



## **Health, Safety, Environment (HSE) & Social Code of Conduct for contractors and sub- contractors**

(as relevant and applicable to the contract scope of work)

**Document No. IGT\_SOP\_HSE 005 HSE Code of Conduct**

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Date	03/11/2024	08/11/2024	

Document No. IGT_SOP_HSE0 05 HSE code of conduct		
Revision number: 01	Revision Date:08/11/2024	Original version date: 11-Sep-20

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## 1. Purpose

This document sets out HSE and Social requirements for Contractors in order to ensure safe workplace environment at the workplace in line with IGT ESMS, legal compliance and IFC PS requirements. It will result in achieving our vision of “Zero Harm”, by creating a systematic approach to managing Contractors and making them aware of the Risks & Impact associated with working on site.

The intention of this document is to develop Health, Safety, Environmental and Social practices to be followed by Contractors on IndiGrid sites to a level that will be recognized among best in India and comparable to the highest standards achieved worldwide.

The Employer shall actively support the efforts and initiatives that are instigated by the Contractors and sub-Contractors for achieving high standards of Health, Safety, Environmental and Social on Sites.

This document represents the minimum standards that the Employer will accept on matters of Health, Safety, environmental and social compliance. The organization shall use its best endeavours to ensure that all of the Contractors employed on the sites achieve these requirements.

## 2. Scope

The scope of this document is applicable to contractors involved in O&M activity, Greenfield project(BESS, RTM, & TL & SS etc) and shut down, other maintenance, Restoration, Diversion activities.

“The requirements with regards to Health, Safety, environmental and social (HSE&S) as contained in this document are in addition to the terms and conditions & General conditions as referred in the Contract/ Agreement issued by SCM.”

## 3. Abbreviation

E&S	: Environmental and Social
HSE	: Health, Safety & Environment,
OHS	: Occupational Health and Safety
PPE	: Personal Protective Equipment
PTW	: Permit to work
LTI	: Loss time injury
HIRA	: Hazard Identification & Risk Analysis
BBS	: Behaviour Based Safety
CEA	: Central Electricity Authority

## 4. Terms and Definition

### 4.1 Terms

- **Shall:** The use of 'shall' indicates a **mandatory** requirement.
- **Should:** The use of 'should' indicates a requirement that is **strongly recommended**.
- **May:** The use of 'may' indicates a requirement that is **to be considered**.

## 4.2 Definition

- **Site** shall mean the Works/Facilities being set up by the Employer at various locations throughout India or abroad.
- **Employer** means the company (IndiGrid) who is owner of Site and shall include its legal successors in title and permitted assignees as well as its authorized Officers / Representatives.
- **Contractor** means the company / agency who is awarded the Contract and shall be deemed to include its legal successors in title and permitted assignees as well as its authorized Officers / Representatives.
- **Environmental and Social (E&S)** – means functions included as environmental, Occupational Health and Safety, Labour and working conditions, Human Resources, resource efficiency, biodiversity etc
- **Safety** means the freedom from unacceptable risks of personal harm, i.e. the avoidance of accidents and incidents.
- **Occupational Health** means the physical wellbeing of a person and freedom from any illness caused due to working conditions.
- **Hazard** means a situation with the potential to cause harm including human injury, damage to property, plant or equipment, damage to the environment, or economic loss.
- **Risk** means the probability of something adverse happening and its severity. It is a combination of the probability, or frequency, of the occurrence of a defined hazard and the magnitude of the consequences of the occurrence.
- **Risk Assessment:** The process of analysing the level of risk considering those in danger, and evaluating whether hazards are adequately controlled, taking into account any measures already in place.
- **Risk Management:** The process of identifying hazards, assessing risk, taking action to eliminate or reduce risk, and monitoring and reviewing results.
- **Foreseeable** means that which is likely or possible.
- **Harm:** Includes death, injury, physical or mental ill health, damage to property, loss of production, or any combination of these.
- **Housekeeping:** Maintaining the working environment in a tidy manner.
- **Incident:** An event that:
  - Results in death or injury to person where the injury requires medical attention (Including first aid)
  - Results in injury/damage to persons, property or process;
  - Is not in compliance with statutory requirements, safe work procedures or inhouse guidelines.
- **Unsafe act or condition:** Any act or condition that deviates from a generally recognised safe way or specified method of doing a job and increases the potential for an accident
- **Near Miss (NM):** Near Miss is an incident that could have resulted into injury or illness, property damage, environment release, adverse community reaction or business interruption.
- **First-aid cases (FAC):** A minor injury that calls for only simple treatment and does not call for follow-up treatment by a health-care professional is an FAC. A case can be classified as an FAC even if a health-care professional administers the first aid.

- **Medical Treatment Cases (MTC):** A MTC is a work-related case for which medical treatment is provided by professional medical practitioner but that does not result in lost work day or work restrictions.
- **Restricted Workday Case (RWC):** An RWC is a case in which an injury or illness prevents the employee from working a complete shift (or from doing any tasks that are part of his or her regularly scheduled job that may be performed or assigned) but which does not result in lost workdays.
- **Reportable – Loss time injury (R-LTI):** If an employee is unable to work on a subsequent scheduled shift because of an injury or illness, the case is classified as an LWC. The shift on which the case occurred is not counted as a lost workday.
- **Recordable Loss Time Injury (Rec. LTI):** As per Factories Rules, 1969, an incident “which cause such bodily injury as will prevent or will probably prevent the person injured from working for a period of 48 hours immediately following the accident” is defined as Loss Time Injury Recordable and to be reported in prescribed format to The Directorate – Industrial Safety and Health (DISH) Department. Follow the respective state factories rules and prescribed forms (say Form 17). Seek HSE leader support for meet the compliance
- **Fatal Case (FC):** Fatal Case is an event causing a loss of life immediately on the spot or subsequently arising out of that incident.
- **Occupational Illness:** A health condition caused, precipitated or aggravated by exposure to workplace over a period of time. According to the WHO, Chronic respiratory diseases, musculoskeletal disorders, noise-induced hearing loss and skin problems are the most common occupational diseases. Work-related noncommunicable diseases (NCDs) as well as cardiovascular diseases and depression caused by occupational stress result in increasing rates of long-term illness and absence from work. Occupational NCDs include occupational cancer, chronic bronchitis and asthma caused by air pollution in the workplace and radiation.
- **Fire:** Any event of un-intended combustion, regardless of the extent, with or without flame.
- **Environment Release:** All incidents which have potential adverse impact on the environment; normally those incidents where prescribed limits as per statutory, if any, are exceeded.
- **Reportable Loss time injury frequency Rate: R – LTIFR** is a representation of business’s safety – it refers to the number of lost-time injuries sustained per million hours worked.
- **Reportable Loss time injury Severity Rate: R – LTISR** is calculated based on Man days lost due to reportable injury per million man-hours worked, consider all man days lost due to reportable incident and fatal incident.
- **Personal Protective Equipment (PPE):** All equipment and clothing intended to be utilised, which affords protection against one or more risks to health and safety. This includes protection against adverse weather conditions.
- **Dangerous Occurrence is defined as:**
  - Collapse or failure of lifting appliances or hoist or conveyors or other similar equipment / machine;
  - Collapse or failure of a crane, derrick, winch, hoist or other appliance used in raising or lowering persons or goods or any part thereof, or the overturning of a crane
  - Explosion or fire causing damage to the structure of any room or place in which persons are employed, or to any machine or plant, resulting in the complete suspension of ordinary work
  - Electrical short circuit or failure of electrical machinery, plant or apparatus, attended by explosion or fire, causing structural damage involving its stoppage or disuse;

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- Collapse in whole or part from any cause whatsoever of any roof, wall, floor, Structure or foundation forming part of the construction site in which persons are employed;

## 5. E&S requirements – contractor shall ensure

- Comply to IGT HSE & ESG policy and ESMS (environmental and social management system)
- Senior Contractors Project team member shall be responsible for E&S requirements compliance and monitoring.
- Appointment of dedicated & qualified HSE resource with minimum 10+ years of experience at project location
- Develop and monitor Environmental and Social Mitigation plan (ESMP)
- Compliance to statutory requirement applicable to construction/ O&M and maintenance of records in legal register;
- Assess OH&S Risks and E&S Impact assessment of all activities
- Maintain relationship with stakeholders at project area and related facilities
- Compliance requirements pertaining to labour wages, attendance, working hours, overtime, labor camp / accommodation etc. are maintained at site;
- Prohibit engagement of child labor, forced labour, migrant workers and bonded labor;
- Prevent of sexual harassment (POSH) and Gender based violence (GBV);
- Report all incidents and investigate in line with procedure.
- Develop and implement On-site and Off-site emergency plan as per schedule
- Impart E&S training to the employees as per plan
- Compliance to the EHS&S requirements as per code of conduct.
- Ensuring provisioning of adequate PPEs, first aid, medicines; and calibration of tools and tackles in use
- Implement employee/worker grievance management system, and maintenance of relevant grievance records
- Provide dedicated area for construction related waste and ensure disposal at approved agencies only.
- provision of security arrangement as per physical security risk assessment.
- Land purchase or land on rent for activity shall be in line with local regulations.
- Monitor E&S KPI's and report on monthly basis.

## 6. Legal References

The procedures in this manual should be read in conjunction with statute and amendments issued time to time.

Develop legal register for applicable E&S statutory licenses including calibration details of tools and tackles used at location

Maintain copies of statutory licenses, permits, NOCs at project location.

### 6.1 Indian statutory requirements

Contractor shall develop thorough understanding about the applicable statutory regulations, (mentioned below) not only to satisfy the regulatory body perspective but to use legislation as the strongest tool for effective implementation of OHS management at work sites. Contractor is strongly advised to practice the principle of voluntary compliance.



In order to facilitate the Contractor for better understanding on the various provisions of the above Acts & Rules, a tabulated information highlighting the Sections / Rules referring to the corresponding registration of Contractors, maintenance of registers and records, hours of work and wages, welfare, medical facilities and safety requirements are given in **Annexure 1to**. It is an indicative one and not a limiting list. In addition, works shall be undertaken in accordance with all applicable legislation and Indian statutory requirements listed below but not limiting to:

- CEA (Safety requirement for Construction, O&M of Electrical Plants & Lines) Regulations 2011 & amendments
- The Indian Electricity Act 2003 & amendments
- Central Motor Vehicles Act 1988, Rules 1989 & amendments
- The Environment (Protection) Act and Rules 1986 & amendments
- Hazardous Wastes (management, handling and trans-boundary movement) Rules 2016 & amendments
- The Air (Prevention and control of Pollution) Act, 1981 & amendments
- The Water (Prevention and Control of Pollution) Act, 1974 & amendments
- “The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act” 1996 & amendments
- “The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Central Rules 1998 & amendments
- The Factories Act, 1948
- The Chemical Accidents (Emergency Planning, Preparedness & Response) Rules, 1996
- Manufacture Storage & Import of Hazardous Chemicals Rules 1989 & amendments
- Noise Pollution (Regulation & control) Rules & amendments
- The Batteries (management & handling) Rules 2001 & amendments
- Bio-Medical Waste Management Rules, 2016 & amendments
- The Petroleum Act 1934 & Petroleum Rules 2002
- The Public Liability Insurance Act 1992
- The Workmen's Compensation Act 1923 & amendments
- The Contract Labor (Regulation & abolition) Act, 1971 & amendments
- The Child Labor (Prohibitions & Regulations) Act, 1986 and Rules 1988
- The Minimum Wages Act, 1948 and Rules 1950 & amendments
- Employee State Insurance (Central Rules), 1950 & amendments
- Central Ground Water Board, Act January 1997 & amendments
- Notification on Control of Noise from Diesel Generator (DG) sets, 2002 & amendments
- National Building Code, 2005
- Other Laws of India, Regulations, Rules and Codes of Practice on Safety and Health that may be applicable.

**Note 1:** The Contractor shall ensure that all his employees / workmen are covered under ‘Workmen Compensation Act’ and shall pay compensation to his workmen as and when the eventuality for the same arises.

**Note 2:** Notwithstanding the above Act / Rules, there is nothing in those to exempt the Contractor from the purview of any other Act or Rule in Republic of India for the safety of men and materials.

## 6.2 International Standards, Guidelines & Certifications

The works should be undertaken in accordance with the applicable international guidelines, standards and specifications on E&S and OHS.

## 7. Duties of Contractors / Sub Contractors and persons employed

Securing safe, healthy places of work requires full co-operation of Contractors and sub-Contractors and the persons employed by them. It is imperative that there is no ambiguity with

regard to the responsibilities of any individuals in connection with duties relating to health and safety.

Every person employed by Contractors and sub-Contractors on construction sites are obliged to comply with the general duties imposed on them under the Contract. Every person employed should, not only avoid careless or reckless behaviour, but should also take positive steps to understand workplace hazards. They must follow all necessary safety rules and regulations and procedures and ensure that their acts or omissions at work do not put the health and safety of self or others at risk.

Every Contractor and sub-Contractor shall: -

- Be responsible for complying with all statutory and contractual requirements on HSE including the general duties imposed on them under the Laws and Regulations of the Government of India and State Government. The Employer shall only deal with health and safety matters through the Contractor and shall hold the Contractor responsible for all his and his Sub- Contractors, actions.
- ensure that an adequate level of competent supervision is always maintained at the workplace by supervisory staff having the relevant knowledge, training, and experience to enable them to supervise the work in a proper manner.
- be responsible for the provision of suitably trained and qualified safety staff to carry out regular safety inspections, safety promotion, and safety audits and for retention of records of all such activities for inspection by the Employer.
- be responsible for providing health and safety training to all workers and supervisors on site, and for retention of records of such activities for inspection by the Employer.
- be responsible for organizing site safety committees which shall meet at least monthly.
- be responsible for reporting incidents and accidents to the Employer's Representative by the quickest practicable means.
- promptly provide the Employer with any information (including any relevant part of any risk assessment in his possession or control) which —
  - might affect the health or safety of any person carrying out the construction work or of any person who may be affected by it,
  - has been identified for inclusion in the health and safety file in pursuance of rules & regulations
- comply with any directions of the Employer given to him under applicable Acts, rules & regulation and any site rules.
- consult workers or their representatives in good time on matters connected with the project which may affect their health, safety or welfare
- so far as is reasonably practicable, be suitable and sufficient safe access to and egress from every place of work and to and from every other place provided for the use of any person while at work, which access and egress shall be properly maintained.

## 7.1 Discipline

Any major breaches of the HSE Manual, relevant Statutory Provisions and Safety requirements, or any other blatant disregard for the E&S and health and safety by any person directly or indirectly associated with the works may result in the Employer exercising their authority in requiring the removal from the Site of the Contractor's Site Manager and/or other personnel.

The Contractors shall develop a system of disciplinary measures and procedures, which shall be implemented immediately that the site activities commence. These measures and procedures should include amongst other things:

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- The issue of Warning Notices.
- The removal from site of personnel who disregard safety instructions.

Any person who is removed from the site for breach of safety measures shall not be allowed to be re-employed on any other Employer's worksite without specific approval from the Employer's HSE & ESG and HR functions.

## 8. Responsibilities and accountabilities of Contractor

It is the objective of the Employer to ensure that the Contract is completed on time, within budget, and to conforming standards of Environmental and social including Occupational Health and Safety as per this document.

### 8.1 Governance System

The Contractor shall be responsible for constituting and participating in site level HSE committee involving management and workmen under chairmanship of the site in-charge and shall review HSE performance including leading indicators (training, reported UA/UC/NM cases) and lagging indicators (FAC, MTC, RWC, 'Lost Time Injuries' etc.).

The committee shall be responsible for submitting E&S & HSE related MIS to the concerned Project director.

### 8.2 Appointment of HSE Resources

Contractor shall be accountable to ensure that team working are continuously identifying and correcting Unsafe Acts (UA) and Unsafe conditions (UC) and all incidents including near misses (NM), accidents are reported, recorded, investigated and recommendations are acted upon in a time bound manner.

Contractor shall appoint necessary and agreed competent HSE resources for the job. As a best practice, Contractor should ensure availability of One HSE Officer in case of up to 50 deployed employees. However, if deployed employees are >50 numbers then minimum one HSE Manager is required and for every additional 50 employees, an additional HSE officer shall be required.

These HSE resources shall be approved by IndiGrid based on available criteria. The Contractor should also deploy trained HSE stewards at the rate of one for every fifty (50) personnel for ensuring safety vigilance.

#### 8.2.1 Qualification and Experience

The minimum educational qualification and the work experience are

- HSE Manager must be qualified as per legal requirement made under The Factories Act and Regulations as Advance Diploma in Industrial Safety and Diploma/Degree Technical/BSc with more than 10+ years of experience
- HSE Officers must be qualified as per Legal requirements made under The Factories Act and Regulations and with Safety Diploma & BSC with etc minimum 5+years of experience.

#### 8.2.2 Pre- Employment Medical check up

The Contractor shall carry out a pre-employment medical check-up for all its employees including, Drivers, Security, Operators & sub-contractors and shall be able to produce the certificate of fitness to the Employer prior to the deployment of such employees at Site.

The Contractor shall also organize periodical medical check-up (six monthly) for the following category persons:

- drivers and equipment operator: check for vision and hearing, audio mediatory.
- height workers: check for vision, hearing, vertigo and acrophobia.
- dangerous substances handlers: effect of chemicals and substances.
- Other employees
- Above 45 Year age workers: check for vision, hearing & ECG.

### 8.2.3 Personal Protective Equipment (PPEs)

- The Contractor shall ensure availability and use of suitable quality personal protective equipment to its personnel with IGT HSE & ESG team consultation.
- Use of safety helmets, safety shoes, high visibility jackets, hand gloves fit for the purpose and safety eye wear shall be mandatory.
- Based on the job requirement, other PPEs like gumboot, respiratory mask for dust nuisance or other chemical fumes protection, full body harness with lifeline support, retractable fall arrester, arc flash suit, flame retardant cloths, welder's masks with suitable screen numbered visor, gas cutter goggles, runner etc., shall be used as indicated in Work Permit and Job Safety Analysis.
- All PPEs used by the personnel shall, at all times, be in accordance with at least one of the following internationally recognized standards: Indian Standard or (i) ANSI; (ii) ISO; (iii) BS; (iv) IS or (v) EU. The Contractor shall take prior approval of the Employer, for any deviation in the PPE standards proposed to be used for the performance of the Scope of Work

### 8.2.4 Approval from Employer

All Contractors must take consent for deployment of HSE Manager and HSE Officer from the HSE & ESG Function of IndiGrid before deployment.

- The name, address, educational qualification, work experience and health condition of each personnel deployed for HSE jobs shall be submitted to the Employer in the format prescribed for the purpose for comments and consent well before the start of the work.
- Only on consent by the Employer these personnel are authorized to work.
- In case any of the HSE personnel leaves the Contractor site, the same shall be intimated to the Employer. The Contractor shall recruit new personnel and fill up the vacancy within a week if required.

### 8.2.5 Penalties for violation

The conduct and functions of the Contractor's HSE shall be monitored by the Employer. Any default or deficiency shall attract penalty as per details given below:

- Violation with respect to handling of community and stakeholders and their concerns.
- Violation with respect to lack of valid gate-pass, basic PPEs and / or other traffic violations: Indian Rupees Five Thousand Only (INR 5000) per violation.
- Violation with respect to work at height, electrical, confined space entry, excavation, hot jobs, barricading, heavy motor vehicle, crane: Security issues: Indian Rupees Five Thousand Only (INR 5000) per violation with a ceiling of Indian Rupees One Lakh Only (INR 1,00,000) per contract exceeding which the Employer can terminate the Contract.

- Fatal accident: Indian Rupees Fifteen Lakhs Only (INR 15,00,000) or five percent (5%) of the SO Price, whichever is less, for the first fatality and Indian Rupees Twenty Lakhs Only (INR 20,00,000) or five percent (5%) of the SO Price, whichever is less, for the second fatality. For any further fatalities, the Employer may at its discretion levy appropriate damages or may choose to terminate the SO at the risk and cost of the Contractor.
- Lost time injury (on 24 hours basis) or non-reporting of incidents: Indian Rupees Fifty Thousand Only (INR 50,000) for each lost time injury or incident not reported.
- Serious bodily injury, such as loss of limb or a loss of more than twenty one (21) man-days: Indian Rupees Five Lakhs (INR 5,00,000) or five percent (5%) of the SO Price, whichever is less, for the first grievously injured person; and Indian Rupees Seven Lakhs (INR 7,00,000) or five percent (5%) of the SO Price, whichever is less, for every subsequent grievously injured person. For the purpose of levying these damages, "Serious bodily injury" shall have the meaning as described to the term in the Employee's Compensation Act, 1923.
- Dangerous occurrences: Indian Rupees One Lakh (INR 1,00,000) or five percent (5%) of the SO Price, whichever is less, for the first violation and Indian Rupees Two Lakh (INR 2,00,000) or five percent (5%) of the SO Price, whichever is less, for subsequent violations.
- Environmental Non Compliance, Procedural violation, including absence of method statement, PTW, JSA, staging and shuttering plan, concreting plan, erection/dismantling plan or non-compliance with any statutory requirement: Indian Rupees Fifty Thousand (INR 50,000) or five percent (5%) of the SO Price.
- Any incident involving injury to a member of the public: Indian Rupees Fifty Thousand (INR 50,000) or five percent (5%) of the SO Price, whichever is less for first violation and Indian Rupees One Lakh (INR 1,00,000) or five percent (5%) of the SO Price, whichever is less, for subsequent violations.

The Contractor shall ensure that all personnel are competent to perform the job assigned to them. In the event that the Contractor is unable to demonstrate the competency of any person whose activities can directly impact on the site HSE performance, the Employer shall remove that person from the site without any procedural formalities.

The Employer shall have the right to stop the work at his sole discretion, if in his opinion the work is being carried out in such a way that it may cause accidents and endanger the safety of the persons and / or property, and / or equipment. In such cases, the Contractor shall be informed in writing about the nature of hazards and possible injury / accident.

The Contractor shall not proceed with the work until he has complied with each direction to the satisfaction of Employer.

The Contractor shall not be entitled for any damages / compensation for stoppage of work, due to safety reasons and the period of such stoppage of Work shall not be taken as an extension of time for Completion of the Facilities and will not be the ground for waiver of levy of liquidated damages.

### 8.3 Access Control Security System

The Contractor shall be responsible to provide valid identity card as approved by the Employer's site team. This should indicate basic detail about the Contractor's personnel. These should be issued only when the Contractor's personnel have attended HSE orientation / induction and passed health screening.



## 8.4 E&S risks and impacts assessment

- The contractor shall identify the environment and social risks and impacts associated with the project activities. The objective of the risk & impact identification and assessment process shall be to determine the measures required to comply with relevant Environmental, Health & Safety and Social legislations and thereby reduce the level of environmental damage, occupational injuries and health hazards. The risk assessment process will be based on the task/ activity being carried out.

## 8.5 Stakeholder engagement and grievance management

- The contractor shall ensure periodic communication with the appropriate stakeholders like regulatory authorities, affected and local community, contractors, workers etc. and all such discussions and interactions will be adequately recorded to ensure proper record keeping and monitoring of any outgoing and incoming communications.
- The contractor shall establish a grievance redressal mechanism for employees and local community in line with IGT GRM process and receive the community grievances through the local Gram Panchayat (i.e. village council) or individuals and address the grievances accordingly after management review. It will also establish a system of addressing the grievance of the employee, public and periphery villagers / Gram Panchayat and direct them to the respective departments within IndiGrid for investigation and resolution. A system of documentation of grievances and external communication will be set up for tracking and monitoring of grievances.

## 8.5 Prevention of Sexual harassment (POSH) and Gender Based Violence (GBV)

- The contractor shall make aware all employees including sub-contractors on sexual harassment and gender based violence at work place and area where camping is done.
- The contractor shall report and investigate any such cases and report to IGT POSH committee.

## 8.4 Personnel Access, Vehicle and Material/Equipment Movement Control

- Develop traffic management plan for the project
- All personnel, vehicles and materials moving in and out of the Site shall move only through the designated security check points.
- All personnel must register their ingress and egress by going through the security checkpoint to ensure that they are accounted for.
- Materials / equipment moving in and out of the Site shall be accompanied by approved gate pass.
- All personnel bringing their property such as personal computers, tools, equipment and samples must declare at the security check points using the Material/Equipment Gate Pass before entering the Site.
- Approval will be required from the authorized signatories before bringing out any personal property from the Site which was not previously declared at the security checkpoints.

## 8.5 HSE Awareness, Training and Communication

### 8.5.1 HSE Orientation

All Contractors, and SubContractors are required to attend Site HSE orientation / induction training, prior to entry to the Site.

The information provided during the orientation shall include:

- Job rules, personal safety and conduct
- IndiGrid Life Saving Rules, hazards reporting
- reporting of injuries/pre-existing conditions; emergency procedures
- firefighting
- HSE activities and program including disciplinary measure and incentives and
- JSA and PTW as outlined above.

Contractor shall also issue personnel HSE handbook in a language known to the workers, which provides information on HSE and emergency procedures that all personnel working at project site are required to know and the need to follow. Contractor shall ensure that this is distributed, and its content introduced to all personnel working at the site.

### 8.5.2 HSE Training

HSE Training is an important factor in managing safety on work sites. The behaviours of people at all levels of the Contractor are critical for HSE performance.

- The Contractor shall organize quality HSE training to engage Managers, Supervisors and Other personnel to improve safety performance.
- A class room with all required facilities should be arranged by Contractor at site for imparting HSE training to the workforce. It should also contain all Personal Protective equipment (PPEs) & exhibition of posters along with Do's and Don'ts. Special physical arrangement of situations shall be made to impart special trainings on practical aspects of his works.
- The Contractor shall analyse the training requirements for all the employees and initiate a training program to demonstrate that all persons employed, including subContractors, are suitably qualified, competent and fit.
- The Contractor shall arrange behaviour-based training programs for all the executives to identify recognize and eliminate unsafe act and unsafe conditions.
- All Contractors shall provide as a minimum the following types of training in addition to HSE orientation. The HSE Training shall be conducted as per prepared HSE Training Matrix.

#### 8.5.2.1 Job Specific Training

Persons with hazardous tasks, such as Crane Operators, Slings and Plant/ equipment Operators, Electrician, Welder and Cutter, Vehicle drivers etc. should have training certificate from competent authority for relevant jobs based on the scope of work.

All vehicle drivers and operators shall be trained in defensive driving techniques, as may be provided by a State Government Licensing Authority or approved equivalent agency. All vehicle drivers shall also undergo refresher training once in 6 months.

#### 8.5.2.2 Regulatory Training:

Specific training is recommended in many act, rules & regulations in certain circumstances base on the scope of work the regulatory training needs are recommended shall be conducted for

- Hazard Communication CPR / First aid Emergency Response Respiratory protection
- Power-operated hand tools Gas welding and cutting Confined space entry
- Lock Out Tag Out Excavation / Trenching

#### 8.5.2.3 On-the Job (Spot Practical Skill Development) Training

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On the job training on safety issues, shall also be conducted with all foremen / workmen associated with these activities for relevant jobs based on the scope of work including

- Working at Heights, Safety in Scaffolding Towers, Equipment etc,
- Safety in Lifting and Shifting Crane safety,
- Welding safety, Electrical safety, Lock Out Tag Out
- Excavation / Trenching Safety Traffic safety etc.

#### **8.5.2.4 Refresher Training**

Refresher Training shall be conducted at least every six months to ensure that all workers on worksite are kept up to date with safety requirements on site.

All training that is carried out shall be formally recorded on dated and signed attendance records, with copies of the records being kept on the sites for inspection by the employer's Representative

#### **8.5.3 HSE Promotional program**

The Contractors at each of their Project sites in the interests of promoting safety awareness amongst the workforce shall devise and implement practical HSE Promotion Programs in coordination with IndiGrid and project manager team.

The objective of these HSE Program is to inculcate and sustain safety culture amongst all employees working on project site and continually improve HSE performances and recognize and reward individuals who continually endeavour to work in a safe manner.

#### **8.5.4 HSE Award & Reward:**

The Contractors at sites shall introduce HSE award and reward scheme in coordination with IndiGrid and project manager team. Suggestions for such Safety Award and Reward / promotions may be invited time to time.

HSE Performance Review of the contractor including Sub-Contractor shall be conducted every month through Monthly HSE score card. Repetitive low scores shall lead to penalty and even work stoppage at Employer's discretion.

The Employer shall also monitor the Contractor's HSE performance through Compliance report of various recommendations given during Audit / inspection / incident investigation.

##### **8.5.4.1 Awards and Rewards by the Employer**

The following categories will be considered for significant awards by the Client: -

- For 100% Safe million-man hour working without any reportable incidents for the Project
- Zero fatality contracts at the end of Contract
- Safest Contractor of the year based on HSE Score card

Appropriate Certificate & trophy shall be issued by the Client as awards.

##### **8.5.4.2 Award and Reward by Contractor**

The Contractor shall also monitor the HSE performance of his Workers, Supervisors, Staff & Sub-Contractors. He shall conduct motivational award ceremony every month and issue awards/trophy/certificates in following category: -

- Safe Workman of the Month
- Safe Supervisor of the Month
- Safe Staff of the Month



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- Safe Sub-Contractor of the Quarter.

#### 8.5.5 HSE Communication:

The Contractor shall ensure full involvement of all his employees recognizing their right to consultation on health and safety matters. The supervisors of the various areas, in conjunction with the HSE officers shall be responsible for ensuring employees involvement through routine HSE inspections, hazard and risk assessment in new and changed works and their control.

The Contractor shall take every effort to communicate the Health, Safety and Environment management measures through regular Poster Campaigns / Billboards / Banners / Glow signs.

- Posters should be in Hindi, English and other suitable regional language deemed appropriate.
- Posters / Billboards / Banners / Glow signs should be changed at least once a month to maintain their impact.

The Contractor should follow **Annexure 2**:

### 9. HSE Inspections and Audits

The Contractor shall maintain a procedure for HSE Inspections at routine intervals to provide assurance that the instituted HSE procedures are in place to prevent deviations from established standards that could lead to a HSE hazard and consequential risk.

The Contractor shall evolve and administer a system of conducting HSE inspections and other risk management analysis on a periodical basis as like regular, intermittent, weekly and monthly etc. with developed check lists specifically for these works.

#### 9.1 Planned General Inspection

Planned general inspections are performed at predetermined intervals and it usually involves the representation from both Contractor and the Employer.

Inspections that will be classified under this inspection program are:

- Daily safety inspection by Contractor site HSE team.
- Weekly safety inspection by construction supervisors (Contractors and Sub- Contractors).
- Monthly Contractor and sub-Contractors site safety committee Inspection. Any other Inspection organized or type of inspection issued by the Employer shall be undertaken.

#### 9.2 Routine Inspection

Routine inspections are often referring to the inspection of worksite, equipment, work activities performed by equipment operators and temporary structure erectors etc.

Inspections that will be classified under this inspection program are:

- Daily Inspection of plant and equipment by operator.
- Weekly Inspection of scaffold by scaffolding supervisor as per procedure.
- Monthly Inspection of electrical hand tools, electrical equipment, temporary electrical systems by competent electrical supervisor as per inspection procedure with specific checklist.
- Quarterly Inspection of access equipment, Fire extinguishers, Hand tools, civil equipment, mechanical equipment etc., by competent supervisor as per inspection procedure with specific checklist.

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- Half-yearly inspection of lifting machines, lifting appliances, equipment and gears by Govt. approved competent person.

The list mentioned above is not exhaustive. Contractor may add additional categories. Contractors' Site HSE Manager will ensure that routine inspections are carried out periodically to all plants, equipment, powered tools and any other temporary structures that will pose a hazard to operators and workmen.

### 9.3 Specific Inspection

Specific inspections are performed on activities without a predetermined date. Competent supervisors usually perform inspections for ensuring an activity whether it is executed in accordance to a general set of rules; method statement submitted or developed procedures.

- Mandatory Inspections by Govt.
- Departments Inspection by Project HSE management team

All inspection records and reports will be properly kept and filed for audit purpose. Inspection reports of Planned General Inspection and Routine Inspection will be used for discussion during Safety Committee Meetings.

### 9.4 HSE Audits

Project Manager and Contractors staff are required to carry out periodical (as mutually agreed) site HSE audits and prepare reports of such audits. Copies of the completed audit reports shall be kept on site and available for inspection by the Employer's Representative.

The frequency of the audits shall be determined by site activities and general conditions. However, the audits should be conducted at a minimum of once a month.

Audit reports should be discussed with the relevant Project Director and HSE & ESG Head. These shall also be discussed with the sub-Contractors and other levels of site management in the Site HSE committee meetings.

The contractor should co-ordinate and co-operate for HSE & ESG audit by Employer's representatives HSE & ESG function team members, which shall be attended by the Contractors' Site Manager, project team and HSE Manager. The contractor should develop Action plan for the recommended actions and monitor compliance tracking.

## 10. Contractor's Site HSE Committees

The objective of the site HSE Committee is to promote a safe and healthy work environment for the site by creating a strong awareness of environment safety & health and reducing or eliminating accidents, injuries, and illnesses throughout the completion of project work.

All employees should be able to participate in the making and monitoring of arrangements for safety and health at their place of work. The establishment of site HSE committees in which employees and Contractor and sub-Contractor management are represented can increase the involvement and commitment of employees. The Contractor shall set up such site HSE committees to promote and monitor safety and health on their worksites. A copy of the agenda shall be forwarded to the Employer's Representative seven days prior to the meeting date, in order that they can decide if it is necessary for them to attend.

IGT & Contractor E&S Joint committee:

The contractor senior project team shall participate in the joint E&S committee meeting as and when conducted for E&S effective compliance and monitoring.

## 10.1 Composition and Functions of Contractor's Safety Committees

The Contractor shall also appoint a HSE Committee comprising of the representatives from the various areas. The committee shall meet at periodic intervals to discuss the status and adequacy of the HSE management, and any concerns of the employees.

- The committee shall also formulate and validate the safety procedures incorporating controls to prevent or mitigate hazards and risks before submission for approval.
- The minutes of the HSE Committee meeting shall be submitted to the Employer.
- The Contractor's Safety Head / Safety Officer shall maintain the records of the meetings.
- Site HSE committee shall be constituted within 14 days of award of contract and notification regarding the same shall be communicated to the members and employees. Function of HSE committee should be as follows.
  - To monitor the adequacy of the HSE procedures at sites and ensure its implementation.
  - To monitor safety inspection / audit reports; discuss detected unsafe practices and unsafe conditions, recommend remedial measures for their rectifications including first- aid medical and welfare facilities.
  - To study accident statistics and trends so as to identify unsafe practices and conditions; identify probable causes of accident and to suggest remedial measures.
  - To review the emergency and rescue procedures;
  - Review the last HSE committee meeting minutes and take follow up actions on minutes of meeting. and take action against persons / sub- Contractors for non-compliance if any
  - To bring to the notice of the Employer the hazards associated with use, handling and maintenance of the equipment
  - To suggest measures for improving welfare amenities in the construction site and other miscellaneous aspect of safety, health and welfare in building or other construction work.
  - To review safety promotional & awareness programs organized (like safety week, safety competition etc.

## 10.2 Agenda

The Secretary shall circulate the agenda of the meeting at least seven working days in advance of the scheduled date of the meeting to all members

### 10.2.1 The agenda should broadly cover the following:

- Chairman's review / overview of site HSE performance / conditions.
- Previous month HSE statistics
- Incident and Accident Investigation / dangerous occurrence / near miss report
- Site HSE inspection
- Sub-Contractors' HSE issues
- Report from Employer

### 10.2.2 The Membership of the committee should be as follows.

Chairman: The Contractor's most Senior Manager for the Contract.

Secretary: The Contractor's HSE Manager / Officer

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Members: Contractor's and Sub-Contractor's management representatives and staff.

### 10.3 Minutes of the meeting

Minutes of the Site HSE Committee shall be sent to all members within two working days of the meeting preferably by mail followed by hardcopy. HSE Committee meeting minutes shall also be displayed on the notice board.

### 10.4 Disciplinary Action

The chairman shall inform the members of any outstanding issues in the meeting and in case of repeated offence / non-compliance by some members or others (co- Contractors / sub-Contractors) and propose suitable disciplinary action including provisions of monetary penalty as per the relevant contract clauses, the Employer shall ensure that the same is implemented.

## 11. Industrial Health, and Welfare

The Contractor shall be responsible for maintaining healthy working conditions for all his, and his sub contractors, workers. In particular, he shall pay attention to the effects of noise, dust, air pollution and the use of chemicals. If it is not possible to remove the cause of harm, then suitable and sufficient Personal Protective Equipment (PPE) should be provided to those workers who could be affected.

If the use of PPE is the only means of providing protection the Contractor shall ensure that all the workers affected are properly trained in the use of the PPE and that adequate supervision is provided to ensure its proper use.

### 11.1 Storage of Hazardous and non hazardous Materials including e-waste:

#### Hazardous material storage:

- Hazardous materials include Oil drums, petrol, diesel, paint drums, thinners, etc
- Develop store at separate area away from other buildings with provision of Fire extinguishers
- Maintain 5S in the storage with proper labelling to the materials
- Hazardous materials shall be stored on solid bases with secondary containment of 110% of capacity of the container stored . Solid bases shall include compacted earth, pallets, concrete or asphalt platforms or paving. Hazardous materials shall be stored, stacked and secured to prevent toppling, spillage or other unintended dislodgement. Hazardous materials shall be stacked in such a manner that an observer standing in the aisle can read their labels and legend.
- Each hazardous material contained be identified by a legible or legend as per governing statute, code or regulation. The label shall identify the item, quantity and appropriate warnings.
- Hazardous materials which if brought in contact with each other could react or pose equal or greater hazard than either material stored alone shall be stored at a distance not lesser than twenty feet apart. Gas cylinders and oil drums should be kept apart as per guidelines.
- Warnings shall be posted and maintained in a legible condition at all access points clearly defining the specific hazardous nature of the stored materials such as 'Corrosive', 'Flammable', 'Explosive', 'Oxidizing', 'Compressed Gas' or other hazardous nature.

- Where hazardous materials are unloaded in the Contractor's storage maintained at site in a semi-permanent installation, such installations shall be approved by relevant statutory bodies. Copies of licenses for storage shall be lodged with the Employer. The containers and storage shall display quantities stored with name of the hazardous material and the UN hazard classification label in prescribed colour code prominently painted in a conspicuous manner.
- The CONTRACTOR shall inspect the hazardous storages and installations daily and shall undertake any requisite preventive action necessary to avoid HSE risks.

## 11.2 Health Hazards & Environment Control

The Contractor shall strive to exceed established minimum performance norms in waste and pollution control. All drains shall be identified as clean water and foul water to aid non-armful disposal.

### 11.2.1 Air Quality

- The Contractor shall take all necessary precautions to minimize fugitive dust emissions from operations involving excavation, grading, and clearing of land and disposal of waste. He shall not allow emissions of fugitive dust from any transport, handling, or storage activity. Contractor shall spray water to control the dust emission and while transporting construction debris /waste.
- The Contractor shall use equipment designed and equipped to minimize or control air pollution. He shall maintain evidence of such design and equipment and make these available for inspection by Employer.
- If after commencement of activity, Employer believes that the Contractor's equipment like DG Set or methods of working are causing unacceptable air pollution impacts then these shall be inspected and remedial proposals shall be drawn up by the Contractor, submitted for review to the Employer and implemented.
- In developing these remedial measures, the Contractor shall inspect and review all dust sources that may be contributing to air pollution. Remedial measures include use of additional / alternative equipment by the Contractor or maintenance / modification of existing equipment of the Contractor. If approved remedial measures are not being implemented and serious impacts persist, the Employer may direct the Contractor to suspend work until the measures are implemented, as required under the Contract.
- The contractor shall ensure air pollution monitoring from the authorized service provider, maintain record and share a copy.
- Contractor's transport vehicles and other equipment shall conform to emission standards fixed by Statutory Agencies of Government of India or the State Government from time to time. The Contractor shall carry out periodical checks and undertake remedial measures including replacement, if required, to operate within permissible norms.
- The Contractor shall establish and maintain records of routine maintenance program for internal combustion engine powered vehicles and equipment used on this project. He shall keep records available for inspection by Employer.

### 11.2.2 Water Quality and discharge of pollutant in water streams

- The Contractor shall comply with the Indian Government legislation and other State regulations in existence in so far as they relate to water pollution control and monitoring.

- The Contractor shall provide adequate precautions to ensure that no spoil or debris of any kind is pushed, washed, falls or deposited on land adjacent to the site perimeter including public roads or existing stream courses and drains within or adjacent to the site. In the event of any spoil or debris from construction works being deposited or any silt washed down to any area, then all such spoil, debris or material and silt shall be immediately removed and the affected land and areas restored to their natural state by the Contractor to the satisfaction of the Employer.
- All water and waste products (surface runoff and wastewater) arising on the site shall be collected and removed from the site via a suitable and properly designed drainage system and disposed-off at a location and in a manner that will cause neither pollution nor nuisance.
- The Contractor shall take measures to prevent discharge of oil and grease during spillage from reaching drainage system or any water body. Oil removal / interceptors shall be provided to treat oil waste from workshop areas etc.

### 11.2.3 Noise

Industrial deafness is caused by over exposure to high levels of noise from plant, machinery or construction processes. Once a part of a person's hearing has been lost it can never be recovered. Deafness can also lead to further accidents on site with workers being unable to hear warnings and other instructions.

- Workers should not be exposed to sound levels exceeding 90dB (A) unless they are wearing suitable hearing protectors, which effectively reduce the sound level at the user's ear to, or below, 90dB (A).
- The Contractor shall carry out Ambient noise at entrance gate & plant boundaries and at source noise assessments to establish what noise levels his workers are being exposed to as per regulations. If excessive noise levels above 90dB (A) are found, then the Contractor shall introduce a noise control program to protect his workers.

Consideration should always be given first to reducing the noise level at source. Examples of noise reduction methods include;

- More efficient silencers on compressors and maintenance of exhaust systems;
- Fitting acoustic lining to machinery panels;
- Use of Acoustic screens and sheds to protect other workers;
- Using noise reduced tools;
- Sighting of noisy plant away from the workplace

Where it is not possible to reduce the noise level to which the worker is exposed the Contractor shall provide the workers with suitable and sufficient hearing protection to protect them. The Contractor shall ensure that all the workers affected are properly trained in the use of the Hearing Protection and that adequate supervision is provided to ensure its proper use.

### 11.2.4 Illumination

The Contractor shall provide lighting natural or artificial to enable work Processes are carried out safely during day and night working appropriately. Artificial lighting shall be adequate especially in the nights and emergencies.

The contractor shall maintain emergency lighting arrangements in case power cut in the project areas.

The lumen levels shall meet the statutory requirements



The Contractor shall take every effort to illuminate the work site as per the Employer's requirement illustrated in table below.

Facility /Area	Luminance- Lux Labels
Administrative Office, Meeting Room	250
Access Ways	110
Parking Areas	55
Work Areas (General)	325
First Aid rooms	325
Toilets /Wash Areas	110
Storage Areas (Indoor/Outdoor)	110
Maintenance Areas/ Welding areas	150
Crane Operation Area	150

#### 11.2.5 Waste – hazardous, non-hazardous and e-waste

Burning of wastes is prohibited. The Contractor shall not burn debris or vegetation or any other waste on the site but remove it in accordance with standard procedure.

The CONTRACTOR shall identify separate area for storage of hazardous, non-hazardous and e-waste storage away from general building

Provide segregation of waste as per waste category and estimated volume of waste generation

Wastes with oily or other ignitable materials such as used oil, oily cotton wastes and hand gloves shall be stored separately with covers to prevent fires and shall be made of metal.

Different wastes shall be segregated and stored separately and disposed-off at authorized and approved waste recycling or disposal vendor.

The Contractor shall handle waste in a manner that ensures they are held securely without loss or leakage thus minimizing potential for pollution.

The Contractor shall maintain and clean waste storage areas regularly.

The Contractor shall remove waste in a timely manner after obtaining approval for disposal.

Non-hazardous and e-waste storage:

- Identify waste sources and prepare list of waste as per waste category i.e. paper/wood, plastic, e-waste, cables /wires, other waste etc.
- Estimate volume of waste generation during activities
- Identify separate area for waste storage and create segregation as per category of wastes.

#### 11.3 Welfare Measures

The Contractor shall provide welfare facilities (free of cost) to ensure a high standard of cleanliness for all activities and rest. The Contractor shall provide facilities for his employees

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such as ablutions, toilets change rooms, kitchens and cafeterias etc. adequate and in a clean and hygienic state

#### **11.3.1 Toilets (Latrine and Urinal Accommodation)**

- The Contractors shall ensure that an adequate number of toilets & urinals with the proportionate to employees at sites are made available at the work sites.
- The toilets & urinals shall always have adequate water supply and be kept in a clean and tidy condition.
- The contractor shall ensure cleanliness of toilets and urinals on daily basis through a external service provider or internal assigned team.
- The contractor shall arrange required cleaning agents and maintaining stocks.

#### **11.3.2 Drinking Water**

- The Contractors shall ensure that effective arrangements water container and dispenser are made to provide and maintain at suitable points a sufficient supply of drinking water.
- The Contractor shall make in every worksite, effective arrangements to provide sufficient supply of drinking water with minimum quantity of 5 liters per workman per day.
- Quality of the drinking water shall conform to the requirements of national standards on IS -10500. Testing of drinking water shall be done on in lab six monthly and site level monthly basis and records to be maintained.
- While locating these drinking water facilities due care shall be taken so that these are easily accessible within a distance of 200m from the place of work for all workers at all location of work sites and away from toilet and washroom blocks.
- All such points shall be legibly marked "Drinking Water" in Hindi, English and local language.

#### **11.3.3 Premises and House-keeping Orderly Workplace**

The Contractor shall maintain a well-managed safe working place in sound clean condition. The Contractor shall ensure that there is a place for everything and everything in its place so that optimum use is made of valuable floor space with commensurate cleanliness and reduced handling time.

The contractor shall ensure that his entire infrastructure including temporary and semi-temporary buildings are kept clean and good repair.

#### **11.3.4 Workers Accommodation and housing**

The Contractor shall ensure and provide free of cost proper accommodation for workers working at site with all arrangement including kitchen, washrooms, toilets, utensils, bed and linen etc.

The Contractor shall ensure that there is a place for everything and everything in its place so that optimum use is made of valuable floor space with commensurate cleanliness and reduced handling time.

The contractor shall ensure that his entire infrastructure including temporary and semi-temporary buildings are kept clean and good repair.

The contractor shall ensure the availability of Fire Extinguisher, First aid box, Electric supply with RCCB/ELCB for workers accomedations.



## 12. HSE Procedures

### 12.1 Permit to Work

The Contractor shall be familiar with IGT permit requirements and shall be responsible for ensuring compliance with such permit requirements. No work shall be carried out without work permits authorized by the Employer or authorised person / agency by the employer on his behalf unless exempted at the Site.

The work permit shall be issued with a validity of only one shift which can be renewed shift-wise. However, the Employer shall have the right to issue the work permit for a longer duration, based on the nature of work.

No work permit shall be issued unless the Contractor has a written job safety analysis (JSA) approved by the Employer or authorised person / agency by the employer on his behalf, preferably in the local language prevalent at the Site.

All work performed after 10pm shall require a separate 'night work permit' to be issued by the Employer or authorised person / agency by the employer on his behalf and the same has to be procured and acknowledged by the Contractor. For avoidance of doubt, it is clarified that when night work is required a period of 'overlap' shall be scheduled such that the day and night engineers can discuss the work and align themselves on the Work to be performed under such night work permit. For Sunday and holidays, separate work permit shall be required which shall be authorized by the Employer's concerned line manager and/or HSE officer.

### 12.2 Work at Height (W@H)

The Contractor shall have a written plan for W@H, in addition to the relevant certificate(s), certifying the right to W@H. Such plan shall ensure that:

- Height works above one point eight (1.8) metres above ground and working on ground (having 1.8m deep trench / excavated areas) should have safe access, egress, and safe platform. Otherwise people shall be secured through use of full body harness with double lanyard including shock absorber and sufficient strengthened lifeline support.
- Working platform shall have handrail, mid rail and toe board. Certified horizontal lifeline shall be used, preferably 8mm wire rope.
- Working at more than five (5) metres (e.g. transmission tower etc.), or requiring different body posture even at lesser height shall require "Fall Arrestor" (for vertical movement).
- Suitable arrangements such as Safety net to prevent Falling objects shall be installed to arrest such objects.
- Step ladder / platform should be used if any personnel intends to work at height. Use of empty drums to climb up is banned. People taking tools for working at height shall have tool kits to facilitate three (3) point contact during access and egress.

All the personnel involved in designing fall prevention measures or fall protection measures shall be subject to formal competency checks by the Contractor, prior to the personnel commencing the assigned work, to ensure that such personnel have the necessary training, experience and qualification to perform the assigned work.

The Contractor shall also have a rescue plan in writing, which provides for, inter alia, the manner and mechanism in which all persons at the Site, including people working at a height, are to be rescued.

### 12.3 Electrical installation

The Contractor shall ensure that:

- Any temporary power distribution system including the source shall be designed and approved by Employer's electrical engineer.
- All cables overhead should be more than two point five (2.5) metres on insulated or wooden support and no temporary cable shall be laid over the ground, if necessary, conduit should be provided.
- All electrical installations, distribution box and welding machines should be prominently marked for identifications with hazard signs and following information shall be provided: identification number, name of the Contractor / Subcontractor, source of incoming / outgoing power and danger sign in case of 440V DB.
- Power supply points are of adequate capacity, provided with proper switch and ELCB/MCB fuse arrangement and installed at strategic locations.
- Panel rooms / distribution box pathways are clear and free from any obstructions.
- While working near the live electrical conductors, arc flash suit of sufficient rating, as per JSA and PTW, shall be used.
- Temporary electrical installations must meet the same electrical code requirements as permanent installation, i.e. proper earthing, glands and seals at electrical boxes and cable repairs equal to the original cable insulation.
- Earth Leakage Circuit Breaker (ELCB) or Residual Current Circuit Breaker (RCCB): earth protection for personnel on the Sites shall be provided by a thirty milli-ampere (30mA) ELCB / RCCB. It should not be replaced by MCB.
- The Electricity Rules, including amendments & revisions and HSE requirements specified under the applicable regulations issued by the Central Electricity Authority are complied with and the following are adhered to:
  - Engage a wireman and technician or engineer (license holder) to work on all electrical installations.
  - Ensure that only industrial type plug and sockets are used, and proper earth is provided on electrical installations.
  - Electrical distribution boxes are installed on mountings at predetermined locations with its nomenclature.
  - Rain protections are provided on electrical installations and DBs.
  - Only three core double insulated cables are used for any temporary wiring or portable / handheld tools or lightings.
  - Use authorized cable jointers / connectors to join the cables.
  - Handles / body of portable electrical tools shall be of rubber or insulating material; and electrical system shall be handled by a competent and authorized person for the voltage as per authorization and in line with the applicable statutory requirements.

## 12.4 LOTO

- The Contractor's supervisor shall ensure that lock-out and tag-out is performed according to the plan and no personnel works beyond the facilities protected through lockout and danger tags and maintain records.
- All people involved directly or indirectly in the work associated with hazardous energy sources shall be involved in the control of these hazards. This involvement may include developing and / or reviewing the lockout plan, placing the locks and danger tag on

isolation devices or group locks system or at least verifying the lock / tag on the equipment on which they are supposed to work.

- The Contractor shall ensure that its personnel shall try to ensure proper isolation before allowing people to work on the equipment. After ensuring proper lock-out and tag-out, key to the lock shall be made available to the concerned supervisor or the engineer in-charge.

## 12.5 Motor Vehicle

All motor vehicles to be used in the performance of the Scope of Work shall be strictly fit for the purpose. Following must be ensured: a valid driving license and vehicle insurance, adequate road worthiness (vehicles less than ten (10) years old for heavy vehicle and less than five (5) years for passengers vehicle/commercial vehicle, good tyre, engine condition, working front and back lights, horn and reverse horn, three (3) way mirrors, registration number clearly visible, good body condition, good brake system, retractable three (3) point seat belt, ABS and air bags, First aid box, Mini Fire Extinguisher for passenger vehicle. Vehicle should have periodic maintenance record as per OEM. The driver shall not be less than twenty-five (25) years of age with minimum of five (5) years of driving experience with good eyesight. Drivers shall not be allowed to drive for more than two (2) hours at a stretch.

- Transportation of passengers shall only be permitted in the passenger compartment of vehicles. All the passengers and driver shall use seat belt irrespective of their sitting position and the driver shall not be driving using mobile phone or under influence of alcohol, drugs or any other narcotic or hallucinogenic substance.
- The driver shall not exceed the posted speed limit. The speed limit on the Site for construction vehicles/ cranes is fifteen (15) km/h. Any load being dispatched from or received at the Site shall not exceed the carrying capacity of the vehicle.
- Tractor trailers while being used for the work of the Employer shall not be used for transporting passengers unless agreed and approved by Site team. These tractors (with trailer/ tanker) shall be driven at a speed of less than twenty (20) KMPH or should have fitted speed governors, should have four (4) wheeled tanker with capacity more than two thousand (2000) litres. The tractor trolley connector pin (coupling) should be either auto-disconnector type or three hundred sixty-degree (360°) rotation type.

## 12.6 Barricades and Signs

- The Contractor shall furnish, erect and dismantle all barricades as required for indicating (warning) and protecting from hazards such as excavated area, opening of a platform, crane swing area, overhead work, to carry out work on road and such other locations.
- Protective barricades shall be made of sheet metal or 40 NB pipe, painted with yellow and black stripes or red and white stripes, with caution signage on it and strong enough. For warning, indicative barricades can be made of fluorescent tape, cable and ropes with signs affixed.
- No excavated pit shall be left unprotected or without signs indicating caution during the job till backfilling is completed. Caution tape shall be used to highlight hazards to other personnel that may need to access the area.
- Any barricade must be at least one point five (1.5) metres from the edge of the excavation or opening. No overburden soil, or vehicle movement shall be allowed within one point five (1.5) m of an excavated pit.
- Barricades, in areas with night traffic by vehicles or people, must be lit with warning flashers (red or yellow) every fifty (50) metres and there shall be caution boards and warning flags.

## 12.7 Winch Machine Safety

The winch machine shall be fit for the purpose in terms of its integrity, rope size, diameter and quality, brakes liners, electrical integrity, condition of isolators, double earth for motor and panels, overloading relay setting with respect to rated current of the motor, solid support in its installation –either through a concrete column or steel column. Machine shall be locked with the column with the help of wire rope or foundation bolt and shall have interlocking arrangement in case of sudden increase in speed. Total lifting process of the rope shall be done in the multiple of thirty (30) meters in case where height is more than thirty (30) meters.

## 12.8 Excavation

Before an excavation begins, the Contractor shall verify Site specific conditions such as traffic, vibrations, proximity of structures, soil, surface water and groundwater, chemical contamination of water, water table, overhead and underground utilities along with Site map, weather condition etc.

Precautions required are:

- Remove or stabilize all surface impediments including by way of removal of loose rock or soil that could fall and create hazards to persons.
- Erect either warning barricades (with depth of less than one (1) metres) or rigid, protective barricades (with depth of more than one (1) metre) to avoid leaving an excavation hazard unprotected. However, a spoil pile of one point five (1.5) metre high can be used as a barricade on one side of the excavation.
- keep spoil dirt and any material or equipment that may fall into an excavation at least one point five (1.5) metre from the edge.
- Excavated pits deeper than one point five (1.5) metres will have a maximum height of vertical wall of one point five (1.5) metres with sloped edges at forty-five degrees (45°).
- Protect, support, or remove underground installations (e.g. electrical ducts, water lines, sewer lines, or fire lines).
- Prohibit personnel from working or passing under the loads of lifting or digging equipment inside the pit.
- Provide support systems such as shoring, bracing, or underpinning to ensure the stability of adjoining buildings, walls or structures, particularly if depth is more than one point five (1.5) metre. In such cases, confined space entry shall be obtained and safe access / egress path shall be provided.
- That no worker shall be allowed to work alone in a trench at any time.

## 12.9 Hot Job

- The Contractor shall obtain and adhere to written work permit while carrying out any hot work involving welding, cutting, brazing, polishing or heating a metal drum, barrel, or tank. Sealed container, cylinder etc. must not be welded or gas cut in any case.
- All operators involved in hot work shall be trained on the hazard and risk control measures as per JSA and should be qualified. Flammable source must be removed or protected from heat using fire retardant mat(s). There shall be flash back arrester on both end at cylinder and torch, precaution related to gas cylinder safety shall be adhered to and welding machine shall be certified by Employer's electrical engineer for suitability and integrity. The Contractor shall not use AC transformer type welding machine and only generator / rectifier type machine shall be used. Electrical DB supply must be fitted with ELCB / RCCB set for thirty milli-ampere (30mA). Spatters generated from hot work must be arrested and the area shall

be barricaded if hot work is performed at height. The Contractor shall ensure availability and use of recommended PPEs as outlined in the JSA and PTW. A trained fire watcher must be placed for all critical hot work. Job and machine grounding must be ensured. In case of hot job in Confined Space, atmospheric test must be carried out by an authorized person.

- The Contractor shall provide fire extinguisher during hot work which shall be periodically inspected and checked for the purposes of being fit to use.

## 12.10 Working Over or Near to Water Bodies

The Contractor shall comply with Employer's standard requirement on working over or near to water bodies including medical suitability, necessary statutory certification, use of life jacket, involving skilled team, rescue system in case person falls in the water and use of insulated powered tools.

## 12.11 Working in Forest

In case Contractor is required to work in forest then Contractor shall:

- ensure entry/work permit from Forest Authority & follow forest regulations.
- maintain Entry Exit Register for the workers entering in forest.
- Make workers aware of wildlife species which are critically endangered or red listed species, dealing with indigenous community members including their beliefs and worship areas and cultural heritage sites.
- assess the possible wildlife attack/crawler bite risks; Know the escape routes & Follow defined emergency procedures in case of emergency.
- Encourage workers to report any wildlife species observed in the project areas.
- Encourage not to disturb biodiversity / damage in forest areas knowingly
- Maintain cordial relationship with local community in the areas to avoid conflict.
- train the workers about risks & precautions including emergency.
- ensure first aid box, emergency supplies (Water, food, Medicine, torch, Whistle, bells, pocketknife, stick, pepper spray, etc.), and a trained first aider in the workers group.
- ensure adequate PPE (Reflective Full sleeves clothing, boots, gloves, hard hats) usage by the workers.
- ensure Map, compass & communication device with the workers group entering in forest.
- ensure that workers don't enter forest in adverse weather (rain, thunder, storm).
- plan the work in such a way that workers return out of forest before sunset. Camping is not allowed in forest.
- ensure that workers follow defined work procedure.
- ensure competent supervision during forest work.
- ensure that workers Stay in group & no lone working is practiced.
- ensure that the workers do not disturb/harm flora or fauna.
- ensure that workers do not throw waste foods inside forest.
- ensure no workers smoke or fire inside the forest premises.
- ensure that workers practice good hygiene inside forest & never taste forest shrubs.

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## 12.12 Corridor Clearance or Vegetation Removal

During the corridor clearance or vegetation removal Contractor shall

- Smoking is strictly prohibited in the forest areas
- start the vegetation removal work only after getting Permission/NOC from relevant authority (MoEF, State Authority, etc.) in hand.
- prepare a vegetation clearing & restoration plan & HIRA and submit to the Client for review and approval.
- Provide Safety Induction training to the gang, communicate the risks involved & precautions required during work to the gang through special training session & daily Toolbox talks.
- barricade the work/tree felling or trimming area & fix red flags & Warning sign boards on boundaries.
- ensure presence of Competent Supervisor and Safety Steward during working hours.
- ensure Use of right tool as per requirement.
- ensure adequate PPE usage like Reflective jackets, Helmets, Safety Shoe, Hand gloves, goggles, Face Shield, bee attack protection kit etc.
- ensure that No unauthorised person is allowed in tree felling / trimming area.
- ensure that No lone working is allowed.
- deploy signaller/flagman for working near roadside.

## 12.13 Fire Prevention and Protection

Fire prevention policies of the Employer require prevention and mitigation training on fire emergency, segregated storage area for flammable and combustible material, safety in welding and burning operation, high risk welding operations, etc. and shall be complied with by the Contractor.

## 12.14 Scaffolds

Contractor shall ensure compliance with standard practices for all scaffold related activities. Some of them are:

- Every scaffold and its support shall be of good construction and be of suitable and sound material and strength. Use of wood and bamboo scaffolds are banned.
- All elevated structures/ working platform areas should be guarded on all sides with railings and toe board as described
- Scaffolds shall be designed to support at least four (4) times the anticipated weight of men and material. It shall have standard inclined ladder / staircase for access and egress.
- Landing platform shall be provided at every nine (9) metres of height. Extra support can be taken from existing nearby structure. Maintain a safe distance from power lines.
- Fall protection when erecting, dismantling, modifying scaffolds shall be under the direction of a competent person.
- Scaffold shall be designed, erected, and certified for use by competent persons. Ready for use scaffolding shall be tagged with green board while other scaffolding shall be tagged with red tag and shall not be used pending certification.



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### 12.15 Portable Ladders

The Contractor shall ensure that:

- Only commercially available and approved ladders of metal / aluminium / fiber glass can be used.
- Metal ladders shall not be used by persons performing electric welding or working near energized electric lines or services, unless otherwise approved in writing by the Employer for a specific job.
- Painted ladders are not permitted.
- All ladders shall be inspected by a qualified person or inspection agency as per the statutory requirements or requirements of the Employer.
- Bends, dents, cracks, loose or missing rivets, disconnected braces, condition of steps and corrosion seriously weaken a ladder. Destroy or repair any defective ladders immediately in accordance with manufacturers' recommendations

### 12.16 Portable Tools and Equipment

- The Contractor shall ensure that tools and equipment requiring a formal periodic inspection must be tagged, marked, labelled, tested, certified and calibrated (as applicable) to indicate that the formal inspection has been performed.
- All formal inspections must have inspection records. The Contractor shall be required to ensure use of all certified, adequately insulated, tested, checked and quality manufactured tools and tackles including cutting, brazing, welding, cutting torch, rock breaker, driller, lifting gear etc.
- Any tools and equipment found defective or in need of inspection must be tagged with a "defective" tag and returned to the appropriate person for repair or inspection. The tool or equipment must be removed from the Site until repaired or inspected. All portable grinding / grinding equipment must have adequate and valid wheel, insulation, guard cover and good quality wire. The Contractor shall ensure that cables for all power tools shall be without any cable joints and 2 Pin/3 Pin shall be used for power connection.

### 12.17 Hoisting/ Mobile lifting equipment

- The Contractor's personnel are forbidden to ride on any hook, load, or headache ball. Equipment operator certifications shall be submitted to the Employer's Site team. Unauthorized lifts (including tandem lifts) are not permitted. The Employer's site engineer must be notified prior to any critical lift (a critical lift is any lift that exceeds eighty percent (80%) of the design capacity of the lifting device / or exceeds 02 tons) being carried out.
- All lifting equipment, tools and tackles and devices shall be tested, certified and maintained to manufacturer specifications. For man lift and other industrial lifts, the Contractor shall ensure that the Contractor, prior to deployment of the lifting equipment, tools and tackles and devices at the Site, procures a certificate from third party inspection agencies as per the statutory requirements, certifying the successful testing of such lifts at Site.

### 12.18 Lifting tools and tackles

- The Contractor shall ensure that different man and material lifting equipment (different cranes, winch machine, hydraulic lift, etc.), tools and tackles proposed to be used at the Sites are suitable for the job and approved for use by the site team.
- The Contractor shall use the Employer's site checklist of different cranes / heavy vehicle etc. before hiring or bringing any such equipment to Site for use. After that the Contractor shall use periodic and daily checklist to ensure continued suitability. These equipment and tools should have all valid legal documents and maintenance record from the competent persons available with them.
- The operator shall have necessary statutory certification, training record on manufacturer's training and refresher training of every three (3) years with minimum experience of five (5) years in the job before coming to the Site.
- All cranes used at the Site must have safe load indicator, over run cut-off switch (anti-two block switch) and audio-visual alarms.
- The safe working load, date of last testing and due date for next testing should be clearly marked on the body. Use of first-generation hydra at the Sites are banned.
- All material lift job should have a documented plan as approved by the Site team and for any critical lifts (with weight of more than two (2) tons, as minimum normal practice but can be different as agreed by Site team) should have detail material lift plan validating soil compactness, crane placement, man and material locations, detail sling specification, angle of lift, approval and presence of competent mechanical engineer during lift. Critical lifts are normally not permitted at night at the Sites.
- The contractor shall ensure third part inspection done for all new or old tools and tackle (Lifting & Hoisting) from respective state competent person and obtain valid certificate from the competent person and maintain the records.

### 12.19 Machine Guarding

Contractor shall be responsible for ensure guarding of rotating machines adequately to prevent exposure of personnel.

### 12.20 Confined Space (CS)

The Contractor shall:

- Confirm with site engineer about working in confined spaces and follow Site specific confined space entry procedure if any.
- Prepare safe entry procedure and obtain entry and work permits.
- Provide on the job training to persons entering confined spaces and have stand-by person and rescue team for any incidents.
- Ensure proper ventilation (forced or exhaust), illumination using 24 V power supply
- Carry out checks for presence of toxic/ flammable gases, monitor the oxygen content in confined spaces and ensure availability of communication media between stand-by confined spaces attendant and people inside confined spaces
- Ensure availability of self-contained breathing apparatus or equivalent and use of all relevant personal protective equipment as per JSA and PTW.



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- ensure that all persons exit from the confined space upon completion of the work. To ensure such exit, head count of the men entering shall be performed and record to be maintained in a register.

## 12.21 Heavy Earth Moving Equipment (HEME)

All HEME supplied or used at the Sites shall have all mandatory attributes for safe operation including rollover protection structure (ROPS), fall-over protection structure (FOPS), reverse and side camera, automatic reverse alarm, fire extinguisher, functional wipers, heating and air conditioning vent as applicable, illumination lamp etc. Operators must be trained sufficiently for keeping it away from over-head power line, not allowing anybody within 10 m radius from the vehicle. Driver shall be required to stop engine and come out from cabin for any discussion. Wearing all PPEs, movement against edge from trenches / excavated area, parking the vehicle with all levers in locked condition and daily and periodic inspection by the operator shall be mandatory and should be trained accordingly.

- The Contractor shall ensure that only safe and well-maintained plant and equipment shall be allowed to operate on any of the sites.
- All operators of heavy plant such as, earth movers, piling rigs, etc. shall be medically fit, over eighteen years of age and be thoroughly trained and experienced to operate the equipment.
- No unauthorized person shall be permitted to ride on plant.
- The operators shall conduct daily inspections of their respective items of plant with the results of these inspections being recorded and the records kept available for inspection by the Employer's Representative.
- All mobile heavy plant shall be equipped with at least one 5kg Dry Powder Fire Extinguisher, carried at a suitable position so as to ensure its easy availability.
- Whenever heavy plant is operating in congested areas, thoroughly trained and experienced banks men shall be deployed to control the plant and personnel movement and interface.
- Any waste engine oil and filters following any on site servicing and maintenance shall be removed from the sites and disposed of in an environmentally conscious manner at authorized disposal locations.
- All drums of fuel oil shall be stored on drip trays or the fuel shall be kept in bunded bulk storage fuel tanks, with quantities stored being kept to a minimum.
- The storage areas shall have dry powder fire extinguishers positioned in close proximity to their location for use in an emergency.

## 12.22 Concreting

- Formwork shall be in line with the current version of approved, released and accepted drawing. The Contractor shall be responsible for adherence to 'Bar Bending Schedule' and 'Concreting Plan' and shall submit and obtain approval for method statement, shuttering and staging plan including rebar spacing and chair design. Formwork shall be inspected by a competent person before pouring of concrete begins. All projected reinforcement bars shall be covered / bent when work is being carried out overhead. Any timber form work shall be carefully inspected for cracks and excessive knots before use. Tubular steel shall be inspected for rusting, dents, damaged welds etc. before it is erected. All vertical supports shall be vertically braced and cross bar support. Footings under the support shall be set on firm soil or other suitable materials which assures stability and the prop shall be of full length and not of two or three pieces joined together.

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- During pouring of concrete there should be continuous inspection of centring wedges and adjustment screws. Before removing the forms, the Contractor shall ensure that the concrete has developed sufficient strength to support itself and all loads that will be impinging on it.
- Formwork structure shall have sufficient catwalks and other secure access for inspection.

### 12.23 Concrete Vibrators

Vibrating unit shall be completely enclosed and belt transmitting the power to the unit adequately shall be totally enclosed and be protected against overloads by suitable overload relays and shall be effectively earthed. Sufficient length of cable to the vibrator shall be ensured. Needle load shall be firmly locked while inserting in the vibrator and inner core shall be adequately lubricated.

### 12.24 Concrete Mixers

- All gears, chains and rollers of concrete mixer should be adequately guarded to prevent damage / danger.
- Concrete mixer hopper shall be protected by side railing to prevent workers from passing under them and operators shall make sure before lowering the skip bucket that no one is there. Hopper hoist, wire rope and anchoring brake, skip hoist clutch, has to be checked for its condition and adjusted periodically. Nothing should be kept inside the motor enclosure.
- The Operator shall ensure that motor fan guard is secured firmly, wiring is properly connected and insulated, and double earthing is done for electric mixers.

### 12.25 Medical/First Aid Treatment

- The Contractor shall maintain first aid box and/or medical centre and certified first aiders at site as per statutory requirement and shall have a tie-up with nearby good specialty hospital to manage medical emergencies. When an injury occurs at the Site and requires medical treatment, the Contractor shall ensure that such personnel is transported to the nearest hospital.
- If the Employer has a first-aid centre and other similar facilities at the Site, the Employer may, at its option, make available such facilities for the treatment of the Contractor's personnel, who have been injured or have become ill while being engaged in the performance of the Scope of Work.

### 12.26 Accident Investigation and Reporting

- The Employer's policy requires that all incidents and environmental releases, regardless of severity, are reported immediately to the Employer's project manager and HSE manager first by verbal and then by a written "preliminary" Initial Incident Report (IIR). Subsequently, a joint written investigation should be conducted by incident investigation team. The Employer's team shall record these incidents.
- Where the actual or potential severity of the incident or behaviour is significant or occurs frequently, the Hub Head shall appoint a committee to investigate, the accident/incident, verifying the information and complete a root cause analysis. All corrective actions shall be carried out, monitored by the HSE Department.

### 12.27 Emergency Preparedness Plan

The Contractor shall prepare an Emergency Response Plan for all work sites. The plan shall integrate the emergency response plans of the Contractor and all other Subcontractors.

The Emergency Response Plan shall detail the Contractor's procedures, including detailed communications arrangements, for dealing with all emergencies that could affect the Site. This include where applicable, injury, sickness, evacuation, fire, chemical spillage, severe weather and rescue from any situation like height, confined & excavations etc.

### 12.27.1 Emergency Situations

Every Contractor shall formulate an Emergency Preparedness Plan for each of his sites. These plans will address foreseeable emergencies that may arise during the construction activities. Examples of activities for which plans should be prepared include amongst other things:

- Fire and explosion.
- Collapse of building, sheds or structure etc.
- Gas leakage or spillage of dangerous goods or chemicals.
- Bomb threatening, criminal or terrorist attack
- Death or major injury.
- A serious fire that threatens life.
- Floods, Earthquake, storms and other natural calamities
- Working at height- hanging of the person on safety belt/ fall arrester
- Landslides getting workers buried
- Snake and reptile bite
- Community strike on the project site
- Community unrest due to accident in the community area
- Employees unrest at project site

An Emergency Preparedness plan should include details of the following; arrangements for emergency medical treatment and evacuation of the victim in the event of an accident or dangerous incident occurring, the chain of command and the responsible persons of the Contractor with their telephone numbers and addresses for quick communication shall be adequately publicized and conspicuously displayed in the workplace.

- The name, location and phone number of the Emergency Co-coordinator;
- Designated Personnel with locations and phone numbers;
- Details of the Emergency Response Team with locations & phone numbers;
- Functions of the Emergency Response Team;
- Resources for handling the emergencies
- The means of Escape;
- Communication with the Emergency Services;
  - Police
  - Fire Services
  - Ambulance and Hospital Services
- First-Aid Facilities;
- Site plans;
- Suppliers of emergency equipment such as sump pumps, lighting, Carnage, etc.

Contractors shall require liaising with the local hospitals and fire stations for prompt attendance to the injured. The Contractor shall keep emergency vehicles on standby duty during all working hours for this purpose.

Copies of the emergency procedures and the Contractor's rescue organization should be displayed at each place of work and notice boards. This information should be reviewed and updated as often as is required, but at least once annually.

Drills should be arranged to test the efficiency in mobilizing the necessary personnel and equipment. These Drills should be carried out at least every three months.

Regular joint exercises between the Contractor's rescue teams and the Fire and Emergency Services should also be carried out for the major contracts.

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It shall be the responsibility of the Contractor to keep the Local Law & Order Authorities informed and seek urgent help to mitigate the consequences of an emergency. The Contractor shall make prompt communication to Employer initially by telephone and followed by a written report.

## 12.28 Personal Protective Equipment (PPEs)

The Contractor shall at all times keep and maintain an adequate supply of suitable personnel protective equipment which shall be readily available for use at all times on the sites, and would include amongst others the following items:

- Safety Helmets.
- Hearing Protection.
- Respiratory Protection.
- Eye Protection.
- Protective Gloves.
- Safety Footwear.
- High Visibility Clothing to BS EN 471 Class 3 standard

All sites shall be designated as HARD HAT and SAFETY BOOTS SITES and as such an adequate supply of safety helmets and safety boots shall be kept available for use by all staff, workers and authorized visitors to the sites.

If the Contractor fails to provide the personnel Protective Equipment, the same may be provided by the Employer at the rate of 1.5 times the actual cost to the Contractor and the cost will be deducted from the Contractor's RA Bills.

The Contractor shall remove from the site any worker who consistently refuses to wear the appropriate personal protective equipment.

### 12.28.1 Head Protection

The Contractor shall comply with requirements of IS 2925. Hard hats shall be used and worn where a hazard of falling or flying objects exist. Safety Helmets (Hard hats) intended for use by visitors shall have replaceable paper lining.

### 12.28.2 Eye and Face Protection

Eye protection shall be worn during all operations by operators and people in the vicinity, where there is a danger of flying particles of metal such as generated during use of hand tools such as chisels, grinding, welding and cutting lathe work on brass and cast iron acid and alkali splash, high pressure jet cleaning or insulation removal from heights using high pressure jets. The Contractor shall meet the requirements of IS 8520 entitled 'Guide for Selection of Industrial Safety Equipment for Eye, Face and Ear Protection.

### 12.28.3 Footwear

Safety shoes, boots and gumboots fitted with steel toe-caps of approved quality conforming to prescribed Indian or international standards. Wearing of unsafe safety shoes such as jogging shoes, tennis shoes, slippers and sandal etc. are prohibited. The Contractor shall meet the requirements of IS 10667 Entitled 'Guide for Selection of Industrial Safety Equipment for Protection of Foot and Leg.

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#### 12.28.4 Hand Protection

The Contractor shall provide appropriate hand gloves as per IS 8807 entitled 'Guide for Selection of Industrial Safety Equipment for Protection of Arms and Hands' to prevent injuries to hands during work. The CONTRACTOR shall maintain appropriate inventory of gloves for different applications like acid and alkali handling, general- purpose work gloves and asbestos or heat resistant hand gloves etc.

#### 12.28.5 Hearing Protection

The Contractor shall ensure reasonable precautions are taken to avoid injury to the hearing of the employees. All noise levels shall be controlled within 85 dBA. The Contractor shall identify noise areas where noise levels exceed prescribed safe level for arranging for appropriate engineering revision. Where this is not feasible, appropriate earplugs / earmuffs or protectors shall be provided to workmen ensuring these are worn by those exposed to noise levels beyond safe levels. Periodic hearing acuity tests shall be conducted on such persons exposed to high noise levels to ensure that they do not suffer any hearing impairment as per requirements of IS 8520.

#### 12.28.6 Respiratory Protection

The Contractor shall maintain where appropriate, procedures for training and use of Self-Contained Breathing Apparatus (SCBA). The SCBA shall be provided together with lifelines and rescue teams to safeguard personnel working in areas where gases such as carbon monoxide, methane chlorine and such life endangering atmospheres are present.

The Contractor shall meet requirements of IS 9623 for 'Selection, Use and Maintenance of Respiratory Protective Devices'. The CONTRACTOR shall have trained adequate number of personnel including the identified firefighting teams, hose teams and SAs in the use of the SCBA.

The Contractor shall use the periodic safety drills to demonstrate, train and establish competence of personnel in the use of SCBA.

#### 12.28.7 Fall Protection - Safety Harness or Fall Arrest

The Contractor shall provide safety harness or means of restraint such as safety belts, harness and lifelines etc. to workmen engaged to work in heights such as open-sided floors, open-sided scaffoldings, floor and roof openings, overhead construction works of various nature etc. where there is a falling hazard of 1.8 meter or above.

Storage, issue, wearing and maintenance of safety harness shall be under strict supervision and records shall be maintained. All fall arrests shall consist of full-body harnesses, lanyards with shock absorbers, lifelines, rope grab, safety nets, crawling ladders and associated hardware.

Two alternate lanyards shall be used to facilitate tying off at a new location before disconnecting from the previous location. Practices for safety harnesses and fall arrests shall conform to IS 4912, IS 11972 and IS 8519 or equivalent international codes.

#### 12.28.8 Protective Clothing

The Contractor shall prevent hazards of loose clothes worn by workmen getting caught in moving machine parts. Loose and thin garments such as dhoti and pajamas are prohibited.

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While the Contractor shall ensure that all workmen wear long sleeved shirts, jackets or the like with the sleeves rolled down and secured at the cuff, long pants/ trousers extending up to the top of the safety shoes so as to prevent injuries caused by contact with heat, cold abrasive and sharp surfaces shall be strictly enforced.

Such protective clothing shall be mandatory in hazardous areas especially during start- up operations involving hot, inflammable, and other chemical hazards, furnaces and Boilers and such fired equipment and asphaltting plants. Personnel exposed to acids and alkalis hot fluids and steam during such operations shall be provided with appropriate heat or corrosion resistant clothing.

The Contractor shall meet the requirements of IS 8990 entitled 'Maintenance and Care of Industrial Safety Clothing'

In case of any Night working / Dark areas, it will be mandatory to wear florescent jacket.

## 12.29 Visitors to Site

All visitors to site shall report to the Contractors site offices where they shall be issued with appropriate Personal Protective Equipment if they are to go out onto the site work areas. Any visitors going out to the site work areas shall be accompanied at all times by a member of the site personnel.



**Annexure 1: Safety, Welfare and Occupational Health Requirements**

(This list has been prepared in chronological order with primary importance to Section of Act and secondary to Rules)

S - Refers Relevant Sections in BOCWA

R - Refers Relevant Rules in BOCWR

C - Refers Relevant Chapter No. in BOCWR

BOCW act and rules are not applicable during O&M phase still it provides a clear understanding of the HSE related requirement.

SR. No.	Items	BOCW Act Section	Central BOCWR Rules	Form No and Schedule
1	Registration of Establishment	S - 7	R - 23 to 27	
2	Display of Registration Certification	S - 7	R - 26 (5)	
3	Hours of work	S - 28	R - 234 to 237	
4	Weekly rest and payment at rest		R - 235	
5	Night shift		R - 236	
6	Maintenance of workers registers and records	S - 30	R - 238	
7	Notice of commencement and completion	S - 46	R - 239	
8	Register of persons employed		R - 240	
9	Muster roll and Wages Register		R - 241 (1) (a)	XVI & XVII
10	Register of overtime	S -28 & 29	R - 241 (1)	XXII
11	Register of Damage or Loss		R - 241 (1) (a)	XIX, XX, & XXI
12	Issue of wages book		R - 241 (2) (a)	XXIII
13	Service certificate for each worker		R - 241(2) (b)	XXIV
14	Display an abstract of BOCWA and BOCWR		R - 241(5)	
15	Annual return		R - 242;	XXV
16	Drinking water	S - 32		
17	Latrines and Urinals	S - 33	R - 243	
18	Accommodation	S - 34		
19	Crèches	S - 35		
20	First-aid boxes	S - 36	R - 231	Schedule III
21	Canteens	S - 37	R - 244	
22	Food & other items served in the canteens		R - 245	
23	Supply of tea and snacks in work place		R - 246	
24	Food charges on no loss no profit basis		R - 247	
25	Payment of wages		R - 248	
26	Display of notice of wages regarding		R - 249	
27	Safety committee	S - 38	R - 208	
28	Safety officer	S - 38	R - 209	Schedule VIII
29	Reporting of accidents and DO	S - 39	R - 210	
30	Procedure for inquiry into the case of accidents		R -211	
31	Responsibility of Owner	S - 44	R - 5	
32	Responsibility of Architect, Project engineer & Designer		R - 6	
33	Responsibility of workmen		R - 8	
34	Responsibility for payment of wages & compensation	S - 45		
35	Penalties and Procedures	S - 47 & 55		
36	Excessive noise, vibration etc.		R - 34	
37	Fire Protection		R - 35	

**Annexure 2: HSE Calendar**

1st Monday to Sunday of January	Road Safety Week (Subjected to confirmation from Ministry of Road Transport, Govt. of India every year)
16th February	Kyoto Protocol Day
March	Red Cross Month
4th March	National Safety Day
7th April	World Health Day
14th April	Fire Safety Day
April 18 to 22	Earth Week
20th April	Earth Day
20th April	Noise Awareness Day
28th April	ILO World Day for Safety and Health at Work
May 1 to 7	Emergency Preparedness Week
5th June	World Environmental Day
12th June	World Day against Child Labours
9th July	Occupational Health Day
17th October	World Trauma Day
1st December	World AIDS Day