



# **VBHC VALUE HOMES PVT LTD**

## **HEALTH AND SAFETY MANAGEMENT**

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<b>Document Approval</b>				
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## **Introduction:**

### **2. INTRODUCTION**

This document illustrates the principal requirement of VBHC on safety Environment & Health associated with Contractor.

### **3. GENERAL**

VBHC's Safety Management System Manual provides the framework for managing all aspects of the development. This safety Management manual summarizes:

- ✓ Safety team, their roles, and responsibilities
- ✓ Successful accident-prevention principles and techniques
- ✓ Management of Hazards
- ✓ Continuous improvement in SHE performance

### **4. SAFETY, HEALTH, AND ENVIRONMENT (SHE) TARGETS & GOALS**

The SHE targets, goals & aim for the workers are to achieve:

- ✓ Zero total recordable injuries.
- ✓ Zero reportable environmental incidents
- ✓ 100% incident recording and reporting
- ✓ 100% adherence of usage of appropriate PPEs at work

## **5. Project HSE Objective:**

The objective of this HSE Plan is to provide requisite guidelines, based on 'Actual site conditions' and 'Safety requirements' of the company at VBHC Value Homes Pvt. Ltd for effective implementation of HSE policy, to ensure 'Zero-Accident' environment.

The goal for VBHC is "Zero Incidents" which is reflected in the project objectives which are as follows:

1. No injury to personnel.
2. No damage to the environment.
3. No damage to equipment and materials.

Further VBHC will ensure a proactive approach to HSE by all personnel through the following performance targets:

- Active involvement in Safety Meetings, Safety Inspection and Toolbox Talks.
- Encouraging safety awareness and always thinking of the risks associated with the work being performed.

## **6. Vision Statement:**

VBHC Value Homes Pvt. Ltd ensures that there is safe and comfortable working environment by procuring necessary equipment and implementing safety measures to prevent physical injuries, reduce health hazards and minimize damage to Property.

## 7. SAFETY POLICY:

### **VBHC VALUE HOMES PVT LTD**

#### ENVIRONMENT, HEALTH & SAFETY POLICY

“VBHC strives to attain and maintain high standards of Environment, Health and Safety (EHS) policy throughout its workplace and strictly adhere to the safety policies adapted from time to time in this course of construction achieving ZERO incident at all levels and times.”



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Head – Projects & Operations

For Vbhc Value Homes Pvt Ltd

29.02.2022

Date: -----

## **8. PROCESS TRIGGER**

The process triggers when any one of the following occurs:

- ✓ EHS Supervisor receives intimation from Contractor/Engineer about joining of new Employee/Worker.
- ✓ If any safety issue observed at site by EHS Supervisor.

## **9. SCOPE AND APPLICATION**

This procedure applies to the entire site Employees/Workers at VBHC.

## **10. PREDECESSOR AND SUCCESSOR PROCESSES**

Predecessor Process: Award of contractor / Start of the project.

Successor Process: Site Implementation

## **11. RESPONSIBILITY AND AUTHORITY**

### **2.1 PROJECT IN-CHARGE / PROJECT MANAGER**

Project Manager / Site In-charge who directs and control the personnel at site is responsible for implementation of safety policy and the safety and health of personnel under their supervision, direction or control. This responsibility also includes the safe operations and safety of equipment / machinery at site.

They will:

- a) Enforce, lead, direct and follow up administration / execution of safety, health, and environment procedures.
- b) Set examples by wearing the personal protective equipment like helmets, shoes etc. and persuade, appeal and discipline personnel under their control to wear the same as a habit.
- c) Ensure regular inspections and surveys to ensure that facilities and equipment are operated and maintained to a high standard of safety so that risk of injury to personnel, breakdown and damage of property is minimized and high quality of output is achieved coupled with safety.
- d) Give weight age to safety performance while appraising performance of employees.
- e) Integrate safety and health in all decisions dealing with purchase of plant, machinery, material, and personal protective equipment.



- f) Plan and maintain desired standards of Housekeeping.
- g) Ensure efficient functioning of 'Safety Officer' and follow up decisions made to improve existing standards.
- h) Ensure implementation of recommendations of the statutory authorities and others

## **2.2 PROJECT ENGINEER / SUPERVISOR**

Concerned Engineer / Supervisor on a particular work location will be responsible for Safety & Health of all employees under their direct & indirect control. His functions will mainly include: -

- a) To identify hazards and ensure control measures on the work spot on day-to-day basis.
- b) To remove any unsafe conditions that may have arisen during the previous shift or working activity.
- c) Close monitoring of activities of all workmen to weed out any unsafe practices adopted by them. He will also be responsible for ensuring that all tools, equipment's and other means of work are safe to operate.
- d) Usage of Safety helmets, Safety shoes and other items of personal protection by one and all, under his span of control.
- e) Investigate and report all incidents / accidents/ including near miss accidents on the prescribed Performa to the Site Safety Officer / In-charge immediately.
- f) Analyze the cause of serious accidents, ensure implementation, and follow up of control measures.
- g) Take all necessary steps to prevent recurrence of any incident.
- h) Encourage participation of workmen in safety suggestion and training etc.
- i) Issue instruction to new employees on safety or approach the 'Site Safety Officer' to ensure the same.

## **2.3 SAFETY TEAM**

The Safety Officer will be responsible for the administration of the company's\_Safety Program under directives of the Project Manager / Site In-charge and is

authorized to interact with corporate HSE Dept for any matters requiring his attention.

His functions will include the following:

- a) Assist and advise Project In charge, Site Engineers, Supervisors and Workmen in implementation of the requirements outlined in the 'Safety Manual' and periodically review the progress of implementation by visiting the sites on regular basis.
- b) Conduct Toolbox meetings and safety training for personnel at site and organize training for project personnel as per training needs.
- c) Provide up-to-date information of safety requirements commensurate with different types of work at various locations of work.
- d) Assist Site In-charge, Engineers in investigation of serious accidents in order to

- e) determine contributing causes with a view to prevent their recurrence.
- f) Giving First Aid in case of emergencies.
- g) Advise the purchase department at site in procurement and usage of personal protective equipment.
- h) Organize Induction training for new employees/Workers. .
- i) Compile safety records, statistics at site and submit monthly report to Corporate HSE Dept. Organize Safety promotional activities like display of safety posters, slogans and other educative materials, competitions & awards, as well as safety day celebrations etc.
- j) Interact and liaise with clients/outside agencies/companies to update information and documentation on Safety.

## **2.5 ALL WORKMEN**

The workmen will: -

- a) Comply with necessary rules, regulations, dos and don'ts and other instructions issued by line supervisors from time to time.
- b) Report all unsafe conditions, equipment prevalent in their respective work area to their immediate supervisor.
- c) Report all accidents, incidents, and near misses immediately.
- d) Maintain a neat, clean, tidy, and orderly work area.
- e) Not remove or make ineffective any protection device or guard provided for their own protection or for the protection of their co-workers and environment.
- f) Not willfully endanger their own and their fellow workmen lives.
- g) Co-operate with the Site Safety Committee representatives.

## **2.6 RESPONSIBILITY OF SUB-CONTRACTORS:**

The subcontractors / his site-in-charges shall adhere to the rules and regulations mentioned in this code practice very strictly in his area of work in consultation with his concerned engineer and the Safety In-Charge.

- All workmen shall be screened before engaging for the JOB.
- No employee below 18 years shall be engaged for work.
- All necessary PPE like Safety helmet, Belts, Shoes, Face shield, Hand Gloves etc. shall be arranged before starting the job.
- Ensure that all engaged are tested for fitness and have valid certificates from competent authorities.
- Instructions laid down in site safety plan shall be adhered to.
- Person working above 2 meters should use full body safety harness tied to a stable structure.
- Material should not be thrown from the height. Cautions to be exercised to prevent fall of material from height.
- All accidents, Major / Minor, shall be reported to the Project Manager of main contractor.

- After completion of the Hot Work, the supervisor has to ensure that there is no burning hot object, which can cause burn injury.
- Strict adherence to permit to work (if applicable).
- Adequate valid FE shall be kept near the place of work while carrying out Hot Work.
- No unwanted materials should be left out.
- Good Housekeeping should be maintained.
- No personnel should travel on Tractor/ Trailer.
- Horse-play should be strictly forbidden.
- Adequate illumination shall be arranged during night work.

Ensure that all personnel working under you are working safely and do not create any Hazard to self and to others.

## **12. Project HSE Management**

This is applicable to all employed in construction activities for 'VBHC Group Projects and extends up to 'Sub-contractor' in the same sense. The company shall monitor the 'Sub-contractor' performance in managing safety aspects.

Project Manager/Project In-charge of site is responsible for ensuring coordination and implementation with other site 'Sub-contractors' for any matter pertaining to HSE.

Corporate HSE Dept will have a two -way communication on HSE related issues with 'Site Safety In-charge'/ Project In charge.

Corporate Safety Coordinator will coordinate and review on implementation of HSE project wise.

### **3.1 OVERALL HSE ACTIVITY CONTROL**

Overall control of HSE activities is set by the requirements of VBHC Corporate Management system and shall be complied with, unless modified by project specific requirements.

The project HSE Plan is developed for project based on VBHC corporate management system and contractual requirements. It is subject to approval by Project Director /Executive Director prior to submission to the clients /Project Management Consultant. Any change to or amendments are to be subject to the same approvals.

## **13.0 Hazard Identification & Risk Assessment (HIRA), Communication & Development of**

### **Records:**

#### **13.1. Purpose**

This procedure is established, documented, implemented and maintained to comply the requirements of OHSAS 18001:2007.

#### **13.2. Scope**

This procedure is to brief the methods to identify actual and potential OHS hazards of the activities, products and services of the organization and assess the risk level.

#### **13.3. Responsibility**

EHS In-charge is overall responsible for this procedure. All the department heads are responsible for the updating the information of respective areas of operation.

#### **13.4. System Details**

#### **13.5 Hazard Identification**

OHS Hazard: Source, situation or act with a potential for harm in terms of human injury or ill health or a combination of these.

The activities / products / services are assessed and related hazards identified and recorded in the HIRA Register by the respective department personnel.

As and when additions or modifications in the existing activities / products / services, the related OHS issues also studied.

## **13.6. Risk Assessment**

### **1.0 Definitions/Abbreviations:**

**Hazard identification** is the process used to identify all the possible situations in the workplace where people may be exposed to injury, illness or disease.

**Risk assessment** is the process used to determine the likelihood that people may be exposed to injury, illness or disease in the workplace arising from any situation identified during the hazard identification process.

**Risk control** is the process used to identify all practicable measures for eliminating or reducing the likelihood of injury, illness or disease in the workplace, to implement the measures and to continually review the measures in order to ensure their effectiveness.

**Risk:** Combination of likelihood of an occurrence of a hazardous event (P) and the severity of injury or ill health that can be caused by the event (S).

$$\text{Risk (R)} = \text{Probability (P)} \times \text{Severity (S)}$$

**Acceptable Risk:** Risk that has reduced to a level that can be tolerated by the organization having regards to its legal obligations and its own OH&S policy.

**Not Acceptable Risk:** A 'Not Acceptable Risk' is one which exceeds some threshold for significance.

**Fatal Incident:** Loss of life / bodily injury, which may permanently, disables a person to carry on his daily work.

**Ill Health:** Identifiable, adverse physical or mental condition arising from and/or made worse by a work activity and/or work-related situation.

#### **1.1 Identification of Hazard & Subsequent Risk:**

- Every activity, sub-activity and tasks have its own hazards & risks.
- While identifying the hazards and subsequent risk, following points shall be taken into consideration, these are:
- Human behaviors, capabilities & other human factors. (Workplace layout, operator information, physical work, work patterns also personnel competency)
- Infrastructure, equipment & materials at the workplace, whether provided by the organization or others. (e.g., hazards caused by stored material, handling & placement of materials, Hired vehicles)
- Changes or proposed changes in the organization, its activities, materials.

- Modifications to the safety management system, including temporary changes, and their impacts on operations, processes, and activities.
- The design of workplace areas, processes, installations, machinery/ equipment, operating procedures and work organization, including their adaptation to human capabilities.

### **1.2 Sources of Information or Inputs to be considered during HIRA:**

- Safety Policy
- Occupational exposure for health hazard
- Inputs from the applicable legislations, standards and codes of practices, relevant operating manuals of plant and machinery and MSDS of the chemicals etc....
- Records or reports of incidents
- Audit & inspection report, assessments and review
- Process review and improvement of activities in the workplace
- Information on best practices and typical hazards in similar organization
- Information on the facilities processes and activities of the organization plan, OEP etc.
- Nature, Timing, Scope of work and methodology should be considered.

### **1.3 Method of Risk Classification:**

In order to identify level of risk associated to identified hazards, the hazards will be evaluated in accordance with their probability & severity and classified in category indicated below,

#### **Step 1 Hazard Identification**

Identify the Hazards to health and safety to which persons are exposed. Objective is to develop a proactive approach to Occupational Health and Safety Management System by anticipating and managing the changes.

#### **Step 2 Risk Rating (R) without control**

For each hazard identified assess and estimate the Risk associated with it in relation to probability (P) and severity (S) of occurrence, without considering the existing controls. Match the probability index and severity index and calculate Risk Rating (**PX S**).

Refer –Table no.1 for probability; Table No-2 for severity

#### **Step 3 Risk Rating R with control**

Evaluate the risk rating (**PX S**) by considering controls in place. Focus on:

- Exposure to specific hazard
- Probability (**P**) of the occurrence of the hazard.
- Severity (**S**) consequences of injury or ill-health

**Table 1**

Rating	Probability of Occurrence	Description
1	Very Unlikely (Improbable)	Hazardous event or exposure may occur in exceptional circumstances. (Very remote chance)
2	Unlikely (Remote)	Hazardous event or exposure is unlikely to occur (Rare chance)
3	Likely (Possible)	Hazardous event or exposure has a significant chance to occur
4	Very Likely (Probable)	Hazardous event or exposure is certain to occur

**Table 2**

Rating	Severity Occurrence	Description
1	Negligible	Minor injuries such as small cuts and bruise, back to work
2	Minor	Injury/ill health with short term effect, not reportable - away from work for less than two days
3	Severe	Major injury or permanent disability or ill health with long term effect reportable;
4	Major	Fatality, disasters.

**Step4: RISK Calculation/Evaluation:**

Severity (S)				
Probability (P)	1. Negligible	2. Minor	3. Severe	4. Extreme
1. Improbable	---	---	D	C
2. Remote	---	C	C	B
3. Possible	D	C	B	A
4. Probable	C	B	A	A

**A:** Hazard must be avoided (or the level of risk reduced significantly and reliably by controls).

**B:** Hazard should be avoided (or the level of risk reduced significantly and reliable by controls).

**C:** Risk to be controlled as far as reasonably practicable.

**D:** Risk is controlled as far as reasonably practicable.

**---**: No control measure necessary.

**LEGAL:** If activity come under legal implication (significant) than additional control measures is to be taken and has to be reviewed periodically.

**S:** Significant

**NS:** Non - Significant.

#### **Step5: Implementation of Control Measure:**

❖ **Eliminating the hazard** - Elimination of risk by avoiding a certain activity/ process or use of alternatives; design improvements; change of process etc.

❖ **Substitution** - Reducing risk using a hazardous substance or chemical which is relatively less risky; using low voltage electrical appliances

**For example** - Use hydraulic machine in wet condition instead of electrical power-driven machine to avoid shock hazards.

#### ❖ **Engineering Controls**

❖ **Redesign:** Jobs and processes can be reworked to make them safer. For example, containers can be made easier to hold and lift.

❖ **Isolation** - If a hazard cannot be eliminated or replaced, it can sometimes be isolated, contained or otherwise kept away from workers. For example, an insulated and air-conditioned control room can protect operators from a toxic chemical and installing guarding on equipment or operating machinery remotely.

❖ **Prevent or minimize exposure to the risk:** If a hazard cannot be eliminated, there are a number of control options that can be used alone, or in combination, to prevent or minimize exposure to the risk.

Once in 6 months or whenever require the HIRA register reviewed by EHS In-charge with the relevant functional for the continuing significance level. Monitoring/Control procedures/guidelines documented to prevent/reduce the associated impact / risks.

The identified significant issues are considered and included appropriately in the Objectives and targets.

Necessary Emergency response procedure / guidelines are identified for emergency situations.

Client Safe Operating Procedure (SOP) and work instruction will be referred for preparation of Hazard identification and Risk Assessment



## **14. WORK EQUIPMENT**

### **5.1 PERSONAL PROTECTIVE EQUIPMENTS (PPE)**

1. All contractor workers shall be provided with adequate & proper safety helmets, good quality safety shoes.
2. The persons engaged in noise area shall be provided with ear plugs / muffs.
3. Approved safety belt (Full body harness) shall be provided for persons working at height.
4. Fall Arrestors, Retractable Fall Arrestors, Safety Net, Guy Ropes, and modern Safety gadgets for working at height are to be used.
5. Civil contract workers shall use the personal protective equipment as per the area they are working.
6. Gumboots shall be provided wherever it is found necessary i.e., activities involving waterlogged areas.
7. No workers including woman workers shall be allowed to take up the job without proper personal protective equipment. It is the responsibility of the concerned supervisor to ensure the personal protective equipment and adequate safety measures.
8. Breathing apparatus sets.
9. All personal protective equipment's should be of good quality.

#### **3.1.1 Personal Protective Equipment's (PPE's)**

The VBHC shall provide required PPEs to workmen to protect against safety and health hazards. Primarily PPEs are required for the following protections.

- i) Head Protection (Safety helmets).
- ii) Foot Protection (Safety footwear, Gumboot, etc.)
- iii) Body Protection (High visibility clothing (waistcoat/jacket), Apron, etc.)

- iv) Personal fall protection (Full body harness, Rope-grab fall arrester, etc.)
- v) Eye Protection (Goggles, Welders glasses, etc.)
- vi) Hand Protection (Gloves, Finger coats, etc.).
- vii) Respiratory Protection. (Nose mask).
- viii) Hearing Protection (Ear plugs, Earmuffs, etc.)

Safety Helmet Colour Code	Person to use
White	Staffs
Grey	Visitors
Blue	Contractor Supervisor/Foreman
Red	Electricians
Green	Safety Dept
Yellow	All workmen

## **15.0 Plant & Machinery Safety:**

### **15.1 standard operating procedure for Rope Suspended Platforms (RSP)**

RSPs operations are complicated considering the non-availability of single operator, small scale manufacturers and continuous shifting at sites. Standard procedures are to be followed by all concerned to ensure safe and productive operations.

#### **Erection & Dismantling:**

- ❖ E&D team(s) duly approved by PMC / safety head only be availed at sites for erection, shifting and dismantling of RSPs at projects. Skill evaluation report duly authorized by P&M In-charge must be available at sites and this document will be audited.
- ❖ Sites having more than 5 RSPs should have an **exclusive** E&D and monitoring team for better control. Special training can be given for such E&D team thro' OEM and certification be attached with Skill evaluation report.
- ❖ For short term requirement, where dedicated team cannot be mobilized, you can avail OEM services. Skill evaluation in this case is also compulsory.
- ❖ All RSPs should be utilized with counter weight system only. If any special application like using parapet clamps, the proposal shall be forwarded to HQ P&M for approval prior to implementation.
- ❖ It is recommended to avoid any works above and below the RSP working area. In case of very unavoidable situations, RSPs shall operate with overhead Protection.

#### **Operations:**

Since the possibility of having dedicated operator for each RSP is difficult, the following measures are to be implemented.

- ❖ Sites having more than 5 RSPs should have a dedicated person (Engineer / Foreman / Technician - Based on the quantity of RSPs engaged at site) to monitor and control the operations as RSP In-charge. The person is to be identified from the site team depending upon the availability ratio (Own/Hire/Subcontract) by the Project manager. His major responsibilities are as follows:
  - Ensuring Authorized operator (Approved by site EHS / P & M) enters RSP and Identity cards are displayed.
  - Ensuring all RSP panel boards are equipped with Lock & Key.
  - Daily pep-talk explaining the safety requirements to day-to-day operators / users and hand over the keys to respective operators.
  - Monitoring RSP operators during the execution on whether their harnesses are tied to the fall arrestor, eqpt not being used for materials shifting etc.
  - Ensuring that the keys are being passed from one gang to other gang only through him and all the keys are collected at the end of the day / work.
  - Maintaining operator log register for each RSP, throughout the project.

#### **Safety Gadgets / Systems:**

- RSPs confirming to **list of safety gadgets / systems** only must be availed at projects (Own / Hired / Subcontract) for all future requirements.
- All RSP hire or subcontract work orders are to be annexed with safety gadget / systems availability status.
- Wherever possible, please encourage the usage of MCPs, which are more sturdy and safer.

## **16. MATERIAL HANDLING:**

Work Instruction will be referred for manual and mechanical means of material handling.

HIRA / Safe work methodology will be prepared for the activity and communicated to all

Training to be conducted for supervisors/engineers and workers on safe manual & mechanical material handling in conformance with Client work instruction

Approved checklist for manual & mechanical handling will be followed

Inspection of components of material handling equipment will be carried out as per our checklist by the Concerned Personal. The tools & tackles used for material handling and erection work will be checked before putting them on Use. Load chart; boom angle indicator will be provided for heavy lifting cranes.

Signaling to crane by single person must be ensured. Crane operator must be authorized by safety department of the Contractor.

**Do's & Don'ts of material handling:**

- While handling the materials care should be taken to prevent the wire rope slings getting placed on sharp edges...
- Tying of the lifting material should be ensured by a designated person so that the material does not slip and fall by any chance.
- It should be done by a good Riggers & /or trained persons.
- The persons receiving the material on the platform top should hook their belt to a rigid structure.
- The area below should be barricaded so that no one enters when the material is lifted.
- While shifting materials through platform openings also the same precautions as stated above should be taken care.

**14.1 Material Handling Safety:**

**14.2. Mechanical Material Handling:**

**Testing & Examination:**

Certificates of test and examinations must be obtained for the lifting appliances & gears such as

- 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 Year.
- 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 appliance 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 its 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.

### **16. Manual Material Handling:**

- Try to avoid manual material handling as much as possible.
- Manual material handling work must be done only under proper supervision.
- No adult more than 50yrs of age to be allotted material shifting work.
- Strict adherence of PPE in material shifting must be ensured.
- Material shifting work must be carried out as per below chart,

Person	Maximum Weight Load
Adult man	50 kg
Adult woman	30 kg

### **15.6 WELDING AND CUTTING**

- Client Work Instruction on Hot work will be Referred for Arc Welding / Gas cutting
- Safe Work methodology and HIRA will be prepared for welding and to be communicated to those who involved in the activity

- Hot work permits will be obtained before commencement of the activity
- Only competent & certified welder to be allowed to perform the activity
- Certified welding machine to be used for the activity
- Housekeeping will be ensured around the hot work area
- Approved Hot work checklist to be followed
- Usage of all relevant PPE will be ensured
- A suitable fire extinguisher / Fire bucket filled with sand will be kept ready for immediate use at places where hot works are carried out.
- The oxygen pressure for welding shall always be high enough to prevent acetylene flowing back into the oxygen cylinder.
- Flash back arrestor will be fixed with cutting sets at cylinder and torch end as well
- Adequate precautions will be taken to prevent:
  - a) Fire being started by sparks, slag or hot metal; and
  - b) Damage to fiber ropes from heat, sparks, slag or hot metal.

#### **15.7 Welding at places with fire risks:**

- Unless adequate precautions are taken, no welding or cutting operations will be allowed near places where combustible materials are likely to be present.
- Combustible materials and structures that cannot be removed from the vicinity of hot works shall be protected by suitable means.

#### **15.8 Gas cylinders:**

- Only Oxy/ Acetylene gas cutting allowed. LPG is not permitted
- Gas cylinders will be stacked only in designated yard and protective caps are mandatory for all cylinders
- Cylinder to be kept in suitable stands, secured with chain always while at work
- 4 NOs of Flash back arrestor mandatory
- Only competent and authorized fitter to be engaged for the activity
- Gas cylinders shall be covered with wet gunny bags while placing it in open area for work
- Leak test shall be conducted prior to use of cylinders
  - Gas cylinders should be inspected, stored, handled and transported with a established system
  - When in use, cylinders should be held in an upright position.

- Welders should not tamper with or attempt to repair safety devices and valves on gas cylinders.
- Only the right pressure-reducing regulator should be used for the gas in the cylinder.
- Cylinder valves should be kept free from grease, oil, dust and dirt.

## **17. Tower crane –**

1. Ensure web slings are free from damage.
2. Avoid overloading
3. Ensure before starting the work physical inspection should be done for the crane.
4. Use Proper communication device for safe signal propose.
5. Ensure the LG and machines have legal documents Like TPI.
6. Ensure before starting the work physical inspection should be done for the crane and Sand Bucket using the check list.
7. Provide proper tag line to avoid oscillation.
8. Deploy trained signal man for proper lifting.
9. Ensure Sign boards should be provided.
10. Ensure hooks in the Sand Bucket should be properly inspected before lifting.
11. Ensure No man movement in the lifting area.
12. Ensure Proper supervision until the task complete.
13. Ensure no person should work underneath the Suspended load.
14. Barricade the Lifting area before starting the work.
15. Ensure SWL of VR hook (Gable) should be displayed.
16. Ensure Center of gravity should be stable while loading and unloading.
17. Ensure Proper Access to unloading.
18. Ensure medical fitness of workmen.
19. Check the fall arrester and safety harness before starting the work.

### **13.1 Passenger & material Hoist –**

1. Working crew should be aware about the hazards and controls.
2. Ensure adequate work permits are filled and get signed from authorized persons.
3. TBT to be conducted before start of the activity and Risk in that job to be explained to all the workers.
4. Ensure adequate supervision until the task complete.
5. Ensure adequate access to the work area, free from obstructions.
6. Ensure all workers are properly using appropriate PPE.
7. Ensure all personnel are properly trained and competent for the job.
8. Housekeeping should be done after completion of the work.
9. Ensure that continuous working by the same gang should be avoided.
10. Ensure proper illumination provided to the work area while needed.
11. Never run the hoist at wind speed exceeding 20 m/s

12. Never exceed the maximum load and number of passengers stated on the sign.
13. Never operate the hoist before making sure that daily checks, service and maintenance have been carried out.
14. Never permit load to project through the cage side panel or through the top of the cage.
15. Never operate the hoist unless all guards and safety devices are working properly.
16. The hoist should not be started top and lower limit switch is turn off.

#### **16.2 General Safety Precaution:**

- Inspection tagging must be followed for all mechanical equipment.
- Skill test must be conducted by P&M in-charge of all P&M operators & test record must be maintained.
- All P&M must be inspected daily by operator, fortnightly by P&M in-charge & joint monthly inspection by P&M in-charge & Safety engineer.
- Periodic & scheduled preventive maintenance must be followed & record must be maintained.
- Good Housekeeping must be maintained around P&M equipment.
- LOTO must be followed for repair & maintenance work of P&M equipment.

#### **16.3 Machine Guarding:**

- Ensure that all rotating, reciprocating & dangerous parts of machineries whether driven by mechanical power or not, securely guarded and they are never removed while machines is in motion and positioning is checked daily by operator, weekly by P&M personal, fortnightly by safety personal & monthly joint inspection by safety & P&M In-charge. (Rule 37 of BOCW Central Rules).

#### **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, and 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 signaller 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.

### **1 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.

### **2 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.

### **3. 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 one 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.

### **4 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 enveloped with safety net from all three side (except building phase).
- Gates to be provided at all landing including ground level with lock & key arrangement.

## **18. WORKING AT HEIGHT**

- Client work instruction for Height work will be referred and for the activity
- Safe work methodology and HIRA shall be prepared and communicated to all those involved in the activity
- Height work permit is mandatory
- Height Work Safety training will be conducted to supervisors and workers
- Height work Phobia test shall be conducted for worker prior to engage
- First aid / emergency procedures shall be explained to supervisors, workers for any foreseeable contingency
- Height work checklist of Client will be followed
- Scaffolding, Ladders, Safety nets, Lifeline, fall arrestors, working platforms, Mobile elevated working platforms, guard rails for floor/shaft opening shall be checked prior to commence the activity
- Approved checklist for Height work will be followed
- Working at a height above 1.8m shall be protected by rigid barricades / railing (minimum 2.5 or 3" ms pipes to be used as a railings) at a height 1 m with intermediate guard rails at spacing less than 500mm with toe 150mm guard.
- The vertical posts should drive deep to provide rigid support. All rigid rails shall be painted with 300 mm wide black & yellow strips alternatively.

- Working Platform should be greater than 600 mm and strong enough (made up of ms material) to take load of persons, materials and tools for the purpose.
- All working platform should have provision of two rung hand rail (top rail @ 1m & mid rail @ 500mm) with toe guard provision. Outer working platform should be made only after approved design by structural consultant.
- Openings on platforms and untied-boards / gratings are not permitted. Toe board shall be provided around platforms where applicable.
- Ladders provided as access shall be secured at both top & bottom.
- Stairs with greater than 15 steps will have landings at every 15 steps.
- Where not possible to provide rigid barricades, use Double lanyard Full body safety harness with scaffold hook is compulsory. The anchoring point of the belt should be above the person and hooks must be properly secured to the anchoring point.
- Safety Helmet with chin strap, Safety Shoes, double lanyard full-body safety harness and other specific PPEs for the job concerned should be used by the workmen.
- Safety training of fall prevention shall be imparted to all workmen involved in such operations.
- The pass validity shall be given for six months from the date of issue. In case any individual continues to work at height beyond this period he has to obtain fresh gate pass undergoing the same procedure.
- Person certified medically fit & should undergo vertigo test and then imparted training for “safe work at height” and shall undergo the test in the Test rig specially design for testing of persons for working at height.
- Vertigo test platform should be erected at site & all new entries should undergo vertigo test in induction training itself.
- All employees of VBHC (Engineers, Supervisors, Foreman & workers) shall undergo medical test as per the format for certification of fitness by the qualified doctor
- P.P. net, if required, shall be provided under the staging platform to protect falling materials and persons.
- Strict control to be followed for passive and active fall protection measures as per site condition. Provision of hard barricading & railings for all open cut-outs, shafts, staircase, open edges/ balconies etc. is imminent.
- Provision of full body harness-double lane-yard safety belts/ fall grab arrester / lifelines (24mm pp. rope) for anchorage of harness for all type of height work is must.

- Contractor to maintain sufficient stock of full body safety belts. Peripheral horizontal safety net for overhead hazard protection and vertical nets all along face of the structures for containment of falling materials are necessary (Rule 41 & Chapter XVI of BOCW Central Rules).

#### **18.1 Fall Protection:**

- Personal fall arrest systems used on scaffolds shall be attached by lanyard to a vertical lifeline, horizontal lifeline, or scaffold structural member at all times. Vertical lifelines shall not be used when overhead components, such as overhead protection or additional platform levels, are part of a single-point or two-point adjustable suspension scaffold.
- When vertical lifelines are used, they shall be fastened to a fixed safe point of anchorage, shall be independent of the scaffold, and shall be protected from sharp edges and abrasion.
- Safe points of anchorage include structural members of buildings, but do not include standpipes, vents, other piping systems, electrical conduit, outrigger beams, or counterweights.
- When horizontal lifelines are used, they shall be secured to two or more structural members of the scaffold, or they may be looped around both suspension and independent suspension lines (on scaffolds so equipped) above the hoist and brake attached to the end of the scaffold.
- Horizontal lifelines shall not be attached only to the suspension ropes.
- When lanyards are connected to horizontal lifelines or structural members on a single-point or two-point adjustable suspension scaffold, the scaffold shall be equipped with additional independent support lines and automatic locking devices capable of stopping the fall of the scaffold in the event one or both of the suspension ropes fail.
- The independent support lines shall be equal in number and strength to the suspension ropes.
- Vertical lifelines, independent support lines, and suspension ropes shall not be attached to each other, nor shall they be attached to or use the same point of anchorage, nor shall they be attached to the same point on the scaffold or personal fall arrest system.

#### **19. HOUSE KEEPING:**

- Client Work Instruction for Housekeeping to be referred to establish housekeeping procedure for maintaining good housekeeping at Construction Sites and associated offices, perimeter area, stores, workshops, batching plants, stock yards and labor camp.

**Stores:** Safe Storage of hazardous materials such as diesel, oil, gas cylinders will be explained to the concerned.

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## **20.Electrical Safety**

Electricity is our friend without which we cannot proceed towards any development. But it may become dangerous foe while we neglect or forget to take care of it. Following safe practices must be observed / ensured while executing electrical work and ensure compliance to prevent injury and damage to property due to fire & explosion.

20. Ensure to follow Electrical Safety Code of Practices while installation, operation & maintenance.
  21. Display Single Line Diagram (SLD) & no supply must be given only as per approved SLD.
  22. Display '**DANGER**' notice near medium, high & extra high voltage installations.
  23. Electrical cables and tools shall be regularly inspected. Any defective tool or damaged cables shall be replaced or rectified.
  24. Provision of body earthing is mandatory for all machines.
  25. Only use three core double insulated cables for portable tools.
  26. All electrical connections, fittings, appliances shall comply with National Electrical standard. Only industrial standard plugs and sockets shall be used at the worksite.
  27. Ensure effective connection of both Neutral & Body earthing to every generator set.
  28. Maintain good housekeeping in the generator rooms.
  29. Connection of all low voltage installations shall be taken through sound **ELCB of 30 mA** sensitivity. Record of their periodic testing shall be ensured.
- Earth-pits and the earthing connections shall be periodically maintained to have effective earthing system on all electrical equipment & installations. All non- current carrying metal parts of high & extra high voltage installations should be earthed.
  - Earth resistivity must be check on monthly basis with the help of earth tester.
  - ELCB must be check on fortnightly with the ELCB tester.

- Ensure use of rubber-mat on the floor around each & every electrical installation and use of insulated tools only while working with electricity.
  - Ensure effective earthing and insulation at the joints if any in the cables connected with concrete vibrators, hand lamps and any other Electrical power driven mobile - equipment.
  - Provide cable-marker on the ground to identify underground cables at site. Cables are not allowed to lie on ground. All the temporary electrical cables shall be laid on posts as overhead or underground.
  - Layout of the cables shall be done considering isolation & segregation from dangerous locations.
  - Electrically powered equipment under repair / refueled shall have the power source turned-off.
  - Treat everything as live and ensure use of job specific PPE regarding electrical work.
  - Ensure use of Full body Safety Harness and use of Non - metallic Ladder while working at height.
  - Provide proper illumination at each work front.
  - Danger tags such as '**DO NOT OPERATE**' shall be placed on defective electrical equipment's/ panels.
  - When passing or working under high voltage power line, no part of any plant or equipment shall come closer than 6 m to the power line.
  - Appropriate protection such as Lightning-Arrestor shall be provided against lightning.
  - Fire buckets filled with clean, dry sand and portable fire extinguishers (Carbon di-Oxide & DCP) should be provided for extinguishing electrical fire.
  - Conduct periodic training and mock drill regarding electrical fire fighting technique and restoration of persons suffering from electric shock.
  - Procedure for restoration of persons suffering from electrical shock should be displayed in local language at conspicuous places.
  - Create awareness of the workmen through tool-box-talk & other EHS-promotional training to avoid sleeping in the generator room and not to wear loose clothing while in work.
  - Electric wires strung for temporary lighting shall have clear overhead clearance.
- 1) Permissible approach distances

Voltage (Volt)	150 - 750	750 - 50,000	50,000 - 250,000	Over250,000
Minimum Distance (m)	2.0	3.0	4.5	6.0

- 2) Erection of over-head barriers (goal posts) painted in two contrasting warning colors to caution the driver / operator of transport & earth moving equipment to be operated in dangerous proximity of the power lines. Clearance of overhead power lines from ground for earth moving equipment and vehicles shall be as follows:

Voltage of Power Lines (KV)	11& below	33& below	132 & below	175 & below	400& below
Clearance (m)	1.4	3.6	4.7	5.7	6.5

## **SITE ELECTRICITY**

### **General**

1. All electrical installation work on site shall be carried out in accordance with the requirements laid down in the specification. All work shall be supervised and executed by qualified and suitably trained electricians.
2. Temporary electrical site installation and distribution systems shall be in accordance with:
  - a) Indian Electricity Act and Rules.
  - b) The Power Companies Supply Rules.

### **Distribution of Supply**

1. The site's mains voltage shall be as the electricity utility supplies. 415V 3- phase 4 wire system.
  - a) Single-phase voltage shall be as the electricity utility supplies, 220V supply.
  - b) The following voltage shall be adhered to for typical applications throughout the distribution system.
  - c) Fixed plant - 415 v - 3 phase.
  - d) Installation in site buildings 220 v - 1 phase.
  - e) Fixed flood lighting - 220v - 1phase.
  - f) Portable and handheld tools - 220v - 1 phase.
  - g) Site lighting (other than flood lighting) 220v- 1phase, and
  - h) Portable hand-lamps (general use)-230 v - 1phase.
2. When the low voltage supply shall be energized via the employer's transformer, any power utilized from that source shall be either 415v-3 phase or / 220 v – 1 phase as appropriate.
3. Protection shall be provided for all main and sub-circuits against excess current, residual current and earth faults. The protective devices shall be capable of interrupting (without



damage to any equipment or the mains or sub-circuits) any short circuit current that may occur.

4. Earthing shall be provided for all electrical installations and equipment to prevent the possibility of dangerous voltage rises and to ensure that faults are rapidly cleared by installed circuit protection.
5. Only plugs and fittings of weatherproof type shall be used.

### **Electrical Equipment's**

- Turn off the main switch of all electrical circuits when the equipment is not in use and more particularly while leaving the site.
- Avoid temporary electrical connections. Use them only in situations where fixed wiring not feasible. If their use is necessary, ensure that they are not run through such locations where they could be damaged particularly due to the vehicle movement.
- Don't overload circuits. Install additional circuit if necessary.
- Ensure that portable electric tools are effectively earthed.
- Keep use of portable lamps to minimum.
- Disconnect electrical equipment if it malfunctions or gives off a strange smell. Call the maintenance personnel.
- Follow correct specifications when replacing fuses in equipment.
- Always prefer standard equipment bearing ISI mark.
- All temporary electrical panel should be IP-55 (Weather proof panels) equipped with 30mA ELCB / RCCB. Use of only single length and three core double insulation cables of required rating permitted.
- All temporary electrical panel must be marked with identification number & inspection record must be maintained as per marked identification number only.

### **Portable Electrical Hand Tools**

The portable electrical hand tools & inspection lamp in underground or confined space at excavation or tunneling work shall be of 24 volts. The risk of severe shock is very low with 24 volts circuits. Low voltage appliances are therefore suggested to minimize the risk of shock in these areas.

- Employment of licensed electricians
- Use of low voltage or insulated portable electric tools wherever possible.
- Daily checks on earthing of metallic bodies of portable electric tools and keeping inspection & maintenance record.

- Periodical watering of earth-pits, measurement of earth-pit resistance and maintenance of record.
- Implementation of Lock-out & Tag-out system
- Tool Box Talk to workmen on safety while handling long objects in the vicinity of overhead electric wires, supported by supervision.
- Continuous on the job supervision and correction in case of trailing cables on the ground and improper tapping of power.

### **Power Tools**

- Only trained & experienced personnel shall be authorized to operate power tools energized by electricity, compressed air, pneumatically, fuel, hydraulic, cartridge or combustible gas.
- Manufacturer's safety guidelines and maintenance schedules shall be strictly observed.
- Check electrical tools before starting work for the day and ensure that the cables are not damaged & the tools are properly grounded.
- Provision of Inspection tagging system for all power tools & equipment's
- Powered tools, which are damaged, shall not be used until reported or replaced.
- Powered tools shall be stored in stable position.
- Approved and properly grounded electrical tools with three - pin plugs shall be used.
- Tools shall be used for the intended task and shall be maintained in good condition.
- Grinding disc shall be inspected for correct size and speed prior to installation.
- Guards shall not be removed except for service or maintenance purpose only.
- Personnel must wear appropriate personal protective equipment's (Safety Shoe, Helmet, goggles, Gloves, Apron etc.) while using tools.

### **20.1 TYPICAL ACCIDENTS DUE TO POOR HOUSEKEEPING:**

The relationship between accidents and poor housekeeping is very close. Too often accidents are reported because of:

1. Tripping over loose objects on floors, stairs and platforms
2. Getting hit by articles falling from overhead
3. Slipping on greasy, wet, or dirty floors

## **20.2 GUIDELINES FOR HOUSEKEEPING: -**

**1. Storage Areas** - all materials will be maintained in a neat stockpile with well-laid aisle and walkways for ease of access. There shall not be any projections in the walkways.

**2. Scrap Yard** - Wooden scrap yard should be well away from any gas cutting or welding operations and Steel scraps should be separately stacked.

**3. Lighting** - The whole working area should have adequate illumination.

**4. Approach roads** -The approach road should be freely accessible all the time so as not to have blocking during emergency.

GOOD HOUSEKEEPING IS AN IMPORTANT ELEMENT OF ACCIDENT PREVENTION. IT WILL BE PLANNED AT THE BEGINNING OF THE JOB AND CAREFULLY SUPERVISED UNTIL THE FINAL HAND OVER.

## **21. SAFETY TRAINING**

### **Minimum required Training Aid:**

- Training hall with capacity of minimum 25 personal
- Siting arrangement (chair with foldable writing pad)
- Good provision for ventilation
- Display of site sign ages & safety posters (minimum 10)
- Display of safety policy in English, Hindi& local Language
- Display of mannequin with PPE-Safety helmet, safety shoes, reflective jacket, hand gloves, ear plug/muff, dust/nose mask, safety goggle & double lanyard full body safety harness.

### **Tool Box Talk:**

A short information meeting shall be conducted prior to commencement of every day's work chaired by the Site engineer or supervisor or location in-charge and attended by workers under his charge. Safety and Health topics discussed will be related to the work to be under taken for the day. Attendance and Safety and Health subject matters discussed shall be recorded.

Best practices & case studies also discussed & shared with workers through tool box talk.

## **22. Emergency Preparedness & Response Procedure**

Emergency Response Team:

Fire Fighting Team

Rescue Team

First aid Team

Electrical Team

Security Team

Emergency Response Team

Fire Fighting Team

### **Site emergency response team will be structured as follows**

- Emergency Response Team (ERT) Chief
- Evacuation Team
- Fire Fighting Team
- First Aid Team
- Admin Team

#### **ERT Chief –**

Project Head is the ERT chief, as he is responsible for activation the emergency plan assuming overall command during the emergency situation.

#### **Evacuation Team –**

Mechanical in-charge is the head of evacuation team and other team members from safety & other staff & contractor's key person will be involved.

#### **Fire Fighting Team –**

Competent Fireman or security in-charge is the head of fire team and other team members from site security and contractor safety steward.

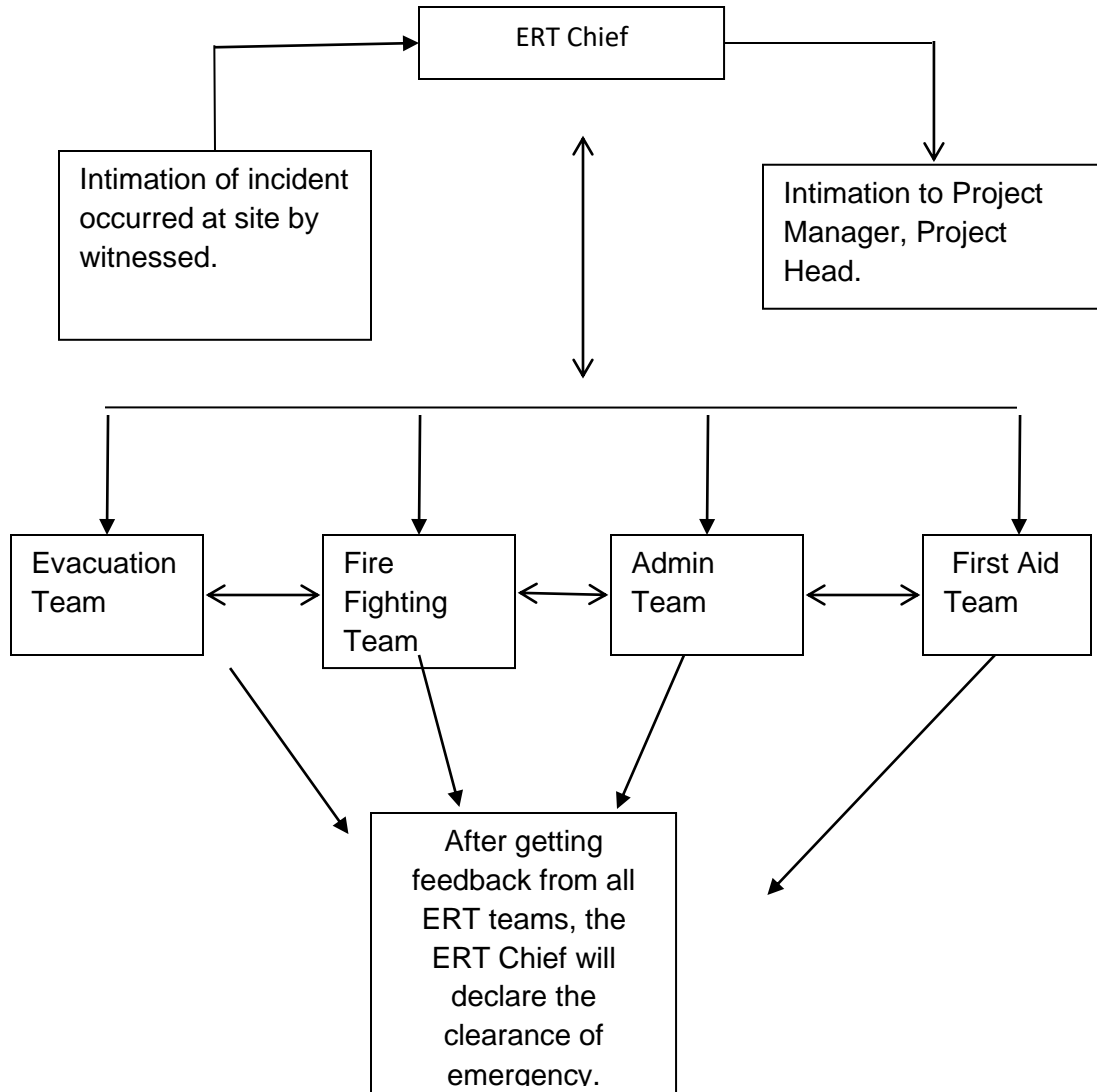
#### **First Aid Team –**

First aider is the head of First Aid Team and other team members are site ambulance driver, store staff & contractor' safety steward.

#### **Admin Team –**

Site admin in-charge is the head of Admin Team and other team members will from admin/store department.

**22 Roles & Responsibility of ERT Team:**



ERT Team Roles & Responsibility	
ERT CHIEF	<ul style="list-style-type: none"> <li>- As the project head, he is responsible for activation the emergency plan assuming overall command during the emergency situation.</li> <li>- Immediately arrange for an informal on spot meeting of the members preferably at site to take stock of the situation and initiate necessary measures</li> <li>- Take on spot decision on the procedure to be adopted based on the type and extent of the emergency</li> <li>- Inform onsite Safety Officer about the incident.</li> <li>- Analyze the situation and determine if rescue services from relevant government departments are necessary</li> <li>- Conduct a review of the accident site with onsite Safety Officer after resolving the accident and determine if it is safe to resume the construction work.</li> <li>- Instruct team member to release the accident site to allow staff to go back to the construction site under a safe situation.</li> </ul>
EVACUATION TEAM	<ul style="list-style-type: none"> <li>- After getting site evacuation instructions from ERT Chief they will ensure entire site evacuation in safe manner.</li> <li>- Assist in evacuating all workers and staff to assembly point</li> <li>- Ensure evacuation path is clear for exit.</li> <li>- Conduct head-count in the Emergency Assembly Point</li> <li>- Report any missing person to the Safety Officer/ERT Chief</li> <li>- Time to time reporting to ERT chief.</li> </ul>
FIRE FIGHTING TEAM	<ul style="list-style-type: none"> <li>- Identify fire intensity and communicate with external fire rescue team if necessary.</li> <li>- Make available all required firefighting equipment's for extinguish fire.</li> <li>- Assist in evacuating all workers &amp; staff from site.</li> <li>- Lead external rescue team to the scene, to assist Fire Services Department personnel to rescue trapped people if required</li> </ul>
ADMIN TEAM	<ul style="list-style-type: none"> <li>- Notify relevant government departments / organisations if necessary</li> <li>- Report the incident to relevant parties if required</li> <li>- Communication with media, if required</li> <li>- Insurance &amp; claim settlement, if applicable</li> </ul>
FIRST AID TEAM	<ul style="list-style-type: none"> <li>- Communication with nearby hospital for further medical assistance.</li> <li>- Assist in checking casualty, provide first aid treatment and contractor to hospital, if required</li> <li>- Make available sufficient Nos. of ambulance.</li> <li>- Reporting of all injured persons details to safety officer &amp; ERT chief.</li> </ul>

## **23. Environmental Protection**

All construction personnel will be provided environmental awareness training as part of their induction. A Project Specific briefing that highlights environmentally sensitive issues and description of the measures required protecting the environment including emergency procedures

**The following precautions shall be taken to prevent the atmosphere from getting polluted:**

### **Emission Control Measures**

## **24. Dust Control Measure:**

- Periodic Sprinkling of water / Irrigation
- Vegetation Cover
- Enclosed conveyer belt
- Speed Limit for all project vehicle in construction site will be 15 Km/hr
- Low Sulphur content diesel will be used, if available in the local market
- Bag filters / cyclone to entrap suspended particulate matter
- Adequate stack height for stationed plant (DG set)
- Periodic cleaning of dust filtering equipment's (like Air-conditioners)

### **24.1 Sources of wastewater & their management**

- Curing / Casting Yard
- Optimize the water requirement for curing.
- Utilizing wet blanks / jute cloth to maintain moisture.
- Curing water run-off shall be away from water bodies.
- Curing Yard overflow water will be collected in a tank through lined open or closed drains.
- Re-use the collected curing water fresh water will be added only for loss.
- At every 3 days interval, the complete collected curing water (from the tanks) will be used for sprinkling purpose or dust suppression.

#### **24.2 Sewage**

- Sewage water collected by septic tanks will be suitably disposed at regular intervals through approved vendors / municipality.

#### **24.3 Noise Control Measure**

- As far as possible, quieter plant and machines will be used for the construction works. When this becomes impracticable, barriers or enclosures will be used to suppress the noise level.
- Barriers should be of 10 mm. Plywood or similar material secured on scaffold tubes or other frame works.
- Providing warning signs in Noise Hazard areas.
- Isolating noisy activities from quieter one's example concrete compressors, pumps, and generators in screened-off areas or away from work to be carried out.
- If the noise level in the environment (outside the construction area) exceeds an acceptable limit, arrangement of screens (Tarpaulins) on the scaffold or other frame work will be provided to reduce the noise level.
- Noise-producing machines will be provided with mufflers / silencers to suppress the noise levels.
- The mufflers will be maintained in working condition. Noise level monitoring will be done periodically.

#### **24.4 Storing, Handling, using and disposal of Fuel and Lubricants**

- Fuel, Lubricants and oil will be managed and stored in accordance with applicable laws and regulations.
- Used oils and used lubricants to be discarded will be stored in corrosion-resistant marked containers and recycled or disposed in accordance with local laws and regulations.

### **25. Waste Management**

- Construction waste will be segregated in source and will be kept in designated yards and Disposal.
- All waste like concrete debris, scrap ply pieces, plastic waste, empty gunny bags etc. will be mostly reused for various purpose like backfilling, as packing material, material shifting,
- After reuse balance waste will be disposed of for recycling as per BOCW and other concerned guidelines.



### **25.1 Collection of concrete debris**

- All types of concrete waste will be collected in gunny bags and shifted to defined and demarked place (Debris yard), by means of material hoist, tower crane material bucket or by usage of debris chute.
- **NOTE:** In absence of other positive modes of disposal of debris from height installation of debris chute is must with feeding point & landing area of debris must be barricaded to avoid personal entry. Collected debris must be cleaned on a daily basis.
- **NO FREE FALL OF ANY MATERIAL FROM HEIGHT WILL BE PERMITTED.**

### **25.2 Collection of scrap ply/wooden scrap**

- All scrap ply and wooden scrap will be collected at defined and demarked “Wooden scrap yard”
- All scraps be disposed with adequate frequency.

### **25.3 Food waste:**

From office area, workmen canteen, pantry, rest room, all food waste should be collected in waste bins and disposed.

### **25.4 Bio medical waste:**

From the first aid room (labor shed and site locations) collected medical waste bins and disposed to /with (through doctor) hospital on adequate frequency.

### **25.5 Electrical waste:**

All electrical waste will be collected at defined and demarked at P&M room.

All electrical waste to be disposed with local service agency adequate frequency.

## **26. Guidelines for Sub-Contractors**

**The following guidelines are annexed to the work order to be issued to the subcontractor:**

1. No workmen below 18 years of age will be engaged for a job.
2. All workmen will be screened before engaging them on the job. Physical fitness of the person to certain jobs like working at height or other dangerous locations to be ensured before engaging the person on work. The final decision rests with the site management to reject any person on the ground of physical fitness.
3. Smoking is strictly prohibited at the workplace.

4. Sub-contractors shall ensure adequate supervision at the workplace. They shall ensure that all persons working under them should not create any hazards to self or to co-workers.
5. Nobody is allowed to work without wearing a safety helmet. Chinstrap of safety helmet should be always on.
6. No one will be allowed to work at or more than two-meter height without wearing a safety belt and anchoring the lanyard of safety belt to firm support preferably at shoulder level.
7. No one will be allowed to enter the workplace and work at site without adequate foot protection.
8. Usage of eye protection will be ensured when workmen are engaged for grinding, chipping, welding, and gas cutting. For other jobs, as and when EHS Personnel insists eye protection has to be provided.
9. All PPEs like shoes, helmet, safety belt etc. will be arranged before starting the job as per the recommendation of EHS Personnel.
10. All excavated pits will be barricaded and to be maintained till the back filling is done. Safe approach has to be ensured in every excavation.
11. Adequate illumination at the workplace will be ensured before starting the job at night.
12. All the dangerous moving parts of the portable/fixed machinery being used will be adequately guarded.
13. Ladders being used at site will be adequately secured at bottom and top. Ladders will not be used as work-platforms.
14. Erection zones and dismantling zones will be barricaded, and nobody will be allowed to stand under suspended load.
15. Horseplay is completely prohibited at the workplace. Running at site is completely prohibited, except in case of an emergency.
16. Material will not be thrown from heights. If required, the area will be barricaded, and one person will be posted outside the barricade to prevent the trespassers from entering the area.
17. Other than the electricians with red helmets no one will be allowed to carry out electrical connections, repairs on electrical equipment or other jobs related.
18. Inserting bare wires for tapping the power from electrical sockets is completely prohibited.
19. Underground cables are checked before landscaping / excavation.
20. All the electrical joints are double insulated and suitably clamped.
21. RCCB / MCCB checked in periodic intervals.
22. All major, minor accidents and near misses to be reported to Project In-charge/Project EHS In-charge to enable the management to take necessary steps to avoid the recurrence.
23. All scaffoldings / work-platforms will be strong enough to take the expected load. The width of the working platform and fall protection arrangements will be maintained as per the recommendation of Project EHS In-charge.

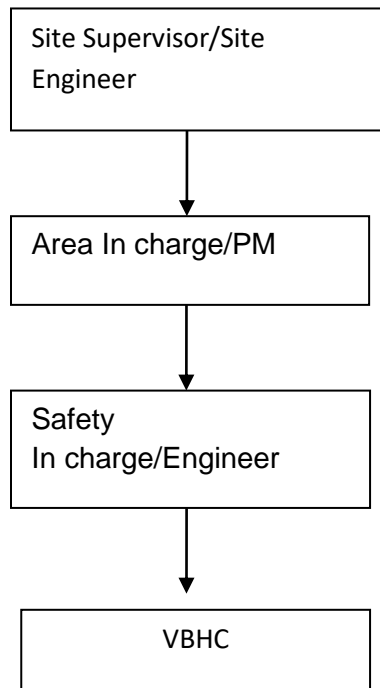
- 24. All tools and tackles will be inspected before use.
- 25. All lifting tools and tackles will be provided with valid test certificate.
- 26. Good housekeeping will be maintained.
- 27. Debris, scrap and other materials will be cleared from time to time from the workplace and at the time of closing of work every day.
- 28. Contractors will be instructed that all their workmen are following safety practices while traveling in the company's transport and staying at company's accommodations.
- 29. Adequate firefighting equipment will be made available at workplace and persons are to be trained in firefighting techniques.
- 30. All the unsafe conditions, unsafe acts identified by contractors, reported by site supervisors and/or safety personnel will be corrected on priority basis.
- 31. No children will be allowed to enter the workplace.
- 32. Deploying of Female workers on work at height & other high-risk areas will be avoided.
- 33. Other than the Driver/ operator, no one WILL BE ALLOWED to travel in a tractor / tough rider / Loader etc.

## **27.0 Work Permit system:**

### **Purpose:**

The formats for reports will be used in the site during the work execution given by client

### **Work Permit approval flow Chart**



### **27.1 Permit Formats:**

Available formats for Work permit as per format manual

Hot work permit (Gas cutting/ Welding)

Hazardous work permit

Work at Height permit

Scaffolding work permit

Excavation Work Permit

General Work Permit

Night Work Permit

Confined Space Work permit

Blasting Work permit

Any other work Permit as decided by Client / PMC as and when required depending on site working condition

## **28.0 General Safety Rules**

### **28.1 Visitor Safety Rules**

- Visitor to communicate & book a slot before visiting the site.
- Do not visit site unless escorted by Contractor person.
- Wearing safety helmet is mandatory and no visitor allowed to enter site area without helmet.
- Using mobile phone & listening songs/ headphones during site visit is strictly prohibited.
- Smoking is prohibited.
- Do not touch any electrical board or any mechanical / electrical equipment's on the way.
- Be careful of heavy vehicle movement, crane movement etc.
- Do not cross any barricaded area.
- Follow demarcated path during site visit.
- Photography is prohibited.
- In course of any emergency, the person escorting the visitors is responsible for their safety evacuation. Hence do not panic & stay where you are, you will be safely evacuating.

### **28.2 Induction Management**

New Arrival		
Level of Screening		Contains
Level 1	Screening from admin	Age proof, ID Proof, Address Prof, Preliminary Medical Examination including vertigo test, Detail medical examination in case of operator & drivers
Level 2	Screening from engineer	Education Qualification; Previous Experience; Skill test
Level 3	Safety Induction	by Contractor / Safety Team & maintained record
Level 4	Issue of ID Card/Gate Pass	After successfully completing all 3 level HR/Admin will issue with authorized signature & keep record of Level 1, 2 & 4

All new comers will go through safety induction training conducted by safety engineer. No one is allowed to work on site without safety induction training.

### **28.3 Training Matrix Flow:**

<b>Duration</b>	<b>Topic to be covered</b>
25mints	Screening of safety induction video
35mints	<b>Induction PPT Contain</b>
	Project Overview
	Safety Policy
	Project Safety Goal
	Site Safety Organization
	Site Logistic Plan
	CLIENT Safety Guideline
	Roles & Responsibility
	Hazard Associated with project & construction activity
	Site Safety Rules or Do's & Don't
	What to do in event of emergency
	Welfare, health & hygiene
	Reward recognition & Penalty
15mints	<b>Practical Demonstration</b>
	PPE demonstration Including Safety Belt
	Basic firefighting training

### **Safety Inspection:**

Two tier safety vigilance will be carried out. Routine daily walk-through safety inspection by Safety Engineers. Monthly inspection of major plant & machinery (batching plant, tower crane etc....).

## **28.4 Safety Inspection & Audit**

The following steps are followed during auditing

- 1) Collection of preliminary information about the project activities, the process and safety provisions that exists, through a pre-audit questionnaire.
- 2) Preparation of audit checklist to suit the requirement of the project which is to be audited
- 3) Field visit involves Inspection of various areas, discussions with employees at various levels and examination of documents, procedures, records.
- 4) Completion of Inspections and analysis of the data collected.
- 5) Preparation of audit report with recommendations.
- 6) Preparation of action plans based on the audit report in consultation

## **29.0 Labor Camp management:**

Sanitation and hygiene at work place as well as at the Labor Camp for all his workers and staff. Shall submit the plan of labor colony and labor toilet in advance for approval of the Project Manager of Client.

### **29.1 Labor 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 bears the figure of a man or of a woman, as the case may be.
- The number of urinals and latrines at site and at labor 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 workers 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 workers	

- Full time sweepers shall be deployed to maintain latrines 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 of 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 labor camp shall be of impervious material easy for cleaning & sweeping and water stagnancy is prevented.
- Adequate urinals conveniently situated & accessible in the high-rise buildings at 5<sup>th</sup> floor & above every after 3 floors.
- Daily cleaning and disinfectant treatment of toilets, bathrooms, water tank area, utensil washing area, drainage etc of labor camp will be ensured.
- Spraying of larva treatment & mosquito fogging shall be weekly or as required by topographical conditions.
- White-wash of every latrines/urinal 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 & labor 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.

## **29.2 Drinking water:**

Adequate number of water taps, water purifiers and water coolers 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.



## **30.0 First Aid Facility:**

### **13. FIRST AID**

#### **i. Definition First aid**

First aid to the injured is the immediate help or first assistance given to a casualty to preserve life before medical help is obtained or rendered.

#### **5.2.2 First things first: -**

a) Do not panic, keep calm so that you can handle situation more effectively.

b) Remember the **A', B', Cs** of life support.

**"A"** = AIRWAY OPEN: If not, ensure it is.

**"B"** = BREATHING: If not, resort to artificial respiration.

**"C"** = CIRCULATION: If not, resort to "Cardiopulmonary Resuscitation"-  
C.P.R.

c) Check the bleeding and arrange to stop it.

d) Look for signs of shock and fractures.

e) Loosen any clothing without disturbing the affected part.

f) Never give any unconscious person anything by mouth.

g) Separate the cause and the victim if possible (e.g. switch off electric supplies; remove the gas cylinder before assisting the casualty).

h) Keep the victim warm and reassured.

- i) Take care that first aid does not become a casualty himself.
- j) Simultaneously arrange for medical help.

#### **First Aid Boxes.**

First Aid boxes in accordance with the standard requirements shall be established at each work area, under the supervision of a person qualified to give First Aid.

#### **5.2.4 First Aid Training.**

Trained First Aider can give first aid at site. Minimum one member of safety Team should have first aid certification. Selected candidates from projects may be given first Aid Training by a professional organization.

Well-equipped first aid center with fulltime trained first aider, minimum two stretcher, emergency contact number list, official tie-up letter& contact details with the nearest hospital for treatment in case of emergency, full time ambulance & medicine as per **SCHEDULE III CONTENTS OF A FIRST-AID BOX [RULE 231(B)]**

\*First Aid Kit please follow the contents as prescribed by BOCWA

**The First Aid Kit comprises of a First Aid Box together with its Medicines and Equipment.**

#### **30.0 EHS Review:**

- Monthly as well as daily safe man hours report will be calculated and Send to HO and client.
- Monthly EHS Audit will be conducted at site by our safety team. Once in 6-month external auditor will audit the site and submit the Reports to management.

Self-assessment will discuss in the monthly safety committee meeting.  
And will be recorded as minutes of meeting.

### **31.0 Rewards & Recognition of workers & Staff**

Monthly Safety implementation and motivation program conducting at site and awards issue to Labors and staff who perform good at site and follow the safety rules

### **32.0 Safety Violation & Penalty Clause:**

Contractor shall impose penalty against violation as below:

<b>Activities and Violations Covered</b>	<b>Penalty amount  (Penalty per activity per violation)</b>	<b>Remarks</b>
1. General Housekeeping not maintained 2. non-Usage of safety PPE 3. Workers working without having authorised ID cards. 4. Use of defective/ unsafe ladder 5. Smoking in site 6. Without safety induction and training 7. Without medical check up 8. Weekly safety meeting does not attend	Rs. 500 each	
1.Non usage of Safety harness	Rs. 1000/- each	
2.Wastage of material	Rs. 1000/- each	

### **33.FIRE PREVENTATION**

**33.1** It is necessary to prevent fires. The following shall be ensured to prevent fires.

- Inflammable waste shall be stored separately and tidily.
- Burning of waste / rubbish shall be controlled.
- Inflammable material shall be stored away from hazardous processes.  
E.g., welding, fabrication areas. All storage areas shall have warning signs.
- Smoking shall be prohibited within 6 meters of storage of diesel pumps, gas cylinders or other inflammable materials. "No smoking" signs shall be prominently displayed, and good ventilation ensured. No naked light or defective worn-out electrical cables shall be operated or run through this area.
- Heating and cooking appliances shall be carefully installed.

**33.2** While doing hot work like gas cutting and welding which requires special considerations, the following shall be observed:

- Removing combustible material beyond the arc of sparks and spatters.
- No tarpaulins shall be used as protection against sparks.
- The work site, after the work is completed, shall be checked to ensure fire is not smoldering.

**33.3** Adequate fire extinguishers shall be provided on selected locations with an emphasis that site personnel know:

- The correct type of extinguisher and their location.
- Limitations of use according to type of fire.

**33.4** Depending on the identified fire prevention program, firefighting system should be placed at designated place. Inspection and monitoring of Firefighting Equipment's to be done regularly. Training and demonstrations on firefighting should be conducted for project personnel regularly. The Site Safety personnel shall explain the various requirements during site training programs.

### **34. INCIDENT/ ACCIDENT REPORTING & INVESTIGATION**

Initial reporting of incidents may be generated using their normal reporting format and will be dependent on the source of the incident. However, all the initial incident reports shall be sent to the Project in charge and Corporate HSE Department.

(VBHC - HSE Manual will provide detailed reporting procedure). This procedure defines the system for reporting and investigation of accidents and the corrective action to prevent its recurrence.

This procedure is intended to assist in the accomplishment of the following:

- ◆ Reporting and recording of near miss, property damage, injury, fire, explosion, and toxic release if any.
- ◆ Communication channel for the dissemination of information to all concerned to prevent its recurrence and future course of action.

**Accident:** It means an unintended occurrence arising out of and in the course of employment of a person which results in injury with or without damage to equipment / materials.

**Incident:** It means unplanned and uncontrolled event, like fire, spill, leak property damage etc. which results in damage to plant or equipment or loss of material without causing any injury to person.

Types of Accident:

- First Aid Case
- Lost Time Injury
- Fatal

#### **6.1 Reporting of Accident and Incident**

All the incidents /accidents / near misses / fire irrespective of their nature and magnitude shall be reported verbally immediately by the injured or a person closely associated with the event or by the supervisor or by the construction engineer to his superior.

All the fatalities and lost time Injuries must be investigated and reported to Company and Corporate HSE Dept through Project In charge This is followed by in writing.

## **35. EMERGENCY RESPONSE PLAN**

- 7.1.1** The purpose of this section is to provide an emergency plan for orderly evacuation of workers & employee in the event of any emergency. Emergency plan shall be communicated to all the staff & employees of VBHC GROUP and all Contract Workers.
- 7.1.2** An Emergency Response Bridging Document will be compiled to describe how all aspects of emergency response will function including details of lines of communication and reporting requirements together with description of the interface of the emergency response organization with the organization and the authorities.
- 7.1.3** Where specific procedures may not have been established, judgment shall be used to determine the best course of action.  
Follow the guidelines below for assistance: -
- a) All emergencies are to be handled by the highest-ranking person present and assisted by the emergency squad.
  - b) The highest-ranking person shall assign the job to responsible person for making emergency calls.
  - c) The emergency phone numbers are to be displayed at the Main entrance gate, office areas and assembly points.
  - d) The highest-ranking person present shall determine the need for an ambulance or other emergency equipment.
  - e) If Medical person is present, he shall call for the Ambulance.
  - f) Where a catastrophic event has occurred, anybody can call for an ambulance.
  - g) In all instances, the 'Top Management' shall be notified immediately by phone.

## **36. EXCAVATION**

### **36.1 General**

- a) Excavation is one of the important phases of construction activity. Due to insufficient attention to the safety aspects, it has become the cause of many accidents. It is therefore necessary to plan and execute all excavations in safe manner.
- b) It is to be ensured that personnel with thorough knowledge and experience of excavation work supervise all excavations.
- c) The integrity of the excavation and support system shall be inspected prior to the commencement of any work daily.
- d) Where there is the possibility of any ingress of water, then pumping shall be established with pumps being readily available for use and additional ladders placed for use in the event of the emergency evacuation.
- e) No excavation shall commence till the disposal area has been earmarked and is ready to receive the excavated material.

### **36.2 General Precautions**

The following precautions shall be observed:

- a) Prevent the sides and the ends from collapsing by battering them to safe angle or supporting them with timber, sheeting, or proprietary support systems.
- b) Entry into unsupported excavations shall be avoided.
- c) No work ahead of the support.
- d) Working in trenches can be dangerous. Support shall be provided if the work involves bending or kneeling in the trench.

## **37. WORK AT HEIGHT**

### **38.1 General:**

Fall from height is the single largest cause of serious accidents in the construction industry and therefore appropriate measures have to be taken to ensure that whenever workers are working at a height from which they can fall, suitable safety precautions have been taken.

### **37.2 Safety Precautions for Work at Height:**

- 1) **Engineering Control:** - Working platform shall be provided with Guardrails at 1.1m, mid rail at 0.55 m and toe board at 15 cm.
- 2) **Use of PPE-** All fall protection safety PPEs like Safety Helmet, Safety Harness required for working at height.
- 3) **Continuous supervision:** While working at height, continuous supervision shall be done by contractor / VBHC Staff.
- 4) **Safety Net Installation:** Safety nets shall be installed at a minimum of three levels.

**37.3** First level of safety net shall be installed at 6m below the top working floor which will be a double layer safety net composed of 2.5mm braded twine with 25\*25 mesh size and shade net.

**37.4** Second level of safety net shall be installed ~ 12m below first level. This net shall be like net on first level.

**37.5** Third level of safety net shall be installed at Podium level 1. This shall be a triple layer net; with the first layer being a 5mm braided twine and mesh size of 70\*70mm. The

second layer shall be a double layer net of 2.5mm braided type with 25\*25mm mesh size. The third layer shall be shade net. A special type of safety net holding brackets has been designed to provide an inclination of 30° angle.

### **8.3 USE OF SCAFFOLDS**

**37.1** Scaffolding must only be erected, altered, or dismantled by competent Scaffolder's.

**8.3.2** All scaffolds must be inspected a minimum of once a week and whenever alterations are made.

**8.3.3** Never use any incomplete scaffold.

**8.3.4** All scaffolds must be constructed of sound materials free from defects.

**8.3.5** The following measures shall also be taken.

- a) The scaffold shall be constructed for the correct use (Light or Heavy duty).
- b) Securely fixed to existing structures or adequately buttressed.
- c) Items such as barrels, boxes, loose tiles or other unsuitable material must not be used as supports for working platforms.
- d) All working platforms shall have guardrails at one meter height and shall also have an intermediate rail at half height and a toe board.
- e) All working platforms shall be kept free of unnecessary obstruction or rubbish.
- f) Secured ladder access shall be provided.

#### **8.3.6 LADDERWAYS (Fixed rungs or loops to masts etc.)**

- a) Look for damaged welds.
- b) Look for missing rungs.
- c) Look for damaged rungs.
- d) Report any problems to your supervisor. Get repairs made urgently.
- e) Wear a safety belt or harness when work has to be done from any ladder way.

### **38. WORK IN CONFINED SPACE**

#### **38.1 General**

The term '**confined space**' has two defining features, firstly, it is a place that is substantially (though not always entirely) enclosed and secondly, there will be reasonably foreseeable risk of serious injury from hazards.

Some confined spaces are easy to identify, for example, closed tanks and sewers. Others are less obvious but may be equally dangerous, for example closed and unventilated or



inadequately ventilated rooms and silos, ducts, culverts, tunnels, boreholes, bored piles, manholes, shafts, excavation, sumps, inspection pits.

### **38.2 The Hazards**

The most likely hazards are:

- a) Flammable substances and oxygen enrichment.
- b) Toxic gas, fume, or vapor.
- c) Oxygen deficiency.
- d) The Ingress or presence of liquids.
- e) Presences of excessive heat.
- f) Excessive humidity.

### **38.3 Entry procedures**

Only persons who have been thoroughly trained, experienced and are physically fit shall be allowed to work in confined spaces after ensuring the place is safe to work. Persons with any of the following medical conditions shall not be allowed to work in confined spaces.

- a) A history of fits, blackouts, or faint attacks.
- b) A history of heart disease or disorder.
- c) High blood pressure.
- d) Asthma / bronchitis or shortness of breath on exertion.

## **39.5 Hot Work Safety (Welding, Gas and Cutting)**

- 8.5.1** Gas cylinders in use shall be kept upright on a custom-built stand or trolley fitted with a bracket to accommodate the hoses and equipment or otherwise secured.
- 8.5.2** Hose clamp or clip shall be used to connect hoses firmly in both sides of cylinders and torches.
- 8.5.3** All gas cylinders shall be fixed with pressure regulator and dial gauges.
- 8.5.4** Non-return valve and Flashback arrester shall be fixed at both end of cylinder and torch.
- 8.5.5** Domestic LPG cylinders shall not be used for Gas welding and Cutting purpose.
- 8.5.6** Powder or Carbon dioxide (CO<sub>2</sub>) type Fire Extinguisher not less than 5 kg shall be fixed at or near to welding process zone in an easily accessible location. Fire Extinguisher should confirm to IS 2190: 1992.
- 8.5.7** Use firewatchers if there is a possibility of ignition unobserved by the operator. Oxygen cylinders and flammable gas cylinders shall be stored separately, at least 6.6 meters (20 feet) apart or separated by a fireproof, 1.5 meters (5 feet) high partition.

- 8.5.8** Flammable substances shall not be stored within 15 meters of cylinder storage areas.
- 8.5.9** Welding Machine used for electrical arc welding shall be fixed with Ammeter and Voltmeter and fixed with separate main power switch.
- 8.5.10** Welding grounds and returns should be securely attached to the work by cable lugs by clamps in the case of stranded conductors or by bolts for strip conductors.
- 8.5.11** The ground cable will not be attached to equipment or existing installations or apparatus.
- 8.5.12** Use a low voltage open circuit relay device if welding with alternating current in constricted or damp places.
- 8.5.13** Avoid being in contact with water or wet floors when welding. Use duckboards or rubber protection.

### **39.PROCESS DESCRIPTION**

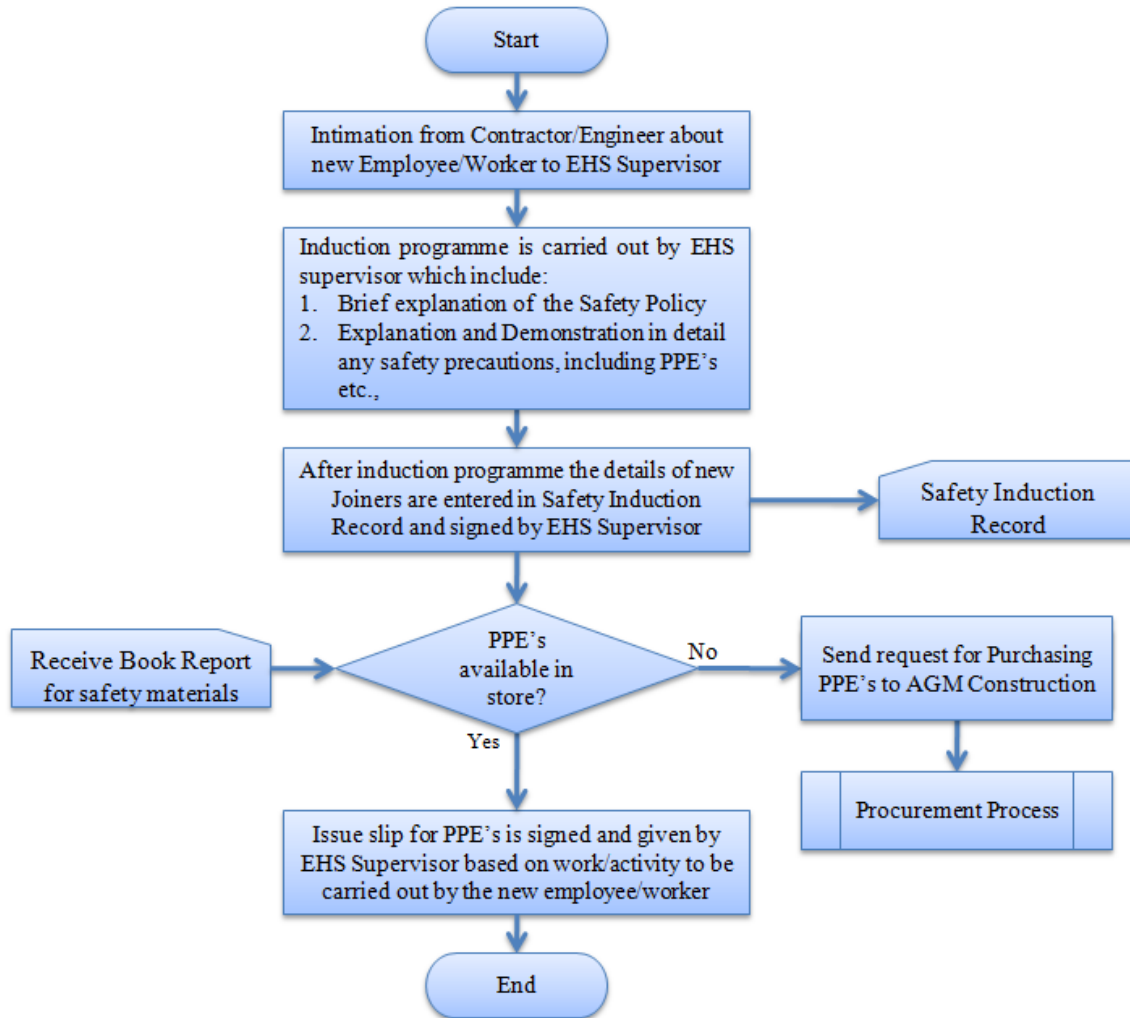
✓ **Safety Induction Program:**

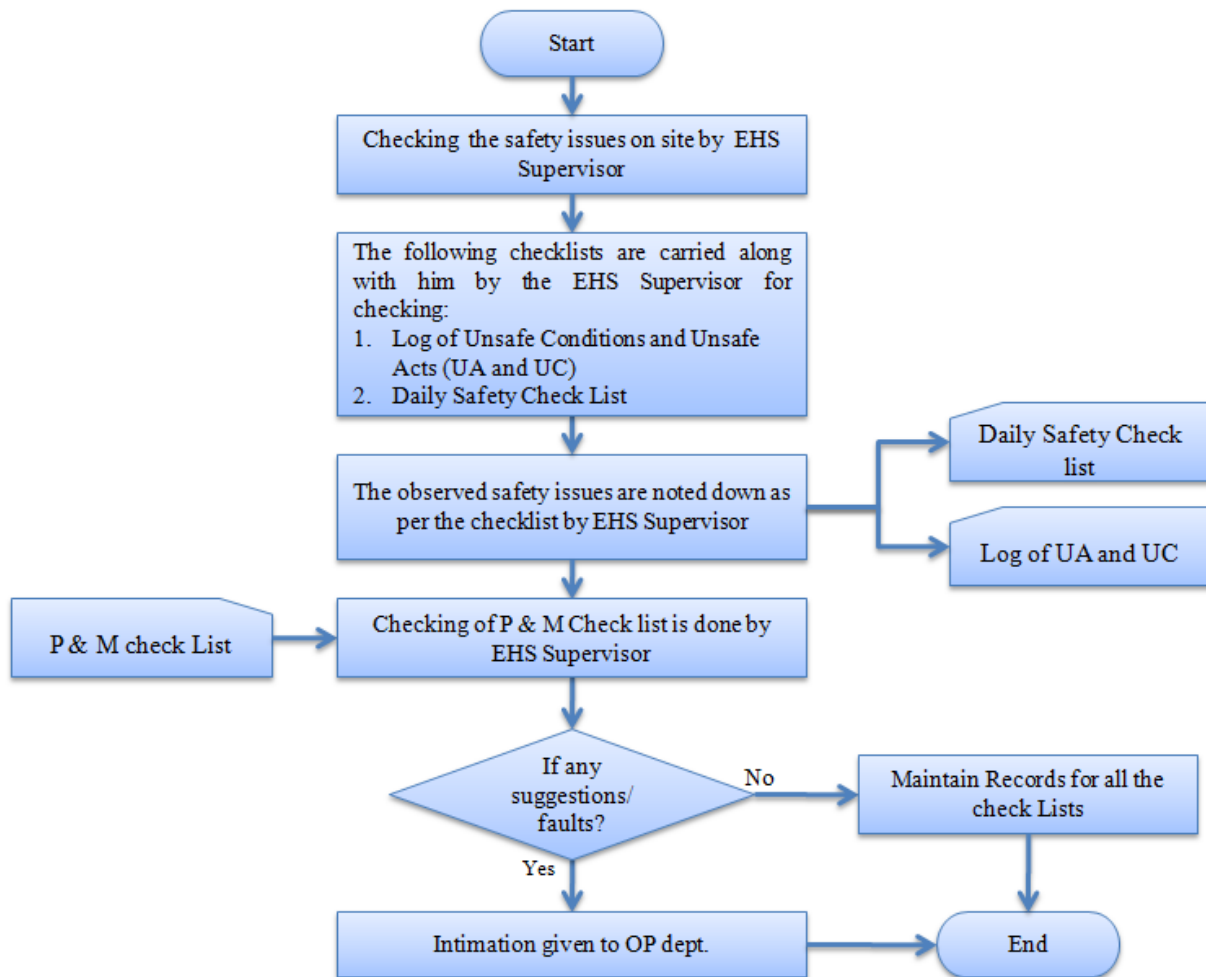
- EHS Supervisor receives intimation from Contractor/Engineer about joining of new Employee/Worker.
- Induction program is carried out by EHS supervisor which include:
  - ✓ Brief explanation of the Safety Policy
  - ✓ Explanation and Demonstration in detail any safety precautions, including PPE's etc.,
- After completion of the induction program, the details of new Joiners are entered in Safety Induction Record and signed by EHS Supervisor.
- If PPEs are available ready in the store, then issue slip for PPE's is signed and given by EHS Supervisor based on work/activity to be carried out by the new employee/worker.
- If PPEs are not available in stock, then request for Purchase of PPEs to Project Head Construction.
- The same is escalated for Procurement Process by Project Head Construction.

✓ Daily inspection for safety issues:

- EHS Supervisor checks the daily safety issues on site.
- The following checklists are carried during daily inspection of safety issues at site by the EHS Supervisor:
  - ✓ Log of Unsafe Conditions and Unsafe Acts (UA and UC)
  - ✓ Daily Safety Check List
- The observed safety issues are noted down as per the checklist by EHS Supervisor
- P & M Check list done by Operations dept. is checked by EHS Supervisor
- If any corrections observed by EHS Supervisor suggestions were written on the checklist and intimation is given to OP dept.
- Records for all the checklists are maintained by EHS supervisor.

#### 40. PROCESS FLOW CHART





## **41. RECORDS**

**Safety Induction Record** – Minimum Retention Period – Till Project Completion

**Daily Safety Check list** – Minimum Retention Period – Till Project Completion

**Log of UA and UC** – Minimum Retention Period – Till Project Completion

**Monthly Safety Report** – Minimum Retention Period – Till Project Completion

**Toolbox Talk Record** – Minimum Retention Period – Till Project Completion

**Accident/Incident/Near Miss Report** – Minimum Retention Period – Till Project Completion

**First Aid Record** - Minimum Retention Period - Till Project Completion

**Safety Calendar**– Minimum Retention Period – Till Project Completion

**Work Permit**– (Height, Hot, Excavation work) – Minimum Retention Period – Till Project Completion.

**Mock Drill Record** – Minimum Retention Period – Till Project Completion.

**Thank You.**