accident.
- **Health & Hygiene**
  Welfare facilities at site
  Potential Health Hazards and First Aid & Medical Facilities
- **Emergency Procedure**
  Types of Emergencies & Responses Important Telephone Nos. in the event of any emergency

3.4.2 Toolbox Talk & Work Instruction

- **Tool Box Talk**

1) As far as possible tool box talk related to the work shall be conducted every day in the morning before starting the work by Job Supervisor, Foreman & Engineer.

2) The talk should be given by the respective supervisors / foremen to the workmen working under their control. The Safety Section shall also conduct toolbox talk on specific topics.

3) The Toolbox Talk shall be on the topics relevant to ongoing site work / activities or shall focus on,

- ✓ Safe Work Plan (SWP) for the work activities.
- ✓ Method Statements' for critical work should be told to the work crew before taking up the activity.
- ✓ Job specific hazards and precautions to be taken to avoid accidents.
- ✓ Unsafe Conditions / Unsafe Acts noticed on the previous day.
- ✓ The lesson learnt from the near miss / accident (if any), and the safety precautions required to be taken to avoid recurrence.
- ✓ New job activity to be started – the hazards likely to be encountered and precautions to be taken to prevent any accident.

4) Following is the list of topics for the toolbox talks,

a) Health & Safety at Work
b) Personal Protective Equipment's (PPE)
c) Machine Guarding
d) Working at Height – Use of Ladders &Scaffold
e) Electrical Safety
f) Portable Electrical Equipment and Electric Tools
g) Fire Safety
h) Material Handling - Loading & Un-Loading
i) Hand Tools
j) Abrasive Wheels and Drilling Machines
k) Accident Reporting
l) Emergency Response & Evacuation
m) Hazardous Materials Handling
n) Housekeeping & Waste Disposal etc.

5) In addition to above, depending upon the site activities in progress, job specific hazards and the precautions to be taken will be highlighted as required.

6) Unsafe conditions and unsafe acts noticed at site, lessons learnt from the accidents, safety precautions to be taken in the new jobs etc. shall be the focus of discussion during the tool box talks.

7) The safety officer will maintain a record of such toolbox meetings at the site as per the format.

- **Work Instructions**

1) The daily work instruction by the supervisors / site engineers will include the hazards likely to be encountered and the precautions to be taken to prevent any accident.

2) If a new job is being started, the engineer/supervisors must ensure that the toolbox talk is carried out to all work forces.

3.4.3 Safety Training:

Following programs should be conducted by Safety Department on a regular basis covering site personnel at levels,

1) Safety Induction
2) Applicable Statutes & Regulations and Administration etc.
3) Safety Organization – Responsibilities & Communication
4) Fire Prevention & Control
5) Permit to Work System & al Monitoring
6) Working at Height
7) Electrical Safety
8) Hand Tools & Power Tools Safety & Machine Guarding
9) Material Handling, Storage
10) Housekeeping and Waste Management
11) General Health & Hygiene
12) Personnel Protective Equipment (PPE)
13) Basic Principal of Accident Prevention
14) Hazards Identification Techniques & Risk Assessment
15) Accident / Incident Reporting & Investigation
16) Emergency Plan & Medical facilities
17) Site Inspections & Audits etc.

3.4.4 Firefighting training

Firefighting trainings and mock drills to be conducted quarterly basis.

3.4.5 Specific Safety Training

For specialized activity and need of the site-based personnel shall be organized by the Safety Department / or through External Competent Agency on request from the Project Manager

3.4.6 Personal Hygiene & First Aid Training

All persons working at site shall be aware of the importance of the first-aid required to be given to the injured / affected persons at the right time.

This training should be given by a Competent Agency (Approved by State Government) and nominated personnel shall be trained in **First Aid**.All electricians shall be trained in first-aid particularly in mouth to mouth resuscitation.

4.0 SAFETY EQUIPMENTS

4.1 Personal Protective Equipment's (PPE)

All necessary personal protective equipment (PPE) shall be provided by the contractor at his own cost, for his workers, supervisors, staffs and visitor/visiting staffs and adhere to Rule 43, 45, 46, 54 & 178 of BOCW Central Rules. All PPEs shall conform to relevant IS Standard / EN Standard or any other international code of practice as given under. The contractor shall make available all type of personal protective equipment for use of workers, supervisors and visitors at site as considered necessary by the Company and they shall be maintained in a condition suitable for immediate use. Also the contractor shall take adequate steps to ensure proper use of PPE by those concerned.

Items	Specifications
Full body industrial safety belt & harness- double lan-yard with scaffold hook	IS: 3521-1999/ EN 361; lan-yard length 1.8m
Fall arrestor & Lifeline	Fall arrester: EN 353-2:2002 Lifeline: 12mm/14mm polyamide rope
Ear Muff / Ear Plug	IS: 6996-1973 (Reaffirmed 1998); IS 9167 or EN 352-1:2002 and EN 352-2:2002; made of sponge or foam; preferably with cord; length of cord not less than 50cm; after squeezing it should return to its original shape within 30 seconds.
Safety Helmet	MOC- HDPE; IS standard: 2925-1984 (Reaffirmed 2000) or EN Standard 397; chin strap & nap strap (adjustable); Inside- plastic head band.
Safety Goggles	IS: 5983-1980 (Reaffirmed 2002) or EN 166:2001; adjustable arm for personalized fit; made of tough polycarbonate material; lenses with anti-scratch treatment; color of lenses- Clear (UV clear).
Face shield	IS: 8521 (Part II) – 1977 (Reaffirmed 2002) IS: 8521 (Part I) –1994 (Reaffirmed 2002) or EN 175F; IS-1179:1967.
Respirators/ Dust mask	IS: 15321 – 2003, IS: 15322 – 2003 and dust mask IS:9623
Hand Gloves (canvas)	IS 6994-Part-I; MOC-split or chrome leather; stitching should be firm;
Hand Gloves (leather)	IS6994 Part-I; Moc- fabric or coated fabric; additional lining at palm; firm stitching
Electricians hand gloves	IS-4770:1991-rubber gloves
Shoulder pads	Round neck type leather covered with foam cushion, as per manufacturer's specifications.
Safety shoes	IS: 15298 – 2002; EN20 345 certified by laboratory DGMS/CLI; size engraved on sole; ankle height not less than 7cm, acid/alkali resistant sole; foam cushion in inner side for ankle lap.
Gum Boots	IS-5557: 2004; IS 12254: 1993 (PVC)
Electricians safety shoes	As per manufacturers specifications and test certificate

Personal Protective Equipment's worn by a worker to minimize exposure to specific occupational hazards. The PPE are respirators, gloves aprons, fall protection and full body suits as well as head, eye, and foot protection. PPE are designed to interpose an effective barrier between a person and harmful objects, substances or energies – radiation, heat or electric etc.

The wearer of the PPE must remember that PPE is a form of guarding not of the object but of person. PPE does not reduce hazard itself nor does it guarantee permanent or total protection.

The Safety Officer advises management to purchase types of PPE required for the types of works / jobs at project. There are no shortcuts to PPE selection. Choose the right PPE to match hazard. Generally, three factors are considered in regards to procurement of PPE

1) Need - protection against what?

2) Protection - degree of desired protection

3) Quality
   - Adequate protection against the hazard to which the worker will be exposed
   - Maximum comfort and minimum weight
   - No restriction to essential movement or work
   - Attractive in appearance
   - Durability and maintainability
   - Acceptable to Standards for performance and materials

4) Compliance with applicable laws and regulations

The HSE website is a useful starting point as it illustrates current health and safety legislation for which they act as the main enforcement body.

·The Local Authority / Municipality Code of Construction Safety Practice and al Regulations,

·National Building Code(NBC) of India 2005 regulations,

·Ministry of , Forest and Climate Change (MOEF)-2010 requirements,

·The National Indian Health, Safety and al Laws, Regulations and Executive Orders. Including But not limited according to the Bureau of Indian standards,

·The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996 & Central Rules, 1998.

·The Indian Electricity Act, 1910 & Rules, 1956.

·The Contract Labour (Regulation and Abolition) Act, 1970 and Central Rules 1971

·The Gas Cylinder Rules, 2004

·Explosive act 1884.

·The Motor Vehicles Act, 1988 & Rules, 1989

·The Petroleum Act, 1934 & Rules, 2002

·The Workmen's Compensation Act, 1923 & Rules, 1924

·DG Shipping Rules and Regulation

·The Mines Act 1952 & Rules, 1955

·The Liquefied Petroleum Gas (Regulation of supply & distribution) Order, 2000

·The Static & Mobile Pressure Vessels Rules, 2002

·The water (Prevention and Control of pollution) Act, 1974, amended 1988

·The water (Prevention and Control of pollution) Rules, 1975

·The water (Prevention and Control of pollution) Cess Act, 1997

·The water (Prevention and Control of pollution) Cess Rules, 1978

·The Air (Prevention and Control of pollution) Act, 1981

·The Air (Prevention and Control of pollution) Rules, 1983

·The Hazardous Waste (Management &Handling) Amendment Rules, 2003

·The (Protection) Act, 1986

·The (Protection) Rule, 1986

·The Batteries (Management and Handling) Rules,2001

·The Noise Pollution (Regulation and Control) Rules, 2000

·The Bio-Medical waste (Management &Handling) Amendment Rules, 1998

· Food Safety And Standards (Licensing And Registration of Food Business), Regulations 2011

· The Manufacture, Storage and import of Hazardous Chemicals Rules, 1989
The Batteries (Management & Handling) Rules, 2001.

·The Energy Conservation Act, 2001

·Use of fly ash, bottom ash or pond ash in the manufacture of bricks & other construction activities, 2000.(2009)

·Pollution control acts, Rules and Notifications Issued Thereunder-Central Pollution Control Board (MOEF) Govt of India.

·G.S.R. 320 (E) [18-03-2016] : Plastic Waste Management Rules 2016[

·G.S.R. 338 (E) [23-03-2016] : e-waste (Management) Rules, 2016

·G.S.R. 343(E). [28-03-2016] : Bio-Medical Waste Management Rules,2016

·G.S.R. 317(E). [29-03-2016] : Construction and Demolition Waste Management Rules,2016

·G.S.R No. 395 (E)[04-04-2016] : Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016

· S.O. 1357(E) [08-04-2016] : Solid Waste Management Rules, 2016

- The NGT rules 2010
- All s statutory compliance to be submitted periodically as per contractual agreement. By dedicated responsible persons.

4.1.1 Types of Personal Protective Equipment's

There are two types of Personal Protective Equipment (PPE)

1. Respiratory – Dust Mask
2. Non-Respiratory – Helmets or Hard hats, Safety shoes &Gum boots, Goggles & spectacles, Safety belts, Face shields, Hand gloves, Apron, and high visibility jackets / waist coats etc.

In general Safety Shoes, Helmets& Hi-visible jackets shall be issued to each worker while other equipment shall be provided to the workers as and when required. Other equipment's shall be provided to the concerned workers w.r.t. work related hazards. Specialized equipment's shall also be arranged in case of specific requirements. Below is given the checklist of recommended PPEs and their suggested Application and some detail of such PPE.

Personal Protective Equipment's (PPEs) – Checklist

Sl. No.	To Protect	Recommended Safety Appliances	Suggested Application
1.	Head	Safety Helmet	All employees including visitors.
2.	Foot	Safety Shoes	All employees including visitors.
3.	Foot	Gum Boots	By workers while working in water logged areas.
4.	Eyes	Safety Goggle	By workers engaged for work of cutting, drilling, grinding and chipping operations and other personnel for any work in dusty work .
5.	Personal fall	Safety Belt	By workers working at height (1.8Meter)
6.	Hand	Hand Gloves (Canvas)	By workers engaged in material handling (light work)

7.	Hand	Hand Gloves (Shock proof)	By electricians against electrical hazards
8.	Respiratory	Dust Mask	By workers & other personnel working in dusty atmosphere
9.	Hearing	Ear Plug	By workers while working in noisy work areas
10.	Person	High visibility waist coat / Jacket ¢ reflective tape	By workers to protect them from speeding vehicular traffic at road sides or from movement of material etc at U/G station.

Head Protection

At work site Safety Helmets are used for guarding head against striking, flying & falling materials and electric shock or any combination of these three. Each individual is issued safety helmet for working at site.

The Colour coding for Safety Helmet is as follows,

White - Manager's / Engineer's

Green - Safety Personnel

White -Visitor

Violet-- Supervisor / Forman

Blue --Sub-contractor's / supervisors. /sup.

Red – Electricians/mechanical (Include. Hot work operational workman)

Yellow – General Worker's

- **Foot Protection**

  Foot and toe are exposed to various types of hazards if not suitably protected. Each individual working at **AAR CEE** work site is issued with a pair of non-skid rubber sole type leather safety shoes having steel toe.

  Gumboots are also provided to the workers for protection of foot up to knee for working in water logged / muddy area.

- **Safety Equipment for Eye Protection**

  The eye protection devices are provided to guard against different types of hazards viz.

  The personnel working at site shall be provided with the suitable safety goggles/ face shields as under,

  (i) Chipper goggle – for grinding, drilling, chipping, etc.
  (ii) Safety goggles – for working in dusty work- or where there is a danger for exposure to foreign particles.

- **Safety Equipment for Fall Protection**

  1) Safety Belts and Safety Harness are used by the workers for protection against fall from height, and confined space entry. Safety harnesses being used in site should have valid test certificates from manufacturer.
  2) The safety belts shall always be used in conjunction with lifelines.
  3) Wearer should visually inspect the belt before using it for such weakness, which might cause the belt to fail.
  4) Wear should take care to buckle up the belt correctly.
  5) Belts and their fittings should be examined at frequent intervals by the responsible person. Defective belts should be discarded immediately.

6) The wearer should anchor the lifeline to a substantial support such that it prevents him from striking against a dangerous obstruction in case of incidental fall.

- **Safety Equipment for Respiratory Protection**

At a construction sites person may be faced with problem of exposure to smoke, fumes, sprays, mists, gases dust etc.

The workers shall be provided with suitable respirators for guarding against irritants, particularly dusts and mists. These respirators are mechanical filter type to avoid inhalation of nuisance dust and mist.

As and when the filter gives resistance to breathing the filter element should be replaced. These types of dust respirators are not suitable for moderately toxic dusts or gases & vapors of any kind.

All workers shall be familiarized to use and maintain the respiratory equipment and before using a respirator individual should inspect and check the respirator carefully to ensure that it's useable.

- **Hand Protection**

Protection of fingers and hands is very essential in handling materials and carrying out hazardous operations. Hand gloves are the best protection, against cuts, bruises, and handling materials of different shapes and sizes.

Generally, hand gloves made of Canvas (for light jobs), Leather cum Canvas (for heavy jobs), Leather (welding and handling metal sheets and such handling sharp edged objects), and Electrical Rubber Gloves (for protection against low voltage electrical shocks) shall be used at AAR CEE work sites.

- **Ear Protectors**

At work sites the exposure to loud noise emanating from ducting work, drill machines, jack hammers and pneumatic drills etc. over extended period can cause hearing loss. Two types of ear protectors are normally used in noisy area as hearing protection.

Ear Plug Type – These are insert type equipment which are placed into the ear canal. It should ensure that the plug fits properly and remain correctly seated.

Ear Muff Type – These are cup or muff type devices cover external ear to provide an acoustic barrier.

Commercially available ear plugs and ear muffs if properly fitted and used, generally reduce noise reaching ear by 25 – 30dB and 30 – 35dB respectively at higher frequencies. The combination of ear plugs and ear muff may provide maximum attenuation of 50bB max.

It should be noted that cotton inserted in the ear is a poor choice as a noise suppressor because of its low attenuating properties (normally 2~5dB)

5.0 ACCIDENT / INCIDENT REPORTING AND INVESTIGATION

5.1 Definitions

A **"Near-miss"** is defined as any incident which does not result in injury to any person but has potential to cause serious injury and/ or equipment damage.
An **"Accident"** is unplanned events which cause injury to people or damage to site equipment & material or the .

A **"Dangerous Occurrence"** is an explosion, fire or any incident beyond normal anticipation leading to or having potential for damage to site / equipment's, fatal or serious injury, major emission of dangerous or objectionable liquids and /or gases, considerable loss of material etc.

5.1.1 Classification of Accidents

(a) Fatal Injury Accident: Accident at work which results in death of the person involved.

(b) Lost Time Accident: Accident at work which, results in an injury, sufficiently serious that stops the injured person from going back to work within 48 hours of the accident. For the purpose of reporting, a "major Injury" means:

- any fracture other than to the fingers or toes;
- loss of limb or part of limb;
- Dislocation of the shoulder, hip, knee or spine;
- loss of sight (temporary or permanent); and penetrating injury to the eye;
- injury leading to unconsciousness, require resuscitation, require admittance to hospital for more than 24hours; or which causes more than 30 days certified absence from work.

(c) Non-Lost Time Injury Accident

An accident at work which results in an injury, not sufficiently serious and the injured reports back to work within 48 hours of the accident.

(d) First Aid Cases

An accident which results in an injury after treatment of which the injured goes back towork.

5.1.2 Classification of Dangerous & Hazardous Occurrences

The Dangerous & Hazardous Occurrences can be divided into two categories.

Category A: All incidents covered under Reportable Dangerous / Hazardous Occurrences by Law such as,

a) Collapse or failure of lifting appliances or hoist or conveyors or other similar equipment for handling building or construction material or breakage or failure of rope, chain or loose gear; overturning of cranes used in building or other construction work; falling of objects from height;

b) Collapse or subsidence of soil, any wall floor, gallery, roof or any other part of any structure, platform, staging, scaffolding or any means of access including formwork;

c) Contact work, excavation, collapse of transmission towers, pipeline or bridges;

d) Explosion of a receiver or vessel used for storage at a pressure greater than atmospheric pressure, of any gas or gases (including air) or any liquid or solid used as building material;

e) Fire and explosion causing damage to any place on construction site where building workers are employed;

f) Spillage or leakage of hazardous substances and damage to their container;

g) Collapse, capsizing, toppling or collision of transport equipment;

h) Leakage or release of harmful toxic gases at the construction site.

Category B: Occurrences, such as a small fire or incident resulting in minor injury and or property damage, which does not appear to require detailed investigation or modification to plant or equipment or any change in approved working method.

5.1.3 Accident / Incident reportingtime frame

INCIDENT	REPORTING TIME
Fatal (Rule 210- BOCW)	Immediately / within 2 hours of incident, by phone, or other faster mode of communication
Reportable Injury disabling workers from working for a period of 48 hours or more (Rule 210- BOCW) and non-reportable but medical treatment injury	Within 4 hours by phone, or other faster mode of communication
Dangerous Occurrence as per Rule 210 (5) – BOCW)	Within 24 hours by phone, or other faster mode of communication
Fire Incident, Leakage of flammable, toxic gases and liquids etc.	Immediate/ within 4 hours of incident, by phone, or other faster mode of communication
The submit all incident reports in Form XIV -Rule 210 (7) of BOCW Central Rules to the Company Project Manager as per above time frame.	

5.1.4 Procedure - Reporting of Accident / Incident

i) Person witnessing an incident, accident or near-miss at work site must immediately report to concerned Supervisor / Engineer or Safety Section;

ii) If injury is serious the Supervisor will inform to the Safety Officer, Engineer and Project Manager. The supervisor shall fill Accident Report in 'Accident Report'

iii) The Project Manager will immediately inform to the CLIENT officials;

iv) The categories of A & B Dangerous / Hazardous Occurrences must be verbally reported to the concerned Engineer who in turn should inform the Project Manager and Safety Officer;

v) Fires of all categories should be reported to Safety Officer to enable him to carry out investigation on adequacy of firefighting system. The Safety Officer should submit his report to the Project Manager;

vi) The reports are to be filled in 'Dangerous Occurrence Report' by the Supervisor of the area where the incident occurs;

5.2 Accident Investigation

5.2.1 Accident / Incident investigation should be conducted to ascertain the facts with a view to prevent future accidents and not finding fault / penalizing persons.

5.2.2 Accidents and Dangerous Occurrences which result in death, serious injury or serious damage shall be investigated at the earliest to find cause of the incident for formulating the measures to prevent recurrence.

5.2.3 Near misses and minor accidents should also be investigated as soon as possible to address inadequacies in the system.

5.2.4 Report shall be given in 'Preliminary Accident / Incident Investigation & Loss Estimate Report.

5.3 Insurance Claim

5.3.1 In all cases of Dangerous / Hazardous Occurrences, in case of any apparent damage to equipment due to explosion, fire, etc then the Finance Manager is to be informed in writing with a brief description of the incident, likely down time etc by the Project Manager within 8 hours of the incident.

5.3.2 The Finance Manager would arrange to collect accurately the detailed information on the monetary aspects of the damages and prepare cases for presentation to the Insurance Company for claims.

5.4 Records

The records of all Accidents and Dangerous / Hazardous Occurrences shall be kept by the SHE Department.

6.0 AAR CEE Works Related Activity

6.1 Facilities, Equipment & Activities Related Hazards & Precautions

With respect to AAR CEE work activities and facilities and equipment required for execution of work, following 'safe operational control measures' have been developed. They are based on hazard analysis and risk assessment for such activities.

6.1.1 Setting up of Temporary Site Facilities- Offices, Store and Welfare

Temporary facilities at project site include Office, Store, Safety Induction Room, Toilets and Urinals.

Hazards:

a) Fire hazard
b) Electric shock
c) Collapse of structure
d) Exposure to hazardous substances
e) Hygiene related hazards

Precautions:

1) Seating of temporary buildings will be planned to ensure stability and availability of utility services (water, drainage and electricity).

2) Loading and unloading of material shall be planned to ensure suitable lifting machines and equipment and trained personnel.

3) A competent electrician shall be engaged to fix temporary electrical supplies.

4) All electrical connections will be routed through ELCB only.

5) Make shift wiring will not be allowed at any circumstance at a later stage. If any additional requirement arises, flexible wires installed in conduits will be used.

6) The platform and the walls of the pantry, where the stove is located, will be covered with gypsum boards or steel Safety etc. If electric stoves are used, it will be provided with suitable overload protection device.

7) Fire extinguishers will be provided in all site office cabins and will be inspected by the safety officer every month to keep them in good working condition.

8) The area below the portable site offices will either be closed or will be maintained free from any disposable wastes which can cause fire hazard.

9) Dustbins will be provided in the office, stores and rest areas to facilitate the disposal of waste materials.

6.1.2 Portable Generators (DG Sets)

DG Sets are temporary source of electrical powers. They are installed at the project site to generate electricity for use by AAR CEE to carry out the work at site and associated areas.

Hazards:

a) Fire
b) Electrical Shock
c) Air Pollution

Precautions:

1) DG Set installed shall be in compliance with the al Protection Rules.

2) The engine emission shall be in compliance to the Applicable Standards.

3) The DG Set shall be inspected and tested before being put into service.

4) The earth pin of all socket outlets shall be connected to the machine frame.

5) Proper earthing, Rubber mats & shock treatment chart should be provided as per norms.

6) A trained operator shall attend the DG Set while the set remains in operation.

7) The area around the DG Set shall be barricaded and be kept free of combustible/ flammable materials and shall be maintained tidy and cleaned.

8) Fire extinguishers and sand buckets shall be installed around the DG Set.

9) DG stacks height should be as per CPCB norms.

6.1.3 Working at Height

Any work carried out by any person under the direction of an authorized person of the company, requiring the usage of one of the accepted methods (as under) for carrying out the directed work at a floor height of 10ft or above from a sound ground.

Hazards

a) Fall of Person
b) Fall of Material
c) High Wind Hazards
d) Collapse / Overturning / slipping of structure or equipment used for access

Precautions

1) The work must be planned to ensure safe means of access is provided.
2) Obtain approval for method of work and a permit to work.
3) All working area shall be inspected before staring the job.
4) Provide suitable signs and barriers to warn of overhead operations.
5) Check all equipment's to be used are in good order and of correct specification.
6) In case of critical nature jobs the detail of the job must be discussed with the Project Manager and Safety Representative to agree for safe working procedure.
7) Recommended safety appliances should be used.
8) Training and instructions must be provided to all operatives and supervisory staff as required involved in the use of lines and harness, and how to inspect and use type of required PPE.
9) Person going to work at height should be healthy and free from sickness and should wear fit clothing.
10) In case edge protection is removed for access, or is not practicable, the operatives working at or near the edge will wear safety belt.
11) Suitable anchoring shall be provided for the work.

12) Common lifeline will be provided whenever linear movement at height is required and safety net shall be used wherever required.
13) Supervisor must frequently visit the work area but be present before start of work for the first time and critical jobs.
14) In case a cradle is used it should be capable of taking combined loads of men and material.
15) Workers who work at height should undergo vertigo test.
16) All the persons working near leading edge will be wearing FBSH and the same to be ensured by supervisor/ engineer
17) Proper double layer hard barricading to be ensured at all leading edges.

6.1.4 Equipment for Working at Height

- **Safety Belts / Safety Harness**

Safety belt must only be used for work positioning or fall restraint and never for fall arrest. The tolerable suspension time in a body belt is 1.5 – 2 minutes prior to onset of medical problem.

The tolerable suspension time in a full body harness is 10 – 40 minutes upward.

1) The Safety Belt / Safety Harness should be used while working at

   i) Elevated working position, where a fall hazards exists and where there is no physical protection available such as hand rail etc.

   ii) On roofs with a slope greater than 3 inches in 12 inches, where catch platforms are not provided.

   iii) On open steel clit, form work, piping channel or equipment and suspended platform.

   iv) Straight Ladders, when both hands are needed from work being done.

   v) Confined space, for lowering and lifting of persons and by the rescuers to rescue the affected person from the confined space in an emergency situation.

2) Belts and their fittings should be examined at frequent intervals by the responsible person. Defective belts should be discarded immediately.

3) The safety belts shall always be used in conjunction with lifelines.

4) Inspect Belt before use for any weakness, which might cause the belt to fail under heavy impact.

5) Wearer should take care to buckle up the belt correctly and securely tight enough to prevent any possibility of his slipping out of it.

6) The wearer should take notice of a substantial support above the point of operation such that it prevents him from striking against a dangerous obstruction in case of incidental fall.

7) Wire rope should not be used as life line because its rigidity greatly magnifies the impact loading.

8) Safety belt should be used where freedom of movement is most important and where only limited fall hazards exists. (Safety Belt is not recommended for use where vertical free fall hazards exists)

9) Safety Harness (Full body harness) should be used when the work is at dangerous heights and where vertical free fall hazards exist. In a fall the harness distributes impact forces over a wide body area than does a belt.

- **Safety Nets**

1) Safety nets are intended preliminary to save lives and prevent injury. They are not intended as a receptacle to catch inverted items.

2) Nets are used in unguarded workplace over water, machinery or dangerous operation or more than 25 feet above the ground.

3) Safety nets should be positioned as closed under the work surface as practical where persons are liable to fall below.

4) Nets should be extended 15 feet beyond the edge of work surfaces where workers are exposed.

5) Double layer braided safety nets which arrests the vertical fall of materials to be used. (Debris arrestor) Proper load test to be done and to be recorded.
Incorporate the procedures of laying the nets and the cleaning weekly basis..

6.2 Scaffolds and Ladders

6.2.1 Scaffolds

Scaffolds are temporary elevated platforms and their structures, used for supporting workers or material or both. The scaffolds/ working platforms must be maintained properly and be inspected by a responsible person at least once in a week or after rough ambient conditions.

a) Fixed Scaffold

1) The concerned supervisor will inspect scaffoldings, erected on castor wheels, every day before allowing the workmen to use it.

2) The height of mobile towers will be restricted to 3.5 times its minimum base width.

3) Working platform of all the scaffoldings with more than 1.2 m or greater will be fully planked and provided with suitable hand rails and toe boards.

4) When a new scaffold has been erected at site, the concerned supervisor will request the site safety

officer to inspect the same before allowing his workmen to use it.

5) Scaffold-tag system will be followed at site. The user should visually inspect the scaffolds/ working platforms before each work shift and in case any defect is noticed it should be bring in the notice of supervisor and a tag “Do not Use” should be attached to it.

6) Suitable approach in the form of ladders will be provided to the working platform of the scaffoldings. Do not use ladders or make shift devices on top of scaffold to increase height.

7) Working platforms shall be with handrail (top rail at a height of 1m from the platform, middle rail of height of 0.5m).

8) Restrain free-standing scaffold towers from tipping by guying or other means.

9) Scaffold higher than 2m above the ground should have toe board with a height of 0.15m).

10) Scaffold higher than 6 meters should be tied at 6 meters and every two meters thereafter.

11) Anchor wall scaffold securely between structure and scaffold, at least every 10m of length 8m of height.

12) Never over load scaffolds/ work platforms. Loose material should not be stacked on scaffolding.

13) Scaffolding having more than 15mtr height to be designed and approved by competent person.

14) Schematic drawing to be made available at site.

b) Scaffold Inspection

1) The scaffold material shall be pre-inspected by Company Site Engineer for its condition i.e. it shall be free from bends, cuts, rust, coated by anti-rust paint etc. All vertical members shall be in plumb and correctly spaced. The joints of vertical and horizontal members shall be properly connected with couplers, lock pins, etc. The scaffold shall be securely tied with permanent structure as per the requirement of IS: 3696 – 1991 (Part 1) (Reaffirmed in 2002).

2) The erected scaffold shall be finally inspected and cleared by the Scaffold Supervisor of the contractor. The safety check list for scaffolding erection shall be submitted by the site engineer to the scaffold supervisor. Apart from certified scaffold, all other scaffolds which are not in use, under erecting, dismantling shall bear with Red-Scaff-Tag.

3) Safety tag (for ‘Unsafe Scaffolding DO NOT USE’ in Red colour or tag / ‘Safe Scaffolding’ in Green colour or tag) shall be displayed on the erected scaffold at ground level. Such safety tag / sign boards shall be written in the language understood by the majority of the workers. Unsafe scaffolds shall be repaired / removed.

4) Maintenance- Scaffold maintenance should be done by supplier.

6.2.2 Ladders

Many people are injured while using ladders on construction sites mainly because ladders are not securely placed and fixed, and of these many accidents happen when the work is of short (30 minutes or less) duration. Other causes of accidents include carelessness while climbing ladder, carrying loads while ascending or descending ladder, over-reaching, and overbalancing.

Ladders brought to site shall be thoroughly inspected by Safety Section and registered and a unique number shall be given to each ladder.

The Safety Representative will carry out ladder inspection every month based on the checklist and record will be maintained to this effect.

Precautions

1) While using ladder, every day the user should,
   - ✓ Choose right ladder of correct length, type and condition
   - ✓ Check condition of ladder by visual inspection
   - ✓ Place ladder with safety in mind
   - ✓ Secure ladder against slipping
   - ✓ Climb ladder carefully
   - ✓ Avoid over loading of the ladder

2) Do not use bamboo, wooden or a make shift ladder at the site, instead ladders of aluminum and steel and approved by the Safety Department should be used.

3) All ladders brought at site will be registered and an appropriate number will be given and will be inspected regularly.

4) Always select a ladder, which is of sufficient length to safely reach the working height and extend 1m above the step off point when used as access to landing level and shall be secured at the upper most ends.

5) Ladders without non-slip base and hinge locks, wherever applicable, will not be used at site.

6) Do not use Ladders in horizontal position as runways and for other purposes for which they are not intended.

7) Check for split or cracked side rails, missing, loose, broken or damaged rungs.

8) Any defective ladder shall be promptly replaced.

9) Before setting ladder make sure that the ladder has firm footing.

10) The foot of the ladder should be supported on firm level surface and should not either rest on loose material or other material to gain extra height.

11) Where ever practicable secure ladder on the top to prevent slipping. If it cannot be done at top

secure it at the base using fixed blocks or cleats, sand bags etc.

12) Set ladder such that its angle of inclination will not be less than 75° i.e. base to height ratio of 1:4.

13) Do not use a step ladder as a single ladder. Always use step-ladders always in a fully open position with the spreaders properly locked.

14) Ladders must not be tied or fastened together to provide longer sections.

15) Do not use metallic ladders near power lines or where it is likely to come in contact with live electrical parts.

16) The ladder base section must be placed with a secure footing. Boxes, Blocks, Barrels, shall not be used as support.

17) Wear the proper shoes with good soles and that are free of grease or mud.

18) Do not carry your tools or materials. Keep your hand free.

19) When ascending or descending, the climber must face the ladder and use both hands near the middle and place feet near the ends of the rung rather than near the middle.

20) Do not climb the back side of the step ladder and never stand on it.

21) Over-reaching from ladder will be avoided i.e. not to lean more than 30cm to the side in order to reach a larger area from a single setting of the ladder. The user must get down and shift the leader to the required position.

22) If you do not feel well, DON'T climb the ladder.

6.2 Portable Electrical Tools

6.3 Portable electrical equipment's is defined as the equipment capable of being readily moved from one place to another in normal use and connected to its source of current by means of a single cord and suitable attachment plug.

Hazards:

a) Electric shock
b) Damaged cable
c) Fire
d) Hit by rotating objects

Precautions:

1) All power tools of 220v will be properly grounded and insulated with necessary ELCB protection.

2) All tools shall be registered and identified and subject to planned maintenance, and their record shall be maintained by the Store In-charge.

3) An authorized person at site will check all portable power tools before releasing it to the site use.

4) It will be the responsibility of the site Safety Representative to ensure that all power tools are regularly inspected and a record is maintained to this effect.

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.

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

7) All power cables will be provided with industrial plug and sockets as applicable.

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

9) Always fit or disconnect accessories only after switching off the power and do not forget to put the guards of the equipment in position before using it.

10) Competent electrician should inspect all power tools before issuing them to site and monthly inspection & maintenance schedule of the same to be maintained.

11) The power tools shall not be dragged using its cord / flexible cable and be stored properly to prevent any damage.

12) Cartridge operated power tools, if any, will be used only by trained technicians.

6.4 Hand Tools

Hand tools used at project site shall be of good quality and appropriate for the work for which they will be used.

Hand tools include – axes, cleavers, hatchets, cold chisels, chisel cutters, punches, crowbars and pinch bars, files, hacksaws, hammers and sledges, hand knives, lifting jacks, hand hooks, pliers, wire cutters and nippers, screwdrivers, wrenches & spanners.

Many types of hazards are associated with hand tools.

Hazards:

a) Tools falling down from heights
b) Hit by the sharp edges of the tools

c) Hit by flying objects
d) Slipping and falling due to the use of worn out tools
e) Broken of handle and others.
f) Improvised tools

Precautions:

1) Hand tools should be issued through a responsible person. He shall inspect all the hand tools before issuance to ensure that they are in good working condition.

2) All the supervisors and the safety representatives 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. Such damaged tools found will be removed immediately.

3) Hand tool should be tampered, dressed and repaired only by the trained person.

4) Improvised (Make shift or fabricated Unauthorizedly) tools will not be allowed and such tools found at site will be removed and destroyed.

5) It is to be ensured that proper tool is used and in the right way. The misuse of common hand tool is always a frequent cause of accidents. The examples for unsafe practices are
   - ✓ using pliers or wrenches as hammers,
   - ✓ using screw drivers as chisels,
   - ✓ using screw spanner or pipe wrench instead of double end or ring spanner,
   - ✓ screwdriver applied to the object held in hands etc.

6) During toolbox talks the workers will be reminded about the perils of misusing hand tools and they shall be prohibited to use defective tools.

7) Hand tools shall not be allowed to lie on floors, passageways, stairways, or in other places where person have to work or pass.

8) The tools should not be left on scaffolds, overhead piping, or top of the step ladder and in other locations from where they can fall on persons below.

9) Tools should be carried in such a manner that both hands are free while using a ladder or climbing a structure.

6.5 Heat Stress at Work

When the body is unable to cool it by sweating, several heat-induced illnesses such as heat stress or heat exhaustion and the more severe heat stroke can occur, and can result in death.

High temperature and humidity, direct sun or heat, limited air movement, physical exertion, poor physical condition, consumption of some medicines, and inadequate tolerance for hot workplaces.

Symptoms of Heat Exhaustion

- Headaches, dizziness, lightheadedness or fainting.
- Weakness and moist skin.
- Mood changes such as irritability or confusion.
- Upset stomach or vomiting.

Symptoms of Heat Stroke

- Dry, hot skin with no sweating.
- Mental confusion or losing consciousness.
- Seizures or convulsions.

It is imperative that the employer should take enough precautions to counter the ill effects of this hazard and AAR CEE is committed to its employees and the local authorities to take necessary steps to limit exposure to such situations.

Precautions

1) The Project manager will take necessary actions to restrict employees from being exposed to direct sunlight and humid work conditions for longer hours.

2) Workers shall be instructed to,
   - ✓ wear lightweight, light colored, loose-fitting clothes
   - ✓ drink lot of water; about 1 cup every 15 minutes
   - ✓ avoid alcohol, caffeinated drinks, or heavy meals.

3) As required arrange will be made to block out direct sun or other heat sources.

4) Necessary action shall be taken to reschedule the site timing to carry out activities that requires hard labour and the workers are exposed to hot and humid conditions.

5) Proper ventilation shall be ensured and pedestal fans will be used to increased air circulation in the work area. And

6) SHE representative will inspect the site on regular basis to check the compliance of the arrangements and report to the project manager.

7) As required project management will arrange to provide such workers, isotonic / electrolyte drinks or suitable fluid to reduce the intensity due to dehydration.

8) If any case of heat related illness is identified / observed arrange to send the worker to a doctor and mean while
   - ✓ move the worker to a cool, shaded area.
   - ✓ loosen or remove heavy clothing.
   - ✓ provide cool drinking water.

- ✓ fan and mist the person with water.

✓ Provide proper refreshment facilities for the workforce in certain intervals. (ORS, Buttermilk, Glucose etc.)

6.6 Manual Materials Handling

Precautions

1) Inspect the object to be lifted, it may have sharp or jagged edges; burrs; splinters slippery or rough surfaces. If so, use suitable gloves.

2) Wipe off grease, dirt or water from any object to be gripped or handled.

3) Keep hands free from oil and grease.

4) Wear required safety helmet, hand gloves and proper foot protection to protect toes and insteps.

5) Wear eye protection as well as stout gloves while handling wire, metal objects with sharp edges. Wear suitable dust mask/ respirator, if the material is dusty.

6) Grip the object firmly.

7) Keep fingers away from pinch points.

8) Keep hands away from the ends of long objects, e.g. pipes and bars to avoid risk of pinching them.

9) Size up the load and make a trial lift.

10) When lifting a load to a height, do it in stages.

11) Do not try to lift alone any load that is too large, heavy or cumbersome. Ensure there are no obstructions in the direction to be followed.

12) Do not carry a load, which obscures the vision.

13) While carrying by two or more persons, 'Test lift' should be made before carrying.

14) Long objects such as pipes or bars should be carried on the same shoulder, the men walking in steps. Shoulder pads should be used to prevent cutting or bruising the shoulder.

15) Follow kinetic way of lifting as under
- ✓ proper foot position;
- ✓ Proper hold, Straight back;
- ✓ Bend at the knees to grasp the weight;
- ✓ Raised head – Chin in and Arms closed to the body;
- ✓ Lift gradually by straightening the legs;

16) Do not bend forward with leg straight. Use leg muscles to lift objects

17) Move in the direction, advanced foot is pointing with load close to the body.

18) Workers at construction / erection sites should be instructed not lift by hand or carry overload on his back or shoulders any material, article, tool or appliances exceeding the prescribed weight unless aided by any other worker or mechanical device. The maximum permissible load to be lifted by a building worker is as under

Person	**Maximum weight load**
Adult-male	55 kg
Adult-female	30 kg

The workers while aided by other workers should not lift by hand or carry overhead or over their back or shoulders, any material, article, tool or appliances exceeding in weight the sum total of maximum limit set out for each building worker separately as indicated in the table above unless added by mechanical device.

6.6.1 Storage of Material

Various types of materials are stored at places within the project site or in other yards. Materials piled haphazardly, or strewn about increase the possibility of accidents to employees and damage of materials. Both the temporary and permanent storage facilities must be neat and orderly.

6.6.2 Precautions while Storage of General Material

Planned material storage minimizes the handling to bring material to the worksite.

1) Material shall be stacked such that the pile will not interfere with,

- The adequate distribution of natural or artificial light;
- The proper operation of machines or other equipment;
- The unobstructed use of passageways;
- And the use of firefighting equipment.

2) Material shall be placed on firm foundations not liable to settle and shall be subject to weight control so as not to overload the floors.

3) Material shall not be piled to a height not more than 1.5 meter, which would render the pile unstable.

4) Material shall not be placed inside the clearance lines for vehicular roads or railway tracks and shall be so piled that it will not slide or otherwise shift toward the road / track.

5) Flammable fluids, solids and compressed gases shall be stored in compliance with statutory provisions regarding fire protection.

6) Chemicals, which might react together or cause fire or explosion, shall be stored remote from each other.

7) Storing places shall be kept clean and should not be damp. There shall be good ventilation from top and bottom. Direct sunrays shall not be allowed to fall on such materials.

8) Materials likely to be spoilt by rains or other natural agents should not be stored in open.

9) Nameplate of the material shall be displayed conspicuously. Wherever flammable or combustible materials are stored 'NO SMOKING' sign boards shall also be exhibited.

10) Where the combustible materials are stored in an open yard care shall be taken to remove the grass and vegetation regularly, growing in the surrounding area.

11) Poisonous materials shall be stored in locked up almirahs or room and sign boards 'POISON' shall be exhibited on them. Such materials shall be stored and issued by a designated person.

12) Sufficient numbers of suitable fire extinguishers shall be kept in the store areas.

13) The material safety data Safety et will be made available if any chemical is to be handled at site and all the precautions indicated in it will be carried out for safe storage of the same.

14) Separate flammable storage area will be earmarked and maintained at site.

6.6.3 Precaution while Storage of Specific Materials

1) While storing Rigid Containers, Boxes etc it should be ensured that they are kept on their slides and the pile is made by keeping them in interlocking position to prevent toppling of pile.

2) While storing Barrels / Rolls of metal Safety etc, and large pipes and such stocks it should be ensured that their pile is made symmetrical in shape of pyramid. First bottom rows should be blocked to prevent them from rolling.

3) Metallic pipes, bar stock in the larger size should be stored in the racks designed for the purpose such that the withdrawal of the material does not create a hazard. Light bar stock may be stored vertically in specially constructed racks.

4) Where storage racks are not provided pipe and bar stock shall be piled in layers resting on wood strips with stop blocks fixed on the ends or on metal bars with unturned ends.

5) Metallic Plates / Safety et should be stored in stable storage racks designed for the purpose. It should be handled wearing leather gloves. Large amount should be handled in bundle by power equipment. They should be separated by strips of wood to facilitate handling.

6) Carton should be stored in layers one above the other and should be kept such that they get interlock to increase stability and to prevent toppling of the pile. Since the sides of the cartons do not support much load, Safety nets of heavy wrapping paper be placed between the layers of cartons to prevent pile shifting.

7) While storing Rigid Containers, Boxes etc it should be ensured that they are kept on their sides and the pile is made by keeping them in interlocking position to prevent toppling of pile.

8) While storing Barrels / Rolls of metal Safety nets, and large pipes and such stocks it should be ensured that their pile is made symmetrical in shape of pyramid. First bottom rows should be blocked to prevent them from rolling.

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12) Carton should be stored in layers one above the other and should be kept such that they get interlock to increase stability and to prevent toppling of the pile. Since the sides of the cartons do not support much load, sheets of heavy wrapping paper be placed between the layers of cartons to prevent pile shifting.

6.6.**4** Storage and handling of flammable liquids& Corrosive Liquid Containers

1) The flammable liquids such as Petrol or Diesel etc shall be stored in containers of approved type.

2) In case of necessity of keeping flammable liquids such as Diesel, Kerosene, Acetone or Solvents in small quantities, they should be kept in approved type container.

3) During dispensing lubricants, care shall be exercised to avoid the same getting contaminated with dust, etc. The use of cotton waste for cleaning equipment used for dispensing lubricants is forbidden.

4) The dispensing of grease on bits of paper, gasket material or tin etc. is strictly prohibited; this is both wasteful and likely to lead to damage of machine parts due to contamination of dust. For small issues tin or containers with lids should be used.

5) Petrol should not be used for cleaning purpose. Personnel handling solvents, lubricants should wear suitable hand gloves.

6) Carboys containing acid or caustics etc shall be store in separate room.

7) Containers such as drums, barrels and carboys' containing corrosive liquids should not be piled one on the top of another, but shall be placed in suitable storage rakes or on wooden strips laid on floor.

8) Floors in the storage area for corrosive liquids should be made of cinders, concrete treated with good drainage and recovery system.

9) Different materials should be stored separately in designated areas, separated by wide aisles.

10) Special handling equipment such as two-wheeled carboys trucks shall be used for the transport of acid carboys from one place to another.

11) Adequate and proper equipment should be used for emptying of such carboys.

12) Before returning an empty carboy, it should be thoroughly washed over with water and drained.

13) The flammable liquid container shall be handled carefully and not be allowed to fall upon one another. They should not be subjected to any undue shock.

14) Sliding, dropping or playing with flammable liquid containers are prohibited.

15) The waste to be stored separately and to be disposed through approved vendors only.

6.6.5 Machine Guarding

1) All moving parts of prime movers, transmission equipment and all dangerous parts of driven machine shall be effectively guarded' unless so constructed or located as to prevent any person or object from coming or being brought into contact with them.

2) The guard should provide positive protection against normally expected hazards, prevent all access to the danger zone during operation and be suitable for the machine.

3) The guard shall be securely fastened to the machine or otherwise at suitable place and shall be kept in place whenever the machine is in operation.

4) Guard should be provided with an adequate number of supports and attachments so as to ensure sufficient rigidity and resistance.

5) Without permitting exposure of moving parts, guards should clear the floor to prevent interference with cleaning around machine.

6) All the machineries to be inspected by P&M team before taking into the site. Proper inspection to be done on weekly and monthly basis.

7.0 ELECTRAL SAFETY

7.1 Site Electricity

AAR CEE shall assess the size and location of the electric loads including that of its sub-contractors which may vary with the progress of project.

The arrangement to be made i.e. external electrical source or DG set of adequate capacity for obtaining / generating the required load.

7.1.1 Hazards of Electricity

Human injury – electric shock, burn and flashes;

a) Fire & Explosion – Ignitions or decomposition of combustible, flammable and unstable materials;
b) Miscellaneous – Unintentional starting and stopping of electrically powered equipment or failure of a critical equipment / item to operate when needed.

7.1.2 Precautions & Safety Measures

a) To provide appropriate electrical protection for all circuits, against overload, short circuit and earth fault current.

b) To provide RCCBs / ELCBs (sensitivity 30mA) for all equipment to be used at site, electrical switchboards, distribution panels to prevent shock to the workers.

c) Circuit breakers / fuses used at site should be as per equipment power rating.

d) Protection against lightning shall be done for equipment kept in open at site.

e) Cable and cords connected with various equipment / appliances and exposed to conditions shall be in compliance with relevant standards.

f) Plugs, sockets outlets and couplers shall be “splashed proof” type and in compliance with IP55 (minimum degree of Ingress Protection).

g) The plugs and fitting used at site shall be of weatherproof type and colour coded in accordance with IEC i.e.
(a) 110V : Yellow
(b) 240V : Blue
(c) 415V : Red

h) Proper Cable connector as per relevant standard shall be used.

i) All equipment shall have provision for cut-off switch in the equipment itself.

7.1.3 Inspection & Maintenance

a) Equipment brought at site shall be registered with the department and given a specific number.

b) Record shall be kept for date of issue / installation and last inspection and recommended inspection period.

c) All fixed installation shall be inspected quarterly or as recommended by manufacturer.

7.2 Safety Precautions for Handling Electricity:

1) Use safety appliances provided – boots, gloves and goggles etc.

2) Exposed live parts should either be guarded or insulated to provide` protection.

3) All switches and equipment's should be properly identified.

4) Identify the danger zones and use standard electrical system.
5) Ground all hand held electric power tools.

6) In flameproof or de-matching area, flameproof/ non-sparking electrical equipment should be used.

7) Opening or interference with electrical apparatus except by competent personnel is forbidden.

8) Repair of electrical equipment shall only be done by authorized electrical staff.

9) Ensure electrical fuses and circuit breakers are of sufficient rupture capacity.

10) Use fuse puller to remove fuses. Do not remove fuses from the energized circuits or open energized switches.

11) Temporary electrical wiring should be avoided. In case it is a must it should be done properly ensuring,

- It is protected by sheathing of tough rubber if necessary, with the additional protection of flexible metallic armour,
- Routed properly, maintained in good condition, particularly as regards insulation, plug and other connections.

12) Make sure that as far as practical, no live electrical cables come in contact with water, corrosive liquid or any sharp object or mechanically damaged, is left on ground or floor.

13) Consider all electrical apparatus as live apparatus so take the precautions accordingly.

14) Temporary repair of electrical equipment and circuits should be avoided.

15) Electrical portable machines/ equipment shall be provided with proper earthing and all electrical tools to be properly insulated.

16) All temporary electrical installations are provided with earth leakage circuit breakers and the power supply to the portable electrical tools must be routed through ELCB.

7.3 Electrical System Risks

Most items of electrical systems and equipment are designed and built for specific type of service. Accidental contact with the energized conductors may cause shock / burn injury or a fatality to the person coming in contact. Faulty electrical installations are frequent cause of fire.

1) All Electrical DB box should comply with IP rating for indoor minimum IP 44 and outdoor IP 67 including RCCB minimum current rating 300MA with MCB with minimum current rating 10KA

For commencing any work near or on the Electrical equipment / installation, they shall be treated as energized. Therefore, necessary safety precautions for working should be observed and necessary clearance / shutdown taken.

2) Permit to work must be taken from the concerned authority before working on any energized system / equipment.

3) Job to be done must be discussed in detail with Manager / Supervisor and very clear instructions shall be given.

4) Do not work on an electrical installation unless you have been duly “Authorized” by a competent person.

5) Use two lamps in series connected in series as a test lamp.

6) Use electrically insulated tools e.g. screw driver, pliers, etc.

7) As for as possible use only 115V hand lamp.

8) In the absence of 115V lamp, a hand lamp of approved design, properly protected i.e. with sockets or lamp holders of insulating material having suitable lamp guard and completely insulated from any live part, approved by the electrical supervisor shall be used.

9) Whenever HT / LT circuit breakers are drawn in to service position hand gloves for electrical purposes and rubber mats must be used without fail.

10) Earth pits should be maintained and checked regularly.

11) Provide appropriate ELCBs (Earth Leakage Circuit Breakers) to prevent shock.

12) Use 3 core cables and 3 pin plugs for all portable electric tools.

13) Ensure plugs, sockets, and switches are in good order. Plugs should be correctly wired and ensure that the fuse is of actual current rating.

7.3.1 Protective Grounding (Earthing)

1) Armoring and sheathing of electric cables, metal conduits and their fittings, metallic safeguards and other non-current carrying parts of equipment's shall be effectively grounded.
2) The grounding conductors shall be of low resistance and of sufficient capacity to carry safely the heaviest flow of current which may result from a breakdown of the insulation of the equipment to be protected.
3) The grounding conductors shall be mechanically protected as and where required.

7.3.2 Switch Boxes/ Distribution Board/Panel Board

1) The temporary switch boxes shall be constructed of metal with water proof door and necessary arrangement for locking.
2) Switch box should be of adequate capacity. The switches and fuses shall be of proper capacity for the circuit protection.
3) The capacity of the switch should be marked on the box.
4) Cable glands and lugs shall do all connections and switch box shall be properly grounded.
5) Switch should not be overloaded and multiple connections of cable from one switch shall be prohibited.
6) Switch box shall be installed adjacent to the work area at a height of about one meter above the work floor for easy access.
7) ELCB shall be installed on each switch box.

7.3.3 Electrical Station and Field Panels

Hazards:

1) Electrical stations and field panels are the areas that contains live electrical equipment
2) Access to electrical equipment introduces risk of electrical shocks.
3) Electrical stations and field panels may contain equipment connected to high fault levels, in the event of equipment failure loitering in the area increases the risks of arc blast and flash burn injuries.
4) The outer non-insulated metal sheathing of cable shall not be used as an active conductor.
5) Where the metal sheathing or metal armoring of cables or wiring is supported by metal parts of building or structures, it shall be either be insulated there from or securely bonded thereto.

Precautions:

1) All electrical stations and field panels shall be secured against unauthorized access.
2) No person shall enter the electrical station unless he has authorization or accompanied by an authorized person.
3) Only authorize electrician should open the field panels.

4) Do not loiter around energized high voltage or high current low voltage electrical equipment.
5) Carryout regular inspection and maintenance of the equipment.
6) Carryout repairs and functionality tests where appropriate to maintain the design specification.
7) Current carrying parts of electrical switchboards and panel boards, which ordinarily are isolated but occasionally require adjustments or repairs, shall be so arranged that suitable portable cover or shield can be effectively placed to protect the electrician from contact with the neighboring live parts.
8) Provide necessary training and authorization to the concerned personnel.
9) Secure doors and covers of equipment with all the devices provided.
10) Use of ELCB is Mandatory. It shall be enforced that the supply of energy to every electrical installation is controlled by ELCB, so as the supply gets cut off instantaneously on the occurrence of the earth faults or leakage of current.
11) Inspection of panel/DB etc. Inspection schedule Placing, barricading of the panels

.

7.3.4 Lock Out / Tag Out (LOTO)

"LOTO" is a technique used to prevent energy from being released during the servicing of equipment. This is accomplished by placing locks on energy isolation devices prior to starting work.

1) Safe procedures for deenergizing circuits and equipment shall be determined before circuits or equipment are deenergized.

2) The DE energization procedures shall be included in the lockout/tag out procedure for the circuit or equipment to be deenergized.

3) Circuits and equipment to be worked on shall be disconnected from all electric energy sources.

4) Control circuit devices such as push-buttons, selector switches, and interlocks shall not be used as the sole means for deenergizing circuits or equipment.

5) Electrical isolation shall be carried out before starting work on or near electrical equipment to avoid electric shock and other hazards.

6) All work on electrical system shall be carried out after obtaining "Permit to work".

7) The extent of isolation required will depend on the nature of work. Requirement of isolation and extent of isolation shall be jointly decided by the PTW issuing authority and executing authority.

8) Before working on electrical equipment, the Authorized Person shall be informed to disconnect the source of power and then lock it out and tag it to prevent accidental release of energy.

9) The following steps shall be followed:
   - Disconnect the equipment and circuits from the electric power source.
   - Turn off the machine or equipment. Release or block any stored energy.
   - Lock out the electric energy sources and operating controls with a lock that holds the control in "off position".
   - Place a tag with each lock. Tags must state that only Authorized Personnel may reconnect the power, operate the controls or remove the tag.
   - Test to make sure that the circuit and equipment are really de- energized.
   - Lock keys shall remain in the custody of the person working on the electrical installation.
   - Multi tag/ lock system shall be followed where different crafts are required to work on the same equipment.
- Training to the persons involved in the activity by P&M team.

7.3.5 Illumination - Temporary lighting (Halogen Lamps, Flood Light Fittings etc.)

Illumination of the site and work area is required for safety, productivity and security.
The minimum lighting (illumination level) requirement at work site is as under

Sl. No.	Faculty or Function	Luminance – Lux (lm/ft^2)
1.	Access ways	110 (10)
2.	Work Areas	325 (30)
3.	Equipment Rooms	110 (10)
4.	Storage Area / area - Out door - Indoor	33 (3) 110 (10)
5.	Toilets & Wash rooms	110 (10)
6.	Office / Meeting rooms	540 (50)

Where permanent fixed light can not be provided; light fittings are provided on temporary basis to carry out work etc.

Different types of light fittings are available each with its most suitable application. While installing a lighting connection advice should be sought for best light for a place or job. The factors that affect the efficiency of lighting are

a) Amount of day light available,
b) Cleanliness and maintenance of light fittings and reflectors,
c) Reflection from walls and ceilings,
d) Distance of light source from the work area and,
e) Shadow from the fittings and fixtures.

Hazards

1) Poor or inadequate lighting / illumination.
2) Excessive illumination and Glare.
3) Electric Shock
4) Fire

Precautions

1) Ensure that fitting is of sufficient strength and suitable for use in the area.

2) Ensure that cords are of strongly insulated type and sockets are made of insulating materials.

3) The lamp should have adequate protection against breakage and its holder shall be completely insulated from the body and no live part shall be in touch with the body.

4) The light fitting/ equipment shall be installed at a safe location and cord shall be so arranged or installed such that both the fitting and cable do not interfere with the working of personnel in the area.

5) All equipment shall be inspected by a competent and qualified person at regular intervals and shall be properly maintained.
6) Double insulated cables with fireproof protection.

7.3.6 Inspection & Maintenance

AAR CEE shall arrange for effective inspection and maintenance program to ensure the safe and effective operation of hand tools, machinery and equipment used at work site. The maintenance program shall include:

1. Listing & Identification

- All hand & power tools, machines &equipment, lifting machinery and lifting tools & tackles brought at site shall be registered.
- All electrical equipment shall be permanently numbered,
- All lifting appliances and loose gears shall be identified by stamping and clearly marked for its safe working load.

2. Schedule of Inspection& Maintenance

- These shall be duly inspected by a designated responsible person before use for safe operation.
- Routine maintenance of machinery shall be done in accordance with manufacturer's recommendation
- Testing / inspection of the tools, equipment shall be carried out by trained technicians, under the supervision of concerned Foreman / Supervisor.
- All electrical hand-held tools shall be inspected on monthly basis.
- Fixed installations shall be inspected at quarterly basis.

- All lifting appliances and tools and tackles shall be thoroughly tested and examined by a competent person (as defined under Factory's Act,1948) at least once in every six months or after any repair or alteration is done.
- Generally crane, hydra as required is hired by for execution of such work and validity of certificates of test of crane, lifting gears to be used and license of driver / operator is insured by AAR CEE responsible person..
- DG set(s) installed (if any) at site are normally hired units. These are serviced and maintained by the concerned Vendor. The service and maintenance is done as per manufactures recommendation.

3. Procedure for maintenance and repair;

- All maintenance work shall be done under the supervision of designated Electrical / Mechanical Supervisor and shall be done by trained technicians.
- All tools used in electrical repair work, such as pliers, screwdrivers, fuse tongs and the like, shall be strongly insulated and of an appropriate type and suitable for the work.
- Repair work on or near live parts of electrical circuits shall not be done.
- Maintenance on electrical machine / equipment shall be done under proper permit to work.
- All machinery/ tools that pass the inspection shall be tagged to indicate that they are inspected and safe for use.
- In addition to sub-contractor's monthly machinery maintenance AAR CEE's personnel shall carryout additional checks and do the tagging.
- Only repairs of minor nature shall be addressed locally. Major repairs etc shall be done through External Agencies.
- AAR CEE sub-contractors planning to bring machinery etc. are to attend a pre-mobilization meeting with Safety Officer where all the necessary documents are submitted. The maintenance schedule and monitoring are then discussed and agreed upon.
- Records of inspection maintenance status and due dates to be maintained for ready reference.

4. Record of inspection and maintenance.

- A register containing a system of identification of all tools and tackles, its date of purchase, safe working load, competent person, date of examination etc shall be maintained.
- Register containing record of date of issue, date of last inspection and recommended inspection period shall be maintained.
- Register containing detail of maintenance and inspection of other machines, equipment and hand tools with such detail shall also be available at site office.

7.3.7 List of Tools, Equipment & Machines and Schedule of Inspection & Maintenance

Sl. No.	Name of Equipment / Tool / Machine	Make / ID No.	Test Frequency	Testing / Inspection & Repair By
1.	DG Set		Monthly	Trained Person
2.	Cutter machine		Monthly	Trained Person

3.	Grinder		Monthly	Trained Person
4.	Polish Machine		Monthly	Trained Person
5.	POP Mixture Machine		Monthly	Trained Person
6.	Breaker Hammer		Monthly	Trained Person
7.	Spray Paint Machine		Monthly	Trained Person

Note: Inspection, Maintenance and testing shall be done by trained persons under the supervision of a designated Supervisor.

- Daily checklists to be maintained for necessary equipment's other than hand/power tools.

8.0 FIRE CONTROL

8.1 Fire Hazards

Any activity / item/ substance which can cause fire damage to men material, machines and ; it can be – toxic, explosive, corrosive and flammable in nature. At the worksites following hazards are generally encountered.

8.1.1 Potential Ignition Sources

Following are identified 'Ignition Sources' with respect to activities at such project sites

a) Electricity
b) Smoking
c) Friction / Mechanical Sparks
d) Burner flame & Cutting & welding
e) Spontaneous ignition
f) Unattended Fires
g) Combustible refuses
h) Incendiaries
i) On account of Natural Calamities

Electrical Equipment:

Grinders & Cutters, Drill M/c and Transformers

1) The faulty design or manufacture, or due to misuse or neglect or improperly installed or maintained equipment or overloading of circuits can lead to overheating which in turn can cause fire.
2) Sparks resulting from short circuits also cause fire.
3) These hazards are dealt with by ensuring personnel are adequately trained and any reported defective equipment is taken out of use and repaired.

Static Electricity

Proper arrangements should be made for the safe handling & discharge of static electricity by necessary incorporation of bonding and grounding system. The system should be checked periodically for anchorage and continuity etc.

Smoking

Carelessly discarded Cigarette/ Bide buts, matches sticks etc. may cause fire. The hazards can be lessened by making workers conscious of the risk and consequences of a thoughtless action.
Separate smoking yard to be made available and to be allowed to smoke at the location only.

Flame Producing Equipment:

Portable heating devices like blowlamp stove Gas welding & cutting sets etc. should not be used around inflammable liquid, paper or similar materials.

1) Equipment's should be properly used and maintained by trained and competent person.

2) Combustible materials in the work area should be either removed or protected.

3) Means of extinguishing any outbreak of fire should be kept handy...

When the work of finished checks should be made to ensure that nothing is left smoldering.

Spontaneous Ignition

Spontaneous combustion occurs when organic materials decompose, usually initially by action of aerobic (oxygen-loving) bacteria and the heat released is not all able to escape so that the temperature of the mass rises and finally burning commences.

The solution to avoid spontaneous combustion is to discourage storing solid waste in mass such as oil soaked rags and cotton waste etc.

The Smaller quantities of waste material in very dry or very wet conditions appear to be inhibitors of spontaneous combustion.

Unattended Fires:

Burning of waste materials at times or in location where bonfires cannot be properly attended to and controlled.

1) Permission must be taken from the concerned authority for burning of materials.

2) Fires should be situated well away from boundary fences, fuel stores, and any combustible

materials or structures.

3) They should not be left burning or smoldering after work has ceased.

Waste & Combustible Materials

Waste papers, cotton waste, rags and other combustible materials should not be allowed to accumulate on floors, but shall be removed at regular interval and shall be placed in suitable containers for subsequent disposal.

1) Grass and Vegetation should be cut regularly and removed from the area.

2) The oil soaked rags & clothes should not be scattered about in heaps or allowed to accumulate in odd corners but deposited into metallic bins with closed fittings lids.

Incendiaries
Sites should be secured against intruders and as far as practicable combustible materials should not be left lying around.

Lightening

Necessary lightening protection – air terminals (lightning rods), conductors, and ground connections are incorporated in high buildings, tall structures etc. The system should be inspected periodically.

8.2 Fire Management

8.2.1 Definitions

Fire Management: Fire Management at a worksite is to ensure that systems and procedure are in place to prevent eruption of fire and to protect the life, property & al damages in case there is any fire.

Combustion: It is a rapid process, and hazards mount as the fire continues. For any fire to take place, three agents are necessary i.e.

1) Fuel,
2) Heat, and
3) Air / Oxygen

Fire Prevention: 'Fire Prevention' means taking all such necessary precautions to prevent fires occurring i.e. arrangements made to check any breakthrough of fire – Good housekeeping, Inspection and removal or shielding the sources of fire etc

The Fire Prevention largely depends on practice of careful habits. For the purpose of fire prevention any site may be divided into three areas viz.

Detaching Area:

Areas where inflammable liquids or gases are handled / stored and smoking, open flames and use of non-flammable electrical equipment and tools is prohibited is declared as Detaching Area. Such areas are demarcated and caution boards are displayed for strict observance. Following instruction is displayed at entry to the compound.

Persons entering into compound must not carry matchbox, lighter or any other items which are liable to cause sparks.

No Smoking Area:

The project site is declared as 'No Smoking Area'. **No Smoking** signs shall be displayed prominently around the area and no smoking shall be strictly observed. Following instruction shall be displayed at the entry.

All Persons entering the area are instructed not to smoke in the area.

8.2.2 Fire Prevention Plan

The **AAR CEE** management prepares fire prevention plan specific to the Project / Site. The plan shall be displayed prominently around the work area and communicated to employees.

- **Elements of a Fire Prevention Plan**

1) A list of all major fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and the type of fire protection equipment necessary to control each hazard;

2) Procedures to control accumulations of flammable and combustible waste materials;

3) Procedures for regular maintenance of safeguards installed on heat-producing equipment to prevent the accidental ignition of combustible materials;

4) The name or job title of employees responsible for maintaining equipment to prevent or control sources of ignition or fires; and

5) The name or job title of employees responsible for the control of fuel source hazards.

6) Information to employees upon initial assignment to a job of the fire hazards to which they are exposed.

7) Procedure for review with each employee those parts of the fire prevention plan necessary for self-protection.

7) The Safety Section must inform the employees upon initial assignment to a job of the fire hazards to which they are exposed.
8) No open fires to be allowed at site for any reasons.

8.2.3 General Precautions:

1) Hot work permit system will be followed to control all hot works at site.

2) Keeping fire extinguisher is a compulsory requirement and a fire watch will be deployed if the sparks are unable to be contained in the floor in which the hot work is being carried out.

3) Oxygen and acetylene cylinders will not be taken inside any confined areas. The cylinders will be kept upright in trolleys. They will be stored separately in the storage area.

4) All the fuel cylinders will be provided with flash back arrestor.

5) Smoking will be totally banned at site. “No smoking” stickers will be displayed at appropriate locations.

6) An emergency evacuation plan will be worked out in consultation with civil contractor, indicating the action to be taken by various personnel, firefighting plan, means of alerting the people, means of escape, assembly point etc.

7) The flammable liquid (paint, insulation compounds etc.) storage area will be clearly identified and be suitably barricaded to restrict the access to unauthorized persons. The storage area will be provided with fireproof walls.

8) Storage of flammable liquid in the main building will not be permitted.

9) All the used flammable liquid containers will be collected and brought back to a safe storage place for disposal. Flammable liquid containers will not be left unattended at site without their lids.

10) Incandescent or halogen lamps will not be used near the insulation application areas.

11) Packing materials, if any, will be removed on the same day from the site, whenever required.

12) 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 tool box talks whenever required.

13) Fire blanket to be used while doing hot works.

8.3 Fire Extinguishments & Control

Water and other fire extinguishing media i.e. sand, Carbon dioxide, Dry chemical powder etc. will control a fire either by spraying a cloud of extinguishing media over the burning substance, which excludes oxygen, or by cooling the burning substance so that it may no longer burn.

Physical removal of flammable substance / material and by cutting the supply of flammable flowing material also helps to control fire.

To control electrical fires, first of all circuit is de-energized to avoid any chance of electric shock, which may be conducted via stream of extinguishing agent. Then only, by spraying the appropriate

extinguishing media the fire is controlled & extinguished.

8.3.1 Class of Fires and Recommended Fire Extinguishing Media

Sl. No.	Class of Fire	Example	Recommended Extinguishing media
1.	A	Ordinary combustible materials like cotton, wood, paper, coal & rubbish etc.	• The quenching and cooling effects of water are important in extinguishing these fires. • DCP (Dry chemical powder) can also be used on small surface fire.
2.	B	Flammable liquids such as kerosene, diesel, petrol oils, grease, paints and solvents etc.	• A blanketing or smothering action is of primary importance on incipient fires • CO_2, DCP and sand bucket
3.	C	Flammable Gases under pressure such as LPG, Acetylene etc.	• Isolating the source of supply of gas is of great importance. Blanketing & diluting the immediate atmosphere by injecting CO_2 to displace air. Cooling of structures etc in vicinity by spraying water is of primary importance. • CO_2, DCP
4.	D	Metal such as magnesium, sodium etc.	• Special DCP and sand buckets

8.3.2 Fire Fighting Equipment

AAR CEE worksites shall be equipped with adequate numbers of firefighting appliances such as Carbon Dioxide (CO_2), Dry Chemical Powder (DCP), and Foam type fire extinguishers along with Sand / Water Buckets suitable to fight types of fire liable to occur in view of the nature of the material in the location or activity.

8.3.3 Portable Fire Extinguishers

The word “Portable” is applied to manual equipment used on small fires in the interim between discovery of fire and arrival of professional fire fighters. At AAR CEE work sites Sand / Water Buckets and CO2, DCP Extinguishers are used. While installing the equipment it shall be ensured that,

1) They are located close to the likely hazards but not so close that it would be damaged or cut off by the fire.

2) They are conspicuously located along the normal path or egress or outside the door of the room /

building.

3) They should be protected from the vehicular movement.

4) The access must not be blocked by the stock or equipment and materials

5) The extinguishers shall be installed in an area considering the relative hazard of occupancy and nature of anticipated fire and protection for special hazard.

6) All equipment shall confirm to the relevant Indian Standard.

7) Each equipment shall be allotted a serial no., date of last filling and date of last inspection.

8) Each equipment shall be thoroughly cleaned, recharged immediately after use.

9) Each equipment shall be subjected to routine maintenance, inspection and testing by properly trained person as per relevant Indian Standard.

10) Operation, Maintenance and Cautions of the Dry Chemical Powder (DCP), Carbon Dioxide (CO_2) extinguisher is given in the table below,

Table - Operation, Maintenance and Cautions of Fire Extinguishers

Activity	Dry Chemical (cartridge operated) Extinguisher	Dry Chemical (stored pressure) Extinguisher	Carbon Dioxide Extinguisher
Operation	To operate the extinguisher remove nozzle from the holster and held the hose firmly.	To operate the extinguisher remove nozzle from the holster and held the hose firmly.	To operate the extinguisher hold the horn/ nozzle hose firmly.
	Remove clip ring and press lever to puncture the cartridge. The gas filled in cartridge shall pressurize the large chamber.	Remove locking pin	Aim the horn / nozzle at the base of fire remove locking pin
	Aim nozzle at the base of fire. Control the chemical powder discharge with the help of squeeze gun fitted at the end of hose.	Aim nozzle at the base of fire. Squeeze discharge lever and control the discharge of dry chemical powder.	Slowly open cylinder valve to control the discharge of gas at the base of fire with slow sweeping action from side to side.
Maintenance	Weigh the cartridge every 6 month – replace it if there is a weight loss of more than 10%	Check regularly the cylinder pressure from the gauge fitted on the cylinder. When pressure drops below the set pressure replace c\extinguisher.	Inspect extinguisher periodically for visible defects.
	Check the chemical powder		Recharge the extinguisher if

	for caking, leveling to ensure proper quantity, condition of gasket, hose, and nozzle & siphon tube for deterioration & blockage and container for physical damage or corrosion.		there is a weight loss of gas is 10% and more.
Caution	Take precaution to avoid ingress of moister into the container.		In confined area discharge of carbon dioxide may makes the atmosphere oxygen deficient.
			The operator may get shock (due to generation of static electricity) due to fast discharging of carbon dioxide.
Testing of fire cylinders.	Testing of fire cylinder to be done as per rules	Testing of fire cylinder to be done as per rules	Testing of fire cylinder to be done as per rules

8.3.4 Sand / Water Buckets

All water / sand bucket shall be filled with clean water, clean, dry and fine sand and shall be painted red. Standard buckets shall be installed as additional equipment particularly near DG set and electrical equipment / switches etc.

8.3.5 Fire Extinguisher Use Guide

In case of fire at the site the AAR CEE personnel present shall act as first-aid fire fighters to control fire. To facilitate users, regarding their application for the type of fire the suitability of fire extinguishers is indicated below.

Table –Application of the Type of Fire and suitably of Fire Extinguisher

Class of Fire	Material	Foam Type	Carbon Dioxide	Dry Chemical Powder	Sand / water Bucket
A	Combustible Solid	**S**	NS	NS	**S**
B	Flammable Liquid	**S**	**S**	**S**	**S**
C	Flammable gases	NS	**S**	**S**	**S**
D	Combustible Metals	NS	NS	Special Type Dry Powder	NS
E	Electrical Equipment	NS	**S**	S	**S**

S – Suitable, NS – Not Suitable

8.3.6 Requirements of Hand Alliances:

1) For Class A fire which is of universal character, the basic protection requires one 9 liters water /

sand bucket for every 100sq.m of the floor area or part thereof.

2) For Class B fire requires one and half times of as described in no.1 above.

3) For Class E (electrical fires) the requirement of hand appliances shall be as under:
   a) For rooms containing electrical transformers, switchgears, motors and /or of electrical apparatus only, not less than 2kg/dry powder or Carbon dioxide type of fire extinguisher within 15m of apparatus.

   b) Where motors and/ or other electrical equipment are installed in rooms other than those containing such equipment only, one 5kg dry powder or carbon dioxide extinguisher shall be installed within 15m of such equipment in addition to the requirement as above in 1), 2) &3)a.

   c) Where motors are installed on elevated platform, one 2kg DCP or Carbon dioxide type extinguisher shall be provided on or below each platform in addition to the requirement as above in1), 2) &3) a&b.

8.3.7 Placement of Hand Appliances

As per requirement above, the correct type of extinguishers must be available at work place and following shall be ensured:

1) They are located close to the likely hazards but not so close that it would be damaged or cut off by the fire.

2) They are conspicuously located along the normal path or egress or outside the door of the room / building.

3) They should be protected from the vehicular movement.

4) The access must not be blocked by the stock or equipment and materials

5) The extinguishers shall be installed in an area considering the relative hazard of occupancy and nature of anticipated fire and protection for special hazard.

6) Recharging of the fire extinguisher and their maintenance shall be ensured.

7) All equipment's shall be inspected regularly by the competent person and records shall be maintained.
8) Sufficient no of persons shall be trained in the proper handling of fire equipment.

8.3.8 Points to Remember

a) Tel. No. of Fire Station. Location of Fire Extinguisher / Fire calls point in the area.
b) Be sure that you know how to operate Fire Extinguisher installed in your area.
c) Do not keep used Extinguisher to its location but inform safety to replace it.
d) Ensure that Fire equipment's installed in your area are visible and easily assessable.
e) If you suspect any defect in fire equipment report to Safety Station.
f) Report all cases of fire no matter however small.

9.0 OCCUPATIONAL HEALTH & WELFARE

Hazards to the Health on a construction site can arise from the 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. Misuses of chemicals, lasers and isotopes, excessive vibration and excessive noise can also cause ill health.

9.1 Hazardous Substances

Below is given the list of hazardous substances used at construction site,

Cement	Diesel / Gas Oil	Mastic Primers	Fiberboards
Lime	Engine Oils	Mastic Solvents	Paints / Primers
Plaster	Hydraulic Oils	Elastomeric Sealants	Fire Resistant Paints
Aertex	Shutter Oils	Elastomeric Primers	Paint Solvents
Sand	Greases	Elastomeric Solvents	Brush Cleaners
Aggregates	Pipe Lubricants	Hot Mastic Sealants	Bleaches
Plasticizers	Epoxy Mortars	Bit mastics	Brick Cleaners
Retarders	Epoxy Adhesives	Coated Road Stone	Concrete Cleaners
Rapid Hardeners	Epoxy Sealants	Contact Adhesives	LPG
Coloring / Mortars	Epoxy Primers	Contact Solvents	Acetylene Gas
Curing Agent	Epoxy Solvents	Soft Woods	Oxygen Gas
Rapid	Epoxy Cleaners	Glass Wool	
Butyl Mastic Sealants	Acrylic Sealants	Hard Wood	

9.1.1 Dusts, Fumes & Mists

The term **dust** in industry is generally applied to air borne solid particles that range in size from 0.1 microns to 25 microns (1 micron = 1/10000 centimeter). Process dusts below 0.5 micron in size are rare. Dust above 5 microns in size usually will not stay air borne long enough to present an inhalation problem.
Fumes are formed when a solid such as a metal is heated at high temperature high enough to volatilize it and the volatilize matter later condensates in cool air. The solid particles that make up a fume are extremely fine usually less than 0.5 microns in size. Also a fume can be formed when a material such as magnesium metal is burnt or welding or gas cutting is done galvanized metal.
Mist is formed when a finely divided liquid is suspended in air. An example is the oil mist produced during

cutting and grinding operations.

Smoke may be formed by the incomplete combustion of the organic material, generally contains droplets as well as dry particles. Tobacco for instance, produces a wet smoke composed of minute tarry droplets. The size of the particles contained in tobacco smoke is about 0.25 micron.

Even smaller amounts of toxic dusts, fumes and mist will make a work hazardous. Description & Effects and TLV of selected toxic dusts & fumes are as under

Substance	**Description & effect**	**TLV mg/m^3 in Air**
Iron oxide Fumes	Major Sources are cutting and welding	10.00
Zinc Oxide	Amorphous white/ yellow powder. Powder is essentially non-toxic but freshly generated fumes may cause metal fume fever.	5.00
Sodium Hydroxide	White, deliquescent pieces or lumps have severe action upon all body tissues.	2.00
Titanium Dioxide	White to black powder considered in the nuisance category	0.5
Vanadium Penta-oxide (fumes)	Yellow to red crystals acts chiefly as an irritant to the conjunctive and/ respiratory tract	0.05

9.1.2 Control Measures:

Concentration of dust, gases or fumes shall be prevented by providing suitable means to control their concentration within the permissible limit so that they may not cause injury or pose health hazard to the workers. Some of the control measures are as under,

i) Installing local exhaust system
ii) Keeping the material moist if possible.
iii) To perform dusty work at night to reduce the number of people exposed.
iv) Use of respiratory protective equipment.
v) Dust suppression methods
vi) Grinding machine with dust collector etc

Ventilation

There are a number of requirements for ventilation in underground construction activities. In general, fresh air supply & exhaust system is provided by designated (by the employer) contractor to all underground work areas in sufficient amounts to prevent any dangerous or harmful accumulation of dusts, fumes, mists, vapors, or gases.

It is required to supply a minimum of 200 cubic feet of fresh air per minute is to be supplied for each employee underground.

Where blasting or drilling is performed or other types of work operations that may cause harmful amounts

of dust, fumes, vapors, etc., the velocity of airflow must be at least 30 feet per minute.

Generally mechanical ventilation, with reversible airflow, is to be provided in all of these work areas, except where natural ventilation is demonstrably sufficient.

9.2 Noise

At construction sites exposure to high noise level may impair hearing. The hearing loss is generally slow which one may not notice. The noise not only hurt hearing but one can also get tinnitus, a ringing sound in ears. Too much noise can make a person tired and nervous. It can raise blood pressure and add stress that can lead to heart disease.

Noise levels are measured in decibels (dBA). Decibels are measured on a scale like the one for the scale of measurement of earthquakes, so that when the decibels go up a little, the noise goes up a lot. 73 decibels is 2 times as loud as 70. The permitted time (in hours) of exposure to continuous or short-term noise level (in dBA) is given in the table below.

Permitted Hours of Work	Level of sound
8	90 dBA
6	92 dBA
4	95 dBA
3	97 dBA
2	100 dBA
1 ½	102 dBA
1	105 dBA
¾	107 dBA
½	110 dBA
¼	115 dBA

Note:

(1) No exposure in excess of 115 dB (A) is to be permitted.
(2) For any period of exposure falling in between any figure and the next higher figure of lower figure as indicated in column (1), the permissible sound pressure level is to be determined by extrapolation on a proportionate basis.

Most construction noise comes from equipment. The ranges of decibel levels of such equipment are given below:

Pneumatic chip hammer	103-113	Stud welder	101	Earth-movers	87-94
Jackhammer	102-111	Bulldozer	93-96	Backhoe	84-93

Concrete joint Cutter	99-102	Earth Tamper	90-96	Hammer	87-95
Portable saw	88-102	Crane	90-96	Front-end loader	86-94

Noise control

Noise should be kept to the lowest reasonably practical level. Appropriate measures shall be taken to ensure that the work shall not cause any unnecessary or excessive noise which may affect workers or public.

In case the work is to be done in vicinity of public area, such operations should be scheduled and conducted to minimize to the extent feasible, the disturbance to the public in the area.

In control of noise, usually three areas are of concern:

- the noise source;
- the path;
- and the receiver.

To protect workers from the dangers of occupational noise following should be done:

Measure the noise on site. It can be done by sound meter. Noise monitoring should be done particularly around powered mechanical equipment.

Cut the noise source generation. This can be achieved by asking for quieter models when buying new equipment. Good maintenance, new / modified mufflers, and other changes can also make a difference.

Install barriers. The barriers interfere with the noise path to improve noise level at the receiver's position. The complete barrier or enclosure is the most effective way of controlling noise. If complete barrier is not practical, partial barriers can help. Even plywood or plastic sheeting set up around machinery can shield noise.

The noise levels changes with distance so installation of the sources of loud noise like compressors and generators far away from the work zone as far as possible is effective way to cut down noise level.

Cut the working time of person spend around loud noises area: Rotate workers from noisy jobs to quieter jobs, if possible. Arrange for them to take rest breaks away from noisy spots.

Provide protective equipment. / Ear muffs If it is not possible to remove the cause of harm then suitable and sufficient PPE should be provided to those workers who could be affected. If the use of PPE is the only means of providing protection it shall be ensured that all workers who may be affected are properly trained in the use of hearing protections. The hearing protections should be is easy to put on and take off type.

9.3 Health Aspects, Physical Fitness & Medical Facilities

9.3.1 Health Aspects

Occupational Health involves identifying what can cause or contribute to ill health of personnel in the workplace, determining the action required to prevent people being made ill by work, and the introduction of suitable control measures to prevent ill health.
Health of work forece checkup to be done quarterly

The management should access all of their work activities undertaken, identify any Occupational Health implications, and implement an Occupational Health Management Programme. In case of a possible need / nature of job, support of a competent Occupational Health Professional may be taken,

Safety Officer shall establish and maintain procedures relating to the management of occupational health. These shall include procedures for:

i) Sickness Absence referral
ii) Medical Reviews
iii) Routine Health Screening
iv) Workplace Assessment
v) Health Education, and Advice
vi) First Aid
vii) Occupational Disease Reporting and Investigation
viii) Employee Welfare Arrangements

Occupational Health performance should be collected and sent to the AAR CEE Management on a regular basis. To ensure the program is operating effectively proactive monitoring should be undertaken and this will include:

- Pre-employment Health Screening
- Routine Health Screening

A scheduled programme for reviewing the efficacy of Occupational Health Controls Data to be collected and analyzed

Occupational diseases as defined in the International Labor Organization (ILO) Code of Practice on Recording and Notification of Occupational Accidents and Diseases

Nationally reportable or recordable occupational diseases under applicable Acts and Rules frame there under viz. BOCWA / BOCWR etc.

Not reportable under ILO or national requirements, but is a work-related and or work aggravated ill-health condition that requires treatment by a physician.

Number of days lost from occupational illness.

Number of employees receiving occupational health medicals treatment / leaves etc.
Number of employees undergoing medical surveillance because of work activities viz. welders, and personnel working in high noise areas.

Near misses, that is where work conditions could have lead to ill-health, should also be included e.g. accidental exposure to carcinogens. All incidents should be investigated to prevent a recurrence. Those persons undertaking investigations should be suitably trained.

9.3.2 Hazardous Substances

The exposures to chemicals & dusts etc may result dermatitis, tenosynovitis, bronchitis, and rheumatism.

The AAR CEE and the sub-contractor shall obtain MSDS for all hazardous substances that are to be used on site.

Minimum inventory shall be kept of all such materials and should only be used for intended purpose.

Particular attention must be given to the actual location of usages such that the hazardous substance does not pose problem and is safe for use in open air.

To be stored separately and unauthorized entry to be restricted.

9.3.3 Physical Fitness

AAR CEEmanagement shall ensure that all staff and workers (including sub-contractors) are of sound health and physically fit to perform their duties. No person under the influence of drugs or alcohol shall be allowed to work at site.

The specific personnel shall be medically examined as specified and their records shall be kept.

Hazards to the Health on a construction site can arise from the 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 misuses of chemicals, lasers and isotopes, excessive vibration and excessive noise can also cause ill health.

9.3.4 Medical Facilities

A. First Aid

The principles and the practice of first aid are based on the principles of practical medicine and surgery, knowledge of which, in case of accident or sudden illness, enables trained persons to give such skilled assistance as will preserve life, promote recovery and prevent injury or illness becoming worse until medical aid has been obtained.

Limited to the assistance rendered at the time of emergency with such material as may be available. It is not intended that the first-aider should take the place of the doctor and it must be clearly understood that the redressing of injuries and other such after treatment are outside the scope of first-aid.

- Aar cee will Deployment of qualified male nurse
- Tie up with nearby hospital
- Doctor visiting weekly basis at site
- First Aid training to conducted periodically
- Ambulance and Ambulance room to be available as per rules

First Aid shall be rendered to the injured by a responsible person at site.
Following are the Golden Rules of First-aid

1) **Do first things first** quickly, quietly and without fuss or panic.

2) **Give artificial respiration** if breathing has stopped– every seconds count.

3) **Stop any bleeding**.

4) **Guard against or treat for shock** by moving the causality as little as possible and handling him gently.

5) **Do not attempt too much –** do the minimum that is essential to save **life and prevent the condition from worsening.**

6) **Reassure the causality and** those around and to help to lessen anxiety.

7) **Do not allow people to crowd around** as fresh air is essential**.**

8) **Do not remove clothes** unnecessarily.

9) **Arrange for the removal** of causality to the care of a Doctor or hospital as soon as possible.

B. First Aid Equipment

1) The first-aid equipment's at site include FA Box, resuscitation apparatus, stretcher, and arrangement for eye wash.

2) Wall notices which include a description of artificial respiration by mouth- to-mouth method should be displayed prominently.

- **First-Aid Boxes**

First aid box will be made available at site office / location where workers can have an easy access. Below is given the typical list of items to be maintained in a first-aid box at construction work site in which number

of persons employed are 50 or less (in line with the Delhi Factories Rules, 1950 and the Delhi B&OCW (Regulation of Employment and Condition of Service) Rules, 2002)

i) Eye drops – one 10ml container, Locula 10%
ii) Eye drops – one 5ml container, Ciprofloxacin.
iii) Eye wash bottles filled with distilled water
iv) Index. Ointment – one 20gm container,
v) (20ml) Bottle of Merbromin (2%) solution.
vi) (200ml) Bottle Dettol / Savlon antiseptic liquid.
vii) Combi flame Tablets (Each of 325mg Paracetamol + 400gm Ibuprofen)
viii) Crocin Tablets (Each of 500mg Paracetamol)
ix) Tube of Sulfadiazine Cream USP 1% w/w
x) Tubes Burn Ointment (Burn Heal Cream)
xi) Small sterilized dressings
xii) Medium size sterilized dressings
xiii) Large size small sterilized dressings
xiv) Large size sterilized burn dressings
xv) (1/2 oz.) Packets of sterilized cotton wool
xvi) (2oz.) bottle containing a 2% alcoholic solution of iodine
xvii) (2oz.) bottle of sal-volatile indicating dose & mode of administration
xviii) Roll of adhesive plaster (2cm x 1m)
xix) Snake bite lancet
xx) (1oz) bottle of potassium permanganate crystals.
xxi) Pair of scissors
xxii) Tourniquet
xxiii) Supply of suitable splints.
xxiv) Packet of safety pins.
xxv) Copy of first-aid leaflet issued by Director General

Tie-up to be made with nursing home / Hospital in the vicinity of the project site for treatment of injured person.

Name of Hospital to be referred	**Hospital Telephone No.**

Serious injury cases shall be sent to the Government Hospital. Details of Hospitals and their Phone nos. is given below:

Name of Hospital to be referred	**Hospital Telephone No.**
Civil Hospital Gurgaon	(91)-124- 2330102, 2322412, 2320102

9.3.5 Suggested First-Aid Measures

In the event of any injury accident,
- Immediate action is necessary.
- The help of the physician should be sought for, in case of serious injuries.
- Do not attempt to give first aid, unless you are sure. Only a trained person should give FA.

Severity of any injury, toxicity or poisoning can be limited to a considerable extent by prompt application of proper First Aid measures. Selected first aid measures are as under:

A. Measures for Gas Toxicity or Asphyxiation (Oxygen Deficiency)

Measures as a result of exposure of person(s) to the gases like Acetylene, Carbon Monoxide, Hydrogen Sulphide, Methane, and Carbon-dioxide are as under:

a) Remove the causality to fresh air immediately.
b) Keep the causality warm using blankets.
c) Do not allow him to undertake any physical activity; he should preferably be put to bed.

If causality becomes unconscious
- Lay the causality with head lower than the rest of the body.
- Loosen clothing around neck and see that there is plenty fresh air.
- Sprinkle face and chest with cold water.
- Rub his limbs towards the body.

If breathing is interrupted:
- Start artificial respiration.
- Administer oxygen if necessary.
- If breathing is normal give him hot tea or coffee.

B. Measures for Burns from Hot Material or Fire

a) Wash the body part with clean cold water.
b) If clothing adheres to the skin, do not attempt to remove it instead cut clothing carefully around the burnt area.
c) Get immediate medical attention from the physician

C. Measures for Chemical Burns from Corrosive Fluids

a) Get the causality under a shower or wash the area of burns with copious quantity of clean water.
b) Remove the contaminated clothing under the shower.
c) Do not use any neutralizing agent.
d) After complete washing, cover the burns with a clean, preferably sterile cloth and get the medical attention of a physician.
e) If the causality becomes **unconscious** follow the procedure under iv) and get the medical attention of a physician immediately.
f) In case of eye injury irrigate the eye with copious quantity of low-pressure clean water for about 15 minutes. Do not attempt neutralizing and get the medical attention of a physician immediately.

D. Measures for Electrical Shocks

a) Get the causality to fresh air and keep him warm.
b) If shock is severe call for ambulance to shift the causality to hospital / call physician as early as possible immediately.
c) If injury is to the chest, breathing may be difficult then keep the causality head slightly raised to make breathing easier.
d) Do not let the patient sit up except in case of chest injury or nose bleed.
e) In case of head injury or fracture in the skull causality should be kept level without elevating feet.
f) If the causality is conscious hot tea/ coffee should be given in small quantity.
g) If causality is **unconscious,**

- Lay him down with legs and feet about 12-13 inches higher than his head.
- Immediately check for breathing and pulse. If no breathing and pulse present, give artificial respiration (either mouth to mouth or mouth to nose) immediately followed by closed chest heart massage for 20 seconds and repeat and continue it till the causality is attended by a doctor.
- Attempt to stop any flow of blood. Remove false teeth and foreign objects.
- Loosen causality's clothing at neck, chest and waist.
- Keep the patient warm and comfortable but not hot. Wrap the causality from top to bottom to prevent loss of body heat.
- Do not give liquids while the injured is unconscious and do not permit him to exert.

E. Measures for Cuts and Bruises

a) If bleeding is copious use a tourniquet to stop it.
b) Under no condition a tourniquet should be held tight for fifteen minutes at a time. If required loosen the tourniquet after about 12-13 minutes and allow the blood to circulation for few seconds and again tighten it.
c) Wipe out the wound with clean, preferably sterile cloth and get medical aid.

F. Measures for Eye Injury

a) In all cases of eye injury, even though apparently trivial, prevent the causality from rubbing the eye.
b) If the foreign body (particle of grit, dust, or loose eye lashes may lodge on eyeball) is seen and does not appear to be embedded or adherent to the eyeball, remove it with the corner of clean handkerchief, preferably white, twirled up and moistened with clean water.
c) If the foreign body has not been found and is suspected to be under the upper eyelid, instruct the patient to blink his eye lid under water.
d) In case of foreign bodies in the eye particularly metal splinter, stone chips, sand particles etc. embedded in or adherent to the eye ball or under eyelid (causing much discomfort and later inflammation), do not attempt to remove it but instruct the causality to gently close his eye lid. Apply a soft pad of cotton wool and secure it by a bandage to exclude light and send the casualty for medical aid.
e) Unskilled treatment, particularly attempts to remove foreign bodies, can do more harm than good, and, in fact, may result in irretrievable damage.
f) In case of corrosive fluids such as acid and caustic or corrosive solids in the eye, flush out with copious supply of water from eye fountain / eye irrigator, apply a bandage and send the casualty to

Hospital / Nursing Home.

9.3.6 Facilities for Treatment of Injury Cases

Arrangements shall be made with nursing home / hospital in the local area for the treatment of injured personnel.

Major injury cases (if any) will be taken to the Govt. Hospital.

Ambulance facilities of the Hospital, Police Department will be called in to handle major injury cases.

9.3.7 Heat Stress & Prevention

Factors viz. High temperature & humidity, direct sun or heat, limited air movement, physical exertion, poor physical condition, consumption of some medicines, and inadequate tolerance for hot workplaces leads to heat stress to the workers.

As a consequence of heat stress is Heat Exhaustion and finally Heat stroke. As a result of this body is unable to cool it by sweating, several heat-induced illnesses such as heat stress or heat exhaustion and the more severe heat stroke can occur, and can result in death.

Symptoms of Heat Exhaustion

- Headaches, dizziness, lightheadedness or fainting.
- Weakness and moist skin.
- Mood changes such as irritability or confusion.
- Upset stomach or vomiting.

Symptoms of Heat Stroke

- Dry, hot skin with no sweating.
- Mental confusion or losing consciousness.
- Seizures or convulsions.

Preventing Heat Stress

- Know signs/symptoms of heat-related illnesses; monitor yourself and coworkers.
- Block out direct sun or other heat sources.
- Use cooling fans/air-conditioning; rest regularly.
- Drink lots of water; about 1 cup every 15 minutes.
- Wear lightweight, light colored, loose-fitting clothes.
- Avoid alcohol, caffeinated drinks, or heavy meals.

First Aid for Heat-Related Illness

- Call for Doctor / medical help at once and while waiting for help to arrive:
- Move the worker to a cool, shaded area.

- Loosen or remove heavy clothing.
- Provide cool drinking water.
- Fan and mist the person with water.

9.4 Welfare Facilities

As prescribed under the statutes, adequate and suitable numbers of facilities for the employed persons shall be provided such as latrine & urinal accommodation, washing facility & soap such as wash basin and shelters & rooms taking rest and lunch etc.

9.4.1 Drinking water

1) Adequate quantity of clean and cool drinking water shall be provided for the workers at project site at all time.

2) The water center shall be maintained in a clean and orderly condition.

3) Cleaning of tank : every 15 days
4) Testing of drinking water : every Quarter

9.4.2 Toilet, Urinals & Water Taps

1) The number of urinals and latrines at site and at labour camp shall be as per following ratio.

URINALS	**For Male Workers**	**For Female Workers**
1-50 workers	1 Urinal	1 Urinal per 50 female workers with separate entry & pictorial sing
50-500 Workers	1 Urinal per 50 workers	
500 & above	Addition to above 1 additional urinal per 100 workers	
LATRINS		
1-25 Workers	1 latrine	1 latrine per 25 female worker with separate entry and pictorial sign & notice
25-100 workers	Additional to above 1 latrine per 25 workers	
100 & above	Additional to above 1 latrine per 50 worker	

2) These shall be conveniently situated, accessible, adequately lighted and ventilated. Water shall be provided by means of taps in / near of every latrine and urinal.

3) All drains carrying waste water shall be connected to the suitable drainage line and flushed regularly.

4) These facilities shall be maintained in orderly manner.

5) Sweeper(s) shall be engaged to keep the facilities in clean and tidy conditions.

9.4.3 Shelters & Rest / Lunch Rooms

1) Suitable arrangements shall be installed to provide ventilated and safe place to the workers to take their meals and to rest during the breaks.

2) These areas shall be maintained in a clean and sanitary condition.

3) Suitable arrangements shall be made for collection and disposal of garbage from rooms

10.0 TRANSPORTATION

10.1 General Precautions

1) No vehicles will be allowed to enter construction site without permission.

2) The vehicles shall be equipped with effective brakes, head lights, tail lamps and hooter & blinking lights arrangement for reversing the vehicle. These shall be maintained in good repair and working order.

3) All the vehicles will be operated by licensed drivers holding valid driving license.

4) If the vehicles have to reverse in crowded work premises, a helper should assist the driver.

5) No vehicles shall be left on a slope with engine running.

6) Workmen will not be allowed to sleep under the parked vehicles.

7) It will be the responsibility of the drivers to ensure that the vehicles are not overloaded beyond its rated loads.

8) They will also be responsible for informing the storekeeper whenever the regular maintenance of the vehicle falls due. No compromise will be made on the maintenance and upkeep of the vehicles.

9) Drivers and operators will not be allowed to work for more than 12 hours continuously on any circumstances.

10) The vehicles will only be parked at designated locations in the site without obstructing the free flow of the traffic.

11) If there is any projected material from the vehicles, warning flag and/ or red lamp will be tied to the projection to warn others of the danger.

12) The materials will be tied properly when loaded in vehicles to prevent its dislodgment while moving.

13) The vehicle movement will be controlled at site and proper area shall be earmarked for collection and dropping of employees.

14) Deployment of traffic marshal

10.2 Minimum Precautions for Vehicle Operators / Drivers

1. All Operators/ Drivers of the vehicles shall be trained and authorized.
2. All vehicles carrying material shall be in good condition of work and shall be provided with helper/ signalman as per requirement.
3. All vehicles shall have reverse gear alarm, indicators with buzzers, parking light in good operable condition.
4. Loading and unloading of goods and materials shall be done under authorized supervision.
5. Materials shall be placed at prescribed place and prescribed manner so that it could not pose any threat to persons working around or public at large.
6. Loaded material shall be placed on vehicle in such a way that it may not protrude out or overhang causing threat to public/ passerby at large.
7. In case material is coming out of the vehicle, red flags/ blinkers or ribbon or gunny bags/ jute bags be put on the extended part of the material to caution the passerby. In that case escorting of the vehicle shall be required.
8. All Traffic rules shall be observed.
9. Instructions related to work at night shall be observed.
10. Pre information for material delivery is essential.
11. In case of major road crossing case, information to safety department is also required.
12. In case of road crossing and obstruction to live road, priority of movement shall be given to public at large and work shall be started only after precautionary steps have been taken by using traffic cones, blinker bars (for night working), reflective jackets, and proper barricading etc.

13. Medical checkup for operators.

11.0 SAFETY INSPECTION AND WORK CONTROL PROCEDURES

Inspections help to safety. Regular inspections encourage individual worker to inspect their immediate work area. Systematic inspection is the basic tool for maintaining safe condition and checking unsafe practices.

Inspections can be internal or external. Internal inspections shall be done by the responsible person of AAR CEE. Inspections by Statutory Authorities or CLIENT REPERSENTATIVE Officials shall be categorized as External inspection

Inspection and Control Procedures have two objectives

- Maintaining a safe work and controlling the unsafe action of workers and
- Maintain product (job) quality and operational profitability

11.1 Types of Inspections

1) Planned General Inspection
2) Routine Inspection
3) Specific Inspection
4) Other Inspections

1) Planned General Inspections

Safety Department shall carryout following Planed General Inspections at predetermined intervals involving PMC/CLIENT officials.

i) Safety Tours – General inspection of work place to address unsafe conditions and unsafe act of persons working there.
ii) Weekly Inspection involving Sectional & Sub-contractor Supervisors.
iii) Monthly Inspection of site / activities involving Safety Committee Members

2) Routine Inspections

Routine inspections include inspection of work site, equipment and temporary structures carried out by Safety personnel, area supervisors, operators and responsible / competent persons viz.

i) Daily inspection of plant, equipment or facility by operator / worker i.e. Walk Through Inspection by a competent person while visiting the site/ work area.

ii) Check List Inspections are done by checking the compliance of conditions already included in the safety check list. The checklist should be developed for the following periodic inspections.

iii) Scaffold by scaffold supervisor / trained person
iv) Housekeeping
v) Monthly inspection of hand tools by designated supervisor
vi) Monthly inspection of electrical hand tools by competent electrical supervisor. along with P&M incharge
vii) Monthly inspection of ladders, fire extinguishers, safety belts & ropes etc. by responsible persons.
viii) Quarterly inspection of temporary electrical system by competent electrical supervisor.
ix) Scheduled inspection of lifting machines, lifting appliances, equipment and gears by Competent Person.

3) Specific Inspections

Inspections of the area, activity executed in accordance to a general set of rules, method statement or procedure.

i) Inspection before a heavy lifting operation
ii) Inspection before and after the entry of person into a confined space
iii) Inspection before and after a welding and gas cutting operation
iv) Safety Survey – General Inspection of particular dangerous activities, or area.
v) Inspection following notifiable accident or dangerous occurrence

4) Other Inspection

- Mandatory Inspection by Labour Department of Government.
- Inspection by Client's Safety Management Team

Safety Inspection

Safety inspections are of principal means of locating accident / incident causes, help determine what safe guarding is necessary to protect against hazards before accidents and personal injury occurs.

Safety inspections are done to ensure that all safety requirements are observed and any unsafe act / unsafe conditions noticed are immediately corrected.

The objective of the safety inspection is

1. To ensure that workers carryout safe working practices during execution of their tasks in accordance with the safety requirements.

2. To check and correct immediately any unsafe acts/ conditions observed.

3. To demonstrate management commitment to safety

AAR CEE shall adopt following programme with respect to Safety Inspections,

i) Site Engineers / Supervisors will inspect their site at least once a day based on the checklist.

ii) Safety officer will ensure that all scaffoldings, ladder and power tools at site are recorded properly and inspected on a regular basis as per the enclosed formats.

iii) He will also conduct periodical surveys to identify the target areas, so that the safety management of the site is on the right path always.

iv) Safety Officer will inspect the site at a regular frequency and incorporate any additional requirements in the safety plan to strengthen the accident prevention efforts. He shall carry out monthly audit of the site and shall ensure that implementation of Health and Safety rules and policy.

4. Safety Audit of the safety management system of the site by a designated team.

5. Safety Officer will inspect the entire site on a regular basis and will give an inspection report to the Project Manager.

6. The respective area supervisor or foreman will attend to all unsafe conditions pointed out by the safety officer.

It will be the responsibility of the concerned engineers to ensure that the suggestions given by the Safety Officer is implemented.

11.2 Safety Audit

The purpose and scope of Safety Audit is to assess potential risks, liabilities and the degree of compliance of AAR CEE Safety Plan and its supplementary procedures, programs against applicable Safety legislation & regulations and requirements of PMC/CLIENT.

11.2.1 Audit Procedure

1. Purpose

To define a procedure for internal audit of AAR CEE work activities at any project site to verify that they are being performed as per the planned arrangements and are giving the desired results.

2. Scope

It applies to all activities covered in the Quality and Management Systems.

3. Procedure

3.1 Frequency of Audit

a) All activities which have bearing on quality, safety and al performance are audited al least once every six months.

b) GM may order special audit of any activity if there is a change in procedure or a large incident of problems.

3.2 Audit Planning

a) A schedule of audit for project work shall be prepared and be made known to Project Manager and concerned departments / sections sufficiently in advance.

b) A team of auditors comprising of team leaders and members who are independent of the function shall be nominated.

c) The scope of audit shall be intimated to audit team leader and project manager and details like time, date etc. shall be finalized.

3.3 Conduct of Audit

a) The project manager shall intimate concerned department / section heads regarding audit.

b) On the appointed date and time the audit team shall meet audited departments and brief them about the scope and other audit details.

c) The audit team then conducts the audit using checklist as a guide by observation of activities, interview of concerned personnel and scrutiny of records.

d) The team members keep making brief notes of their observations on checklist indicating person talked to, location of each observation and identify of the record checked.

3.4 Audit Reporting

At the end of the audit, internally discuss the findings

11.2.2 Audit Program

At Project Site AAR CEE shall adopt programme with respect to Safety Audits in accordance with PMC/ CLIENT Guidelines.

1) Internal Safety Audit

Internal Safety Audit shall be conducted on regular basis by an Safety officer and Execution Team.

11.3 Permit-To-Work

1.0 Purpose and Scope

To define the standard and process for work activities that requires a permit to work system.

2.0 Application:

AAR CEE work operations/ activities including Sub-contractor's activities at project site.

3.0 Definitions:

Permit-To-Work

A written clearance for hazardous work to commence, detailing the work to be carried out and specific risk controls to be applied.

4.0 Authorized Person:

Concerned area Site Engineers & Managers

5.0 Person In-Charge:

The Person responsible for the work activity to be carried out which requires a Permit-to-Work.

6.0 Responsibilities:

The Station Manager will ensure that such precautions are implemented.

7.0 Procedure:

Permit-to-Work is required for the following categories of work activities:

i) Working at Height
ii) Painting work
iii) Tiles fixing work
iv) Any other work identified as Dangerous work
v) Electrical work
vi) Confined space entry
vii) Cut out opening.

The maximum duration of a permit to work will be seven days or as instructed by the AAR CEE Management.

Before such work commences permit will be completed by the authorized person.

The permit to work will be received by the person in-charge of the works who will get the job done.

Before the works commence, the person in-charge will explain to all persons who will be engaged in the work activity, what is the condition of the job / area is, what precautions are required to be taken while carrying out the job.

At the completion of the validity period of the permit, the person in-charge of the works will stop all work activity and ensure that the work area is in safe condition and all equipment and personnel have been withdrawn. The Permit-to-Work will than be returned to the authorized person..

On receipt of the permit, the authorized person will than confirm the confirm the completion of job and closed the permit..

Note: If the work as detailed in the permit cannot be completed in the specified time, then permit to work must be renewed by the issuing authority.

The **permit to work** format attached as **Annexure-XVI**

- Permits are valid up to 6-PM only and further night permit to be obtained.
- Permits should be signed by issuer & accepter on daily basis.
- Separate Holiday permits to be taken on Sundays.

11.4 Working at Height

- **Definition – Working At Height**

  Any work carried out by any person under the direction of an authorized person of the company, requiring the usage of one of the **accepted methods** for carrying out the directed work at a floor height of 1.8Mtr. Or above from a sound ground.

- **The accepted methods of work at height**

  a) Scaffolding Structures
  b) Ladders
  c) Existing platforms of original structures
  d) Improvised structures for specific once-off job
  e) Cradle & Crane combination (crane cradle)

- **Hazards of Working At Height**

  Working at height is the largest single cause of accidents in the construction industry. Therefore Supervisors shall take appropriate measures to ensure suitable precautions whenever working at height is planned.

  a) Fall of Person
  b) Fall of Material
  c) High Wind Hazards

- **General Precautions for Working at Height**

  a) The job must be planned as for as possible and discussed in advance.
  b) Obtain approval for method of work.
  c) Obtain a permit to work.
  d) In case of critical nature jobs the detail of the job must be discussed with the Project Manager and Safety Officer.
  e) Recommended safety appliances should be used.
  f) Person going to work at height should be healthy free from sickness and should wear fit clothing.
  g) Supervisor must frequently visit the work area but be present before start of work for the first time and critical jobs.
  h) In case a cradle is used it should be capable of taking combined loads of men and material.

- **Measures To Work Safely At Height**

To ensure safety of men before sending him to work at height following should be considered.

a) Proper Scaffolds & Platforms
b) Quality Ladders
c) Fitness of Persons Deployed to Work at Height
d) Use of Standard PPE Against Falls from Height
e) Proper Supervision

- **Scaffolds & Work Platforms**

Scaffolding is a structure generally made of steel tubes or bamboos that support the work platform. Thus it can be said that a scaffold is an elevated working platform to support men and material. The scaffolds are of 3 types,

a. Built Up Scaffold – Built up from ground / floor as the work progress & made of structural members
b. Castor mounted Scaffold – Castor mounted section of tubular metal scaffolding
c. Suspended Scaffold – Carry the working platform on beams and ropes secured to structural members

- **Safety Tips**

(a) Only qualified, trained and experienced personnel must do erection or dismantling of a scaffold;

(b) No bamboo scaffolding shall be allowed for working at height; all scaffolds should be of steel pipes conforming to BIS;

(c) Scaffold shall be designed to support at least 4 times the anticipated weight of men and material.

(d) Scaffolds shall be constructed on leveled and firm surface and for the correct use i.e. light (225kg), medium (450kg) or heavy (675kg) duty; Do not overload scaffolds beyond the capacity;

(e) All scaffolds shall be erected plumb and level on a firm base.

(f) Examine all scaffold components prior to erection and make sure that they are in the order of erecting.

(g) Scaffolds shall be securely fixed to existing structures or adequately buttressed. Anchor wall scaffold securely at least every 9m of length 7.5m of height.

(h) Trestle scaffolds shall not be of more than three tiers and the working platform shall not be more than 4.5 M above the ground or floor or other surface upon which the scaffold is erected and no trestle scaffold shall be erected on a suspended scaffold.

(i) Scaffolding shall be visually inspected every day by the supervisor for any defect before starting the job and should be inspected every third day of its erecting by an experienced person;

(j) Scaffold structure shall be inspected every fortnight by a competent person. It should also be checked in the event of major storm, earth quake, explosion or fire in the area before resuming the work;

(k) For decking only planks of 25mm thick scaffold grade lumber or laminated wood or properly fabricated gratings of uniform size shall be used. They shall be closely laid and securely fastened in place.

(l) All working platforms shall be fully boarded; and shall have guard rails (at 1m height and a mid rail at half the height.). The scaffolds shall also be provided with toe boards (15cm).

(m) All platforms shall be provided with secure ladder access; and shall be kept free of unnecessary obstruction or rubbish;

(n) Maintain a safe distance between scaffold and overhead power line (as thumb Rule - 3m).

(o) As a rule no scaffold member shall be altered by welding, cutting, drilling or bending.

(p) Bricks, tiles, blocks etc. and similar materials shall not be stacked higher than 24" on the scaffold deck.

(q) Scaffold under which personnel are to pass shall be provided with screen or equivalent between the toe board and handrail.

(r) Do not use ladders or any make shift arrangement on the top of scaffold platform to increase height.

(s) Restrain free standing scaffolds towers from tipping by guying or other suitable means.

(t) Do not ride rolling scaffolds, Ensure castor brakes are applied all time while working on it.

(u) Do not let the working platform height exceed four times the smallest base dimension, unless guyed or otherwise stabilized.

(v) Men shall not be allowed to work from scaffolds during storm or high winds.

- **Ladders**

Safety Tips

(a) All ladders shall be of sound construction and free from patent defect.

(b) Each ladder should be visually checked by the user before every use and if found defective should be discarded and defect should be brought to the notice of Supervisor.

(c) Any ladder with defective, missing or un- equal paced rungs shall not be used.

(d) Do not use make shift ladder, such as cleats fastened across a single rail.

(e) Ladder should be thoroughly checked once a week by a designated person and defective ladders should be promptly replaced;

(f) As for as possible only metallic ladders should be used. In case wooden ladders are in use they shall never be painted. 'Painting' conceals the defects instead coat of clear varnish may be applied.

(g) Ladder shall not be used as working platform.

(h) Ladders shall be used for work of short duration (30 minutes max).

(i) Ladders shall be secured at top or footed at the bottom to prevent slippage.

(j) The ladder shall be placed, one- horizontal to four- vertical i.e. Ladders shall be set at an angle of 75^0, and the upper ends of the ladder shall extend at least 1m above the support platform.

(k) Ladder shall be equipped with a tie-off rope and non- skid safety feet.

(l) The ladder should be kept within the reach of the work. Do not reach out (stretch out) too far.

(m) Most of the ladders are designed for the use by one person therefore more than one person shall not be allowed on a ladder unless it is designed for it.

(n) If it is necessary to use a ladder on top of a scaffold or close to the edge of an elevated platform, roof or floor opening, tie off the ladder and use fall protection.

(o) Use of ladders for other than means of access should be eliminated as far as possible.

(p) The Ladders shall not be placed in front of doors or windows. Extension ladders shall be overlapped a minimum of three rungs.

(q) Do not climb higher than the third rung of any straight or extension ladder and second rung in step ladder.

(r) Always face ladder while ascending or descending using both hands.

(s) Ladders should not be used near or adjacent to overhead power lines.

- **Fitness of the person deployed to work at height**

Safety Tips

a) The person should be medically fit, over eighteen years of age and thoroughly trained and experienced for working at height.

b) He should also be physically fit and free from emotional disturbances that may impair judgment or prevent him from performing normal work.

c) He should not have height phobia.

The persons may be examined by medical practitioner and approve for the job before assigned the job to work at height.

11.5 Precautions for Working Inside Building Shaft

1) Inspect the shaft for the particular type of work to be done and ensure that it is safe to work.

2) Ensure that there is adequate cross ventilation. If required arrange air blower/ supplied air hose for air circulation.

3) Before starting any work inside the shaft make sure that atmosphere is safe to work. It is essential that the atmosphere inside a confined space be thoroughly tested.

4) Ensure adequate illumination in and around confined space. The light should be fixed such that there is no glitter.

5) Ensure that a permit to work is issued for working inside the shaft.

6) No portable electric light (hand lamp) of voltage exceeding 24 volts shall be used inside a confined space. Ensure that electrical hand tools are certified by the competent person and their power supply is through ELCB.

7) Ensure / provide proper means of access to the place of entry and place for working inside the shaft is secured.

8) Ensure persons going to work inside the shaft should wear required Personnel Protective Equipment's (PPE).

9) Ensure that proper arrangements are made to rescue the persons working inside the shaft.

10) A watch out person and properly equipped Rescuer to be stationed at outside the 'ENTRY' all along the job is carried out.

11) Only the Competent and Authorized persons should be allowed to go inside the shaft.

12) Ensure that signs "MAN ON WORK, DO NOT PUT ANY MATERIAL INTO THE SHAFT" are prominently displayed near all openings in the shaft at various floors.

13) Inform concerned Officers of other 'Agencies' working in the area and make sure their personnel working in the area/ floors have been properly intimated.
14) Secure/ remove all the material loose or otherwise, around/ inside the shaft which may incidentally fall below.

15) Ensure that equipment operating adjacent to the shaft (if any) does not emit any noxious or irritating substances which may find their way into the shaft.

16) Work inside the shaft should be done in Day time i.e. 08:30AM to 5:30PM.

11.6 Working around Certain Openings in Buildings

It is mandatory that ensure all type of horizontal & vertical openings, open edges inside the buildings and in non-tower area are protected by robust construction of temporary baricatios and railings to prevent fall of person/ material. It is advisable that identify all openings, staircases, voids; shafts etc based on building design and workout the schedule of fabrications of railings and Baricading well in advance and protection fixtures shall be ready before shuttering work of the floor initiated. The contractor shall get approved temporary Baricatios& railings programme from Company Project Manager. To ensure that railings &baricatios shall be of following specifications and in line with IS 4014:1967 reaffirmed in 2005:

Requirements at	Specifications of baricatios and railings and material of construction
✓ Open slab edges ✓ Working floor ✓ Staircases ✓ Voids/ OTS ✓ floor cut-out openings ✓ open/ extended balconies ✓ platform railings etc ✓ Scaffold railings ✓ Suspended platforms	✓ Made of 40NB MS pipe with top horizontal guardrail at 1150mm with intermediate guardrail at 550mm and intermittent vertical posts at a distance of not more than 3m. ✓ The vertical posts having MS base plate shall be rigidly fixed with floor by anchor fasters. ✓ Railing pipes shall be secured with vertical post pipe by scaffold clamps/ nut-bolt fixtures. ✓ Railings shall be provided with toe-board of 150mm. ✓ The railings construction should be strong enough to bear the lateral load of about 100kg. ✓ Neatly painted in red & white bands
✓ Lift shafts and other shafts/ cut-outs	✓ Vertical and or horizontal secured MS grill with following specifications: ✓ Height of MS grills 1.20 m - 1.50 m (Approx.).

	✓ Width of MS grill: Based on the shaft openings with 4”-6” more at either side for fastening/ securing with side walls/ floor. ✓ Material of MS grill frame: Outer frame made of 16mm steel rebar’s or 35mm MS angle and inside mesh of 12mm rebar with spacing not more than 4”-6", properly welded & capable to take minimum 100kgf lateral load. ✓ All shaft gates shall be in lock-key arrangement and removal shall be by permit. ✓ MS mesh shall not be made by tying binding wires, welded mesh is must. ✓ Contractor can use waste / scrap steel for fabrication of baricatios. ✓ Fixed by anchor fasteners (Tie rod holes if available use the same for fixing). ✓ Grills shall be fixed on the shafts/ cut-out openings positively covering entire opening and removal shall be by Permit. ✓ The shafts shall be horizontally covered by MS platform or safety nets (6mm strand pp rope) every after 2 floors to arrest free fall of person/ material through the shaft. ✓ As a rule all the shafts openings at working floor shall be positively fully decked by MS planks.
✓ Excavations (deep than 1.5m)	✓ Railings made of 40NB MS pipe with top horizontal guardrail at 1150 with intermediate guardrail at 550mm and intermittent vertical posts at a distance of not more than 3m. ✓ Railing pipes shall be secured by scaffold clamps/ nut-bolts with vertical posts. ✓ For open excavations railings shall be fixed at about 1000mm away from the edge of excavation. ✓ Other shallow excavations shall also be barricaded by similar railing protection to prevent fall of person or vehicle.
✓ Colour& sign	✓ For high visibility, the railings and baricatios shall be coated by paint in red & white or wrapped with danger barication

	tapes of same colour.

Lifelines & Fall-grab Arresters:
While working with suspended platforms, gondola, mast-climber working platforms, cantilever platforms or scaffolds, tower crane access ladder, work in lift-shafts & other shafts, the Contractor shall ensure that the independent lifeline of 12mm/ 14mm Polyamide rope of approved quality and fall-grab arrester is provided. Ensure that the lifelines are independently fixed to the building structure or any other rigid support and not tied with the equipment/ platform on which the person is working.

11.7 Safety Net Protection:

The AAR CEE should provide safety catch nets as per building height & structure but minimum two level of safety nets i.e.
(i) Peripheral horizontal safety net for overhead hazard protection shall be erected all along the periphery of every building extending 5m from face of building and erected at height not more than 5m above base of the building.

(ii) Another safety net just below working floor but not below more than 6m.

(iii) Nets shall be erected at an angle of not more than 200 to its horizontal sloping into the building and shall be secured with building structure or independent props but shall not be tied with any temporary structure like scaffolds, shuttering, temporary railings etc.

(iv) In addition to hard barication, where ever required or in case where hard protection is not practically possible, vertical safety nets should be effectively used to envelope the vulnerable work fronts to contain fall of material or person from the building such as externally facing open edges of rooms; open balconies, landings of under cast staircase, etc (Rule 41 & 179: Chapter XVI of BOCW Central Rules)

v) Vertical Netting: As a special case for all high-rise towers, towers close to neighboring structures, public roads etc the Contractor shall ensure that the vertical surface on external periphery all around the building shall be covered with metal scaffolding and standard safety net with debris nets till the completion of work. This arrangement shall be adequately anchored with and braced to ensure stability and structural approval by consultant is must. Rule 41(3) of BOCW Central Rules. No extra shall be paid for the vertical safety features.

(vi) Specification of safety nets shall be as per IS-11057:1980, as described below:
(vii) Specification for safety Net at peripheral level(permanent overhead protection) as follows,

- ✓ Made of PP ropes.
- ✓ Border rope: 12mm (breaking strength 2995 Kgf)
- ✓ Inside ropes: 8mm (breaking strength 1345 Kgf) (as height of structure will increase falling impact load on safety net will increase)

- ✓ Main net mesh size: 4"x4" or 3"x3"
- ✓ Overlay net / debris net (HDPE): 10mmx10mm
- ✓ Rope test certificate from supplier is must.

viii. Specification for climbing safety Net (always at one floor below working level not more than 6m),

- ✓ Made of PP ropes.
- ✓ Border rope: 12mm (breaking strength 2995 Kg)
- ✓ Inside ropes: 4mm
- ✓ Main net mesh size: 75mm*75mm with overlay net (mesh size of overlay net should not be more than 10mmx10mm).

ix. Vertical Safety Net for face of building:

- ✓ Made of PP ropes.
- ✓ Border rope: 12mm (breaking strength 2995 Kgf)
- ✓ Inside ropes: 2mm single cord knotted with debris net.

x. Rope test certificate as per IS 5175 & Safety Net test certificate as per IS 11057 from supplier is must

xi. Safety nets and safety net installations must be drop-tested at the jobsite,

- ✓ After initial installation and before being used.
- ✓ Whenever relocated.
- ✓ After major repair.
- ✓ At 6-month intervals if left in one place.

11.8 Overhead Protection (Protection from Falling Objects)

The supervisor shall ensure that no worker removes helmet inside the project area and also implement one of the following measures:

When a work such a work is planned where workers / persons are exposed to falling objects any of the following shall be ensured.

1) To ensure that no material or object is thrown or tipped from height such that it is liable to cause injury to any person.

2) To ensure that material or objects are stored in such a way as to prevent risk to any person due to collapse of pile, overturning or unintended movement of such material / object.

3) To erect toe boards, screens, or guardrail systems to prevent objects from falling from higher levels.

4) To erect a canopy structure and keep potential fall objects far enough from the edge of the higher level so that those objects would not go over the edge if they were accidentally moved.

5) To display prominent danger signs and barricade the area to which objects could fall, and prohibit workers and others from entering the barricaded area, and keep objects that may fall far enough away from the edge of a higher level so that those objects would not go over the edge if they were accidentally moved.

6) To cover or guard holes 6 feet or more above a lower level.

12.0 HOUSEKEEPING

Housekeeping is the act of keeping the working cleared of all unnecessary waste, thereby providing a first line of defense against accidents and injuries.

The housekeeping contributes to efficient operations, improved employee's morale, better productivity. It is an important element of accident prevention.

a) Good housekeeping is one of the foundation stone for safety. Many accidents can be avoided just by having proper and good housekeeping in the construction site.

b) The AAR CEE shall promote and upkeep the practice of good housekeeping throughout the contract period in order to create a safe and hygienic working at site.
c) Housekeeping management shall be integral part of the Site Safety Plan and Site Logistics Plan.
d) The contractor shall follow the recommendation of IS: 4082-1996 (Reaffirmed in 2003) for stacking and storage of construction materials and components at site.
e) The plan of temporary structures shall be such that they do not hamper easy movement of worker and vehicles. No materials on any of the sites of work shall be so stacked or placed as to cause inconvenience to any person or the public.
f) The Company PM has the right to stop work if the sub-contractor fails to improve upon the housekeeping after having been notified.
g) The Company PM may require the sub-contractor to remove any materials which are considered to be of danger or cause inconvenience to the public.
h) After the completion of the work, the contractor shall have removed from the work premises all scaffoldings, surplus materials, scrap, rubbish and all temporary structures, huts and sanitary arrangements used/installed for his workmen at site. The contractor shall stack all undesirable materials and debris to the designated area at his own cost, as directed by Engineer-in-charge.
i) The AAR CEE shall have dedicated & sufficient housekeeping team as per the size of the project but not less than 5% of total work-strength and should be specially identified by their reflecting jackets as "housekeeping" person (recommended "yellow" color jacket with reflective bands). The housekeeping team shall be controlled by Responsible Person of the Contractor who should schedule of housekeeping at site, perimeter, internal access roads and all associated places such as offices, stores, workshops, stock yards and maintain a register.
j) The Site shall have perimeter site fencing of minimum standard around the site in order to prevent inconvenience & endanger to the public and stop unauthorized entry. The fencing should be of sound construction and aesthetically good with minimum 5m height; 2" to 3" spacing in between the sheets and neatly painted. Site fencing & frontage should be maintained presentable with display of visitors' instructions, safety guidelines & signage etc and should be cleaned & repair as required.

k) There shall be separate gates & access roads for labour entry and material vehicles to prevent workers directly coming in contact with vehicle traffic & happening of incident.

l) The walkways, gangways with minimum width of 1.2m shall be clear of debris, protruding dowels, timber with nails, oil spillages & other obstructions all the time to prevent tripping and slipping danger. Similarly all emergency exit , fire doors, firefighting equipment, access to electrical panels & DB's, first aid stations, ambulance station, stairways, ladders, scaffolds etc should be unobstructed, dry and in good working order.

m) Contractor shall provide and maintain hard barriers with top rail at 1150mm, mid rail at 550mm, vertical posts at 3m with toe board of 150mm at all floor edges, cut-outs, voids, shafts, staircases, excavation, trenches etc to prevent fall of person & material.

n) Contractor shall provide adequate illumination in the work place, staircases, landings, passages, lift shafts and maintain general uniform illumination of 50 Lux across length & breadth of the site and access roads.

o) The Contractor shall ensure that parking of trucks, transit mixers& other construction vehicles not stranded on public roads, which may impair aesthetics & obstruct traffic. The tires of the trucks leaving the site shall be cleaned with water, wherever the possibility of spillage on public roads, particularly during excavation, piling, rainy season etc.

p) Dewatering of stagnant water from site shall be regular activity equipped with adequate capacity of pumps.

q) It shall be daily routine that sufficient time is devoted on housekeeping of the work place after completion of work & just before leaving the work place.

r) Similarly on weekly basis or as required remove all the scraps, debris, waste oils and other disposables, to the designated yard. And same shall be disposed of from the site on monthly basis or depending upon the quantum of scrap.

s) AAR CEE shall arrange to clean safety nets, catch platforms & deposits on chajjas weekly. The saleable/ salvage items like wooden scrap, empty cement bags, empty containers and steels scraps etc shall be removed from the site on quarterly basis or as required.

t) Similarly all surplus earth and debris shall be removed/ disposed of from the work place to officially designated dump yard as per logistics plan fortnightly or as required.

u) Debris chute or other appropriate means shall be installed in the buildings with five floors or above compulsorily for safe removal of debris. Dropping of debris from height is prohibited.

v) Over and above as a good practice the Contractors must plan at least a day in a week as a "housekeeping day" to keep the site orderly.

w) Electrical cables, welding leads routing shall be overhead to prevent trailing cables, tripping & electric shock. Overhead cable routing height should be minimum 2.5m inside the buildings and minimum 6.1m in open area supported by stable & insulated stands/MS-poles or otherwise ensure that DB's and welding machines are placed near work location.

x) Materials shall be stacked at least 2m away from openings, roof edges, excavations or trenches.

y) The storage area shall be well laid out with easy access and material stored / stacked in an orderly and safe manner and must be segregated and stored depending upon the cost, type, shape, and size as per logistics plan.

z) Steel, shuttering & other materials etc shall not be stacked more than 1.5m height and also concrete block and brick should be stored to a heights not exceeding 1.8m at ground level; however while stacking material at floor level or slab consider the capacity of structures.

aa) Piles stack of cement bag shall not be more than 10 bags in height unless such stack piles is stacked in suitable enclosure or otherwise adequately supported.

bb) Sites having space constraints shall limit the material inventory or staggered inventory, disposed of scrap/ debris & other excess or waste material more frequently and plan rack stack methods.

cc) Ensure that the work vicinity of hot work is cleared of all combustibles and rubbish and work permit procedure is strictly adhered.

dd) Display required nomenclatures and mandatory, cautionary & informative signage such as speed limit, no smoking, electricity danger sign, flammability diamond sign, no spitting, drinking water, urinal/ toilet with gender pictorial sign, empty & full gas cylinders storage, emergency exit, assembly point, numbering of floors/ levels etc as well as display caution signs for height work, falling objects, deep excavation, fire, electrocution, unauthorized entry or as per site requirement etc prominently.

ee) The contractor shall provide proper PPE's (e.g. helmet, safety shoes, dust mask, hand gloves, goggles, safety belt, yellow-color reflective jackets with "Housekeeping" sign etc) needed for housekeeping and debris collecting workmen.

13.0 BARRICADES & GUARDS, CAUTION BOARDS & SIGNS AND TAGS

13.1 Barricades & Guards

1) Barriers such as guardrails, hole-covers etc must be provided with sign to protect workers and public from injury.

2) Excavation area and road blockage must be barricaded.

3) All work area, walkways, platform etc. elevated 1 meter or more must be encompassed by an approved guard rail or rope.

4) When work is carried out at elevated levels, the area below must be free of workers. Warning signs and barricades in area below should be done.

5) All floor opening must be protected by one of the following,

6) Rigid guard-rail or mid-rail

7) Rope guard-rail or mid-rail.

8) The hole-cover must be of minimum 2cm plywood if one dimension is 35cm or less, it should be of 5cm if both dimensions exceed 35cm.

9) The hole-covers should be secured to prevent displacement and clearly marked with 'hole cover' sign.

10) Roof or elevated floor must be protected by one of the followings:

- Perimeter guard-rail
- Temporary non-right barricade set back from edge at least 2meters.

11) If the edge protection or barricade is removed to gain access to the prohibited locations to carry out any specific work there, it will be carried out with permission only. The removed protection shall be replaced after the work is over.

13.2 Cautions Boards & Signs

1) Whenever any work is taken up in the live electrical distribution network, caution boards such as "Do not operate-Men at work" will be put up in the main boards and it will be locked for further protection.

2) Information posters will be put up in appropriate locations indicating the emergency telephone numbers and fire points.

3) No smoking signs and hot work prohibition signs will be installed wherever required.

4) Suitable safety posters and stickers will be arranged from time to time.

5) Emergency procedure will be displayed at appropriate places.

13.3 Safety Colors& Safety Signs

The purpose of marking / displaying safety colors and safety signs is to draw attention rapidly to objects and situation affecting safety and health. Under various legislations it is mandatory to display safety signs.

13.3.1 Safety Colors

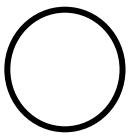
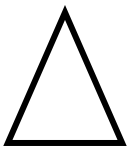
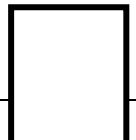
There are four safety colors of specified shade to which safety sign is attributed as follows:

Safety Colour	Meaning OR Objective	Example of Use	Corresponding Contrast Color
Red (Shade No.537 – Signal Red)	Stop & Prohibition	- Stop Signs - Emergency Stop on machines - Prohibition Signs - Fire Prevention and Fire - Fighting Equipment & indicate its location	White
Blue (Shade No.166 – French Blue)	Mandatory action & Information	- Obligation to wear personal protective equipment - Location of Telephones	White
Yellow (Shade No.309 – Canary Yellow)	Caution, Risk or Danger	- Indication of hazards / dangers (fires, explosion, radiation, chemical, etc.) - Warning for steps, Low passage and Obstacle	Black

Green (Shade No.221 – Brilliant green)	Safe Condition		White

13.3.2 Safety Signs

A sign which gives a particular safety message obtained from the combination of a geometric form, a color and a symbol. The sign may also incorporate a text & numbers. Geometric form and meaning of safety signs are given below

Geometric Form	Layout	Meaning	Examples
	• Background – White • Circular band & cross bars: • Running from top to bottom right at 45^0 • Red must cover 35% of the area of the sign	**Prohibition Sign** • Indicates certain behavior is not allowed.	• No Smoking • No Admittance • No Naked Flame
	• Background – Blue • Symbol or text – white and placed • centrally • Blue must cover at least 50% of the area of sign	**Mandatory Sign** • Indicates that a specific course of action is to be taken.	• Eye Protection, Hearing Protection must be worn etc.
	• Background – Yellow • Triangular band – Black • Symbol or text – Black and placed centrally • on the background • Yellow shall cover at least 50% of the area of • the sign	**Warning Sign** • Gives warning of a specified hazard	• Caution, • Risk of radiation
	• Background – Green • Symbol of text – white and placed centrally on the background • Shape – Rectangular or Square • Green shall cover at least 50% of	**Information Sign** • Provide information about safe conditions.	• First Aid, • Emergency Shower, • Eye wash, • Wear head • Protection,

	the area of the sign		Direction arrows

- The outer band for each sign is optional.
- The preferred sizes for overall height of safety sign shall be 100mm, 300mm, 600mm, and 1200mm.

13.4 Tags

1) **"Not Safe for Use"** and **"Safe for Use"** tags should be provided on scaffold/ elevated platform, ladder or an equipment/ tool; if found defective/ damaged during inspection
2) "**Isolation Tags**" shall be provided on Electrical Isolators while the connected equipment will be given for repair/ maintenance job.

"DANGER" TAG
NOT SAFE FOR USE
Company:
Checked By: (Name & Sign)
Date of Inspection

"SAFE FOR USE" TAG
Company:
Checked By: (Name & Sign)
Date of Inspection

"ELECTRICAL ISOLATION" TAG	
Name of Equipment	
Serial No. of Equipment	Date & Time
Method of Isolation:	
Name & Signature of Isolator	

14.0 EMERGENCY ACTION PLANNING

An emergency may occur due to many reasons. It may occur due to natural causes – earthquake, cyclone, flood etc. and due to terrorist activity, due to mal function of standard working system or practice.

Major hazards at a project site are

1. Fire & Explosion
2. Serious accidents – road accident, falling from height, electric shock
3. Collapse of lifting appliances and transport equipment
4. Collapse of building, Sheds, or structure etc.
5. Gas leakage (LPG, DA etc.) or spillage of dangerous goods or chemicals

A major emergency has potential to cause serious injury or loss of life and / or property and may require use of outside recourses.

14.1 Mock drills

AAR CEE Mock drill should be planned in every six Month. Plan as per below table.

FEB '20	AUG 20	Feb 21	Aug'20
Fire	HEAT STROKE	Fall from height	Electrocution
1st	2nd	3rd	4th

Quarterly to be arranged. Planned as per site requirements after consultation with client/PMC

Emergency flow chart and action plan submitted separately

15.0 HAZARD IDENTIFICATION & RISK ANALYSIS

15.1 Hazard Identification & Communication

In the process of planning work, including that of subcontractors, the persons responsible for planning must identify hazards and associated risks to health & safety of the persons associated with the work and other working around including public and the .

The hazard identification must include any part of the process / activities including on-site fabrication, delivery, erection, testing & use and dismantling where applicable.

A risk control method, appropriate to the degree of risk, must be communicated to the persons who will be involved.

This would normally occur through a Construction Method Statement for major work and may be in the

form of verbal instruction for minor work.

1. Prepare a list of work activities, covering geographical areas within/ outside the organization premises, planned and reactive work, defined tasks, materials handled, premises, people and procedure, and gather information.

2. To identifying hazards following hazard categories may be used:
   a) Civil
   b) Mechanical
   c) Electrical
   d) Radiation
   e) Substances
   f) Fire & Explosion
   g) Toxic Release
   h) Natural Calamities
   i) Structural Collapse

   But not limited to. All the works allowed at site to be identified for any hazards and to be communicated and to be recorded along with remedial measures.

3. Following techniques for identification of hazards shall be deployed:
   a) Hazards knowledge based on professional experience
   b) By using past accidents and incidents which show presence of hazards.
   c) By using experience of other similar units in the business
   d) By using check lists and by carrying out inspections.
   e) By health records of employees and contractors men
   f) By carrying out work place monitoring
   g) By gathering information from Material Safety Data Sheet
   h) By process study of operational activities
   i) By job safety analysis & task observation.
   j) By checking legal requirements.

4. The identified hazards at the work sites shall be classified in three categories

   Class A: Major Hazard (Immediate Action)
   Class B: Serious Hazards (Action on same day)
   Class C: Minor Hazards (Action within a week)

5. Attempt would be to involve all supervisory & managerial persons in hazards identification and risk assessment. They would be explained about this exercise before start. Working in group would be more useful for achieving the complete results.

15.2 Procedure: Risk Assessment of Hazards

1. Objective:

To carryout risk assessment of hazards activities and to determine the significant risks.

2. Definition:

A severe hazard is defined as a hazard having the potential for causing a fatality or / permanent/ partial disability and property or al damage.

3. The Activities:

The following activities shall be considered for identification of hazards.

i) Fire on site
ii) Manual Handling
iii) Manual spray-painting work
iv) Setting up site offices
v) Site Access
vi) Storage and use of highly flammable materials
vii) Storage of materials on site
viii) Temporary electric connections
ix) Use of disc cutters and abrasive wheels
x) Use of hand tools
xi) Work on scaffolds
xii) Working with hand held portable machines
xiii) Working alone
xiv) Work in hot climate and high humidity
xv) Work on ladders

4. Responsibility:

The Project In-charge would be responsible for ensuring that hazard identification and risk assessment is carried out by risk assessment committee for all activities at project site.

5. Scope:

Covering all jobs within the scope of AAR CEE Work at project site and associated areas controlled directly & indirectly taking into account any change in activities.

6. Method:

Identify hazards under various categories.

To determine the risk, make a subjective estimate of risk associated with each hazard assuming that planned or existing controls are in place considering the effectiveness of the control and consequences of their failure.

The consequence rating from the hazard should be determined by estimating the potential severity to harm and probability (likelihood) that harms will occur.

While establishing potential severity of harm, consider effect on person (ranging from first aid to fatality).

All hazards would be checked for consequences on the basis of parameters as given below,

Severity		Injury
S4	Extreme	Single/Multiple
S3	Sever	Multiple injuries: single / several disabilities
S2	Minor	First-aid case and no further loss time
S1	Negligible	No first-aid required and no material damage

(i) On the basis of above consideration highest rating would be taken coming from either - effect on persons, chronic health effect or cost to business.

(ii) While establishing likelihood of harm, consider adequacy of existing control measures. Also consider,

a) Number of personnel exposed;
b) Frequency and duration of exposure to the hazard;
c) Failure of services for example electricity and water;
d) Failure of plant/machinery components and safety devices;
e) Exposure to the elements;
f) Protection afforded by PPE and their usage rate;
g) Unsafe acts by persons

Probability (P)		Control Majors
P4	Probable	Control measures unlikely to break down or be easily removed
P3	Possible	Multiple control measures in place and failure of one does not result in accident
P2	Remote	Control measures to be in place as well as PPE
P1	Improbable	Constant exposure to the hazard

(iii) Following criteria would be used for risk assessment:

Hazard	Probability (P)	Severity (S)	Risk = PX S
F			

7. Records

The AAR CEE shall document this information and keep it up to date.

Based on the Hazard Identification & Risk Assessment, The 'safe operational control procedures' have been developed for the various above activities. The control measures apply to general circumstances.

Site Engineers and supervisors have to incorporate specific requirements to these procedures before carrying out any activities.

Hazard Identification & Risk Assessment of format has been attached as **Annexure-**

15.3 Method Statement

A method statement is closely related to a risk assessment and provides the means of transmitting information to those who will be doing the work.

When starting a method statement record the task activity and how you are going to do it. With your knowledge and experience you will know the hazards, risks and the job itself and you will know how to avoid problems, injuries, damage and illnesses.

While preparing a method statement thinks about:-

- A safe system of work;
- Information;
- Instruction;
- Training;
- Supervision;
- Providing suitable and adequate plant / equipment and personal protective equipment.

A method statement should contain sufficient information should contain as a minimum the following information to enable the task to be undertaken safely,

(a) Introduction

(b) Detail of the risk involved

(c) A step by step description of how the task is to be undertaken detailing

- What needs to be done;
- The order in which the task will be carried out;
- What plant or equipment is required?
- Who the task will be done by;
- Who will supervise the task;
- Where will the task take place;

- When will the task take place;
- The precautions which must be taken before the task is under taken;
- What to do if the things go wrong.

Once notes have been made then you are in a position to format your method statement. The first heading may be “Preparation” and this could include identifying the numbers and type of people, equipment and materials required. The next heading should be the first task in the work operation.

15.4 Typical Method Statement Format

Project……
Contractor……..

Method……

Description of work	:	Describe what is to be done
Sequence of tasks	:	Write down
Supervisors	:	Define who they are and their duties
Controls and Monitoring	:	For what and by whom.
Plant and Materials	:	By whom, what and what intervals
Plant inspection & operator training	:	By whom, what and what intervals
Disconnection of services	:	Who is responsible?
Safety of the public & occupier	:	How, with what and by whom
al Controls	:	For what, when and by whom
First aid & PPE	:	When, how and why
Emergency procedures	:	How and by whom
Notifications: Authorities	:	How and who

Once the method statement has been written, it will be necessary to prepare a risk assessment to make employees aware of the hazards, risks, procedures and precautions required to protect employees, occupiers and the public.

15.5 Excavation Safety

- Excavation work shall not be carried out without PTW.
- Before taking excavation conduct underground utility survey to find out any underground services (if any).
- If any underground services is located then consult concerned department and take required precautions.

- Excavate as per the angle of repose of the particular soil.
- Provide shoring wherever required.
- The excavated soil shall be kept at the distance of more than 5 feet or half of the depth of the trench whichever is more from edge. Proper slope must be given.
- Vehicle movement shall not be allowed near by the edge of the trench or excavated pit (minimum 5feet away from the edge).
- Cutting should be done from top to bottom. Under cutting shall not be allowed.
- While providing steps for access/egress, slippery must be avoided. Proper ramp must be given.
- Dewatering to be done before allowing workmen in or around the pit.
- Provide proper sign / warning board (Deep Excavation).
- Use proper means of access. Ladders to be provided which should be extended more than 3 feet from the ground level& secure at both the ends (top & bottom).
- Minimum two access & egress must ensure.
- Barricade (hard barricading) the excavated area. Barricading must be in two rungs top rail at 1.2 mtr & mid rail at 0.5mtr.
- Provide proper illumination for night work.
- 12Vbulb with red color to be provided at the excavation area for easy identification.
- In deep excavation (more than 4 feet), persons working at slope or bench of the pit should wear safety belt / one ladder should be place at all the times.
- Store the material away from the edge of the excavation (minimum 5feet away).
- Nose / dust musk shall be provided.
- Safety shoes with ankle must be provided.
- Eye protection shall be adhered (Safety goggle).
- All electrical or mechanical equipment must be inspected before starting excavation activity.
- No excavation allowed if any vibrating equipment employed within 5m radius.
    - Sites of excavation shall be thoroughly inspected:
        - Daily, prior to each shift and after interruption in work of more than one day
        - After every blasting operation
        - After an unexpected fall of ground
        - After heavy rains
- Adequate posters & signage board to be provided at appropriate location.
- Entry & exit of the staff & workers to be monitored & registered of the same to be provided at the entry of the excavated area.

15. 6 Concreting Safety

- Before starting the concrete works the formwork engineer or foreman shall check the reliability of the

formwork done and give approval for concreting.

- Only authorized operator shall work on mixer machine. Nobody shall be allowed to work near mixer machine with loose clothing. Moving parts of the machine shall be guarded.
- The access from the point where concrete is supplied to the area to be concreted shall be properly made and free from obstructions.
- Barricade the concreting area while pouring at height and near to the public occupancy.
- Keep vibrator hoses, pumping concrete accessories in healthy conditions and mechanically locked.
- Pipelines in concrete pumping system shall not be attached to temporary structures such as scaffolds and support as the forces and movements may affect their integrity.
- Ensure and check safety cages in concreting mixers. Guards around moving parts etc. are provided.
- Use Personal Protective Equipment like gloves, safety shoes etc. while dealing with concrete and wear respirators/nose mask.
- Earthing of electrical mixers, vibrators, etc. should be done and verified.
- Cleaning of rotating drums of concrete mixers shall be done from outside. Lockout devices shall be provided where workers need to enter.
- Where concrete mixers are driven by internal combustion engine, exhaust points shall be located away from the worker's workstation so as to eliminate their exposure to obnoxious fumes.
- Ensure adequate lighting with 50 LUX illumination along the length and breadth of area for carrying out concrete work during night.
- Don't allow the same workers to pour concrete round the clock. Insist to follow rotation pattern.
- During pouring, shuttering and its supports should be continuously monitored for any defects or deformation.
- Eating or drinking or keeping foodstuff near the machine shall not be allowed.
- Where possible, ready mixed concrete shall be used instead of mixing on the site.
- Jewelry such as rings and watches shall be removed because wet cement can collect under them.
- While carrying out floor / slab-concreting, planks shall be placed on the re-bars and secured for safe movement of the employees.
- Movement of the employees and concreting process shall be predetermined and informed to the concreting gang.
- Compressed air shall not be used, under any circumstances, to clean dirt and dust from clothing or off a person’s skin.
- Ensure driver or operator involved in concreting (Batching plant, TM, Tower Crane, Concrete Pump, Concrete mixture etc.…) must be competent, trained & experienced.
- Avoid concreting in night & if then concreting work must be done only after issue of night work permit.
- Supervisor, Safety supervision, trained first aider & emergency vehicle must be available during concreting.
- Fall protection measures to be at place while doing form works and to be ensured by concerned persons.

15.07 Material Handling Safety

1. Mechanical Material Handling

Testing & Examination

Certificates of test and examinations must be obtained for the lifting appliances & gears such as

All the lifting tools and tackles must be inspected prior taking inside the site and to TPI certificate to be obtained other than manufactures test certificate.

All the lifting tools and tackles must be inspected prior taking inside the site and to TPI certificate to be obtained other than manufactures test certificate.

No old generation crane (A type) are allowed at site. Only new generation cranes to be allowed.

Also

The OEM to conduct through inspection of Tower cranes, Hoists etc. before and after the installation and certification to be obtained.

After installation as per the manufactures requirements service certificate to be obtained.

No old generation crane (A type) are allowed at site. Only new generation cranes to be allowed.

Also The OEM to conduct through inspection of Tower cranes, Hoists etc. before and after the installation and certification to be obtained.

After installation as per the manufactures requirements service certificate to be obtained.

- Winches, Derricks and accessory gear
- Cranes / Hoists and their accessory gear
- Loose gear
- Wire Rope

Periodicity

- All lifting appliances shall be test, examine & certified by a competent person before being used for the first time and subsequently examined by him once in every 6 (six) months.
- All lifting gears shall be tested initially (before being used) and also after undergoing any major alterations – tested on behalf of the manufacturer.
- Chain is to be examined at least once in every month by a responsible person.
- Ropes shall be tested & examined by a competent person. A responsible person inspects every wire rope once in every month

Controlling Hazards

- Make sure (before use) that all the lifting appliances & gear are tested, examined & certified by a competent person and they are in sound condition.
- Every lifting appliances and loose gear shall be marked (in plain figures or letters) with its Safe Working Load and identified clearly by means of stamping or other suitable means.
- Lifting appliances & gears shall not be loaded beyond it's Safe Working Load while in use.
- Care should be taken not to dragging or pulling under the load.
- Deployment of trained operator & signaler and their safe method of work.
- All the operators, riggers, signalers of lifting appliances shall be above 21 years of age, sufficiently competent & reliable, possess the knowledge of the inherent risks involved in the operation of lifting appliances also competency test to be taken & certified by P&M in-charge.
- Ensure precaution to prevent persons passing under suspended load. Preferably barricade the working place and also instruct the gang to move to a safe away from the place where operations are carried out before the loading sling is hoisted.
- All slings should have a thimble for increasing their life.
- Use guide rope or tag line for handling long objects.
- Specify area of providing safe means of access to every part of lifting appliances.
- Lift the load when in plumb and bring it to the plumb of the hook. Make sure that the horizontal movement does not take place simultaneously with the vertical movement.
- Sling the load properly and signal only when loading of the sling is completed.

Colour Coding for Slings

Colour Coding of Slings shall be done periodically to ensure that only safe slings are being used at site. (Where applicable as per contract requirements)

- All slings in use will be checked by the mechanical Engineer & Safety Officer.
- All damaged slings (10% wires broken in one lay, 4 wires broken in one strand) shall be segregated and removed from site. Visually damaged slings having thinned diameter, bird caging, flattening will be rejected.
- Serviceable slings will be marked with different color coding for every quarter as follows.

Sr. No.	Duration	Colour
1	Jan-Mar	Green
2	Apr-Jun	Orange
3	Jul- Sept	Brown
4	Oct-Dec	Yellow

- During the subsequent month slings marked with Green colour will be used till they are once again checked on the fixed day of the month.

Safety Precaution for Electrical & Mechanical lifting Appliances

Tower Crane

- No person other than the operator trained and capable to works at heights is employed to operate tower cranes & competency record of tower crane operator must be available at site for verification.
- The ground on which a tower crane stands should have adequate bearing capacity.
- Bases for tower cranes and trucks for rail-mounted tower cranes should be firm and leveled and such cranes are erected at a reasonably safe distance from excavations and are operated within gradient limits as specified by the manufacturer of such cranes.
- Tower cranes to be installed where there is a clear space available for erection, operation and dismantling of such cranes.
- Tower cranes are sited in such a way that the loads on such cranes are not handled over any occupied premises, public thoroughfares, railways or near power cables, other than construction works for which such cranes are used.
- Where two or more tower cranes are sited and operated, every care is taken to ensure positive and proper communication between operators of such cranes to avoid any danger or dangerous occurrences. Anti-collision device must be installed.
- Manufacturer's instruction for erection and extension of cranes should be followed.
- Wedges for fixed tower cranes should be properly secured.
- The working load of the jibe should be marked and painted on it to avoid overloading.
- Electric control should be fitted on crane for safe lifting, swinging and turning of the load.
- Operator should be familiar with the signal system.
- Third party inspection to be done before the tower crane is installed at site.
- The tower crane should be periodically maintained for efficient functioning & records maintained.
- Provision of limit switch& indicator (over hoist, over turn, over load etc..) to be made.
- Provision of emergency brakes should be made.
- Trained signalman to give signals to operator.
- Separate and alternate DG line should be catered.
- Weekly checking of nuts and bolts tightening should be carried out.
- Any overhead wire shall be considered to be an energized line unless and until person owning such line or the electrical utility authorities indicate that this is not an energized line and it has been visibly grounded.
- Railing to be provided for upper level.

- Landing point given in every 10 steps to climb upstairs.
- Lightning arrestor must be provided & also aviation lights must be installed on tower crane.
    - Manufacture certification to be obtained after installation and then TPI certification to be done.
    - If the TC is used before then prior inspection to be done by OEM and certificate to be obtained.
    - Communication method via Willkie talkie to be ensured.
    - Daily inspection to be done by operator and checklist to be maintained.
    - Proper means of access to be made available from the buildings when height exceeds and to be maintained.

Crane Operators &approved riggers

Crane signaling procedures should be well laid down and need to be meticulously followed by both the crane operator and banks men. Regular training to crane operators and their banks men is therefore of immense importance to avoid any accidents that might take place due to the wrong methodology being followed.

- One person is nominated by name to function as banks men with each crane. This person as far as possible should not be changed and should work with the particular crane operator so as to develop an understanding between them.
- Crane Operator will only look at his nominated banks-men and act on his given signals.
- Site supervisor to ensure himself that any instructions to be passed on to the crane operator only through the nominated banks men for a specific crane operation.
- All other persons working in the area are firmly told not to signal to the crane operator. In fact personnel other than the nominated banks men should move out of the radius of operation of crane.

Hoist/Lift

- The operator should be trained and competent.
- There should be substantial enclosure to prevent someone from being struck by any moving part of the hoist or falling down the hoist way.
- Hoist should be inspected weekly and thoroughly examined once in 6 months and its record maintained.
- Gates to be provided at all landing including ground level with lock & key arrangement.
- Controls to be arranged in such a way that hoist can be operated from one position only.
- Safe working load should be clearly marked and excess weight should not be loaded.
- A warning notice to be placed at the platform to stop people to ride it if it is exclusively for materials only.

- A cage is fitted on each of its opening should be only on one wide towards landing place with a gate. Such cage should not be moved up or down as the case may be from the landing place until such gate is closed. This must have efficient interlocking or other devices to secure so that gate cannot be opened when such cage is not at a landing place.

Passenger Hoist

- Manufacturer's recommendations shall be followed.
- Hoist shall be erected by competent persons under the supervision of P & M Engineer.
- Hoist shall be anchored to the building.
- Hoist shall be protected by a substantial enclosure to prevent someone from being struck by moving part of the hoist or falling down the hoist way.
- The cage shall reach the nearest landing place so that the persons can get out of the cage in the event of power failure.
- The controls shall be arranged so that the hoist can be operated from on position only.
- Hoist operator shall be trained and competent.
- Safe working load of the hoist shall be clearly marked in the cage.
- Hoist shall be inspected weekly by P & M and thoroughly examined every six months by a competent person.
- Upper and Lower Limit Switches shall always be kept operation.
- Emergency Switch, Emergency Alarm and Emergency Lamp shall be provided on the platform.
- Illumination shall be provided on the platform.
- Communication system, like telephone shall be provided which can be used in case of emergency.
- Emergency brake system, like centrifugal force brake, shall be incorporated in the hoist.
- Gates to be provided at all landing including ground level with lock & key arrangement.
- Controls to be at place to avoid unauthorized operations such as biometric or face recognition control of the operator.
- Material movement not to be allowed at passenger hoists.

Builder Hoist

Every builder's hoist and its tower are well constructed of sound material, are strong enough and free from patent defects and in general are constructed in accordance with generally accepted technical standards.

- To be secured to the structure or to be braced by steel wire guy ropes and to extend to such a distance above the highest landing as to allow a clear and unobstructed space of at least 900mm for over-travel.

- To be enclosed on all side at the bottom, and at all floors where persons are liable to be struck by moving part of the hoist except on the side or side giving access to the bucket / conveyances, with walls or other effective means to a height of least 2100mm from the ground or floor level.
- To be provided with a door or gate at least 1800mm high at each landing, and such door or gate shall be kept closed except when the conveyance is at rest at such a landing.
- The Bucket of a builder's hoist to be carried by a steel-wire rope of which the breaking strength shall be at least six times the maximum mass load it is required to carry.
- Material shall not be allowed to ride on a builder's hoist.
- Persons shall not be carried in such a way that they slip or spill from the bucket.
- Limit switches and Load Limiters shall be maintained operational.
- The person who picks up the load shall use safety belt.
- One builder hoist shall not be used for transferring materials at two different elevations simultaneously.
- Wire rope shall be lubricated at least once week.
- Effective arrangements to be made for clear signals for the operation of the hoist to be given from each landing from which the builder's hoist is being used.
- Hoist mast must be envelop with safety net from all three side(except building phase).

Gates to be provided at all landing including ground level with lock & key arrangement
Daily checklist to be maintained.

Labour Camp

15.7 Health, Hygiene &Welfare

Hygiene & Welfare:
Sanitation and hygiene at work place as well as at the Labour Camp for all his workers and staff. Shall submit the plan of labour colony and labour toilet in advance for approval of the Project Manager of PMC/Client.

Labour Toilet and Urinals: Latrines and urinals, as the case may be required to be provided, shall be as specified below:

- Every latrine shall be under cover partitioned off to secure privacy with proper door and fastenings, adequately lighted, and maintained in a clean and sanitation condition at all times.
- Where both male and female building workers are employed, there shall be displayed outside each block of latrines or urinals a notice containing therein "For Men Only" or "For Women Only" with

pictorial sign, as the case may be written in the language understood by the majority of such workers. Such notice also bear the figure of a man or of a woman, as the case may be.

- The number of urinals and latrines at site and at labour camp shall be as per following ratio.

URINALS	**For Male Workers**	**For Female Workers**
1-50 workers	1 Urinal	1 Urinal per 50 female workers with separate entry & pictorial sing
50-500 Workers	1 Urinal per 50 workers	
500 & above	Addition to above 1 additional urinal per 100 workers	
LATRINS		
1-25 Workers	1 latrine	1 latrine per 25 female worker with separate entry and pictorial sign & notice
25-100 workers	Additional to above 1 latrine per 25 workers	
100 & above	Additional to above 1 latrine per 50 worker	

- Full time sweepers shall be deployed to maintain latrine's and urinal blocks in clean and hygiene condition. It shall be cleaned at least every day and maintained properly throughout the project duration. The privacy of the all workers shall be ensured by providing partitions of suitable heights. Cleaning log book is maintained/ available with camp boss all the time for checking.
- Proper disposal of excreta by septic tank and soak pit. In no case, the excreta shall be disposed off in any open drain, nallah, etc. which may cause outbreak of disease or reduce the overall hygiene of the workplace.
- The floor area in & around the labour camp shall be of impervious material easy for cleaning & sweeping and water stagnancy is prevented.

- Daily cleaning and disinfectant treatment of toilets, bathrooms, water tank area, utensil washing area, drainage etc of labour camp will be ensured.
- Spraying of larva treatment & mosquito fogging shall be weekly or as required by topographical conditions.
- White-wash of every latrines/urinals once in every period of four months.
- Canteen shall be situated at the distance not less than 15.2 meter away from any latrine/urinal or any source of dust, smoke or fumes and should be equipped with fly catcher. Also waste water from canteen shall be carried away in covered drain.
- Arrangements shall be made for the collection & disposal of canteen & labour camp food waste daily.
- Medical examination of canteen food handlers shall be done twice in a year (if applicable).
- At site provide & identify lunch shed with drinking water facility& dust bin to prevent eating food in open area & all over the site by workers and unhygienic condition.

Drinking water: Adequate number of water taps, for the potable water supply for the staff and workers.

- Drinking water tanks should be cleaned fortnightly or as required and portability test should be done at every six month (as per IS:10500) and equipped with appropriate filtration media.
- Also ensure that water tank lids are covered or follow directives of local Municipal Corporation, to prevent the larva growth and mosquito breeding etc.

Crèche: Crèche shall be provided at site if more than 50 female building workers are employed at site. Necessary arrangement shall be made of crèche for their children under the charge of women trained in the care of children & infants and maintain in sanitary condition and adhere with Section 35 of BOCW Act. The crèche shall ensure safe & adequate accommodation, adequately lighted & ventilated, maintained in clean and sanitary condition etc.

15.8 SAFETY PROMOTIONAL ACTIVITIES SAFETY AWARDS AND SAFETY COMPETITIONS

Aar Cee conducts safety promotional activities among the work force as following.

1. Safety Poster Campaign: Display safety posters throughout the workplace.
2. Safety Slogan Contest: Encourage employees to submit safety slogans.
3. Safety Quiz: Conduct a monthly safety quiz with prizes.
4. Safety Training Sessions: Organize training sessions on specific safety topics.

Annual Safety Promotional Activities:

1. Safety Week: Celebrate Safety Week with various activities.
2. Safety Conference: Organize a safety conference with industry experts.
3. Safety Competition: Conduct a safety competition among departments.
4. Safety Audit: Conduct an annual safety audit.
5. Safety Manual Review: Review and update the safety manual.

Incentives:

1. Safety bonuses
2. Safety recognition awards
3. Extra leave
4. Gift vouchers
5. Lunch with management
5. Emergency preparedness drills

Competitions and Games

1. Safety quizzes
2. Safety slogan and poster contests
3. Safety-themed puzzles and games

4. Safety manuals and guides Goals and Objectives

1. Increase safety awareness
2. Reduce accidents and injuries
3. Promote safe behaviors
4. Encourage employee participation
5. Improve safety culture

15.9 Proactive Safety Monitoring:

1. Regular site inspections
2. Hazard identification and reporting
3. Safety audits
4. Employee feedback and suggestions
5. Continuous monitoring of safety performance metrics
6. Incident investigation and root cause analysis
7. Implementation of corrective actions

15.10 Pre-Task Planning (PTP):

1. Task-specific hazard assessment
2. Risk evaluation and mitigation
3. Development of safe work procedures
4. Assignment of responsibilities and accountabilities
5. Identification of required safety equipment and PPE
6. Communication of safety plan to involved personnel
7. Review and revision of safety plan as necessary

15.11 Waste Management Procedures

Submitted separately

MAX ESTATES	**HSE PLAN**	rcc

ANNEXURE –I

SAFETY INDUCTION

Site Name:
Your Employer's Name:

Site Safety Management Matters - Identify points covered by induction by ✓ in box

1. SUPERVISION site management structure.		**11. CLIENTS RULES** *detail any client specific rules*	
2. EMERGENCY alarm procedure/muster point.		**12. ACCIDENT and INCIDENT** *reporting procedures Including near miss incidents*	
3. SMOKING identify any smoking restrictions.		**13. DISCIPLINARY ACTION** *for safety related failings*	
4. FIRST AID arrangements on site.		**14. PPE** *requirements for boots, eye & hearing protection, respirators & overalls etc.*	
5. ENTRY ROUTES TO SITE give details for both Pedestrian & Vehicle routes		**15. SAFETY HELMET** *as directed by site management in accordance with site rules*	
6. ACCESS RESTRICTIONS detail any areas which are out of bounds		**16. NOISE** *nuisance noise & restrictions on working hours (Section 60 notices) & noise assessment procedure*	
7. ALCOHOL consumption of alcohol, taking of non prescribed drugs is not permitted**.**		**17. NO RADIOS** *operating from leads.* ***NO WALKMANS*** or other in ear audio device	
8. HAZARD REPORTING detail procedures.		**18. SECURITY** *arrangements & right of search etc.*	
9. WELFARE no eating on site. Site canteen/ toilet Arrangements. Identify smoking restrictions Arrangements		**19. STATUTORY CERTIFICATES** *required for , lifting appliances, electrical power tools etc.*	
10. SITE RULES give details			

WORKING ARRANGEMENTS - Identify points covered by induction by ✓ in box

20. SAFE WORKING *risk assessments &method statement explained*		**28. COSHH** *before using chemicals, cutting, grinding, or mixing materials obtain assessment. If in doubt ASK!*	
21. SITE VEHICLES,PLANT & MACHINES *only to be operated by authorised person, with proof of training & competence* certificate *(CITB etc*		***29.*** **SCAFFOLD** *not to be erected, dismantled or altered except by authorised persons. Proof of training &competency is required. (Includes towers.)*	
22. TRAFFIC MANANGEMENT *Vehicle/pedestrian routes. Speed limits*		**30. MATERIAL STORAGE & WASTE DISPOSAL** *arrangements & procedures*	
23. FIRE PREVENTION *location and type of fire fighting equipment.*		***31.*** **MANUAL HANDLING** *maximum weights &assessments.*	
24. PERMIT TO WORK *describe procedure.*		**32. MATERIAL HANDLING** *to be lowered not thrown*	
25. TOOLS. *Personal hand tools should be inspected regularly and any defects corrected.*		***33.*** **SAFETY MONITORING ARRANGEMENTS** *safety inspections & site instructions etc.*	

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26. *conditions and special arrangements relating to this site.*		**34. CONSULTATION ARRANGEMENTS.** *You are encouraged to discuss any constructive aspects of safety.*	

To be completed by the person receiving induction training ✓

✓ **Appropriate box**	**YES**	**No**	
35. Has your employer explained the safe system of work contained within your method statement and risk assessment?		⇒	**STOP**
36. Do you understand the Risk Assessment and Method Statement & agree to comply with its content?		⇒	**STOP**
37. Do you suffer from epilepsy, asthma, hearing or visual disability, (colour blindness etc.)? Do you have any disability or condition, which requires special medical attention or treatment?Are you taking any medication? (Give details overleaf in order to assist any first aid treatment)			
38. Have you read and understood the site rules? and agree to comply with them?		⇒	**STOP**
39. I am 18 years of age or older		⇒	**STOP**

40. Which training certificate* do you Hold?		None	

I have been instructed on the above items

Operatives Name:	Signature:	Date:	Trade:
Emergency contact details.	Name:	Contact No:	

ANNEXURE –II

TOOLBOX TALK ATTENDANCE RECORD

PROJECT/ SITE:…… **DATE**……..……..

The Toolbox Talk conducted at……**Hrs,** **at**……**Site**.

Talk Subject: ……**Given By**……..

Sl. No.	**Name of Workers**	**Designation**	**Signature**
1.			
2.			
3.			

4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			

Name & Signature of:

Trainer		**Date**	

ANNEXURE – III

SAFETY TRAINING ATTENDANCE RECORD

PROJECT / SITE… **DATE**……..……

SHE Training was attended by workers/ staff of M/s…… (Time Period……..hrs)

TRAINING TOPIC……,

Sl. No.	Name of workers	Designation	Signature
1.			

2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			

Name & Signature of:

Trainer		**Date**	

ANNEXURE – IV

DAILY SITE MONITORING REPORT

Site / Station: …… **Date** ……

SL. No	Observations	Risk Category (A, B, or C)	Corrective Action&Corrective Action by	Status by Towerin charge Closed / Open

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A–Stop work immediately		**B–Rectify within 1 day**		**C–Rectify within 2/3/4 days**

Name & signature of Inspector ……Date…….

- **The above observations shall be addressed and rectified**,

Name & Signature of Site Engineer / In charge……Date……

- **Actions Complied and Report Closed**

Name & Signature of Site Safety Steward/ In charge……Date……

ANNEXURE – V

WALK THROUGH SITE INSPECTION CHECKLIST

Station/ Site …… **Date**……..

Sl. No	**Requirement**	**Compliance Status**		**Remark**
1.	Safety Indicator	Displayed	Not Displayed	
2.	Vehicle Movement	Controlled	Erratic	
3.	Personal Protective equipment's	Issued	Not issued	
4.	Housekeeping	Good	Bad	

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5.	Excavation (if any)	Safe/barricaded	Unsafe	
6.	Safety Posters and Signage's	Displayed	Not Displayed	
7.	Scaffolding Towers	Mounted orderly	Mounted Disorderly	
8.	Gas and Arc welding /	Safe	Not in order	
9.	Fire Extinguisher	In order	Not in order	
10.	Material Storage	In order	Not In order	
11.	Waste	In proper bins	Haphazardly kept	
12.	DG power mgmt.	In order	Not in order	
13.	Gas cylinders	Stored upright	Not in order	
14.	PPE	Issued to workers	Not provided/ Not wearing	
15.	Full Body Harness	Issued for height work	Not issued / Not wearing	
16.	Hoists properly anchored	Yes	No	
17.	First aid box /record book	Available /Maintain	Not available	
18.	Crane operations	In order /barricaded	Not in order	
19.	Cut outs/ opening etc. in vicinity	Protected	Not Protected	
20.	Ladders	Secured	Not secured	
21.	Scaffolds	Proper & Secured	Not safe	
22.	Clean drinking water provided	Yes	No	
23.	Emergency Evacuation procedure	In place	Not in place	
24.	Child labour	Noticed	No	
25.	Toilets	Provided/ Cleaned	Not Provided	
26.	Rest Location	Provided	Not Provided	
27.	Assembly point	Notice Displayed	Not Displayed	

Site Safety Incharge	**Sign.**	**Name:**	**Date**

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ANNEXURE –VI

HOUSEKEEPINGINSPECTIONCHECKLIST

Name of Project-

Inspected By-

Date-

Sl. No.	Points	Observation	Measures
	STRUCTURAL FABRICATION/ERECTION & ELECTRICAL INSTALLATIONS & BOTHS		
1	Approach, to DB, panels, switches kept clear?		
2	Fire extinguishers installed at locations where they are easily accessible?		
3	Scrap cut pieces, welding electrodes tubs, hand tools kept tidy in work Place and disposed suitably?		
4	Scrap bin available in adequate number?		
5	Rubber mats are in place at electrical panels?		
6	Compressed gas hoses routed properly?		
7	At least 1 meter on both sides of gantry rails is kept clear of material?		
8	Floor kept clear of water, oil spillage / Accumulation?		
	CIVIL WORKAREA		
1	All approach, aisle, ingress/ egress to and from work area, excavated pits, ramps, walk ways kept clear of debris, tools etc.?		
2	Scaffolding materials (beam, ITD tower frames, bracing, clamps) shuttering boards etc. are stacked properly at site?		
3	Stacking of bricks, hollow blocks are done in safe manner?		
4	Nails removed from wooden planks/timber and not protruding out?		
5	Sawdust, wood chips &scrap wood cleared from carpentry shop and disposed suitably?		
6	Debris from demolition and excavated earth cleared from work place and access?		
	STORES		
1	Walkways, entry and exits kept clear?		
2	Materals placed on racks safely accessible?		
3	Accumulation?		
4	Vertically stored cylinders are secured/ chained to avoid toppling and horizontal ones guarded against rolling down?		
5	Flammables to rage are as are isolated from store, office and work areas?		
6	Cement bag safe stacked in proper stacking order?		
7	Corrosive material (e.g. acids,alkalis) stored away from other material &kept on collection trays to safe guard against accidental leakage?		
8	Storing area for lifting tools &tackles, ropes, wire ropes &PPE is dry,clean &free of corrosive material?		
9	Easy accessibility to installed fire extinguishers ensured in store?		

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	GENERAL		
1	Separate scrap yard allocated for the project?		
2	Approach to work stations,offices,time offices, stores, P&M are well aid and demarcated?		
3	Roads are kept clear of stacked material forfree& safe vehicular movement?		
4	Heavy materials stacking are taken care of to prevent slips,collapse and rolling?		

Signature

ANNEXURE –VII (A)

PRELIMINARY INCIDENT REPORT

Name of the Project/ Job No.:

Name, Age, Sex &Designation of the injured (or) :

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Name/identity of the P&M/Equipment:

Name of the contractor/ Dept. :

Name of the immediate Supervisor:

Date &Time of the incident:

Location of the incident:

Brief Description of the Incident(Add: sketches and additional sheet if necessary):

Nature of injury (fractures, superficial: injuries, burns, effect of electric current, multiple injuries, other spl. specify)–If applicable:

Unsafe Acts /Conditions which caused the accident:

Safety Appliances used: (If applicable) :

Remedial measures taken to prevent recurrence :

Any other relevant information:

Witness:

(_____)

Site Supervisor /in charge Name:

ANNEXURE –VII (B)

INCIDENT INVESTIGATIONREPORT

1.Details of the Project	
Name of the Project	

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Site Engineer	
Site In charge	
P&M In charge (if P&M related incident)	
Name of the Safety Officer	
Name of the Project In charge	
Name of Contractor	

2.CategoryofIncident(Tick as applicable)

Reportable Loss Time Injury	Dangerous Occurrence	Fatality

3.Details of the Incident(Write N.A if not applicable) :-(NA)

Name of the Injured	Age	Sex	Designation	Working Since

3.1)Date &Time of	

3.2) Exact Location where the Incident occurred:

3.3) Nature of Injury:

3.4) Describe briefly how the incident occurred (Add sketches and additional sheets to support the description):

4.CausesoftheIncident

4.1) Direct Causes:

4.2) Root Causes:
5.PrecautionaryMeasures
5.1) What are the precautions taken / being taken to prevent similar occurrence?
6.Anyotherinformation

Names& Designation of the Investigation Team:

_____

Project in charge

ANNEXURE –VIII

OPERATIONAL CHECKLIST FOR FIRST AID KIT

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Site/ Station…… **Date**……..

Sl. No.	Description of Check Points	Status		Remarks/ Usages
		Desired	Available	
1.	Is box painted in red Colour	**YES/ NO**		
2.	Is box marked distinctly with “FIRST AID”?	**YES / NO**		
3.	Is there anything except first aid contents in the box (detailed below)	**YES/ NO**		
4.	First aider available	**YES / NO**		
5.	Eye wash cup plastic			
6.	Medical glass plastic			
7.	Medicinal Dropper Plastic			
8.	Packet of sterilized cotton wool			Wound cleaning
9.	Dettol /Sevlon 50ml antiseptic solution			Antiseptic to clean / wash wound
10.	Antiseptic Cream & Burnol (burn ointment) Cream			Antiseptic cream to cover wound &Cream to cover burn area
11.	A pair of stainless steel scissors with plastic handle			Cut dressing, bandages or clothing
12.	Roll of adhesive plaster (6cm x 1m) & (2cm x 1m)			Secure dressing
13.	Pieces of sterilized eye pads in separate sealed packets.			Cover eye wounds
14.	Aspirin or any other analgesic and Paracetamol Tablets			Headaches / pain killer + Anti Inflammatory
15.	Digene Tablets			Antacid
16.	Roller bandages 10cm & 5cm wide			For dressing of wound
17.	Forceps			
18.	Tourniquet Velcro			Removal of splinters
19.	A supply of suitable splint Set			To support broken bones
20.	Packets of safety pins			Secure dressing and slings
21.	Triangular bandages			Secure sling or bandages
22.	Pair of Disposable Gloves			Prevention of cross infection
23.	Kidney tray			For cleaning
24.	Copy of first aid leaflet issued by the Director General.			First Aid reference

Name &Signature of Site Safety In charge: ……

ANNEXURE – IX

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SITE STORE PPE INVENTORY CHECKSHEET

Site/ Station…….. **Date**……

Sl. No.	Items	Min. Stock	Stock in Store	Remarks
1.	Helmet (White)			
2.	Gloves(Cotton)			
3.	Gloves (Leather & Cotton)			
4.	Gloves(Welding)			
5.	Goggles(Plain)			
6.	Goggle (Glider)			
7.	Goggles(Welding)			
8.	Safety Shoes			
9.	Face Mask			
10.	Nose mask (General Purpose)			
11.	Ear plug			
12.	Safety Belts			
13.	Fire Buckets			
14.	Fire Extinguishers			
15.	Shock Treatment Chart			
16.	Gum Boot			
17.	Reflector Jacket			
18.	Stretcher			
19.	Caution Tape			

Site Safety In charge	**Sign.**	**Name:**	**Date**
Site Manager	**Sign.**	**Name:**	**Date**

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ANNEXURE – X

SCAFFOLDING CHECKLIST

Sr. No	Scope	YES	NO	N/A	Comments
A. General Requirement					
1.0	Are all scaffold components inspected for dents, rusting, fatigue, wear/ damage and any abnormal observation before use?				
2.0	Are scaffold erected by experienced scaffolder and under supervision of qualified scaffold supervisor?				
3.0	Does erected scaffold inspected and approved by qualified scaffold supervisor before use?				
4.0	Are all scaffolds tagged either with Green tag or Red Tag?				
5.0	Has scaffold inspected at least once in a week by qualified scaffold supervisor?				
6.0	Is scaffold inspected by execution supervisor before use every day?				
7.0	Has scaffold erected minimum 4m away from high voltage line?				
8.0	Are all damage scaffold material marked with colour and stored separately?				
9.0	Is scaffold capable of loading/ supporting four times the maximum intended load ?				
10.0	Has ground condition and strength of supporting structure inspected ?				
11.0	Is surface leveled and base compacted before erecting the scaffold?				
12.0	Is base plate and sole plate provided with size of(150X150X6mm) & (225mm wide X 38mm thick) respectively?				
13.0	Is base plate with adjustable screw jack adjustment (locking) ok?				
14.0	Is height of the base lift not more than 300mm?				
15.0	Is proper bracing and clamping provided and not more than 300mm from post connecting point?				
16.0	Is angle of transverse bracing in between 35° to 55°?				

17.0	Is first inter connecting of scaffold not more than 4 times of base width?				
18.0	Is the plumb (verticality) of the scaffold maintained and checked while erection and at frequent intervals?				
19.0	Is erected scaffold inspected by qualified scaffold supervisor when exposed to weather condition like heavy rain, high wind etc...?				
20.0	Are all electrical fitting / lines protected/ insulated against direct contact with scaffold?				
21.0	Has scaffold assembly designed and approved by structural consultant when it is to be used for a hoisting?				
22.0	Is safe working load marked on the scaffold ?				
B. Working Platform					
23.0	Is scaffold erected in accordance with the design and drawing of structural consultant?				
24.0	Are all alteration in working platform done as per design?				
25.0	Are working platform closely boarded, planked/ plated, or guarded well?				
26.0	Is width of the platform 600mm used for work without material?				
27.0	Is width of the platform at least 900mm used for work with material?				
28.0	Are MS planks / boards rest securely and evenly on its supports?				
29.0	Is planks/ boards of a working platform rest on at least three supports in case of wooden planks/ boards, to prevent undue sagging?				
30.0	Is platform provided with suitable top rail and mid rail in between (950mm to 1150mm) & (450mm to 600) respectively, and toe board of (100mm to 150mm) with adequate strength?				
31.0	Is the spacing between face of the building and edge of the platform not				

	exceed 300mm?				
32.0	Is platform free from any obstruction, material, protruding nails and rubbish etc…?				
C. Access & Egress					
33.0	Is safe access provided to all scaffold platform?				
34.0	Is the ladder secured properly with scaffold platform at top and base?				
35.0	Is ladder placed at an angle of 65° to 75° or in ratio of 4:1?				
36.0	Is scaffold ladder extend minimum 1 m above the platform deck?				
37.0	Are ladders inspected before use and in good and workable condition? (Specially rungs, arms and foot rest etc...)				
38.0	Is three point contacts maintained while using the ladder?				
39.0	Is access opening in the landing not less than 900mm?				
40.0	Is access opening in the landing platform protected with a self-closing drop bar?				
D. Fall Protection					
41.0	Are guardrails and mid-rails installed on all open sides and open ends of the platform?				
42.0	Where required, have screens / safety net been installed to protect employees from falling objects?				
43.0	Is double lanyard full body harness with scaffold hook used on the scaffold?				
44.0	Has life line used on the scaffold is certified and of adequate strength/capacity?				
45.0	Is vertical life line secured / anchorage with the independent fixed or rigid structure?				
46.0	Is horizontal life line secured / anchorage to two or more structural members of scaffold?				

Inspection Team:-
Scaffold Inspector Safety Officer
Name & Sign:-_____**Name & Sign:-**_____

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ANNEXURE –XIII

EHS COMMITTEE MEETING ATTENDANCE RECORD

Contract No:…….. **Date:…….**

The following SHE Committee Members and Representatives of Contractors, CLIENT Representative and Special Invitees whose name and signatures are appended below participated in the Number # _____

Sl.No	Name of Member / Invitee	Company & Designation	Work Site/ Location	Mail Address/ Telephone No.	Signature
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					

Secretary of Committee	**Name**	**Sign.**	**Date**
Chairman of Committee	**Name**	**Sign.**	**Date**

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ANNEXURE –XIV

EMERGENCY (MOCK) DRILL ASSESSMENT REPORT

1. Location :------- Place : _____

2. Mock Drill conducted on : (Date) _____ Time : _____

3. Agencies present : _____

4. Emergency Situation : *Fire *Explosion *Release of Gas *Evacuation
   *Occupational Emergency *Any other

5. Name of the Observer
   a. Internal : _____
   b. External : _____

6. Time of Declaration of Emergency : ……. Hrs ……. Minutes
7. Whether cordoning of the area done ? *Yes *No
8. Whether emergency alarm sounded : *Yes *No
9. First Responders Response Time :
10. Whether workmen assembled at assembly point : *Yes *No
11. Whether Ambulance / Medical Staff was called and time taken accordingly ……
12. Time of All Clear : ……. Hrs ……. Minutes
13. Total Time Elapsed : ……. Hrs ……. Minutes
14. Previous Total Time : ……. Hrs ……. Minutes
15. Deficiencies observed during the exercise : _____
    _____

16. Action recommended for improvement :

S. No.	Recommendations	Action by	Expected Completion Date
1	_____	_____	_____
2	_____	_____	_____
3	_____	_____	_____
4	_____	_____	_____
5	_____	_____	_____

17. Name of the person responsible to follow up the above : _____

18. Other remarks if any : _____
    _____
    _____
    _____

Name &Signature of Emergency Co-coordinator of AAR CEE

Note:

a) Observer would observe the entire Mock drill proceeding and make the noting of short comings and finally prepare the Mock Drill report. External observer may be the concerned Safety Officer & Team of the department or a person decided by the Project Manager

b) Response time would be noted by the observer using Stop Watch or any suitable device.

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ANNEXURE –XV

RECORD OF WASTE GENERATION & MANAGEMENT

SITE/ STATION …… **MONTH** ……..

Sl. No.	Description of Waste	Quantity Generated / Obtained	Type of Waste	Disposal Method	Quantity Disposed	Remark
1.	Excavated Soil					
2.	Civil Debris					
3.	Petroleum Waste					
4.	Medical Waste					
5.	Used Batteries					
6.	Metal Scrap (Ferrous)					
7.	Other Metal Scrap					
8.	General Solid Waste					
9.	Empty Container					
10.	PPEs					
11.	Other					
12.						

Comments:

Site Store In charge	Sign.	Name:	Date

HSE PLAN

Site In charge	Sign.	Name:	Date

PERMIT TO WORK FORMAT **ANNEXURE –XVI**

COLD WORK ☐ **HOT WORK** ☐ **EIGHT WORK** ☐ **ECTRICAL WORK** **C**☐**OUT OPENING** ☐

PERMIT NO-

Station/ Site:

Detail of work to be done:

Location of the work:

From :

To :

Precautions to be taken:

1) Ensure workers supplied and using Suitable PPE as

Safety Helmet	Safety Shoes	Hi Vi Jacket	Boiler Suit/Apron
FB Harness & lifeline	Welding goggle/ Hood		Safety / Cutting Goggle
Safety / Welding Gloves		Dust Mask	Ear Plug

ELECT. ISOLATION -Done / Not Done / Not Required

Method ----------

Date----------Time----------

By: ----------

(Name & Sign of person doing Elect. Isolation)

Cut Out/ Lift pit Opening.

Name & Sign ----------
of Authority
Date----------Time ----------

EXCAVATION CLEARANCE: Granted Yes/ No/ NA

Electrical Engineer: ……

Civil Engineer: ……

Date / Time

AUTHORIZATION: By PMC/ CLIENT REPERSENTATIVE
Certify that location specified above has been inspected and subject to the said precaution being taken the work can proceed.

Name & Sign ----------
of Authority

Date----------Time ----------

Certified that required Safety Measures are in place

Date----------Time ---------- ---------- Name & Sign of Safety In charge----------

Names of Workers to be deployed on job		Are workers briefed of Job to be done, Hazards and precautions to be taken
1.	4.	
2.	5.	
3.	6.	YES / NO

NOTE: The issue of Safety Work Permit does not make working condition safe but inform permitted of exact state in which he receives the plant equipment or place, specified precautions which shall be taken & special precaution be enforced by permitted.

Permit Applicant: Site Supervisor/foreman

Date:…….. Time: ……

Name & sign of Sup:……

Authorized person : By ABPL Site Engineer

Date----------Time ---------- ----------

Name & Sign of Engineer----------

The work detailed above has been Completed / Not completed and the Work Permit is surrendered after cleaning the work place on,

Date ----------Time----------Name & Sign of Supervisor surrendering PW----------

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The Work Permit is hereby Cancelled & Closed on, **Date----------Time----------** **Name & Sign of Authority ----------**	**Electrical Re-connection done on,** **Date----------Time----------** **By: ----------** **(Name & Sign of person doing re-connection)**

SAFETY PERMIT TO WORK - RISK CONTROL MEASURES

Risk Control to be applied - Tick (✔) Box as appropriate and ensure compliance

GENERAL WORK (COLD WORK)		HOT WORK	
Ensures that all working conditions are planned and prepared prior to, and maintained during the entire job.		Instruction to Personnel regarding hazards and working procedure	
Ensure that all potentially hazardous work is controlled and property authorized.		Notification To Other Contractors	
Ensure that all hazards associated with the work have been identified.		Escape routes to be provided and kept clear	
Ensure that all necessary safety procedures for controlling the risk and property implemented while the work is being completed.		Combustible material to be removed / covered	
Ensure that the work site is left in the safe condition when the work is completed or suspended.		Has the area immediately below the work spot been cleared / removed of oil, grease & waste cotton etc…	
Ensure that work being controlled by a permit to work, is regularly monitored for permit to work requirement compliance.		Has gas connection been tested in case there is gas valve / gas line nearby.	
Ensure that, where necessary, a hazards identification and risk assessment process has been completed to identify high risk hazards and appropriate risk control measures which will be implemented to reduce those risks to an acceptable level.		Have fire extinguisher been kept handy at site.	
Ensure that using tools in good condition & inspected.		Has tin sheet / wet gunny bags/ fire retardant cloth/ sheet been placed to contain hot spatters of welding / gas cutting.	
Ensure that all edges are barricade.		Has water hose connection been made for continuous water spray, if required	
Have workers been trained in the proper use of safety equipment?		Have all drain inlets been closed.	
Others (Specify)		Whether welding machine checked for fitness and gas cutting set for flash back arrestor and NRV.	
WORK AT HEIGHT		**ELECTRICAL WORK**	
Instruction to Personnel regarding hazards and working procedure		Instruction to Personnel regarding hazards and working procedure (Attached Attendance)	
Notification To Other Contractors		Notification To Other Contractors	
Whether height pass issued to all the workers working at height.		Has permission for the intended work been confirmed.	
Whether persons are provided with full body harness & life line.		Is the equipment isolated from all source of supply.	
Is ladder and scaffold secured and supported properly.		Are lockout device fixed at all point of isolation.	
Is weather condition normal and weather toxic or flammable fumes are observed during the height work		Are caution Sign fixed at all points of isolation.	
Is working area bellow safely barricaded?		Has the equipment been proved dead by competentelectrician.	
Whether all scraps are removed and area cleared for smooth operation after completion of work.		Are safety lock fixed to secure temporary earth.	
Whether all tools are properly anchored and carried in bags / tool kit.		Where the work involves a cable has it been identified with certainty.	
Whether vertical and catch net provided below progress floor.		Has lockout key handed over to the responsible person?	
Whether supervisor available at the place at all time.		Whether working area has been barricaded/ isolated.	
Whether illumination of mim 50LUX maintained at the work location.		Whether tag out or warning tag is secured onto the energy isolating point	
NIGHT WORK		**CUT OUT/ LIFT SHAFT OPENING**	
Instruction to Personnel regarding hazards and working procedure (Attached Attendance)		Instruction to Personnel regarding hazards and working procedure (Attached Attendance)	
Notification To Other Contractors		Notification To Other Contractors	
Whether all activities shall be carried out under proper supervision		Separate routes for man and material entry to be provided and kept clear bellow Grill/ Guardrail	
Whether workers are tired and unfit for work		Has the area been fenced/ barricaded	
Is illumination of min 50LUX maintained at the work place.		Have the caution signage's, red light / reflectors/ red flags been displayed (Specially at night)	
Are all safety norms strictly followed, strict action will be taken for any violation.		Has in existing structures/buildings installations like gas, electrical supply, water line, chemical line etc.. disconnected	
Is there any unfavorable weather condition like heavy rain, wind / thunder.			

Are all electrically operated tools used with due care only by skilled workers.			
Whether separate work permit obtained for Hot work, Height Work, Excavation, and confined space etc..			
Whether high visibility cloth used by workers during night work			
Is there any system in place to inform emergency situation to project manager / safety engineer.			

Distribution: To be filled in duplicate: First Copy to be taken by the **Working Agency and** Second Copy to be retained by the **Issuing Authority**

ANNEXURE –XVII

DIESEL GENERATOR (DG)INSPECTION CHECKLIST

Name of Project :

Inspected By: Date :

Sl. No.	Points	Observations	Measures
1	Whether the continuity and tightness of earth conductor are checked?		
2	Mention the SWG of the earth conductor used		
3	Whether earth resistance is measured?		
4	Mention the value of Earth Resistance		
5	Is DG provided under shed/ cover?		
6	Whether entry is restricted into the DG room?		
7	Are cable trenches are covered?		
8	Is insulation provided on the battery terminals?		
9	Is thermal insulation done for the DG exhaust?		
10	Whether stack height is maintained as per PCB regulations?		
11	Whether DG exhaust is diverted outside the shed?		
12	Are all the rotating parts (coupling, radiator fan) of DG guarded?		
13	Whether any leakage of fuel/oil in the DG room?		
14	Whether DG surrounding is free from flammable material?		
15	Whether fire extinguisher /fire buckets with standard provided?		
16	Whether DG is fitted with Acoustics &Silencer insulations?		
17	Is there any heating of conductor on joint points (physical observation)		
18	Validity of PUC certificate		

19	Barrication to DG Area?		
20	Shock treatment chart in front of DG?		

Signature----------

PRE—EMPLOYMENT MEDICAL EXAMINATION RECORD **ANNEXURE –XVIII**

Name of the Project: _____

Name of the Worker: _____ **Sub-contractor:**_____

Date of Birth:_____ **Weight:** _____**Kg. Height:** _____ **cm Sex:** _____ **Blood Group:** _____

Identification mark:_____

COMMON TO ALL WORKERS:

		Deficiency observed	Satisfactory	Remarks
1	Vision			
2	Visual deformity or physical			
3	Blood Pressure			
4	Hearing			
5	Undergone any surgery in the past			
6	Currently suffering from any illness			
7	Had any serious illness in previous 6 months			
	MEDICALLY FIT ☐	UNFIT ☐		Medical Officer

ADDITIONAL CHEACKS FOR HEIGHT WORK

	Before	After
Blood Pressure		
Pulse rate		
Vomiting Tendency		
Any Other		

FOR DRIVERS & OPERATORS (in addition to the common points)

		Deficiency observed	Satisfactory	Remarks
1	Total Visual performance			
2	Colour Vision			
	MEDICALLY FIT ☐	UNFIT ☐		Medical officer

FOR COOKS & FOOD HANDLERS (in addition to the common points)

		Deficiency observed	Satisfactory	Remarks
1	Skin disorders			

2	Blood Test			
3	Chest X Ray (To check Respiratory			
	MEDICALLY FIT ☐	UNFIT ☐		Medical Officer

ANNEXURE –XXIII

FIRST AID LOG BOOK

FIRST AID LOG BOOK (SHALL BE AVAILABLE IN FIRST AID CENTRE)

Information to be completed by First Aider / Male Nurse									*Information to be completed by Site Safety In charge*							
Sr. No.	Date	Time	Age	Sex	Name of Injured Person	Nature of Injury (Burn, abrasion, cut etc)	Part of body injured	Trade of Person (Eg - Helper/Carpenter/Fitter/ Messon/ welder etc)	Name of Contractor / Sub-Contractor / Agency	Work Location	Type of Activity / Machine / Tool / Material etc.	Scope of work allotted to Contractor / Sub-Contractor / Agency	Cause of Injury	Corrective action & Preventive action taken	What could have prevented the injury	Signature / Thumb Impression of Injured Person or Supervisor after action on CAPA	Remarks

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ANNEXURE –XXIV

CHECK LIST - PORTABLE LADDERS

Site / Station ……	**Report No. #**.....	**Date** ……

Sl. No.	ID No.	Type of Ladder	Location	Condition / Status of								Remarks
				Length	Placement	Vertical Members	Shoes	Rungs	Locking Devices	Top Platform	Lashing / Hooks	
1.												
2.												
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												

(Only the aluminum ladders shall be used. Every ladder should be of good construction, made of sound material and of adequate strength)

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Site EHS In charge	**Sign.**	**Name:**	**Date**

ANNEXURE –XXV

FIRE EXTINGUISHERS INSPECTION /CHECK LIST

Site / Station ……. **Date**……

Sl. No.	Type	Cylinder No.	Location	Hydraulic Test Done On	Charged/ Refilled On	Status / Condition of									
						Body & Paint	Sticker	Lifting Handle	Valve / Gauge	Locking Pin / Clip	Hose / Nozzle	Cartridge / Porthole	Gas Pressure	Content Weight (kg)	Remarks
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															

Access to the fire extinguishers/ fire buckets should not be blocked. Any equipment found defective / empty, should be replaced immediately.

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Site SHE Incharge	**Sign.**	**Name:**	**Date**

ANNEXURE –XXVI

ELECTRICAL PANEL & OTHER SAFETY DEVICES CHECKLIST

SITE / STATION…….. **Date**:……

SL. NO.	PANEL / DISTRIBUTION BOARD / EQUIPMENT	LOCATION	PROTECTIVE EQUIPMENT				TYPE OF TEST PERFORMED	INTEGRITY STATUS	REMARKS	
			ELCB	MCB	MCCB	ANY OTHER				
1.										
2.										
3.										

Site Electrical In charge	**Sign.**	**Name:**	**Date**	

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Site In charge	**Sign.**	**Name:**	**Date**	

ANNEXURE –XXVII

ELECTRICAL EQUIPMENT & TOOLS CHECKLIST

SITE / STATION…….. **DATE……**

Sl. No.	Equipment Name / Make / ID No.	Condition / Status of									
		Type of Equipment	Operating Voltage	Wheel, Drill Bit / Locking Device Etc	Rating / Cable Insulation / Connections	Start / Stop Switch / Button	Type &Colour Coding of Socket & Plug	Earthling Connection	Body Frame/ Body Screws / Guards	Noise Level	Work
1.											
2.											
3.											

4.											

1) Plugs, sockets outlets and couplers shall be “splashed proof” type and in compliance with IP55 (minimum degree of Ingress Protection).
2) The plugs and fitting used at site shall be of weatherproof type and colour coded in accordance with IEC i.e.110V – Yellow, 240V - Blue and 415V – Red

Site Electrical In charge	**Sign.**	**Name:**	**Date**
Site EHS Engineer	**Sign.**	**Name:**	**Date**

ANNEXURE –XXVIII

SITE NOISE MONITORING REPORT

Site/ Station …….. **Date**……

Sl. No.	Location	Activity	Noise Level dB(A) 1m away from Source					Remark
			1	2	3	4	Range	
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
9.								
10.								

The permitted time (in hours) of exposure to continuous or short-term noise level [DB(A)] is given in the table below.

Permitted Hours	Level of	Permitted Hours	Level of sound	Note

of Work (hrs)	sound DB(A)	of Work	dB(A)	• No exposure in excess of 115 dB (A) is to be permitted. • For any period of exposure falling in between any figure and the next higher figure of lower figure as indicated in column (1), the permissible sound pressure level is to be determined by extrapolation on a proportionate basis.
8	90	1 ½	102	
6	92	1	105	
4	95	¾	107	
3	97	½	110	
2	100	¼	115	

Site SHE In charge	**Sign.**	**Name:**	**Date**
Site In charge	**Sign.**	**Name:**	**Date**

ANNEXURE –XXIX

SITE ILLUMINATION LEVEL CHECKLIST

SITE/ STATION…… **DATE**……

Sl. No.	Work Location	Activity / Work	Distance (m) of Light Source	Type of Light Fitting Fixed / Temp	Illumination Level (Lux)				Remarks
					Recommended	Inst. Reading	CF	Corrected Reading	
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									

9.									
10.									

Correction Factor (CF): Mercury Lamp : x 1.1 Fluorescent Lamp : x 1.0 Incandescent Light : x 1.0 Day Light : x 1.0	**Recommended Illumination (lux)**: Office: Offices, drafting, meeting room etc - 540 Site: **Access** - Exit ways, Walkways , ladders & Stairs - 150 ~ 300 Work Areas(general) - 325 Mechanical Electrical Equipment Room – 110 Welding Shop – 325	Store : Indoor stockroom, active / bulk Store 110 Indoor rack store – 270 Outdoor storage – 33 Facilities: Toilet, wash rooms – 110

Site SHE In charge	**Sign.**	**Name:**	**Date**
Site In charge	**Sign.**	**Name:**	**Date**

ANNEXUR XXX

INSTRUCTION FOR SAFETY VIOLATION

SITE: ……..

To:		Date**:**
From		
Location		
Purpose		
Instruction for Work / Special Safety Measure/Description of the Safety Violation		
Corrective Action/ Recommendation		
Any Fine / Warning / Disciplinary Action		

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Remarks	-
Name & Signature of Instructor:	
Due to violation of safety norms & non-compliance of safety instructions a fine of **Rs.---------- (Rs. --------- ----------Only) is imposed on M/s …….** **Project Manager**	

ANNRXURE - XXXI

DO'S AND DON'TS

Your safety and health is in your hands. Any unsafe act or behaviors by you may endanger not only your own life but some times the life of others too. Your first responsibility on job is to avoid unsafe act and to report any unsafe condition noticed to your supervisor promptly. Here are some tips in the form of Do's & Don'ts which will help you in preventing unsafe acts.

DO'S	**DON'TS**
GENERAL SAFETY	
Know safety procedures and general Safety Rules of your company	Do not operate any machine, vehicle or equipment unless you are authorized to do so.
Know the location and use of fire extinguishers, first aid box, emergency exits, electric control panels, personal protective equipment's	Do not temper with guards on machines, equipment's.
Remember the telephones numbers of your Supervisor / Engineer and Safety Officer.	Do not try to repair defective power tools or machines and electric wiring, rather report it to Supervisor.
Ask how to do a new task before you attempt to perform it.	Do not take short cuts.
Use specific tool for the job.	Do not stand under the hanging loads

Keep tools within easy grasp.	Do not handle any container if you are not sure about its contents.
Use appropriate PPE for the job you are going to do.	Do not taste or inhale any chemical
Ensure free movement after wearing PPE. In any restriction in work activity inform to your Supervisor.	Avoid excessive body bending, or twisting, extended postures and zigzag movements
Be alert and active while performance or work.	Do not Keep any one posture for a long time
Wash hand and exposed parts of the body regularly and take bath after work.	Do not use solvents, alkalis etc. to clean the skin / hands.
Wash hands before eating. Ensure cleanliness of your hair and under nails.	Do not eat where dangerous chemicals are used.
Co-operate in keeping sanitary areas clean.	Do not make surroundings of work sites unhygienic
Stay away from work if you are suffering from any contagious disease.	Do not continue work after you feel sick. Report to your Supervisor.

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DO'S	**DON'TS**
FIBRE ROPES	
The rope should be visually inspected by the user for • Worn out fibers and strands • Sign of damage due to heat, chemical and stretch, reduction in size, damage to splicing and sign of any wear.	Do not use rope that shows signs of peeling skin, discoloration, reduction in circumference etc.
Maximum Safe working load of ropes should be taken as not more than 15% ~ 20% of its breaking load.	Do not load natural fiber rope over 50% and synthetic fiber rope over 65% of their breaking strength under any condition or they will be permanently damaged.
Join rope by splicing.	Avoid increasing length by knotting smaller length ropes pieces.
Store PP ropes in dry, cool and well ventilated rooms.	Do not expose synthetic ropes in sunlight for a long and to come in contact with hot surfaces (temp around 60 deg C).
Tie up the ends of the rope using thread to avoid opening of strands.	Do not drag rope along ground, over sharp or rough edges as it causes outer surface to wear faster and damages the inner fibers due to embedded dust.
LADDER SAFETY	
Use only ladders of aluminum/ steel and approved by the Safety Department.	Do not use bamboo or any make shift arrangement in lieu of ladder
Carryout visual inspection of the ladder prior to use.	Never use a damaged ladder or of unknown integrity.
Report promptly for replacement of any defective ladder.	Do not use ladders if thee is a possibility of coming in contact with current from electrical equipment/ circuits or overhead power lines.
Ensure firm footing while placing a ladder.	Do not place ladder on loose bricks or other loose packing.
Secure ladder at the bottom end. Or site a person at its base to hold the ladder from slipping.	Avoid undue swaying and sagging of ladder

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DO'S	**DON'TS**
Simple rule for setting up a ladder is to put the ladder at an angle is (75^0) i.e. place the base of ladder at a distance from the vertical wall equal to ¼ the working length of ladder in use.	Do not lean more than 30cm to the side in order to reach a larger area from a single setting of the ladder.
Ladder leading to landing shall extend at least 3 rungs (one meter) above the landing and shall also be secured at the upper ends.	Do not use a ladder in horizontal position as runways and for other purposes for which they are not intended
While ascending/ descending, keep face towards the ladder; and keep minimum of 3 limbs out of (4 limbs – 2 hands and 2 legs) on ladder and place feet near the ends of rungs.	Do not splice two or more ladders to increase its length.
Ensure that the stepladder is in a fully open position and safety locking device is on.	Do not work while standing at the platform of step ladder.
Portable ladders are designed as one man (90kg) working ladder.	Do not over load ladder
SCAFFOLD SAFETY	
Scaffold should be erected by a competent person.	Do not use false support i.e. drums, ladders, pipes or bricks etc.
Visually inspect the scaffolds before start of the work each shift and in case of any defect is noticed inform your supervisor.	Do not use any partially built scaffold or which is not cleared for use.
Use safety belt while working at scaffold platform.	Do not climb the scaffold without proper access.
Provide toe boards and hand rails at the scaffold.	Do not use ladder or such access to gain more working height on the scaffold platform.
High-rise scaffolds - tie it at 6m and every 2m thereafter.	Do not stack any loose material on scaffolding.
Keep load on the scaffold with in its capacity load.	Never over load scaffolds/ work platforms.

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DO'S	**DON'TS**
TOOL SAFETY	
Select right tool for the job.	Do not use a file for a screwdriver, a wrench for a hammer or pliers for wrench.
Keep tools in good condition.	Do not use defective tools such as Wrenches with crack or worn jaws, screw driver with sharp point or broken handle, hammer with loose head or cracked handle or a dull saw.
Use the tools in the right way.	Do not use the tools in wrong way such as screwdriver applied to the object held in hands, knives pulled toward the body or tools lying on work floors, in passages, entrances etc.
Carry tools in such a manner that both hands are free while using a ladder or climbing a structure.	Do not leave behind the tools on scaffolds, overhead piping, or top of the step ladder etc. from where they can fall on persons below.
Use a toolbox or similar container to hoist the tools from the ground to job or vice-versa.	Do not use mushroomed head tools.
ELECTRICAL TOOL SAFETY	
Use proper tools and correct types of plugs/ sockets.	Do not insert naked wires in sockets.
Ensure that the guards on tools or equipment are in position.	Do not remove / temper guards of the equipment.
Ensure that the equipment is properly grounded, insulation is in place and power supply to the tool is through ELCB.	Do not use equipment which is not earthed or whose supply source is far away or not known.
Fit or disconnect accessories only after switching off the power	Do not drag the equipment using its cord / flexible cable
Ensure that as far as practicable, no wiring, which may come in contact with water or may be mechanically damaged, is left on ground or floor.	Do not use tool with damaged insulation or any known defect. AND Do not overload a supply cable by connecting many equipment's

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DO'S	**DON'TS**
FIRE SAFETY	
Report each and every case of fire no matter however small it may be.	Do not smoke at site or indulge in bon fire activities.
Know the location of Fire Extinguisher or other firefighting equipment and fire call points if any.	Do not use water on electrical system until you have de-energized the system.
Be sure that you know how to operate Fire Extinguisher installed in your area.	Do not keep the used Extinguisher to its fixed location but inform safety to replace it.
Ensure that Firefighting equipment installed in your area are visible and easily assessable.	Do not block the approach to extinguishers etc.
If you suspect any defect in any fire equipment report to Supervisor / Safety Officer.	Do not tamper with the firefighting equipment
Do remember the Telephone numbers of your superiors and Fire station.	
WELDING & CUTTING SAFETY	
Take hot permit to work before starting any welding/ cutting job.	No untrained person should be deployed for welding job.
Place fire extinguisher and such equipment handy.	Do not keep inflammable material around the welding job
Keep welding machine at a dry place. Make sure that proper earthing connections are provided.	Do not keep material around the welding machine.
Cable should be in good condition and connections should be tight.	Cable should not be laid on wet surface or to become a tripping hazard.
Welders should use welding screen to avoid flying of sparks.	Welder or operator should not wear wet dress/ foot wear or hand gloves
The welder should check welding holder and its insulation before stating the job.	

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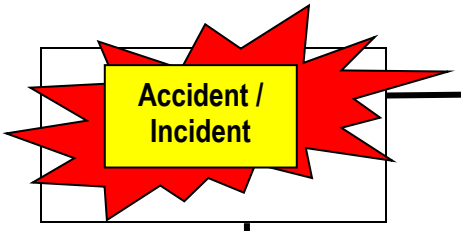
DO'S	**DON'TS**
FLOOR / WALL OPENING SAFETY	
Access to temporary Floor or wall opening should be protected.	Do not allow any unauthorized persons to visit the area.
Any temporary floor opening should be guarded by a standard railing provided on all exposed sides. Toe boards / screens may also be provided if there is a danger of material falling through the opening.	Do not allow any untrained person to work in the area.
Any temporary wall opening should be adequately guarded.	
Floor opening infrequently used, shall be guarded by a cover of standard strength and construction.	
Use safety belt while working around the opening.	Do not work in the area without information to your supervisor and in dark hours.
Open sided floor/ platform or walkway should be provided with standard railing and toe boards on all open sides except entrance.	
GRINDING WHEELS & GRINDING MACHINES SAFETY	
Handle and store wheels in a careful manners.	Don't use a wheel that has dropped.
Visually inspect all wheels before mounting for possible damage, expiry date, and speed of rotation.	Don't force a wheel onto the machine or alter the size of the mounting hole – if wheel won't fit the machine, get one that will fit.
Make sure operating speed established for machine does not exceed wheel speed.	Don't start a machine until the wheel guard is in place.
Use mounting flanges for equal and correct diameter	Don't jam work into the wheel
Use mounting blotters when supplied with wheels.	Don't ever exceed maximum operating speed established for the wheel.
Always use a safety guard covering at least one half of the grinding wheel.	Don't use mounting flanges on which the bearing surfaces are not clean and flat.
Run newly mounted wheel at operating speed with guard in place for at least one minute before grinding.	Don't stand directly in front of grinder wheel whenever a grinder is started.
Always wear safety goggle or face shield when grinding.	Don't grind material for which the wheel is not designed.

HSE PLAN

ANNEXURE – XXXIII ONSITE EMERGENCY PLAN & REPORTING SYSTEM



First aid shall be given to the victim at site

The injured person shall be sent to Doctor, / Nursing Home or Hospital for medical care & further treatment.

Site Supervisor / Engineer

1. Brief personal detail of injured person (who)
2. Time, Date of accident (when)
3. Exact location (where)
4. Brief of accident (what)
5. Cause of accident (why)

Report on telephone or in person

Site Incharge

Very Important

In case of major / fatal accident, area must be barricaded and no one is allowed to disturb anything inside of barricading

Emergency Telephones

NAME / LOCATION	
Project Manager	
Project co-Ordinator/ Admin	
Site Engg.	
Safety Officer	
P&M	
QA & QC	
Store	
Ambulance Driver	
Hospital	
First aider	
Police Station	
Fire	

Project Manager

Safety Officer
For investigation and recommendation, corrective action taken and documentation for reference

General Manager

Administration
To help victim, arrangement of all medical facilities and dealing with legal matter

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ANNEXURE – XXXIV
HAZARD IDENTIFICATION & RISK ASSESSMENT

				FOREMAT					**HAZARD IDENTIFICATION & RISK ASSESSMENT**						
				Date:					**Ref No. : /SAF/FRMT/HIRA/RO**					**Revision No. : R -**	
Activity: ……..															
Sr. No.	**Activity**	**Hazard**	**Risk**	**Legal Yes/No**	**Risk Assessment existing Control Measure**			**Significant (S) / Non-Significant (NS)**	**Additional Control Measure**	**Risk Assessment with Control**			**Category**		
					Probability(P)	**Severity(S)**	**Risk(R) : P*S**			**Probability(P)**	**Severity(S)**	**Risk(R) : P*S**	**Acceptable(A) or Not Acceptable(NA)**		
		Probability (P)		P/S	S1	S2	S3	S4							
		P1=Improbable		P1	-	-	D	C							
		P2= Remote		P2	-	D	C	B							
		P3=Possible		P3	D	C	B	A							
		P4=Probable		P4	D	B	A	A							
		Severity (s)	A= Hazards must be avoided (or the level of risk reduced significantly and reliable by controls)												
		S1= Negligible	B= Hazards should be avoided (or the level of risk reduced significantly and reliable by controls)												
		S2= Minor	C= Risk to be controlled as far as reasonably practicable												
		S3= Sever	D= Risk is controlled as far as reasonably practicable .												
		S4=Extreme	--= Risk is acceptable												
			LEGAL = If activity come under legal implication (significant) than additional control measures is to be taken and has to be reviewed periodically.												

NOTE:HIRA to be prepared at site as per method statement

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ANNEXURE – XXXV

INSPECTION CHECK LIST FOR CRANE

Sr. No	Scope	YES	NO	N/A	Comments
A. General Requirement					
1.0	Safe access and egress are provided to the crane operator.				
2.0	A load capacity chart is displayed in the operator cabin.				
3.0	A safety bar is fitted across the operator's cabin window where there is likelihood of the operator falling through it.				
4.0	Fire extinguisher is fit for use and provided in the operator cabin.				
5.0	Manufacturer Operating Manual and Maintenance Manual are made available				
6.0	Tower crane is adequately grounded or protected against lightning.				
7.0	Hydraulic fluid level is sufficient.				
8.0	Slewing oil level is sufficient				
9.0	All mounting bolts are in good condition				
10.0	Hydraulic system is free of leaks				
11.0	Boom sections are free of cracks or dents.				
12.0	Winches, pulleys and wire ropes are in good working condition				
13.0	Crane hook is provided with a safety catch to prevent displacement of the sling or load from the hook.				

14.0	Load radius indicator with warning alarm is installed				
15.0	Hoisting Limiter to prevent over-hoisting of the hook block is functional.				
16.0	Trolley Travelling limiter to prevent over-travelling of trolley is functional.				
17.0	Limit switches to prevent over-derricking and over-lowering of jib (For Luffing Jib Tower Crane) is functional.				
18.0	Slewing limiter to restrict slewing of crane is functional				
19.0	Overload Limiter to prevent overloading of crane is functional.				
20.0	Wind anemometer is installed and is in good working				
21.0	Adequate aircraft warning lights functional.				
22.0	Tower Crane has a regular maintenance programme that is in accordance with manufacturer's specifications				

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AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR AIR COMPRESSOR***		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

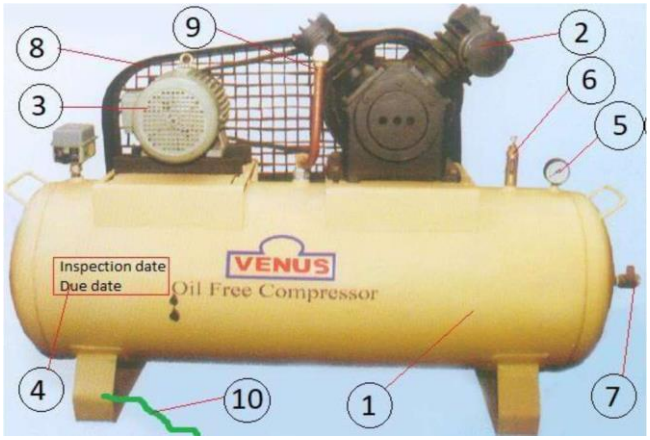
ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Physical condition of compressor tank should be good and certified by TPI.		
2	Piston should be in good condition.		
3	Motor should be in good and working condition.		
4	Inspection date and due date should be clearly marked.		
5	Pressure gauge should be in working state and free from defects.		
6	Safety valve should be calibrated at regular interval.		
7	Any other valve should be free from defects and in working condition.		
8	Rotating part should be covered with fixed guard.		
9	All joints should be properly tighten.		
10	Compressor should be grounded as per IS 3043:1987.		
11	Power cable should be free from defects and connection taken through industrial plug.		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:

HSE PLAN


9
8
2
6
3
5
Inspection date
Due date
VENUS
Oil Free Compressor
4
10
1
7

MAX ESTATES	**HSE PLAN**	rcc

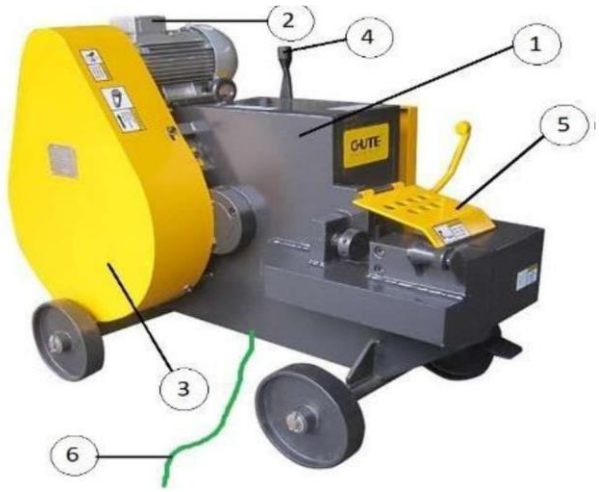
AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR BAR CUTTINGMACHINE***		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Physical condition of body should be good & sound.		
2	Junction box of motor should be full packed.		
3	Rotating part of machine should be covered by fixed guard.		
4	Operating leaver should be insulated with Nonconductive material.		
5	Bar guard should be fixed with machine.		
6	Machine should be grounded as per IS 3043:1987		
7	Power cable should be free from damages and connection taken through industrial plug.		
8	Machine should be operated by competent person.		
FIT :	**PARTIAL FIT:**	**UNFIT :**	

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:



MAX ESTATES	**HSE PLAN**	rcc

rcc AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR BAR BENDING MACHINE***	

PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

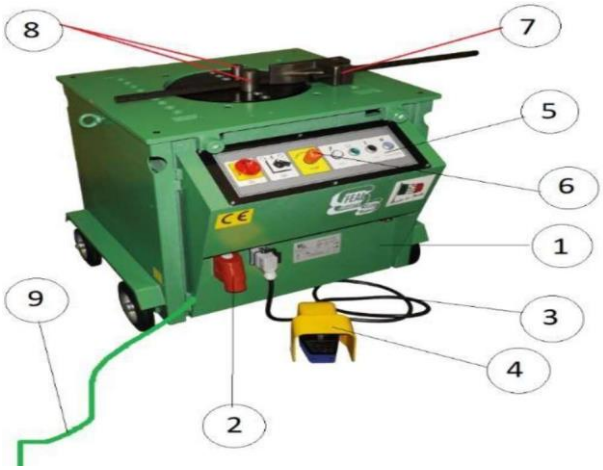
ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Physical condition of body should be good & sound.		
2	Electrical connection should be taken through Industrial plug in proper manner.		
3	Power cable should be free from damages.		
4	Operating switch should be free from defects, e.g., uninsulated & broken, etc.		
5	On/off or other switches should free from defects, e.g., uninsulated & broken, etc.		
6	Emergency stop button should be in working condition with red colour .		
7	Bar support should be properly fitted with machine.		
8	Pins should be free from loose fitting.		
9	Machine should be grounded as per IS 3043:1987.		
10	Machine should be operated by competent person.		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:

HSE PLAN



MAX ESTATES	**HSE PLAN**	rcc

AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR BENCH CUTTING MACHIEN***		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Physical condition of body should be good & sound.		
2	On/off switch should be in proper condition.		
3	Fixed guard should be in good condition.		
4	Auto adjustable guard should be functional condition.		
5	Cutting wheel should free from defect and rotating capacity should be marked, standard quality of cutting wheel used.		
6	Positioning screw should be in working condition.		
7	Power cable should be free from damage and connection taken through industrial plug.		
8	Machine should be double insulated or grounded.		
9	Always use designated key for changing wheel.		
10	Machine operated by competent person.		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & Signature of Safety officer:

HSE PLAN

MAX ESTATES	**HSE PLAN**	rcc

rcc AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR BREAKER***		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Breaker should be in good and working condition.		
2	Power cable should be free from damages and connection taken through industrial plug.		
3	A flexible cord should be provided to keep cable free from damage		
4	Handle should be provided for better control.		
5	Bit should be in good condition and free from defect.		
6	Breaker should be double insulated otherwise grounded.		
7	Machine operated by competent person		
FIT			**IT**
Inspect Name & Name &			

MAX ESTATES	**HSE PLAN**	rcc

rcc AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR CIRCULAR SAW***	

PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Physical condition of body should be good & sound.		
2	On/off switch should be in proper condition.		
3	Fixed guard should be in good condition.		
4	Auto adjustable guard should be functional condition.		
5	Wheel should free from defect and rotating capacity Should be marked.		
6	Power cable should be free from damage and connection taken through industrial plug.		
7	Machine should be double insulated or grounded.		
8	Machine operated by competent person.		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:

MAX ESTATES	**HSE PLAN**	rcc

rcc AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR GAS CUTTING SET***		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

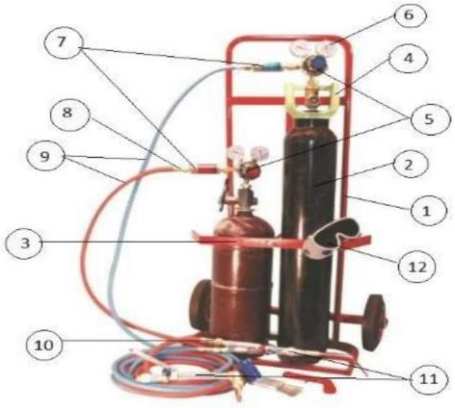
ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Cylinder should be kept in trolley.		
2	Always keep in upright position.		
3	Properly secured.		
4	Valve protection cap.		
5	Regulator should be free from any defect.		
6	Pressure gauge should be in proper condition.		
7	Provide flash back arrestor		
8	Provide industrial clip		
9	Hose condition should be good with colour coded.		
10	Joint should be firm and free from defect, e.g., oily, rust & leakage, etc.		
11	Torch should be in good condition.		
12	Use proper PPEs for the Job, e.g., Leather hand gloves & safety goggles, etc.		
13	Keep fire extinguisher at working place.		
14	Provide booth, made by fire retardant material (if required).		
15	Work carried out by competent person.		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:

HSE PLAN



MAX ESTATES	**HSE PLAN**	rcc

AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR DG***		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Physical condition of DG should be good.		
2	Door of DG should be in good condition, so that rotatory part of machine could cover		
3	Display panel should be in good condition.		
4	Emergency stop button should be mushroom Headed with red colour.		
5	DG should be grounded as per IS 3043:1987.		
6	Power supply panel provided with ELCB/RCCB/MCB.		
7	Spark arrestor should be installed, if DG is operating in flammable atmosphere.		
8	Diesel tank should free from leakage.		
9	DG should be keep on aggregate/gravel stone.		
10	Keep fire extinguisher/sand bucket near DG.		
11	Fitness and pollution certificate should be taken from competent authority.		
12	DG operated by competent person.		
13	Spill observant kit or drip tray available.		
14	Insulated rubber mat available.		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:

MAX ESTATES	**HSE PLAN**	rcc

rcc AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR DRILL MACHINE***		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

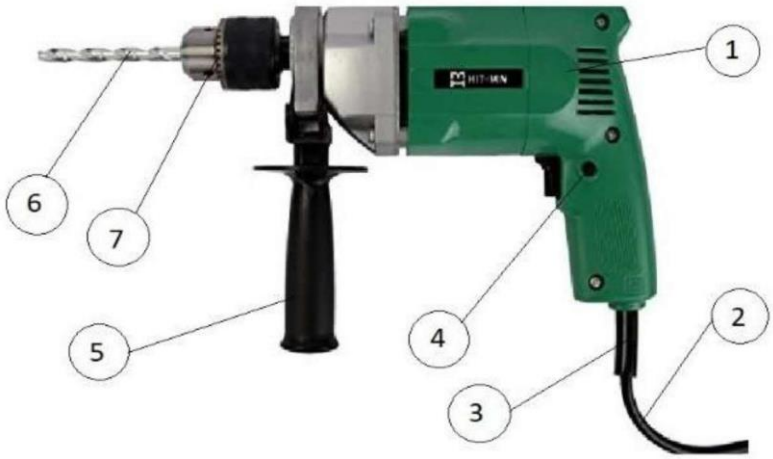
ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Drill machine should be in good and working condition.		
2	Power cable should be free from damages and connection taken through industrial plug.		
3	A flexible cord should be provided to keep cable free from damage.		
4	Handle should be provided for better control.		
5	Handle should be provided for better control.		
6	Drill bit should be in good condition and free from defect.		
7	Always use designated key for removing and changing drill bit.		
8	Drill machine should be double insulated otherwise grounded		
9	Machine operated by competent/trained person.		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:

HSE PLAN



MAX ESTATES	**HSE PLAN**	rcc

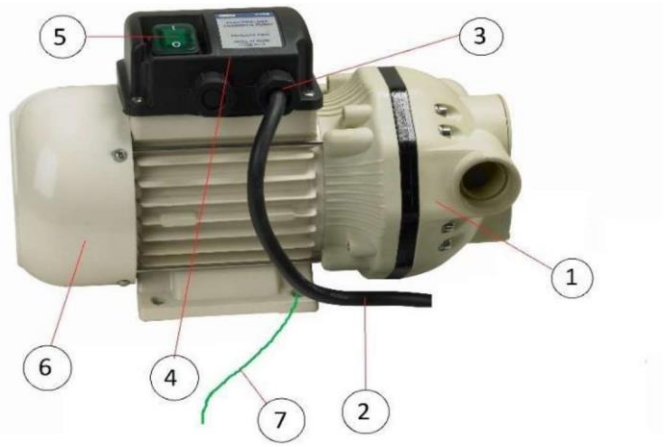
rcc AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR ELECTRICAL PUMP/MOTOR***		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Physical condition of pump should be good.		
2	Power cable should be free from damages and connection taken through industrial plug.		
3	Cable entry point should be fully packed, so that water can't enter.		
4	Junction box of motor should be free from defects.		
5	On/off switch should be properly insulated.		
6	Rotating part of machine should be covered by fixed guard.		
7	Machine should be grounded as per IS 3043:1987.		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:



MAX ESTATES	**HSE PLAN**	rcc

AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR ELECTRICAL PANEL***		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Physical condition of panel should be good & sound.		
2	Panel should be kept on suitable stand.		
3	Junction boxes should be free from defects.		
4	All connection should be taken through ELCB/RCCB/MCB		
5	Connection socket should be covered with auto lock.		
6	Switches and display should be properly covered.		
7	A danger signage should be marked		
8	Panel should be grounded as per IS 3043:1987.		
9	Further connection for extension of cable should be taken through male-female connector		
10	In case of flammable atmosphere single length cable shall be use.		
11	Canopy should be provided to avoid water getting entered due to rain or any other means		
12	Rubber mat should be provided to stand during operation.		
13	Input power cable should be free from defects.		
14	Power input and output cable should be passes through glands.		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:

MAX ESTATES	**HSE PLAN**	rcc

rcc AAR CEE CONTRACTS PVT.LTD.	**HSE CHECK LIST FOR EXCAVATOR**		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

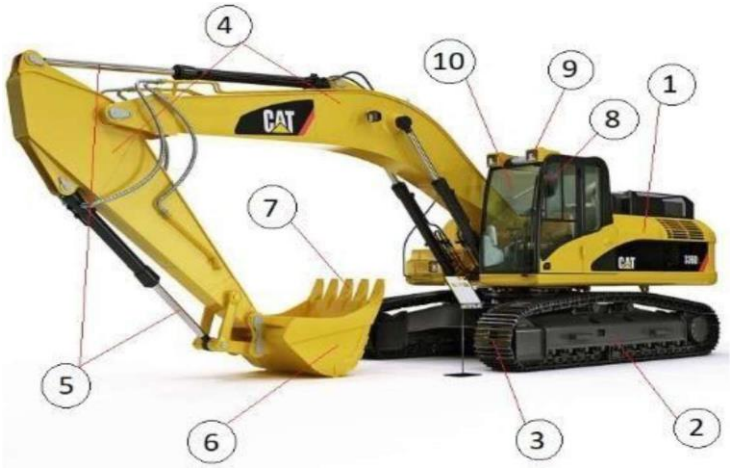
ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Engine and rotating part should be properly covered.		
2	Track frame should be in good and working condition.		
3	Crawler belt and shoes should be in good condition.		
4	Boom and arm should be free from defects like corrosion, bend, etc		
5	Hydraulic cylinder and hoses should be in good Condition.		
6	Bucket, cutter pins should be free from defects, e.g., damage, corrosion, bend, etc.		
7	Teeth should be free from defects, e.g., damage, corrosion, bend, etc.		
8	Side mirror should be in good condition.		
9	Head & tail light and indicators are in working Condition.		
10	Wind shield/glass should be in proper condition.		
11	Wiper should be in running condition.		
12	Swing horn should be in good condition.		
13	Fire extinguisher in operator cabin.		
14	Operator have suitable license/experience certificate.		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:

HSE PLAN



MAX ESTATES	**HSE PLAN**	rcc

rcc AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR HYDRA***		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

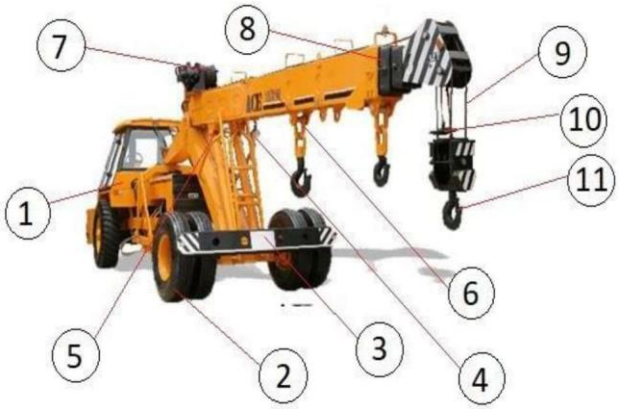
ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	**Hydra should be physically good & certified by TPI.**		
2	**No damage in tire (Bolts, crack, cuts & air pressure, etc.).**		
3	**Registration number should be written.**		
4	**Head & tail light and indicators are in working condition.**		
5	**No oil leakage in hydraulic part.**		
6	**Safe work load (SWL) marked.**		
7	**Sling drum should be in good condition.**		
8	**Boom condition while full extension (free from damage, crack & jamming, etc.).**		
9	**Wire rope free from damage.**		
10	**Hoist limit switch.**		
11	**Safety latch in hook.**		
12	**Safe load indicator should be in working condition.**		
13	**Front & reverse horn.**		
14	**Fire extinguisher in operator cabin.**		
15	**Operator should have valid license (heavy duty)**		
16	**Load chart available in operator cabin.**		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:

MAX ESTATES	**HSE PLAN**	rcc



MAX ESTATES	**HSE PLAN**	rcc

AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR* BACKHOE LOADER (JCB)**		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

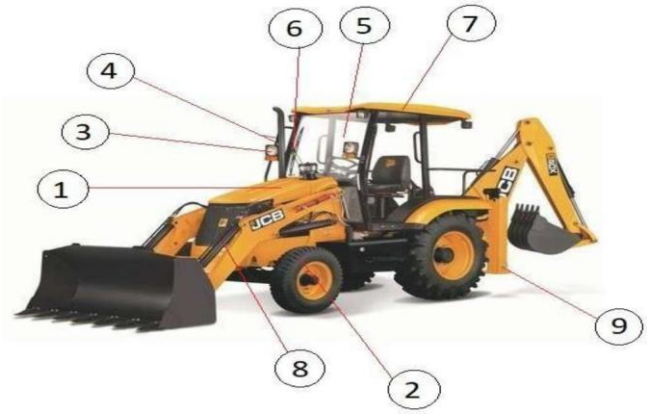
ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Machine should be physically good & certified by Competent authority.		
2	No damage in tire (Bolts, crack, cuts & air pressure, etc.).		
3	Head & tail light and indicators are in working condition.		
4	Side mirror should be in good condition.		
5	Wind shield/glass should be in proper condition.		
6	Wiper should be in running condition.		
7	Operator cabin and driver seat should be made by good & sound quality of material.		
8	Hydraulic cylinders and hoses are in good condition and free from leakage.		
9	Outrigger should be free from damages.		
10	Red triangle/reflective tape should be fixed in front of vehicle		
11	Front & reverse horn.		
12	Fire extinguisher in operator cabin.		
13	First aid box in operator cabin.		
14	Operator have valid and suitable license.		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:

HSE PLAN



MAX ESTATES	**HSE PLAN**	rcc

rcc AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR TOWER CRANE***		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Tower crane should be physically in good condition, free from defects.		
2	Foundation should be provided as per design.		
3	Operator cabin should be in good condition, equipped with wind glasses and wireless communication.		
4	Safe working load should be marked.		
5	Counter weight should be properly fixed.		
6	Hydraulic cylinder, hoses should be in good condition and free from leakage.		
7	Trolley condition should be good.		
8	Over hoist limit switch should be in working state.		
9	Limit switch should be provided for trolley motor.		
10	Sling should be free from defects.		
11	Safety latch should be in hook.		
12	Power cable should be free from damages and connection taken through industrial plug.		
13	Tower crane should be grounded as per IS 3043:1987.		
14	Safe load indicator should be in working condition.		
15	Fire extinguisher in operator cabin.		
16	Operator have suitable license/experience certificate.		
17	Aviation light to be available.		
18	Lighting arrester is provided.		
19	Tower crane should be physically good & should have valid TPI.		
20	Anemometer should be in working condition.		
21	Fall arrest system is available .		
FIT	**PARTIAL FIT**		**UNFIT**

MAX ESTATES	**HSE PLAN**	rcc

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:

MAX ESTATES	**HSE PLAN**	rcc

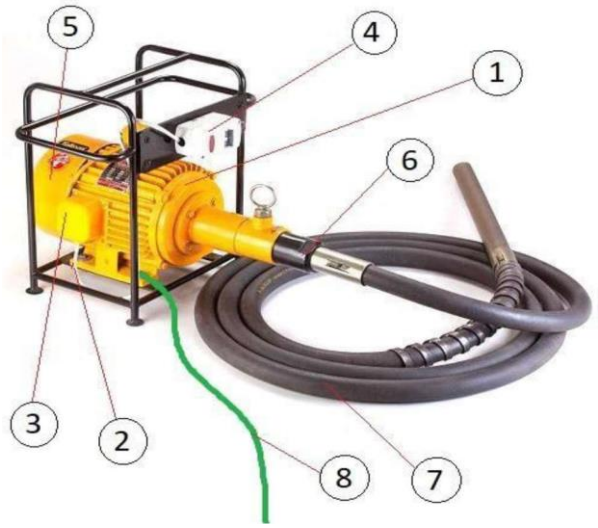
rcc AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR ELECTRICAL*** **VIBRATOR**		
PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	On/off switch should be properly insulated.		
2	Power cable should be free from damages and Connection taken through industrial plug.		
3	Junction box of motor should be free from defects.		
4	On/off switch should be properly insulated.		
5	Rotating part of machine should be covered by fixed guard.		
6	Needle should be tightly connected with motor.		
7	Needle should be free from damages.		
8	Machine should be grounded as per IS 3043:1987.		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer:



MAX ESTATES	**HSE PLAN**	rcc

rcc AAR CEE CONTRACTS PVT.LTD.	***HSE CHECK LIST FOR WELDING MACHINE***	

PROJECT NAME	MAX-65 Gurugram	CONTRACTOR NAME	Aar Cee Contracts Pvt.Ltd
EQUIPMENT No /TYPE		DATE OF INSPECTION	

ITEM TO BE CHECKED:

S.NO	DESCRIPTION	CONDITION (OK/NOT OK/NA	REMARKS
1	Welding machine should be in good and working condition.		
2	Power cable should be free from damages and connection taken through industrial plug.		
3	Switches should be free from defects, e.g., uninsulated & damages, etc.		
4	Welding led & return led connection should be tightly by means of lugs/socket.		
5	Welding led & return led should be free from damages, e.g., cuts, naked, too many joint, etc.		
6	Welding holder should be in good condition and free from metal contact.		
7	Earthing holder should be in good condition and free from rust.		
8	Keep fire extinguisher at working place.		
9	Work carried out by competent person.		
FIT	**PARTIAL FIT**		**UNFIT**

Inspected by :
Name & signature of P&M In charge :

Name & signature of safety officer: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C.M.T
AC WELDER BX1-200C
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