

Tender for '**Supply, Installation, Testing & Commissioning of Networking with Optical Fiber Cables (OFC) including Closed Circuit Television (CCTV) Camera Works at Phase 1C & 1B Area in Origins, Chennai** for Mahindra Industrial Park Chennai Limited near Gummidipoondi located in Pudevoyal village, Gummidipoondi Taluk & Eliambedu village, Ponneri Taluk of Tiruvallur District

**Volume - II A**  
**Technical Specification**

**Mahindra** INDUSTRIAL PARK CHENNAI LTD.,  
Mahindra Industrial Park Chennai Limited,  
Mahindra Towers, Ground Floor,  
No. 17/18, Pattullous Road, Anna Salai, Chennai - 600 002

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## **CCTV Network systems specifications**

### **1. Preamble**

This specification describes the minimum requirements for CCTV Network systems that are involved in the execution of the subject CCTV and inter-alia involves Design, selection, procurement, supply, installation, testing and commissioning of CCTV , Networking, cabling, earthing required civil works and allied minor ELV systems.

#### **1.1. Scope of works and responsibility of the contractor**

The contractor is advised to peruse the document in full and understand the scope of work as detailed elsewhere in this document. He is / they are also advised to make himself / themselves aware of the site requirements and conditions before submission of his / their bid. Clarification, if any, required shall be made with the consultant before submission of bid.

However, nothing shall absolve the contractor to carry out and complete the entire works including those minor / incidental works required for the completion of the work whether it is explicitly brought out in this document or not.

#### **1.2. Interpretation**

All the technical terms referred in this document shall have the interpretation as per the relevant Indian standard code / IEC /BS etc., In case on any doubt in any of the meanings / interpretations, the tenderer shall get the same clarified from the owner prior to submission of bid.

#### **1.3. Contractor's license**

The CCTV works shall be carried out by persons holding valid competency certificate issued / recognised by the Licensing Board of the locality / State in which the works is to be done. The contractor holding valid Licence / Authorisation from the Licensing Board of the locality / State for carrying out the installation work of such nature.

#### **1.4. Design philosophy**

All equipment offered by the contractor shall offer the following features: -

- Safety to personnel and equipment during operation and maintenance.

- Reliability of Services.
- Ease of maintenance.
- Facility for ready addition of future components.
- Convenience of operation.
- Maximum Inter-changeability of equipment.
- Minimum fire risk.

### **1.5. Codes and standards**

Whether explicitly mentioned in this specification document or not, all the engineering, systems, equipment, materials and works being provided by the Contractor for this project shall conform to the requirements of the respective latest editions / amendments of the Indian Standards Specifications. In particular cases where relevant Indian Standards are not available, other International Codes and Standards may be accepted, subject to Developer's specific approval.

The design and the installation shall be in accordance with established and sound engineering practices, standard specifications and must conform to the statutory regulations applicable.

The equipment and installation shall conform to (but not be limited to) the following (Latest versions/editions).

- Indian Electricity Act, 1910
- Indian Electricity Rules, 1956
- The Factory Act, 1948

In case of conflict between various documents, specifications and codes / standards etc. the following order of procedure shall govern:

- Job specification
- Codes and Standards.

### **1.6. Electrical system**

Unless and until specified, otherwise the complete electrical system shall be suitable to work satisfactorily with the following system parameters

System Voltage (Low Voltage)	:	240 Volts Single phase 3 wire AC system of supply subject to permissible variations as per IE rules
System Voltage (Extra low Voltage)	:	24AC/DC Volts 2 wire system of supply subject to permissible variations as per IE & IEC rules
Frequency	:	50 Hz and subject to permissible variations as per IE rules

### 1.7. Service conditions

All equipment to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

Maximum ambient temperature (deg C)	:	50
Maximum temperature in shade (deg C)	:	45
Average temperature in air (deg C) in shade	:	35
Relative Humidity (%)	:	60 to 80
Maximum altitude above mean sea level (Meters)	:	1000
Operating Environment	:	Moderately hot & humid tropical climate conducive to rust & fungus growth.

### 1.8. Drawings and data

The contractor shall furnish the following drawings and data as part of the work:

- General arrangement showing plan, elevation, and typical section views.
- Installation plan showing location of fixing CCTV etc.
- Schematic drawings.
- Technical literature on the equipment offered.
- Make/ Model No. of required equipments.

The Contractor shall also furnish the following drawings for each major equipment such as CCTV, Fiber optic cable layout after the award of contract.

- (i) Overall outline dimensions and general arrangement including plan, front elevations, clearances required in front and back etc.
- (ii) Itemized bill of material for each module, listing all devices mounted and cable, indicating all type, rating quantity and special notes, if any.

- (iii) Detailed internal wiring diagram of each type of module, including terminal block number, ferrule numbers & the external cable connection designations.

### **1.9. Acceptable makes / Brands of CCTV network equipment / items**

The list of preferred brands / makes of various CCTV network equipment / items is furnished in tender BoQ. The tenderer is free to choose any one of the make/brands listed therein and have to clearly bring out the same in their tender. However, the owner reserves the right to insist for any specific / particular brand from the list without any additional financial implication.

## **2. Specific project requirements for CCTV Network equipment**

### **2.1. Optic Fiber Cable**

The single-mode Outdoor Armoured Optic Fiber Cable shall meet to the following standards

- IEC 60793, IEC 60794, Telcordia GR-20, ITU-T, RoHS,
- Type of cable: Single-Mode Armoured Cable
- Fiber type / Mode: single mode Fiber
- No fiber counts: 6 and 24
- **Jacket Material** : LSZH
- **Operating Temperature** : -20 deg C to +60 deg C

### **2.2. Cat6 UTP Armoured Cable**

The Cat-6 UTP Armoured Cable shall meet to the following specifications

- Type of cable: Cat6 UTP 4-Pair Armoured Cable.
- No of pairs: 4 Pairs
- Conductor Metal: Solid Bare Copper
- Jacket Material: PVC UL94V-0/LSZH
- Conductor Diameter: 0.560mm Nominal, 23 AWG
- Temperature Range: -20° to +70°C
- Inner / Outer Sheath: LSZH
- Armour type: Aluminium
- Sequential Marking: At Every Meter
- Packaging: 305 Mtrs in a Reel

### 2.3. Gigabit Ethernet PoE switch

- Type of switch: 8 port PoE+ Gigabit ports with 190W with 2 dedicated Gigabit SFP fiber uplink ports.
- PoE / PoE+ ports: 8 PoE+ (190W PoE)
- 1G SFP (fiber) ports: 2 (dedicated)
- Bandwidth 20Gbps Priority queues 8
- Number of IPv4 static routes: 32
- Number of IPv6 static routes :32
- Allowable Acoustic noise level @ 25° C (dBA): 32 dBA
- Password management: Yes
- Admin access control via RADIUS and TACACS: Yes
- Many-to-one port mirroring: 4
- Max power (worst case, all ports used, full PoE, line-rate traffic) (Watts): 190
- Fan: 1 Nos
- Operating Temperature: 0° to 50°C (32° to 122°F)
- Humidity: 90% maximum (RH)
- Certifications: Electromagnetic Emissions and Immunity Certifications

### 2.4. IP Bullet camera

Feature	Specification
Image Sensor	½.7" 8Megapixel progressive CMOS
Scanning System	Progressive
Effective Pixels	3840 (H) × 2160 (V)
S/N Ratio	More than 50dB
Minimum Illumination	0.009 Lux@F2.0
IR Distance	Distance up to 50m
IR On/Off Control	Auto/Manual
Optical Zoom	12X-16X,
Focal Length	2.8 mm, 3.6 mm
Lens	3.7mm~11mm, Motorized, F1.9
Angle of View	H: 113°~50°, V: 60°~28°
Compression	H.265; H.264; H.264B; MJPEG
Day/Night	Auto (ICR)/Color/B/W
Ethernet	RJ-45 (10/100 Base-T)
Noise Reduction	3D DNR

Feature	Specification
Streaming Method	Unicast / Multicast
Power Supply	12V DC/PoE (802.3af)
Management Software	Should be provided
Power Consumption	<14.3W
Operating Temperature	-30° C ~ +60° C
Protection Grade	IP67
Certifications	CE, UL, FCC

## 2.5. Network Video Recorder

Feature	Specification
IP Camera Input	32 Channel
Two-way Talk	1 Channel Input, 1 Channel Output, RCA
Interface	2 HDMI (up to 3840 x 2160, Different Source), 1 VGA
Resolution	3840 x 2160, 1920 x 1080, 1280 x 1024, 1280X720, 1024X768
On ScreenDisplay	Camera title, Time, Camera lock, Motion detection, Recording
Compression	Smart H.265+/H.265/Smart H.264+/H.264
RecordingResolution	12MP to HD
Record Rate	384Mbps
Record Mode	Manual, Schedule (Regular, Motion Detection, Alarm, IVS), Stop
Incoming bandwidth	320 Mbps,
Video Detection	Motion Detection, MD Zones: 396 (22 x 18), Video Loss and Tampering
Alarm input	16 Channel,
Playback	128 Mbps 64 Mbps
Interface	2 RJ-45 Ports (10/100/1000Mbps)
Ethernet Port	2 Ethernet Ports
Network Function	HTTP, HTTPs, TCP/IP, IPv4/IPv6, UPnP, RTSP, UDP, SMTP, NTP, DHCP, DNS, IP Filter, FTP, Alarm Server
Internal HDD	8 SATA III Ports, Up to 8 TB capacity for each HDD
HDD Mode	Single, Raid 0/1/5/10(Enterprise-level HDDs)
USB	4 USB Ports
Power Supply	AC100V ~ 240V, 50 ~ 60 Hz
Power Consumption	<20W

<b>Feature</b>	<b>Specification</b>
Operating Conditions	-10°C ~ +55°C
Installation	Rack-mounted
Certifications	CE, FCC, UL
Software	Necessary software to be included

## **2.6. Online UPS System**

<b>Feature</b>	<b>Specification</b>
Rated Capacity	<b>1 KVA</b>
Input / Output Phase	<b>Single Phase with Ground</b>
Input Voltage Range	<b>118 ~ 295 V (± 5 V)</b>
Input Power Factor	: > 0.99
Harmonic Distortion	<b>≤ 2 % THD (Linear Load), ≤ 4 % THD (Non-linear Load)</b>
Output Voltage Range	<b>208 - 240 V AC</b>
Frequency Range	<b>50 Hz ± 0.1 Hz</b>
Power Factor	<b>≥0.99 @ full load</b>
Waveform	<b>Pure Sinewave</b>
Efficiency	<b>&gt;90%</b>
Communication Interface	RS 232/USB/SNMP/MODBUS
Indication	<b>LCD Display</b>
Noise Level	<b>Less than 50dBA @ 1 Meter (With Fan Speed Control)</b>
UPS Overload	<b>110%</b>
<b>Environment Features</b>	Operating Temperature: 0 - 40 °C
<b>Compliance</b>	<ul style="list-style-type: none"> <li>IEC/EN 62040-1, IEC/EN 62040-2, IEC/EN 62040-3</li> </ul>
<b>Protections</b>	<ul style="list-style-type: none"> <li>Input Low / High Protection: Yes</li> <li>Output Low / High Protection: Yes</li> </ul>
Standards	EN 62040 – 2, EN 62040 - 1, IS 16242 - Part1

## **3. Erection, testing and commissioning for CCTV Network equipment**

### **3.1. Scope**

The specification covers the design, manufacture, shop testing, packing, and delivery, erection, testing and commissioning of various CCTV network equipment/items suitable for an effective surveillance system.

### **3.2. General constructional requirements**

CCTV equipment, including cameras, enclosures, and mounts, should be built to withstand environmental conditions such as extreme temperatures, humidity, dust, and physical impacts.

The equipment should meet industry standards for weatherproofing (IP ratings for ingress protection, e.g., IP66, IP67) and vandal resistance (IK ratings for impact resistance).

Power over Ethernet (PoE) compatibility is often required for simplifying installation and reducing the need for separate power cables.

Equipment should have accessible interfaces for servicing and maintenance, including easy-to-replace components.

Equipment should be compatible with other components in the CCTV system, including cameras, recorders, monitors, and software. This includes support for common video formats (e.g., H.264, H.265) and communication protocols.

CCTV equipment should incorporate security measures such as tamper-resistant seals, encrypted communication, and access controls to prevent unauthorized access and tampering.

All components should adhere to international and local standards, such as CE, UL, RoHS, and other relevant certifications, to ensure safety, quality, and compliance with regulatory requirements.

### **3.3. Erection**

Physical installation of CCTV network components, including cameras, poles, cables, and network equipment. This step is crucial to ensure that all elements of the system are correctly positioned and set up.

Assess the installation site, considering factors such as camera coverage area, mounting locations, and cable routing. Ensure there are no obstructions and that the site meets requirements for proper camera positioning. Plan cable paths, power sources, and locations for network equipment.

Install CCTV poles securely, ensuring they are grounded secure all equipment with appropriate fasteners to prevent vibrations or movement.

Power up all cameras and network device and ensure each camera is connected to the network for remote viewing via IP address configuration. Configure Power over Ethernet (PoE) or power supply connections for cameras.

**Earthing of CCTV poles:** Earthing shall be carried out as per IS:3043. By properly earthing the CCTV pole, you ensure not only the safety and protection of the equipment but also the safety of personnel working with or near the system.

**Visual Inspection:** Periodically check the earthing cable and connections for corrosion or damage. Ensure that the cable is securely attached and the clamp is tightly holding the cable to the pole and earth rod.

**Test Earthing Resistance:** Regularly test the earthing resistance, especially after extreme weather conditions or when electrical surges have occurred, to ensure it is still within the safety limits.

### **3.4. Testing and Commissioning:**

After the physical installation is complete, thorough testing must be performed to ensure that all components function as intended. This phase involves verifying the system's functionality, quality of video feed, and network integrity.

Functionality Test, Signal and Connectivity Test Recording System equipment Test, Motion Detection Test, System Configuration, Integration with Other Systems, Final Check for Performance and Functionality, User Training etc.

#### **Routine Test:**

All the Routine tests as per standards amended upto date shall be carried out on each delivery for CCTV system equipment are crucial for ensuring the system functions properly and maintains its reliability. Routine testing of CCTV system equipment helps to maintain system integrity, ensures timely detection of faults, and enhances overall security operations.

### **Acceptance Test:**

All Acceptance tests as per IS: 7098 (Part 2) - 1985 as modified upto date including the optional test as per Clause no 18.4 and Flammability Test shall be carried out on sample taken from the delivery lot.

The installation, testing, and commissioning of CCTV network equipment is a structured process that guarantees the system is correctly set up, fully functional, and prepared for use. Proper installation, comprehensive testing, and meticulous commissioning are crucial for ensuring the system's long-term reliability and optimal performance. Adhering to these steps ensures the CCTV network delivers high-quality video surveillance, secure monitoring, and effective protection of the premises.

### **3.5. Packing and marking**

Packing is the process of securing CCTV equipment in protective materials to ensure it is not damaged during transit. Use foam padding, bubble wrap, or moulded foam to protect delicate components such as cameras, lenses, and circuit boards. Foam inserts also help prevent movement inside the packaging.

Each camera should be individually wrapped in anti-static bags and foam, placed inside a secure cardboard box.

Larger items like monitors, NVRs, and DVRs should be packed with extra padding on all sides to absorb shock during transportation.

Coiled cables should be wrapped and bundled neatly to avoid tangling. Accessories such as power adapters, connectors, or mounts should be packed in small, labeled bags inside the main box.

Marking, labelling and identifying each package or item for easy identification, handling, and tracking. Proper marking is essential for inventory management and ensures that each item is delivered to the correct location and handled appropriately.

Use eco-friendly packaging materials where possible, such as recyclable cardboard and biodegradable foam, to reduce the environmental impact.

**Identification marks on cable:**

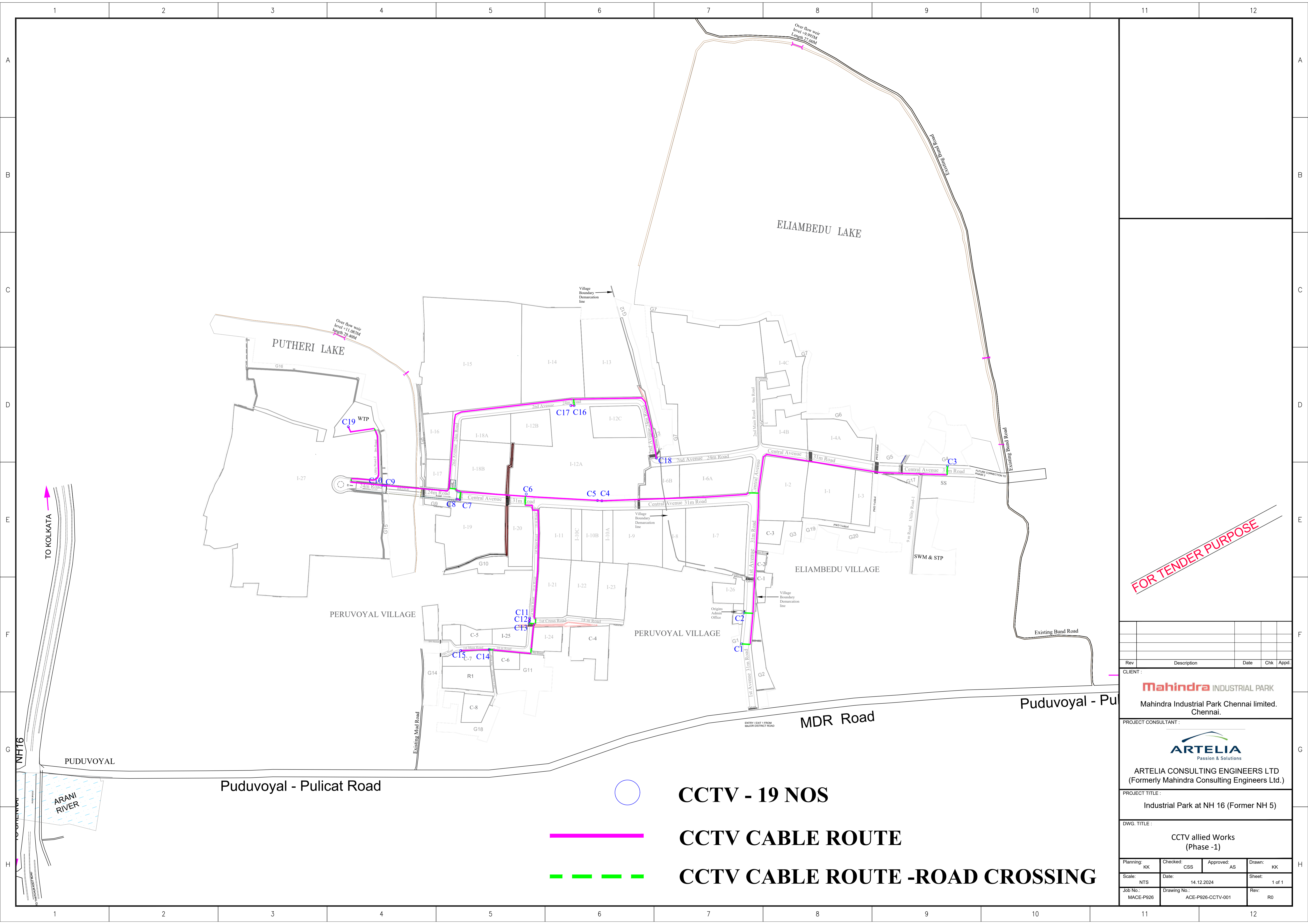
The following particulars shall be properly legible embossed on the cable sheath at the intervals of not exceeding one meter throughout the length of the cable. The cables with poor and illegible embossing shall be liable for rejection.

- a) Manufactures name and/or Trade name.
- b) Voltage grade.
- c) Year of manufacture.
- d) Successive Length.
- e) ISI mark

**Annexure B**  
**List of tender drawing**

**List of tender drawing**

<b>Sl. N#</b>	<b>Drawing title</b>
1	Master Plan – Phase 1



FOR TENDER PURPOSE

- **CCTV - 19 NOS**
- **CCTV CABLE ROUTE**
- - -
**CCTV CABLE ROUTE -ROAD CROSSING**

Rev	Description	Date	Chk	Appd.
CLIENT :				
<b>Mahindra INDUSTRIAL PARK</b> Mahindra Industrial Park Chennai limited. Chennai.				
PROJECT CONSULTANT :				
<b>ARTELIA</b> Passion & Solutions <b>ARTELIA CONSULTING ENGINEERS LTD</b> (Formerly Mahindra Consulting Engineers Ltd.)				
PROJECT TITLE :				
Industrial Park at NH 16 (Former NH 5)				
DWG. TITLE :				
CCTV allied Works (Phase -1)				
Planning: KK	Checked: CSS	Approved: AS	Drawn: KK	
Scale: NTS	Date: 14.12.2024	Sheet: 1 of 1		Rev: R0
Job No.: MACE-P926	Drawing No.: ACE-P926-CCTV-001			

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**EHS Requirements**

## CONTRACT OCCUPATIONAL HEALTH & SAFETY (OHS) REQUIREMENTS

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## 1 General Instructions

- 1.1 The contractor shall abide by the policy, manual, procedure, and core values of the Mahindra Lifespace Private Limited and its subsidiary companies here after referred as "Company".
- 1.2 These are mandatory requirements for all employees, contractors, and visitors. The contractor shall ensure that any time during the performance of the work his personnel are not under influence of any alcoholic liquor, drug, or other intoxicating substances. Breach of any of these rules will result in severe disciplinary action, with possibility of immediate termination of employment or contract or dismissal from the site.
- 1.3 The following acts are prohibited anywhere inside the construction project of the Company:
  - Possession or use of lighter, matches, cigarettes, smoking, tobacco chewing, alcohol, illegal drugs, firearms, ammunition, fireworks etc., other than the one permitted for site work.
  - Fighting, bullying, harassment, horseplay, or other violent actions.
  - Self-harm or attempted suicide.
  - Vandalism or willful damage or destruction of company property.
  - Deliberate violations of safety rule or procedure, in particular any unauthorized interference with critical safety systems.
  - Deliberate negligence in the safe execution of tasks including sleeping on duty.
  - Instructing others to deliberately contravene safety rules or interfere with critical safety system or placing another employee, contractor, or visitor in danger.
- 1.4 The contractor shall adhere to safe working practices and guard against hazardous and unsafe working conditions and shall comply with company safety rules as laid down in this contract and issued from time to time.
- 1.5 The contractor shall be solely responsible for any injury to its employees or any other damage arising out of the performance of obligation under this contract and shall indemnify and keep indemnified company in respect of thereof.
- 1.6 In case of emergency/ fire, all contract personnel, except those involved in firefighting or rescue work should report at nearest marked emergency assembly point or safe location.
- 1.7 Additional or special safety requirements which are unique for the contracted work to be carried out will be defined and /or listed elsewhere in this contract, its addendums or annexure or company guidelines.
- 1.8 The contractor shall provide for all safety requirements prescribed herein under. All cost related to safety at site as directed by the company as required and not limited to the items listed, shall be borne by the Contractor.
- 1.9 It is the Company's endeavor to secure a high standard of safety at sites. Therefore, Contractor must know their responsibilities under common law for their establishments, employees & neighboring community/ property and to conduct their business and method of work to confirm to the best engineering practices.
- 1.10 The contractor before undertaking any work at site shall understand law of the land and it is obligation on the Contractor to conduct all construction activities such as erection, construction, repair, maintenance, cleaning,



painting, alteration or demolition of the plant, machinery & buildings and strict adherence to the provisions of the “Building & Other Construction Workers [Regulation of Employment & Conditions of Service] Act 1996 (herein called as BOCW Act)” and “The Building & Other Construction Workers [Regulation of Employment & Conditions of Service] Central Rules 1998 (herein called as BOCW Central Rules)” or State notified BOCW Rules and other applicable regulations.

- 1.11 The Company is belief that the observance of these rules by Contractor will assist in the avoidance of incidents.
- 1.12 All Contractors shall make sure that the Project Manager & Safety Officer of the Company is notified as and when they or their sub-contracting firms are reporting for work on site.
- 1.13 The Contractor shall ensure that every worker at site has been issued with identification card (ID Card) with photographic evidence under authorized signatory of contractor.



## 2 Terms & Definitions

- I. OHS is Occupational Health and Safety
- II. Occupational Health is the branch of medicine dealing with the prevention and treatment of job-related injuries and illnesses
- III. Safety is the state of being safe or free from any kind of hazard.
- IV. Hazard means danger or potential danger.
- V. Risk is the likelihood that a person may be harmed or suffers adverse health effects if exposed to a hazard.
- VI. Working platform means a platform which is used to support building workers or materials and includes a working stage.
- VII. Workplace means all places where building workers are required to be present or to go for work and which are under the control of any employer.
- VIII. Establishment means any establishment belonging to, or under the control of, government, anybody corporate or firm, an individual or association or other body of individuals which or who employs building workers in any building or other construction work; and includes an establishment belonging to a contractor, but does not include an individual who employs such workers in any building or contraction work in relation to his own residence the total cost of such construction not being more than rupees ten lakhs;
- IX. Competent person means a person so approved by the central government, who belongs to a testing establishment in India, possessing adequate qualification, experience, and skill for the purposes of testing, examination or annealing and certification of lifting appliances, lifting gears, wire ropes or pressure plant or equipment.
- X. Contractor means a person who undertakes to produce a given result for any establishment, other than a mere supply of goods or articles of manufacture, by the employment of building workers or who supplies building workers for any work of the establishment and includes a sub-contractor.
- XI. Building worker means a person who is employed to do any skilled, semi-skilled or unskilled, manual, supervisory, technical, or clerical work for hire or reward, whether the terms of employment be expressed or implied, in connection with any building or other construction work.
- XII. Access or egress means passageways, corridors, stairs, platforms, ladders, and any other means to be used by a building worker for normally entering or leaving the workplace or for escaping in case of danger.
- XIII. Construction site means any site at which any of the processes or operations, related to a building or other construction work, are carried out.
- XIV. Danger means danger of accident or of injury or to health.
- XV. Flashpoint means the minimum liquid temperature at which a spark or flame causes an instantaneous flash in the vapor space above the liquid.
- XVI. Hazardous substance means any substance which due to its explosiveness, inflammability, radioactivity, toxic or corrosive properties, or other similar characteristics, may— (i) cause injury; or (ii) affect adversely the human system; or (iii) cause loss of the life or damage to property on work-environment, while



- handling, transporting or storing and classified as such under the national standards or in case such national standards do not exist to the generally accepted international standards;
- XVII. Lifting appliance means a crane, hoist derrick, winch, gin pole, sheer legs, jack, pulley block or other equipment used for lifting materials, objects or, building worker.
- XVIII. Lifting gear means ropes, chains, hooks, slings, and other accessories of a lifting appliance.
- XIX. Magazine means a place in which explosives are stored or kept, whether above or below ground.
- XX. Plant or equipment includes any plant, equipment, gear, machinery, apparatus or appliance, or any part thereof.
- XXI. Safe working load, in relation to an article of lifting gear or lifting appliance, means the load which is the maximum load that may be imposed on such article or appliance with safety in the normal working conditions as assessed and certified safe working load||, in relation to an article of lifting gear or lifting appliance, means the load which is the maximum load that may be imposed on such article or appliance with safety in the normal working conditions as assessed and certified by a competent person; d by a competent person;
- XXII. Responsible person means a person appointed by the employer or contractor to be responsible for the performance of specific duty or duties and who has knowledge and experience and the requisite authority for the proper performance of such duty or duties.
- XXIII. Sound or good material means materials of a quality conforming to the relevant national standards or in case such national standards do not exist, to other generally accepted international engineering standards or code of practices.
- XXIV. Testing establishment means an establishment with testing and examination facilities, as approved by the central government for carrying out testing, examination, annealing or similar other test or certification of lifting appliances or lifting gear or wire rope as required under these rules.



## 3 Company OHS Principles and Objectives

### 3.1 OHS Principles

- 1) Accidents can be avoided at the workplace through proper planning, supervision, and thorough implementation of safe work methodology.
- 2) All accidents, incidents, and property losses can be avoided through preventative measures.
- 3) Increase OHS consciousness among all stakeholders, continuous training, awareness, and motivation toward safe practices are required.
- 4) Adherence of OHS requirements at construction sites is a mandatory because it is directly related to occupational safety, welfare, health, and hygiene of all stakeholders.
- 5) Regular monitoring, inspections, and OHS audits will be an integral part of workplace OHS initiatives.

### 3.2 OHS Objectives

- A. Is to ensure that all stakeholders work in a healthy & safe working environment.
- B. Is to ensure Occupational Health & Safety is an integral part of the execution at each level of the project.
- C. Is to strengthen the organizational OHS culture as part of a continuous improvement process, by ensuring consultation and participation of various stakeholders.

## 4 Project OHS Plan

The Contractor has both moral and legal responsibility to ensure that a well-developed OHS Program is in place. The contractor shall submit a well-documented & practical "Project OHS Plan" immediately after award of the contract and before site mobilization for review & approval of Company inline to prescribed guidelines as per [Annexure-III](#). The project specific objectives & targets mentioned in plan should be practical & measurable aiming for zero incident project, which will be assessed quarterly by the Company. The plan should clearly outline the site OHS organization and required arrangements for better management of day to day OHS requirements, protection of health & environment. The plan shall be signed off as an agreement of acceptance by project manager of Contractor and project manager of Company in [Annexure-I](#).



## 5 OHS Organization

The contractor shall establish full fledged Safety Department as per below mentioned [contractors Safety resources](#) requirements. Furthermore, the contractor's corporate office should include a safety, health, and environmental control unit to interface with the Company, supervise the contractor's site team, and conduct periodic (Quarterly) safety audits on site and submit the report to company. In the absence of such a corporate or zonal / regional / cluster OHS setup or competent resources, he will be responsible for obtaining self-assessment on six monthly bases from reputable third-party audit organizations certified by company and submit the report to company. Contractor shall be self-compliant with sections and rules of various Acts and Rules applicable to construction safety. He shall promote Occupational health, safety, and environment practices by identifying the personnel and assigning specific responsibilities to them so that proper OHS Controls are implemented at site and an OHS culture is created among staff and workers and maintained until completion of the project. Alternately MLDL Can appoint the Third party for entire project and submit contractor wise assessment.

The Company project manager will constitute an Company Joint Project OHS Committee (JPOC) with representation of all contractors as detailed [below in 5.1](#) It will be obligatory for all associates project manager & safety in charges to attend every meeting & resolve the pending OHS issues within 48 hours.

Similarly, all applicable Contractor shall form a Contractor Safety Committee (CSC) as detailed [below in 5.2](#) to meet obligation of the chapter XXI, Rule 208, BOCW Central Rules 1998.

### 5.1 Company Joint Project OHS Committee (JPOC)

Company will constitute a Joint Project OHS Committee under control of company project manager to periodically monitor & review OHS measures taken by the Contractor. This committee will meet monthly with mandatory participation of project manager of contractor, safety officers and other key representatives at site, coordinated by Company Safety Engineer. In addition to project manager the Contractor can also nominate key staff / workmen representative to attend monthly meeting. The Committee shall function as per guidelines of Rule 208 of BOCW Central Rules. The decisions and recommendations of JPSC shall be complied within specified /reasonable time. In the event of repeated OHS violations by the contractors or person or in the event of accident JPSC has authority to decide appropriate course of action and penalty. Copies of the minutes / records of JPSC shall be maintained to the Company project manager / Company Safety In charge.

Before conducting meetings, the JPSC should go round the construction site to check unsafe practices and condition, welfare measures, PPE etc. and recommend remedial measures to the Contractor.

The Safety Committee shall meet at regular intervals at least once in a month and it shall be chaired by the Project Head or Project Manager having overall control over the affairs of the construction site.

The agenda and minutes of the meeting shall be circulated to all concerned and it shall be in the language understood by majority of the building workers and shall be produced to the Inspector on demand for inspection.



### 5.2 Contractor's Safety Committee (CSC)

The Contractor employing more than 100 workers at Company site shall mandatorily form a safety committee, meeting with obligation of chapter XXI, Rule 208, BOCW Central Rules 1998. The committee shall meet at regular intervals, at least once in every month and shall be chaired by the contractor's project manager or senior most persons having over all control on the affairs of the construction site with Safety Officer as Member Secretary. All key section-in-charges including building in charge, area in charge, MEP engineer, maintenance in charge, Stores in charge, administration section, Labour camp supervisor and equal representatives of the workers, supervisors and sub-contractors shall be the members of this committee. Copies of the minutes / records of CSC shall be sent to the Company project manager.

### 5.3 Duties of the Safety Committee

- 1) The primary responsibility of the Safety Committees is to ensure the health and safety of the staff, workers, and the surrounding community, and the committee shall do so. -
- 2) The main functions of the Safety Committee shall be—
  - a) to go round the construction site with a view to check unsafe practices and detect unsafe conditions and to recommend remedial measures for their rectification including First Aid Medical and Welfare Facilities.
  - b) to look into the health hazards associated with handling different types of explosives, chemicals and other construction material and to suggest remedial measures including use of proper personal protective equipment.
  - c) to suggest measures for improving welfare amenities in the construction site and other miscellaneous aspects of safety, health and welfare in building or other construction work;
  - d) to stimulate interest of employer and building workers in safety by organizing safety weeks, safety competition, safety campaigns talks, and film shows on safety, preparing posters or taking similar other measures as and when required or as necessary.
  - e) to identify probable causes of accident and unsafe practices in building or other construction work and to suggest remedial measures.
  - f) to bring to the notice of the employer the hazards associated with use, handling and maintenance of the equipment used during the course of building and other construction work.
- 3) The Safety Committee shall meet at regular intervals at least once in a month and it shall be chaired by the senior person having overall control over the affairs of the construction site.
- 4) The agenda and minutes of the meeting shall be circulated to all concerned and it shall be in the language understood by majority of the building workers and shall be produced to the Inspector on demand for inspection.
- 5) Investigate complaints received from anybody about the risks or dangers.
- 6) The decisions and recommendations of the Safety Committee shall be complied with by the employer within reasonable time limits.



**5.4 Contractors Safety Resources**

To avoid any work stoppage or smooth utilization of man and material on site, the Contractor's approved safety resource shall be deployed from day one, and the approval process shall be initiated accordingly.

**5.4.1 Contractors Safety Officers**

The contractor shall be fully responsible for preparation of plans and getting approval by company and implementation on ground. Contractor shall appoint the approved safety officer from Kick-off meeting onwards. Monitoring / supervision of its site all activities, plant & machineries, Labour hutment, batching plant and personnel to ensure that they strictly adhere to all applicable fire & OHS requirements. Contractor shall take prior intimation to company safety in charge and take approval before replacing or sanctioning long leave (More than a day), contractor shall not plan any critical activity in this period if competent safety officer is not available to supervise the job.

With the approval of the Company project manager and the HO Safety department, the contractor shall appoint adequate safety officers. As described below, the Contractor shall employ qualified and experienced, trained, and dedicated safety officers:

<b>No. of workers</b>	<b>No. of Safety Officers</b>
Those contractors employing 50 to 500 workers	One safety officer
Those contractors employing 500 or more workers OR	Additional safety officers / 500 workers
In case of 50 or less workers but work involves hazardous activities like height work i.e., 1.5m height & adjacent work next to excavation more than 1.5m, sloping roof work, demolition work, heavy material lifting, confined space work, steel structure work, façade work, piling, blasting job, work on Rope suspended platform (RSP) etc. or as directed by the Company.	One safety officer

**5.4.2 Qualification & Experience of Contractors Safety Officers (mandatory): -**

The qualification & experience and duties of Contractors safety officer shall be commensurate with Schedule VIII of Rule 209 of BOCW Central Rules and as prescribed below:

A person shall not be eligible for appointment as a Safety Officer unless he fulfills following criteria.

- i) **Basic qualification:** Degree or diploma in engineering or Science Graduate
- ii) **Professional qualifications:** Advanced Diploma in Industrial Safety; min one year duration course from State Board of Technical Exam, recognized under State Factories Rules / BOCW Central Rules or Diploma in Construction Safety Management from NICMAR.
- iii) **Experience:** Minimum 8-10 years' experience as safety officer in construction sector.
- iv) **Language:** Has adequate knowledge of the language spoken by majority of the workers in the region in which the construction project is located?
- v) **Duties:** as laid down in Schedule VIII of BOCW Central Rules and as prescribed below.



No one shall be designated as a safety officer unless he or she has received post-interview approval from the company safety in charge and the company project manager.

**5.4.3 Contractors Safety Supervisors / Safety Stewards**

In addition to safety officers and / or depend on the number of workers / hazardous nature of work, the Contractor shall deploy adequate number of safety supervisors / Safety stewards for continuous supervision, training and creating awareness at site. The Contractor shall employ trained and experienced stewards as per below criteria:

- i) The supervisor / steward shall have completed 12th or equivalent and shall have satisfactorily understanding of English reading & writing and shall possess short term safety management course from NIFE, NILEM, IOSH, Annamalai University etc.
- ii) Stewards shall have minimum 3-5 years of site safety experience and adequate knowledge of the language spoken by majority of the workers in the region in which the construction project site is located.
- iii) The Contractors safety officer will be responsible to ensure optimum utilization of supervisor or stewards, train them, allocate duties, review inspection reports & advice on compliances etc.
- iv) Contractor shall take prior intimation to company safety in charge and take approval before replacing or sanctioning long leave (More than a day) from company safety in charge, contractor shall not plan any critical activity in this period if competent safety supervisor / steward is not available to guide and ensure the job along with the respective work engineer.
- v) Minimum Number of safety Supervisor / safety stewards

<b>No of workers</b>	<b>No of safety stewards/ supervisors</b>
Those employing 01 to 10 workers:  (Nominated personnel shall be competent enough to read, write, communicate, and understand the MLDL OHS requirements and get it implemented at his own)	The contractor must nominate one staff member ( <i>The individual shall go through competence assessment by MLDL Safety In charge and respective work in charge and got approved</i> ) to ensure that their manpower follows all necessary safety processes such as permits, SMARRT, induction, checklist-based inspection, submission of legal & statutory documents and MIS submission - all of which must be submitted to the safety department via the MLDL Engineer in charge without error.
Those employing 11 to 50 workers:	One Safety Supervisor or Steward
Those employing 51 & more workers:	Additional safety supervisors / stewards per 50 workers employed

If there is recurring noncompliance on site and the sufficiency of safety personnel is judged to be inadequate to improve the site timely safety compliance, the company project manager has all right to demand for more safety resources by respective contractors.



In case of non-fulfilment or pending in deployment of required safety resources company project manager shall depute the resources at his own at contractor's cost in addition to penalty as per Penalty for OHS Violations mentioned in the document

#### 5.4.4 Duties of Safety Officer:

The duties of the Safety Officer shall be to advise and assist the site management in the fulfilment of its objectives and targets, contractual obligations, statutory or otherwise, relating to the BOCW Act and Central Rules, personal injury prevention, and the maintenance of a safe working environment. These responsibilities will include the following: -

- a) to advise the concerned departments / work engineer in planning and organizing measures necessary for creating a safe working environment for all workmen engaged at site and to prevent any kind of personal injuries and damage to property.
- b) to advise on OHS aspects in all job studies, and to carry out detailed job OHS studies of selected jobs and to formulate Hazard Identification & Risk Analysis, Job Hazard Analysis Report and Project OHS Plan during initial mobilization stage of the project.
- c) to check and evaluate the effectiveness of the action taken or proposed to be taken to prevent personal injuries and damage to property.
- d) to ensure that all Personal Protective Equipment (PPE) provided to workers as required under any of the provisions of the Act or the Rules conform to the relevant Indian Standards / EN Standard and to advise all Site Engineers / Supervisors to ensure proper use of such PPEs by workers at site.
- e) Monitor that required buffer stock of the PPE is available and there is no shortage at any given time of the project.
- f) to provide advice on matters related to carrying out site OHS inspections, daily walk-through surveys, etc.
- g) to carry out site OHS inspections with involvement of site engineers, building/ area in charge, section in charge & site head to observe the physical conditions of work and the work practices and procedures followed by workers and to render advice on measures to be adopted for removing the unsafe physical conditions and preventing unsafe actions by workers.
- h) to render advice on matters related to reporting and investigation of accidents and occupational diseases.
- i) to report and investigate all accidents, dangerous occurrences, and near-misses and to recommend the preventive measures to ensure non-occurrence of such cases.
- j) to investigate the cases of occupational diseases contracted and reportable dangerous occurrences.
- k) to advise on the maintenance of such records as are necessary relating to accidents, dangerous occurrences, and industrial diseases.
- l) to promote setting up of Site Safety Committee and to act as adviser and catalyst to such committees.
- m) to organize in association with the concerned departments, campaigns, competitions, contests, and other activities which will create awareness and will develop and maintain the interest of the workers in establishing and maintaining safe conditions of work and procedures; and
- n) to design and conduct OHS induction, skill OHS training, special & motivational training, and educational program for the prevention of personal injuries, health & hygiene.
- o) Maintain update inventory/ register of plant & machineries, lifting tools, tackles, cranes, earth moving vehicles, power hand tools and monitor statutory, scheduled & preventive test / examination and periodic inspections.
- p) Monitor preventive maintenance & inspections schedules of plant, machineries and accessories and remind respective sections about scheduled activity.



- q) Also, he will be responsible to track the preventive maintenance schedule of plant & machineries as per manufacturers manual/ recommendations with P&M Dept.
- r) The Contractor shall provide Safety Officer with such facilities, equipment, and information as are necessary to enable him to discharge his duties effectively. Such typical facilities may include personal computer, training room, training audio-visual aids, first aid room, vertigo test station, testing facility, facilities for storage of PPE, documents, and stationery, etc.

## 6 Responsibility of Site Engineers / Supervisors

It is the primary responsibility of site engineer / supervisor to ensure implementation of these OHS requirements at site. The provision and presence of safety officer does not absolve the concerned Supervisor i.e., Site Engineers, Tower In charge, Section-In-Charges, supervisors, line managers etc. of the Contractor from the responsibility of ensuring safe working condition for the workmen deployed under their control. The respective Supervisor stands equally accountable for occurrence of any near-miss and / or any accident at site and the Company reserves the right to advise contractor to take suitable actions, as deemed fit, against the Contractor's personnel responsible for such lapse in ensuring proper OHS at site. Here supervisor means not a designated person as supervisor, but he is personnel in charge of men and the job, regardless the designation.

### 6.1 Role of Site Engineer/ Supervisors

The contractor shall assign a responsible supervisor to oversee each activity and notify the company of the list of such supervisors. The contractor must ensure that every job is supervised, and that responsibility is explained to them, regardless of whether the supervisor belongs to subcontractors or any other agency on site.

- a) Supervisor will not start any critical job at site without proper work permit as required under company rules.
- b) Supervisor will be responsible for complying all required conditions of the permit.
- c) Supervisor will be always present during the job till its completion.
- d) Supervisor shall provide all required PPE to his workmen.
- e) Supervisor shall carry out the work safely as per method statement to eliminate hazard and minimize risk of injury to his own personnel, damage to equipment's & property.
- f) Supervisors will remain fully responsible for ensuring that work is carried out in a safe manner inclusive of duties undertaken by his sub-contractor. Whenever required and necessary, supervisor should contact/ consult the safety officer for advice.
- g) Supervisor shall communicate with all his workmen and sub-contractor on general OHS requirement of the Company, conduct OHS pep-talk and keep them informed about do's & don'ts in case of emergency.
- h) Contractor's supervisors shall have the authority and responsibility to ensure safe working. Supervisor shall ensure that a responsible person must be present where job involving high hazards and it should not be left to the workers to decide the job is safe or not.
- i) Supervisor should be aware of all the safety rules of the company and for that he should undergo OHS induction, proper training / counseling from safety officer.
- j) Supervisor shall arrange and maintain all OHS & fire protection equipment's, provided by contractor or company.
- k) It shall be responsibility of the supervisors to ensure that workers are coming at site with proper clothing and loose clothing's' not allowed.



- l) If there are many jobs carried out at different locations by a contractor, then supervisor shall take frequent rounds of the work areas and shall ensure that all the jobs are being carried out with full safety precautions.
- m) Supervisor must always set the right example by following safety rules and taking all precautions for job by wearing safety appliances such as safety helmet, safety shoes and when required double lanyard full body safety harness etc.
- n) Supervisor should conduct OHS check of location/ equipment prior to job and if required conduct risk assessment.

## 7 Emergency Response Plan:

The Contractor shall submit site specific emergency Response action plan to handle emergencies like fire & explosion, collapse of lifting appliances and transport equipment's, collapse of building sheds or temporary structure etc., gas leakage or spillage of dangerous goods or chemicals, drowning of workers, land slide, floods, storm, and other natural calamities etc. The plan shall include list of emergency responders with roles & responsibility in emergency, contact numbers and contacts of external government agencies/ professional services whose help required handling higher level of emergencies. The contractor shall get the plan approved from Company project manager. While preparation of emergency plans the contractor shall adhere to requirements of Rule 36 of BOCW Central Rules.

## 8 Establishing Common Setup by company:

### 8.1 Common Medical Facilities

All common medical facilities by company shall be discussed during pre-contract, decision and accordingly rates shall be considered during tendering or In the event that the majority of contractors fail to offer emergency response facilities as per company standard or repetitive violations is seen at site such as the availability of an ambulance with a driver, deployment of full-time nurse deployment, doctors visit for pre-medical check, bio-disposal of medical waste to authorized agencies, and recordkeeping on site etc. Respective project safety in charge will be responsible to raise his concern to project manager along with the details that need to be incorporated for establishing common OHC by company. Respective company project managers will be responsible for developing action plans such as providing common infrastructure uniformly for all contractors and distributing operational costs among all available contractors. The mechanism of debit cost can be discussed jointly agreed between the project manager and contractors, but the decision of the company project manager will be considered as final and must be agreeable to all contractors.

### 8.2 Common OHS Infrastructure

Similarly in continuation to Common Medical Facilities, All common OHS infrastructure setup by company shall be discussed during pre-contract, decision and accordingly rates shall be considered during tendering or In the event that the majority of contractors fail to comply the requirements pertaining to resources or facilities (i.e. man & Material both) as per company standard or repetitive violations is seen at site such as the availability of a Induction / training room, resources such as electricians, supervisors or stewards, P&M technicians or preventive maintenance staffs, necessary resources such as working platforms, ladders, inspection tags, Fire-extinguishers, Fire Points, Statutory Signages etc. Respective company project managers will be responsible for developing action plans such as providing common infrastructure uniformly for all contractors and distributing operational costs among all available contractors. The mechanism of debit cost can be discussed jointly agreed between



the project manager and contractors, but the decision of the company project manager will be considered as final and must be agreeable to all contractors.

## 9 General OHS Provisions

### 9.1 OHS Legal Register:

The contractor shall identify the requirements of good practices at site for fulfillment of legal requirement related to environment, occupational health and safety and welfare. The contractor shall enlist all the activities under the contract in advance in Legal Register and their effect on OHS, and environment. The contractor shall establish the procedure to take all legal approvals and timely renewal in advance. The contractor shall maintain an update Legal Register and Company Safety Engineer shall verify quarterly.

- Building & Other Construction Workers (Regulation of Employment & Conditions of Service) Act, 1996 and Central Rules, 1998 or respective state rules.
  - The gas cylinders rules 2004
  - The Indian electricity act 2003
  - The Indian electricity rules 1956 & 2005
  - Fatal Accidents Act, 1855
  - Explosives Act, 1884 and Explosives Substances Act, 1908 & Explosives Rules, 2008
  - Motor Vehicles Act, 1988 and Central Motor Vehicles Rules, 2002
  - Petroleum Act, 1934 and Rules, 2002
  - The Static & Mobile Pressure Vessels [Unfired] Rules- 1981
  - Noise Pollution Regulation & Control rules, 2000
  - Environment (Protection) Act, 1986 and Rules, 1986.
  - The Hazardous Waste (Management & Handling) Rules, 1989
  - Air (Prevention & Control of Pollution) Act, 1981 and Rules, 1982
  - National Ambient Air Quality Standards- Notification 1994 under Air Act.
  - Water (Prevention & Control of Pollution) Act, 1974 and Rules, 1975
  - Battery (Management and Handling) rules, 2001
  - Bio-Medical waste (Management & Handling) Rules 1998
  - Child Labour (Prohibition & Regulation) Act, 1986 and Rules, 1988
  - Contract Labour (Regulation & Abolition) Act, 1970 and Rules, 1971
  - Inter-State Migrant Workmen (Regulation of Employment & Conditions or Service) Act, 1979 and Rules, 1980
  - Public Liability Insurance Act, 1991 and Rules
  - Workmen's Compensation Act, 1923 with State Rules.
- i. The contractor shall display abstract of prominent safety and Labour laws at conspicuous places at site.
  - ii. The contractor will be responsible to submit the documents pertaining to daily attendance, monthly attendance, wages register, pay slip, payment transfer proof, PF records, RC Copy – BOCW, Labour contract License, agreement copy, WC Policy, PT Challan, leave encashment record, Form-VIII - Contractor register and other applicable registers.
  - iii. If the contractors fail to produce the documents required by Labour legislation, company project manager is authorized to hold the 10% of running bill and same can be released post submission of required details.



### 9.2 Protection from Existing underground/ above ground Services

Before beginning demolition, excavation, and other construction work, the Contractor shall be responsible for site mapping of existing/old underground or aboveground services in coordination with company work in charge. The Contractor shall conduct a survey of existing underground services such as old Water / Gas / Chemical pipelines, sewage lines, electric cables, water/chemical tanks, and so on, to ascertain the hazards associated with them and to consider all safety measures before beginning work, and if necessary, consult local administration/ authorities to cut-off / divert / remove the implications of such danger and to locate isolation valves and feeder points, among other things. If overhead electric lines (EHV/HT/LT) pass through the site, cross access roads, or are dangerously close to the site, the Contractor must take all necessary precautions immediately. The Contractor must communicate such mapping plan and actionable measures to the Company Project Manager and all sub-contracting firms on site well in advance, and no work shall be permitted in those areas unless the potential danger is removed/ isolated, and the necessary permit is obtained from the Company Project Manager.

### 9.3 Temporary Structures:

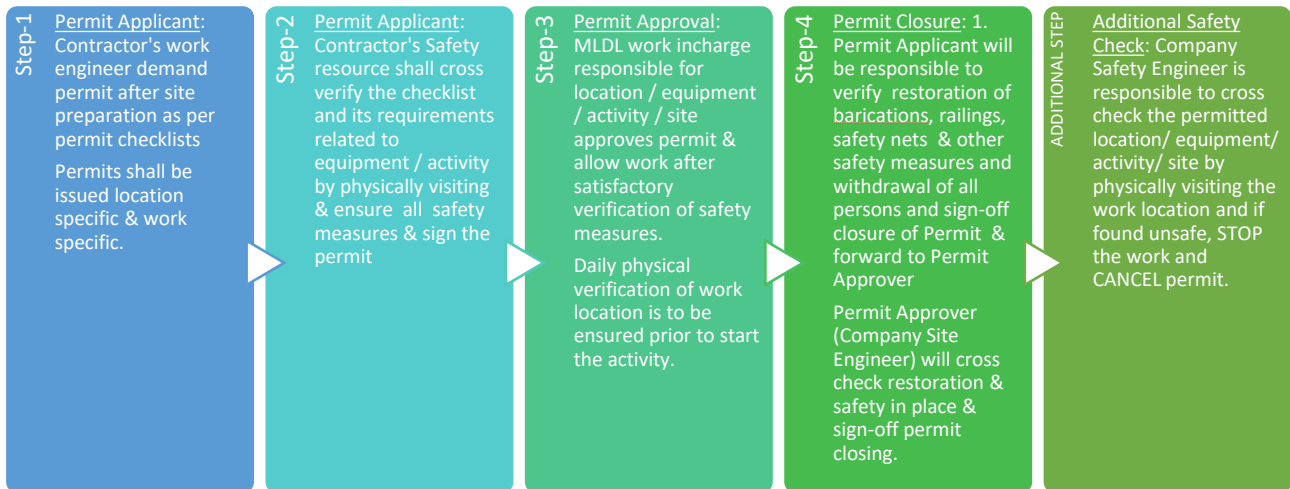
All types of temporary structures at the site, steel yard, and labour camp must be built in accordance with approved site logistics and after design approval by a structural consultant or company site head. This includes all temporary Offices, Labor hutments, Stores, Water tanks, Toilets & Urinals blocks, Rest area, advertising pylons, Laboratory, Batching plant, Electrical installations, Cranes supports, Hoists landing platforms, Aluform formwork periphery working platform, Scaffoldings, Working Platforms (Stool / Table for internal work), Access staircase, Boundary / Fencing by GI sheet, and so on.

## 10 Work Permit:

The contractor must strictly follow the work permit system as outlined in the approved Project OHS Plan for general work, height work, hot work, excavation, electrical work permit & LOTO, night work permit, removal of safety barriers, and confined space entry permit, among other things. With checklists, the permit procedure must clearly define the role of permit users. The contractor shall provide the Company with a daily checklist and copies of permits, and the Company's respective work engineer will be responsible for cross-checking and approving the same prior to the start of the activity. In the absence of a contractor's permit system, the Company's "SOP on Work Permit System" will apply on site. No work shall begin on the job site unless an approved work permit has been obtained, the site has been inspected, and safety precautions have been implemented. If the permit is renewed, such a notation must be made on the permit. Electric work permits, as well as LOTO (lock-out & tag-out), will be required for positive isolation of energy sources for Batching Plant and other plant & machineries maintenance, as well as all cleaning & electrical jobs. The permit system's process flow should be as follows.



Flow Chart- Work Permit Procedure



11 Work Methodology, Hazard Identification and Risk Assessment:

Contractor shall actively analyze job specific hazards in advance to identify the probable causes of these hazards and recommend remedial measures. Before beginning relevant activity, the contractor must submit site-specific activity-by-activity method statements that incorporate risk assessment results for approval by the Company Project Manager in coordination with respective safety in charges. He shall review and approve the Hazard Identification & Risk Assessment prepared and submitted by HIRA Team. The contractor must follow the standard work method statement, and any deviations must be reported to the Company. A new risk assessment must be performed, and additional OHS controls must be implemented as needed. The contractor is responsible for implementing the method statements and training staff. All OHS inspection checklists must be created using method statements and risk assessments. The review of Hazard Identification & Risk Assessment shall be ensured as per SOP.

12 Operational Safety Requirements

12.1 Demolition:

The Contractor shall take all necessary precautions before beginning any demolition work and throughout the duration of the work:

- a) All roads and open area adjacent to the work site shall either be closed or suitably protected. Appropriate warning signs shall be displayed for cautioning persons approaching the demolition area. The area shall be cordoned off properly by 5m height GI sheet fencing.
- b) Protection of adjacent building, underground service lines should be ensured. Underpinning operations shall not be permitted till adequate measures against collapse of structure are ensured.
- c) Before demolition work begin, the Contractor shall remove glass panels & fragile and ensure that the power on all electric service lines, water lines, gas lines is shut off and the lines are cut or disconnected at or outside the demolition site. If it is necessary to maintain electric power during demolition operation, the required service lines shall be adequately protected against damage.
- d) Persons handling heavy materials /equipment's shall wear safety shoes & safety helmets.
- e) No floor, roof or other part of the building shall be overloaded with debris or materials that may render it unsafe.
- f) Entries to the demolition area shall be restricted to authorized persons only.



- g) Required PPE should be provided to all such as safety shoes, safety helmets, dust mask, goggles & where required safety belts.
- h) All provisions under Chapter XII, Rule 108 to 118 of BOCW Central Rules shall be strictly adhered.

## 12.2 Working at Height

### 12.2.1 Scaffolding Safety Requirements:

- a) The use of bamboo/wooden scaffoldings is prohibited and shall not be used at Company sites, regardless of height of work, and the contractor shall only use steel scaffolding except H-Frame.
- b) The erected scaffold shall be finally inspected and cleared by the Scaffold Supervisor (A competent trained person for scaffolding erecting & dismantling from approved agencies) of the contractor. The safety check list for scaffolding erection shall be submitted by the site engineer of the contractor to the scaffold supervisor. Apart from certified scaffold, all other scaffolds which are not in use, under erecting, dismantling shall bear with Red-Scaff-Tag.
- c) The Scaffold supervisor shall maintain scaffold register.
- d) Safety tag (for 'Unsafe Scaffolding DO NOT USE' in red color or tag / 'Safe Scaffolding' in green color or tag) shall be displayed on the erected scaffold at ground level. Such safety tag / sign boards shall be written in the language understood by most of the workers. Unsafe scaffolds shall be repaired / removed.
- e) The scaffold to be erected for working at height must be designed for the estimated load (load of the RCC structure to be supported, live load, and other vibrations load during casting, etc.) and must be approved in advance by a structural consultant. The scaffold components must be designed to withstand at least four times the maximum intended load.
- f) All of the contractor's workers, supervisors, and engineers who will be working at height must have valid height passes issued during the induction and vertigo test.
- g) The scaffold's base must be at least 1.5m away from excavated pits, open drains, manholes, waterlogged areas, and so on.
- h) Contractor shall ensure that there is no vehicle movement near the erected scaffold, and it shall be protected by proper barricading/warning sign, etc.
- i) The scaffold material shall be pre-inspected by Company Site Engineer for its condition i.e., it shall be free from bends, cuts, rust, coated by anti-rust paint etc. All vertical members shall be in plumb and correctly spaced. The joints of vertical and horizontal members shall be properly connected with couplers, lock pins, etc. The scaffold shall be securely tied with permanent structure as per the requirement of IS: 3696 – 1991 (Part 1) (Reaffirmed in 2002).
- j) The access to the scaffolding shall be free from obstructions, protruding dowels, undesirable and slippery materials. Stair tower, monkey ladders, gangway, etc. shall be provided in the scaffolding for movement of the workers.
- k) The working platform fully decked or minimum width of 600mm with adequate railings (no gaps in platform is allowed) and the access to the scaffold shall be free from all debris and loose materials.
- l) The diagonal face bracing/Zig zag face bracing shall be provided at a spacing of maximum 10 m center to center for pipe scaffolding.
- m) Every independent scaffolding more than 03Mtr height shall be provided with tie to permanent structures. In case of column activity or work on scaffolding while working on edge no independent scaffolding shall be allowed and there should be tie between scaffolding to prevent toppling of scaffolding.
- n) In active slab where scaffoldings are prepared for column activities no independent scaffoldings shall be left untied and it is always recommended to provide tie between independent scaffoldings.



- o) Contractor shall provide necessary PPEs to the workers working at height viz. double lanyard full body safety harness with scaffold hook, fall arrestor, kinetic shock absorber, safety helmet, safety shoes, gloves, etc.
- p) In addition to above the above the contractor shall adhere to all applicable provisions under chapter XIX Rule 188-205 of BOCW Central Rules.

#### 12.2.2 Working platform:

- a) Working Platforms should be inline to Mahindra standard (i.e. Ref. Drawing attached by Mahindra for fabrication or procure standard aluminum scaffolding available in market fulfilling the requirements of handrailing, ladders and working platform.
- b) The MS grill plates for the decking of the working platform must be of good quality, free of defects, and have the required load carrying capacity. Working platforms, gangways, and stairways must be built so that they do not sag excessively or unevenly. They must be closely boarded, have an adequate width (at least two planks/grill plates wide or 600 mm wide, whichever is greater) for easy movement of people, be at least 600 mm wide (only for people without materials) and at least 900 mm wide (for people with materials), and be suitably tied and guarded. Size of ledgers shall be selected based on its usage and in both condition (either 600mm or 900mm wide platform) the platform shall be provided by double railing to prevent fall from platform.
- c) MS grill plate / Challis overlaps must not be less than 300 mm.
- d) MS grills plate / Challis shall be adequately clamped and shall not be left in loose condition to prevent movement while using.
- e) Steel walkways used to construct working platforms must not extend beyond the end supports by more than 150 mm. To prevent sliding and toppling, the planks must be rigidly tied at both ends. The thickness of the planks must be sufficient to support the weight of men and materials, conform to IS: 3696:1987 (Part-I) (Reaffirmed 2002), and not collapse.
- f) The platform must extend at least 600 mm beyond the end of the wall to allow the worker to reach the end of the wall.
- g) All working platforms shall have guard rails of 40NB MS pipes top rail at 1150mm height with middle rails at 550mm height from the platform and 150mm high toe boards securely tied with the vertical posts. The spacing of vertical posts shall not exceed 3 m center to center.
- h) Every opening in the floor of a building or in a working platform shall be provided with fencing or railing and protective cover, to prevent fall of persons or materials. The removal of such railing / protective cover shall be done only after seeking proper work permit from Tower In-charge/ Area In-charge or Safety Officer of the contractor.
- i) The contractor shall provide grab rope / lifeline all around the working platform/level, at height, which will provide tying / anchoring facility for the double lanyard full body safety harness & fall arrestor.
- j) Contractor shall provide safety net under all working platform/level at height but not more than 6m below to protect fall of men and materials from above and such safety nets shall conform to IS: 11057-1984.
- k) Adequate precautions shall be taken to prevent danger from electrical lines and equipment. Scaffolding, ladder, working platform, gangways, etc. shall not exist within 5m of any un-insulated electric wire. Whenever electric power and lighting cables are required to run through (pass on) the scaffolding or electrical equipment's are used, such scaffolding structures shall have minimum two earth connections with earth continuity conforming to relevant IS Code of Practice on earthing.
- l) Hanging platforms, suspended platforms, and similar provisions must be carried out in accordance with manufacturer guidelines and must be approved by the design consultant.
- m) In addition to the foregoing, the contractor must follow all provisions of BOCW Central Rules Chapter XV-Ladders Rules 172-174.



### 12.2.3 Ladder:

- a) Ladders must be used to provide safe access to all working platforms and other elevated working places.
- b) The ladder must be placed at an inclination of no more than 1 in 4. (1horizontal and 4 vertical).
- c) Every ladder must be securely fastened at the bottom to prevent sliding/slipping.
- d) No single portable ladder shall be over 9 m in length.
- e) For ladders up to 3m in length, the width between side rails in the ladder shall be a minimum of 300 mm. For longer ladders, this width shall be increased by at least 20 mm for each additional meter of length.
- f) The spacing of rungs shall be uniform and shall not exceed 300 mm.
- g) Whenever ladder is not securely fixed an extra worker shall be engaged for holding the ladder.
- h) Ladders must not be used for climbing while carrying materials. Both hands must be free to hold the rails while climbing. For all his workers working at height, the contractor must make alternate safe arrangements for lifting tools and implements.
- i) The ladder must be of rigid construction, with sufficient strength for the intended loads, and made of high-quality metal. All ladders must be well maintained to be used safely. The rungs must be tested on a regular basis in accordance with IS: 3696-1991 (Part 2). (Reaffirmed in 2002).

### 12.3 Steel work Erection

- a) Wherever possible erectors should work from an independent platform. Personnel carrying out steelwork erection must always wear safety harnesses. Where erectors are required to connect beams then:
  1. Wherever practical safety nets should be provided.
  2. Where steelwork has been drilled to provide safe anchorage points, man-lock girder grip devices may be used.
  3. Where neither 1) or 2) apply, a running line and / or wire sling/strap wrapped around the connected beam and attached to the erectors lanyard and harness must be pushed in front of the erector. In this situation double lanyards must be used in order to negotiate obstruction like king posts and maintaining attachment at all times.

Erectors should ensure that all tools and equipment used at height are secured to prevent them from falling.

All erectors must receive a team briefing on the methods to be employed in the erection of steelwork and the risks involved.

### 12.4 Roof Work / Cladding

- a) Personnel carrying out roof work must wear safety harnesses at all times, wherever possible cladders should work from an independent platform.
- b) Where cladders use cherry pickers, MEWP'S or mast hoists the rules governing these will apply.
- c) Where cladders working from scaffold platforms erected adjacent to building structures are required to work in the void between the scaffold platform and the steelwork, fall restraint devices must be used e.g., inertia blocks (fall arrestor).



- d) Edge protection must be used along the edge of roofs during the cladding of roofs and all cladders must be always attached to lifeline installed across the roof. Likewise, cladders must be attached to lifeline when working inside open gutters along roofs.
- e) All cladders must receive a team briefing on the methods to be employed in the cladding of roofs and the risks involved.

### 13 Earth moving Plant & Machinery Requirements

General: The operation and maintenance of any construction machinery shall be as per manufacturer's manual & checklists and by trained personnel only.

The contractor shall adhere to all the provisions of Chapter X, Rule 88 – 95 of BOCW Central Rules.

#### 13.1 Earth moving machinery

General: The contractor shall ensure the stability of the equipment, while working, depending on the load bearing capacity of the ground, which may reduce due to presence of moisture and due to vibration effect. The contractors shall provide a initial third party test certificate specifying the equipment is fit to use by competent third party and submit the test report along with checkpoint verified to respective safety in charge for approval and record. The contractor shall provide bearing plates, packing, etc. to strengthen the ground below outriggers or wheel or crawler of the equipment. All earth moving equipment shall have Roll-overprotective Structures, sound suppressers, seat belts, reverse alarms, warning horns, windshield wipers, taillights, search lights for forward / reverse and easily approachable control and lever for brake system and emergency stop. They shall be checked at the time of delivery, and they shall be properly maintained. Contractor shall display warning sign for keeping away from the moving parts of such equipment and the area of operation of such machinery shall be properly cordoned. The shovel / bucket of the earth moving equipment shall be rested on ground when the equipment is not working. Operation of such equipment shall always be carried out by trained operator accompanied by the designated helper.

#### 13.2 Piling Rig:

- a) All trenches 1.5mtr or more in depth shall at all times be supplied with at least on ladder for each 10mtr length or fraction thereof.
- b) Do not allow vehicle to operate too close to excavated area, maintain at least 2-mtr distances from the edge of excavated pit.
- c) During rains, the soil became loose. Take additional precautions against collapse of sidewalls.
- d) Rigid Barricade shall be provided near excavation, Warning display boards shall also be provided.
- e) All excavation work shall be planned Considering the following:
  - Stability of the ground
  - Excavation will not affect adjoining buildings, structures etc.
  - Presence of underground utilities like pipes, cables etc.
- f) Safe angle of repose shall be maintained while excavating trenches exceeding 1.2 meters deep. Slope should, usually be not less than 45°. Suitable bench of 0.5-meter width shall be provided at every 1.5 meters depth of excavation in all type of soil except for hard rock. In case slope/benching is not possible, proper shoring and strutting should be provided to prevent cave-in or slides, as required.
- g) Hard barricading of 01-meter height shall be provided for all excavations 1.2 meters and above in depth.
- h) Excavated earth shall not be placed within 1 meter of the edge of the trench.



- i) Vehicles shall not be allowed to operate too close to the excavated area. At least 2meters distance shall be maintained from the edge of excavation. No load, plant
- j) Equipment shall be placed or moved near the edge of any excavation where it is likely to cause its collapse and there by endanger any person unless precautions such as the provision of shoring or piling are taken to prevent the slides.
- k) Necessary precautions shall be taken for underground utility lines such as cables, sewers, pipelines etc. Position of buried utilities shall be located by referring to plant drawings, if available. Necessary clearances/permit from the concerned authorities shall be obtained before commencement of the excavation job, as applicable.
- l) In case of mechanized excavation, precaution shall be taken so as to not allow anybody to come within one meter of extreme reach of the mechanized excavator.
- m) The excavator shall be operated by a well experienced operator. While not in operation, the excavator shall be kept on firm ground with excavator shovel resting on the ground. Wheel of excavator shall be suitably protected/ guarded to prevent any accidental movement of the excavator
- n) Ensure work area is clear of other workers.
- o) User shall wear a hard hat, eye protection, ear plugs & Hand Protection is must
- p) Watering to keep down the dust; and Have dust masks available for workers who might want to use one in addition to the other hazard controls.
- q) Inspect and Test drill and cord prior to use
- r) Make sure all manufacturer's protective devices (guards) are in place and operational.
- s) Take regular breaks from drilling or switch with another worker (if drilling/chipping for a prolonged period of time) to relieve vibratory Ergonomics fatigue.
- t) If chipping is done manually then avoid mushroom headed chisel and hammer, ensure good eye and hand coordination
- u) Eye protection and ear protection must be worn
- v) Secured the hand tool so that it will not get slip and fall
- w) Appropriate means of access and egress must be provided
- x) Ensure lifting permit shall be filled by supervisor & approved by site manager, cross verify by Safety officer before the work starts. Specific Hazards to be identified on the specific location and appropriate control measures should be implemented; It should be mentioned on work permit. Hazard should be communicated to the workmen
- y) Ensure correct size & capacity of lifting gears should be in use (ref .load calculation sheet )

Load calculation sheet :

LENGTH-PILE DIA	0.5 MTR	1 MTR	1.5 MTR	2MTR
<b>600Φ</b>	0.35 (Ton)	0.71 (Ton)	1 (Ton)	1,42 (Ton)
<b>SLING/D-SHACKLE CAPACITY</b>	16mm/5 ton	16mm/5 ton	16mm/5 ton	16mm/5 ton
<b>TYPE OF LIFT</b>	Choke Hitch	Choke Hitch	Choke Hitch	Choke Hitch

- z) Check the working platform for crane movement Whether it is ok or not, Identified & access the crane movement area & debris stocking area
- aa) Before proceeding to work prepare a plan layout for crane movement & debris stocking area(mark the location into layout)
- bb) (Ref: Plan layout of Pile chipping)
- cc) Park the crane on the stable ground, check the safety control measures & level of crane



- dd) Refer to the load chart of the crane and analyse angle & radius of the crane, make the crane to its position.
- ee) All Rigger should be trained before proceeding to work & keep its training record
- ff) Only Competent Rigger will apply lifting gear to the load.
- gg) Use tagline on the sling while lifting the load.
- hh) Avoid dragging of the load.
- ii) Load the debris into the dumper directly or keep the debris at the designated area. (Note: Designated area should be away from the edge of the excavation (3mtr))
- jj) Exclusive zone shall be allotted for the crane (Ensure Barricading)
- kk) Lifting shall be carried out under the appropriate supervision and Signal man)
- ll) In case of any emergency ref. to procedure mentioned in onsite emergency plan
- mm) All gas cutting, and welding work are categorized as "Hot Work". A PTW for "Hot Work shall be applied for and approved by the Site Manager at the work site prior to the commencement of work.
- nn) If the welding area is wet or damp, then he/she shall wear rubber gloves under the welding gloves.
- oo) All Electrical Hazards at work site should be access & appropriate control measure should be taken before proceeding to work

### 13.3 Power shovels:

The shovels both mechanical as well as hydraulic / pneumatic type need basic precautions while being operated. The excavators shall not lose their stability while operating. The Contractor shall adhere to the Load Charts for various boom lengths provided by the manufacturers. For the mechanical shovels, the wire rope shall be changed as per the frequency mentioned in history sheet. For Hydraulic hoses, the connections shall be tight and leak proof. The fire extinguisher of appropriate type conforming to IS: 2190-1992 (Reaffirmed in 2007) shall be made available on the hydraulic excavator.

### 13.4 Bulldozers:

The blade of Bulldozer shall be inspected at least once in a week. The blade shall not be used as a brake except in emergency. The position of the blade shall be adjusted while travelling up or down the gradient. The Bulldozer shall be parked on leveled ground, by applying hand brakes and by lowering blade.

### 13.5 Scrapers:

The brakes of the Scraper shall be checked before putting it in operation. The scraper bowl shall be repaired, and the cutting blades shall be changed periodically. The bowl shall be locked before carrying out the repairs. The bucket shall be raised while moving the scrapper. No vehicle movement shall be allowed within the radius of movement of scrapper and the area shall be properly cordoned. The wire ropes shall be checked periodically by visual inspection at least once in a fortnight.

### 13.6 Transporting Machinery:

- a) Trucks, tippers, dumpers used in transportation of excavated earth or other materials, which are loaded with mechanical excavators, shovels / loaders shall have strong canopies over the driver's cabin to protect them from injuries while loading. The driver's cabin for all the vehicles at construction site shall have a system of sound and vibration suppression, seat belts, reverse horn/alarm, rear view mirror, wide windshield, triplex glass, wiper, sun visor, etc. Brakes and control shall be designed to get locked when the vehicle is parked. While going down the gradient, the



speed of the vehicle should be controlled. Hydraulic retarder shall be used for big dumpers. Persons holding valid driving licenses for heavy motor vehicle shall be engaged as drivers of the respective type of vehicles. Every dumper, tipper, truck, etc. shall be accompanied by helper and driver shall take all signals from his helper only. The access road of such transport vehicle shall be firm and leveled as far as practicable and shall be free from any obstacle.

- b) Trucks shall be loaded at places where there is no danger of falling rock or landslide. While loading trucks with mechanical excavators, shovels, etc. suitable distance shall be kept avoiding the shovel touching the truck. Brakes shall be applied when a vehicle is loaded and unloaded. The vehicles shall not be overloaded, and the loading shall be even. Stop logs shall be used while loading and transportation so that the back door of the dumper does not open undesirably.
- c) For tough riders, the hydraulic system for the bucket shall be checked periodically as per manufacturer's maintenance manual. They shall not be overloaded.

### 13.7 Mobile Elevated Work Platforms (MEWPs)

- a) All personnel who operate MEWP'S must be trained, be certificated and competent to use it.
- b) Note: Familiarization training by hire companies in the controls does not confer competency and any certificates issued as a result may carry disclaimers.
- c) Equipment should carry a handover certificate provided by the hire company and a manufacturer's manual which covers how to deal with emergencies, operate, check and maintain the equipment and will state its safe working load. The equipment must be inspected and maintained in accordance with the legal and site requirements, at least twice in a year.
- d) All personnel in MEWPs are required to wear a harness and the lanyard must be attached to the restraint point at all times. The PPE-FP must prevent any fall out of the basket, usage of double lanyard is only allowed, all lanyards used in MEWPs have to be short enough to fulfill this requirement.
- e) Barriers should be provided around the area where the MEWP is working and "Man working overhead" signs should be erected.
- f) Operators should lock their machines in a safe, out of service position when they leave them.
- g) Personnel should not normally leave MEWPs while in an elevated position, nor should materials be transferred since the work platform may supposed to rise or lift.
- h) However, on the few occasions where it may be necessary to leave the mobile platform it must be carried out in controlled conditions, like
  - The operator must remain in control in the MEWP at all times.
  - The harnessed person leaving the platform must wear a double lanyard; attach one lanyard to a safe point outside the MEWP with the other being unclipped when ready to get down the standing platform i.e. MEWP.
  - One hundred percent fall protection must be maintained at all times.
- i) Mobile elevated working platform categories as:
  - Mobile Work Elevated Platforms (MEWPS) - Scissor Lifts/Cherry Pickers (Mechanical)
  - Mobile Elevated Work Platforms (MEWPS) - Mast Work Platforms (MWP)/Rope Suspended Working Platforms (Manual)

#### 13.7.1 Scissor Lifts / Cherry Pickers (Mechanical):

- a) Personnel who operate Scissor Lifts / Cherry Pickers must be fully trained and competent.



- b) It is important that instructions for use are provided by the installer and the equipment should work as per the instruction.
- c) The equipment is thoroughly inspected and certificated by a competent person at every 6 months. Work platforms should also be inspected weekly (period inspection recommended by the manufacturer) by a person authorized for this purpose and a written report should be made on the condition of the appliance. A visual inspection should also be carried out on a daily basis before use.
- d) It is important that tires are properly inflated, equipment is used on firm and level ground and outriggers are extended and checked before raising the platform, MEWP'S should not be used in high winds and adverse weather conditions.
- e) Danger from overhead electric power lines and obstructions must be avoided.
- f) All Scissor Lifts and Cherry Pickers must be outfitted with warning lights and warning sounders; these have to be operational during all movements of the plant.

#### 13.7.2 Rope suspended Platform (RSP):

- a) All engineering controls such as Safe Load Indicator, Centrifugal Speed Limiter, Electromagnetic Brake with manual release, Over Hoist / Top Limit Switch, Anti-Tilting Cut off, Anti-Sway Restriction, locking arrangement for upper counterweights, Hammer weight for wire rope locking, Panel board Lock & key, etc. as advised by company safety in charge shall be ensured by contractor during procuring or hiring process.
- b) Third party certificate is mandatory requirement for all MEWPs and frequency of TPI will be once in six month or before starting activity on these equipment's or in case of any alteration in the equipment.
- c) Company safety in charge shall be informed well in advance so that he can be a party while TPI, if fail to do so then Company safety in charge can demand for retest if he feels it is required at contractor's cost.
- d) Only trained and authorized personnel should be permitted to erect, operate, or decimate a work platform.
- e) SWL shall be displayed outside and shall be clearly visible from distance.
- f) Load on Platform's safe working load shall not be exceeded.
- g) No accumulation of materials is allowed on RSP working platform as it increase the load on platform
- h) Lifeline rope to be used for fall grab arrestor shall be of polyimide and shall be prevented at edges or sharp object or sharp corners to protect cut or damage of ropes.
- i) Full body safety harnesses and rope grab fall arrestors attached to independent lanyards must be worn by all personnel travelling in rope suspended platforms/mast work platforms when the platform is moving up/down. Only short lanyards are permitted.
- j) Independent Lifeline shall be provided to every individual working on MWP / RSP.
- k) RSP should not be used in high winds or in bad weather.
- l) Below area shall always be cordon off while performing over RSP.
- m) No Parallel activity shall be allowed while working on suspended platforms.



## 14 Lifting and hoisting machinery

### 14.1 General Requirements:

The use of lifting machines and tackles, including their attachments, anchorage, and supports, must comply with Rules 55 to 71 of Chapter VII of the BOCW Central Rules, 1998, as well as the following conditions.

- a) Lifting machines and tackles must be of good mechanical construction, sound material, adequate strength, and free of defects, and they must be kept in good repair and working order. Every rope used in hoisting or lowering materials or as a means of suspension must conform to the manufacturer's specifications, be of good quality, have adequate strength and dimension, and be free of defects. The contractor must submit test certificates for such ropes, D-shackles, and so on in advance.
- b) Only trained authorized personnel or authorized agency shall perform the maintenance activity and records shall be maintained at site without fail.
- c) Every crane operator or lifting appliance operator shall be properly trained and competent. No person under the age of 21 years shall oversee any hoisting machine or to give signal to operator of such machine.
- d) The base of such hoisting equipment shall be kept in perfect horizontal condition since any tilt would reduce the load carrying capacity of the equipment. The foundation shall be firm enough to support the equipment. The level shall be checked every day before starting the work in case of mobile hoisting equipment.
- e) The safe working load (SWL) of every lifting machine (and of every chain, ring, hook, D-shackle, swivel, and pulley block used in hoisting or as a means of suspension) shall be identified and clearly marked. Each safe working load and the conditions under which it is applicable must be clearly indicated in the case of a lifting machine with a variable safe working load. Except for testing purposes, no part of any machine or gear shall be loaded beyond the safe working load. This must be approved by the contractor's Safety Officer and contractor's project manager. Advance intimation shall be given to company safety in charge to ensure the third-party testing is only being carried out under supervision of respective work engineer and respective work engineer. If failed to do so, the company's safety officer may demand for re-testing if he believes it is necessary.
- f) The Contractor shall notify the safe working load (SWL) of the machine to the Company Project Manager whenever he brings any machinery to site and get it verified by Competent Person, supported by a valid test certificate.
- g) The contractor shall arrange thorough inspection and load testing of all lifting machines and tackles by the Competent Person, at least once in every six months and the records of such inspection and testing and updated inventory shall be maintained, and a copy shall be submitted to Company.
- h) Motors, transmission, couplings, belts, chain drives and other moving parts of hoisting appliances shall be provided with adequate safeguards. Hoisting appliances shall be provided with such means as it shall minimize the risk of any part of a suspended load becoming accidentally displaced or lowered.
- i) Double sling shall be used for hoisting material. The angle of the sling shall be wide enough for safe hoisting and the sling shall be adjusted as per the center of gravity of the material to be lifted. A guide rope (manila rope of sufficient length, normally 1.5m long) shall be attached to the end of the material lifted to pull the same conveniently during lowering.
- j) As per Rule 74, Chapter VII, BOCW Central Rules, the contractor shall maintain a Register of Periodical Tests for Examination of Lifting Appliances and Gears on site and record the periodic / six monthly thorough examination of such appliances (viz. winches, derricks, their accessory gears,



loose gears, ropes, hooks, shackles, swivels, etc.). This register must be kept on site at all times for inspection.

## 14.2 Tower Cranes:

### 14.2.1 Erection & Commissioning

The tower crane type to be used must be determined by the load to be lifted, the reach of the boom, and the height at which the material is to be shifted. For the erection, dismantling, or extension (jumping) of tower cranes, the contractor must follow all OHS instructions in the manufacturer's manual. Before erecting the structure on site, the contractor must submit the operation manual provided by the manufacturer to the Company Project Manager. The adequacy of the counterweight must be ensured for both movable and fixed tower cranes. The base of the tower crane must be perfectly horizontal. During tower crane operation, the base must be capable of bearing loads. The foundation of the tower crane (mainly for static tower crane) shall be properly designed, for at least 25% more than the maximum load carrying capacity of the crane and approved by structural consultant. For erection of mobile tower crane, the contractor shall first level and compact the soil at the place of erection or shall lay PCC / RCC of sufficient thickness if the soil condition is poor. The out riggers / wedge of the mobile tower crane shall be properly secured. The limit switch of the tower crane shall be properly calibrated and checked periodically by the contractor to ensure safe load carrying capacity of the same. The load carrying capacity shall be tested, at least once in SIX months in presence of company safety officer and company work engineer, by a Competent Person and a copy of such test shall be submitted by the contractor to the Company project manager and company safety incharge. The limit switch shall function in such a manner that it immediately cuts off the power supply to the hoisting motor of the crane on overloading. The electrical power supply system of the crane shall be through MCB / ELCB of proper rating which shall be periodically checked. The height of the tower crane shall be such that it clears all obstruction like column dowels, protruding parts of scaffolds, overhead electric lines, etc. while hoisting the loads. If there are multiple cranes in the same swing area or habitat area within the tower crane radius or any other structure fall within the swing area of tower crane, an anti-collision device must be provided. The tower crane must have an automatic safe load indicator (SLI) as required by the BOCW Rules. The dismantling sequence and hazards such as the mast inside the lift pit, narrow passage, near transmission line, and so on must be considered during tower crane erection planning phase.

Only trained authorized personnel or authorized agency shall perform the maintenance activity and records shall be maintained at site without fail.

### 14.2.2 Operation

The crane shall never be used to pick up loads that are beyond the crane's reach or to perform any form of skew pull. The load (to be lifted by the crane) must be free of any sticky characteristics that could cause a sudden jerk while lifting. No worker or individual shall be lifted by a tower crane. Any swinging of lifted loads to get them out of the reach of the crane is prohibited. The operator must not reverse the motor to achieve a faster stop in order to save time. He must only perform one operation at a time and must never combine horizontal movement of the trolley with vertical movement of the lifting hook. During operation, the tower crane must be protected from sway caused by wind load, etc. Precautions in high wind load (more than 72 kmph or possibility of storm) shall be taken as per manufacturer's guide. Various components and parts of the tower crane like wire ropes, pulleys, structural members of the tower and boom, etc. shall be periodically checked and properly maintained by the mechanical engineer of the contractor. Proper lighting arrangement with the boom and the tower of the crane shall be provided as safety arrangements for clear



visibility during night. The tower crane shall be provided with the siren / horn facility to caution the workers in vicinity during operation of the crane. The operator shall use walky-talky for communication and take "START" and "HOISTING" signal from the designated signaler/ supervisor only; however, "STOP" signal can be taken from anyone. Maintenance of the balancing rope, trolley rope, hoisting rope, and erection rope must be checked and replaced as needed according to the manufacturer's maintenance guidelines. The manufacturer's manual must be followed for routine maintenance.

### 14.3 Mobile Cranes:

The contractor must ensure that the crane's engine is kept running with the gear engaged and at a slow speed while moving down at slope. The boom must always be kept downhill while travelling uphill or downhill to prevent the boom from falling back. The soil in the mobile crane's working area, movement area, and parking area must be well compacted and have proper drainage arrangements. The area must be dry, level, and firm enough to support the mobile crane's load. If the soil is soft, the area under the wheels should be solidified with stones, wooden slippers, and so on. This is also true for crawler-mounted cranes. The chart for rated load vis-à-vis operation radii for mobile crane shall be referred to before any erection and the same shall be submitted by the contractor to the company in advance. In no case, the maximum operation radius shall be exceeded. The out-riggers / jacks along with bearing plates shall be used while in operation and no load shall come on the wheels. The lifting hook shall be tied / anchored while the crane is moving or not operational. Before starting operation at the beginning of day's work, the capacity load shall be picked up to 0.3 m above the ground to test the drift, if any, due to faulty brakes. The brakes shall be 'ON' when a rubber tire crane is operated. The operator shall always avoid any jerky start or a fast swing during operation of the crane since it increases the risk of overturning of the crane. In all wheeled machines, the pressure in the pneumatic tire must be maintained correctly. The project prohibits the use of conventional 3<sup>rd</sup> generation hydra. Only Farhana (F-15 or above) Hydra shall be allowed at project site.

Only trained authorized personnel or authorized agency shall perform the maintenance activity and records shall be maintained at site without fail.

The crane shall be equipped with the following features:

- i) Anemometer to indicate wind pressure
  - ii) Anchors for rail mounted cranes
  - iii) Load Limiter to prevent failure of ropes
  - iv) Safety stops to restrict crane travel
  - v) Swinging radius indicator to indicate safe load at given radius
  - vi) Heel indicators to control crane heeling
- II) Electrical/mechanical safe limits to compare the weight hoisted and the load admissible at various swing radii.

### 14.4 Material Hoists:

- i. No Hoist / Lift without rack and pinion shall be allowed for material hoisting purpose at site.
- ii. The frame of the hoist must be of standard construction and installed in accordance with the manufacturer's instructions. Any changes or modifications to the frame must be certified by a structural engineer. Scaffolding or other structures are not permitted to support the mast.
- iii. Builder hoist capacities are limited. The structure of the builder hoist must be supported by a permanent structure such as a column, slab, or other similar structure so that the rails do not rattle while operating the hoist. The structure must be held vertically in place.



- iv. Daily check by operator, weekly by safety officer and monthly preventive maintenance by P&M or competent person from third party shall be done by the contractor for the condition of ropes, rails, pulleys, bucket/hopper, locking system, etc. from time to time.
- v. There shall not be any obstruction or protruding part on the way of movement of builder hoist.
- vi. The builder hoist shall never be used for movement of manpower.
- vii. The openings shall be cordoned by suitable guard rails to prevent any physical access to moving part.
- viii. Gate and locking arrangements shall be provided at loading/unloading points at each floor to control the unauthorized entry/access.
- ix. The vertical mast shall be enveloped by debris safety net to contain projectiles of spill over material.
- x. Signaling between operator and unloading person shall be by walky-talky or electric bell.
- xi. The winch machine & wire rope shall be guarded to avoid un-authorized entry and tripping & entangling hazard.
- xii. The helper at unloading job shall wear double lanyard full body safety harness & anchor, while maneuvering on landing platforms for bucket loading/ unloading.
- xiii. Diesel generators and other makeshift construction hoists are not permitted to be installed or used on the job site.
- xiv. The statute load test of hoists shall be performed by a Competent Person before use after erecting and thereafter every six months, and certificates shall be submitted to the Company.
- xv. It is strongly advised that the contractor prominently display the SWL of hoists in Kg/Tonnage as well as in unit quantity charts of material (such as bricks, number of bags, etc.) for clear communication and to avoid overloading.
- xvi. Only trained authorized personnel or authorized agency shall perform the maintenance activity and records shall be maintained at site without fail.

#### 14.5 Passenger Hoists:

The contractor shall ensure that no building worker is carried by a passenger hoist unless it is provided with a cage which is:

- a) So, constructed as to prevent, when its gates are shut, any building worker carried by such hoist from falling out of it or from being trapped between any part of such cage and any fixed structure or other moving part of such hoist or from being struck by articles or materials falling down the hoist-way on which such hoist is moving.
- b) Is fitted on each of its side from which, access is provided to a landing place with a gate which has efficient interlocking or other devices to secure so that such gate cannot be opened except when such cage is at a landing place and that such cage cannot be moved away from any such place until such gate is closed.
- c) Every gate in the hoist-way enclosure of such hoist used for carrying persons is fitted with efficient interlocking or other devices to secure so that gate cannot be opened except when the cage of such gate is at the landing place, and that such large cage cannot be moved away from the landing place until such gate is closed.
- d) In every hoist used for carrying building workers these are provided suitable and efficient automatic devices to ensure that the cage of such hoist comes to rest at a point above the lowest point to which such cage may travel.
- e) Only trained authorized personnel or authorized agency shall perform the maintenance activity and records shall be maintained at site without fail.



## 15 Construction Tools Precautions

Inventory of all tools shall be updated immediately it enters the site premises and shall undergo through inspection process. Only authorized personnel shall perform the maintenance activity during the inspection process and records shall be maintained at site without fail. Fit to use tag shall be provided post inspection Only if its fit to use and if found unfit remove from the site.

### 15.1 Hand Tools:

#### 15.1.1 Impact Tools:

- a) The contractor shall use precision grip for the most used impact tool, hammer for light work. For safe operations, the hammer shall have a straight cylindrical handle of 24 to 40 mm caliber with a maximum length of 600 mm and maximum head weight of 6.5 to 7.5 kg. Hammers shall be maintained such that cracked or weak handles are replaced, and heads are in good condition and firmly secured to an undamaged handle.

#### 15.1.2 Cutting Tools:

The contractor shall ensure that various cutting tools like axes, chisels, and shovels, etc. are made up of material with adequate strength. The contractor shall ensure that wooden handles are to be moist before use during summer. Proper PPEs like hand gloves, ear plugs, goggles, dust respirators, etc. shall be provided to the worker as per the need of the work.

### 15.2 Compressed air Tools:

- a) The hose of the compressed air shall not be directed towards a person's body. Compressed air shall not be used for cleaning of dust on the clothes of the workers.
- b) The compressed air line shall not be bent to stop the flow of air. This may cause building of pressure resulting in bursting of pipe and injury to the person.
- c) The operator shall use earmuffs on regular basis.
- d) The person cleaning certain area with compressed air shall be given safety goggles, dust respirators and ear plugs. Other workers shall not be present in the area which is being cleaned.

### 15.3 Abrasive Tools:

- a) All machines, hand tools, etc. shall be test driven and necessary earthing shall be checked before actual use.
- b) All moving parts of mills, mixers and disintegrators shall have secure fixed guards to avoid injury to workers.
- c) Contractor shall provide protective equipment to workers involving in crushing, grinding, or pulverizing operations.

### 15.4 Drills:

- a) All the pneumatic drills shall be equipped with the additional lateral handles to avoid accidents wherein the back twisting torque exceeds 15 Nm.
- b) Compressed air hoses shall be suitably covered or hung from the ceiling.

### 15.5 Saws:

The contractor shall ensure that all the built-in safety devices of the pneumatic saws such as adjustable riving knife, guard hood, replaceable blade aperture insert, push stick and start/stop



switch shall not be tampered by the workers during operations. The contractor shall provide standard PPEs such as ear plugs or earmuffs as the noise level during operations of saws may exceed 90 dBA.

#### 15.6 Grinding machines:

The contractor shall use correct type of wheel depending on type of material to be ground such as separate wheel for concrete and steel surfaces, etc. The expiry date written on the wheel shall be referred before use. The RPM of the wheel shall match with that of the grinding machine. The wheel may get chipped or cracked in transportation or in storage. To check this defect, the wheel shall be held loosely on a finger through the arbor hole and tapped lightly with a wooden hammer. The grinding machine shall have proper earthing, guards, etc. and the operator shall use all necessary PPEs like goggles, ear plugs, dust respirators, etc.

#### 15.7 Pneumatic Tools Safety:

- a) The contractor shall check RPM of tool before changing or replacing the wheels .
- b) The contractor shall operate all the grinding wheels under or inside the guards (except cone shaped wheels and small mounted points).
- c) The diameter of the wheel arbors shall match that of the grinding wheels. The wheel washer (blotter) and collar shall grip the wheel firmly and the two shall never be of different diameters. The nut which holds the wheel on the arbor and the washer (blotter) against the wheel shall be of ample size and strength.
- d) The contractor shall follow the manufacturer's charts about the applications and speed of the various types of the grinding wheels.

### 16 Gas Cylinders Safety:

#### 16.1 General precautions:

- a) Cylinders together with their valves and other fittings and identification colors shall be maintained in good condition. Flash back arresters 04 Nos (02 Nos at Torch side, 02 Nos at cylinder side) shall be provided at both Cylinder side and torch side. Pressure gauges of 02 Nos shall be provided to monitor the pressure of cylinder while operation
- b) No lubricant shall be used in any fittings of the cylinders.
- c) No cylinder shall be subjected to any heat treatment or exposed to a high temperature or to the sun or stored with flammable or explosive material.
- d) Every cylinder containing compressed gas shall have its valve securely closed to prevent leakage. Valves fitted to the cylinders containing LPG and highly toxic gases shall be provided with security nut on the outlet to act as a secondary means of safeguard against leakage of gas.
- e) If the leak in the valve cannot be rectified by tightening the gland-nut or the spindle, the cylinder shall be removed to an open space where it is least dangerous to life and property and the Supplier shall be informed.
- f) Domestic LPG gas cylinders are not allowed to use at company site.

#### 16.2 Handling and use:

- a) Cylinders shall be adequately supported during handling.
- b) Trolleys and cradles of adequate strength shall, as far as possible, be used when moving the cylinders and should remain secured on trolley at workplace also.



- c) The cylinders shall be handled carefully and not be allowed to fall on one another or subjected to any undue shock.
- d) Sliding, dropping, rolling, or playing with cylinders is prohibited.
- e) LPG cylinders for cooking purpose, Oxygen and Acetylene cylinders shall always be kept in upright position and be so placed that they cannot be knocked over.
- f) Open flames, lights, lighting of fires, welding and smoking shall be prohibited in proximity of any cylinder containing flammable gases except those in use for welding, cutting, or heating.

### 16.3 Storage of cylinders:

- a) Cylinders shall be stored in cool, dry, well-ventilated place under cover, away from open flames or any potential sources of heat and such place shall be easily accessible.
- b) The storage room or shed shall be of fire-resistant construction.
- c) Thin-walled cylinders such as LPG and cylinders of dissolved gas shall not be stacked in horizontal position. All cylinders shall be stored in up-right position.
- d) Cylinders containing flammable and toxic gases shall be kept separated from each other by 3m and from cylinders containing other types of gases by an adequate distance or by suitable partition wall.
- e) Cylinders shall not be stored under conditions that will cause them to corrode.
- f) Cylinders shall not be stored with any combustible materials.
- g) Empty cylinders shall be segregated from filled ones and care shall be taken that the valves are tightly shut.
- h) The contractor shall ensure that hydro-static test certificates of all pressurized gas cylinders are obtained & record available.
- i) No Cylinders shall be allowed to store inside building.

### 16.4 Transport of cylinders:

- a) Cylinders filled with any compressed gas shall not be transported by bicycle or any other two-wheeled mechanically propelled vehicle.
- b) Cylinders shall be so transported as not to project in the horizontal plane beyond the sides or ends of the vehicle by which they are transported.
- c) Cylinders shall be adequately secured to prevent their falling off the vehicle and being subjected to rough handling, excessive shocks, or local stresses.

#### 16.4.1 Restrictions on transport of cylinders:

- a) Cylinders containing flammable gases shall not be transported along with cylinders containing any other type of compressed gas.
- b) Cylinders containing toxic or corrosive gases shall not be transported along with foodstuff.

#### 16.4.2 Loading and unloading of cylinders for transport:

- a) No lifting magnet shall be used in loading or unloading of cylinders filled with compressed gas. When any such operation is carried out by means of a crane or forklift truck, a proper cradle of cylinder height should be used as approved by safety officer.

#### 16.4.3 Protection of valves:

- a) The valves of compressed gas cylinders should be protected against damage during transport.
- b) Barrier screens shall be erected to protect other persons from harmful rays and sparks from the work. When welding or gas cutting is carried out in elevated positions, precautions like



- providing metal sheet, fire blankets etc. shall be taken to prevent sparks or hot molten metal falling on persons or flammable/ combustible materials below
- c) Adequate ventilation shall be provided for easy dispersion of gas while welding, brazing, and cutting in confined space.
  - d) Suitable type of protective clothing consisting of fire-resistant gauntlet gloves, boots and aprons shall be provided to workers to protect from heat and hot molten metal splashes. Welding shields with filter glasses of appropriate shade shall be worn as face protection against UV & IR rays.
  - e) Welding and gas cutting shall not be carried out by standing on drums, barrels, tanks, or other containers.
  - f) Appropriate type fire extinguisher and fire bucket shall be available near the location of welding operations.
  - g) Contractor's safety officer shall ensure at least half an hour fire watch after the hot work is over.

### 16.5 Electric Arc Welding:

- a) For Electric Arc welding the following additional safety precautions shall be taken.
- b) All power connections shall be routed through ELCB of 30mA rating and machine connections shall be through MCB. Double earthing shall be provided to the welding machine. A provision of a separate return path shall be ensured.
- c) The cable to be used shall be of adequate capacity corresponding to output of the welding transformer / generator and shall be routed through dry isolated path. Welding cable terminals shall be provided with lugs and connected properly. Proper insulation of cable with insulation tape of approved quality shall be ensured and only double insulated cable shall be used. Extension of welding cables shall be done using standard connectors.
- d) Pipelines carrying flammables shall not be used as part of earth conductor, but a separate earth conductor shall be connected to the machine directly from the job. Painting and Dye Penetration testing shall not be done near electric arc welding.
- e) Personal contact with the electrode or other live parts of electric welding equipment shall be avoided. Wires and cables shall not be hung from any metal hook.
- f) Accidental contact of electrodes with ground shall be prevented.
- g) The welding cables shall not be allowed to get entangled with power cables. It shall be ensured that the cables are not damaged by movement of materials. Dragging and coiling of cable shall be avoided.

#### 16.5.1 Grinding:

- a) All portable grinders shall be used only with their wheel guards & tool rest in position to reduce the danger from flying fragments should the wheel break during the use.
- b) Grinding wheels of specified diameter only shall be used on a grinder portable or pedestal in order not to exceed the prescribed peripheral speed.
- c) Goggles shall be worn during grinding operation.
- d) All safety procedures as mentioned in Construction Tools Precautions shall also be followed for grinding activity.
- e) Safety provisions for grinding activity as per IS: 1991-1987 (Part 1-10) (Reaffirmed in 2002) shall be followed.



#### 16.5.2 Erection of Fabricated structures:

- a) Only trained operators and workers shall be engaged for the erection of structural fabricated members. For erection by mechanical means, following guidelines shall follow.
- b) The heavy materials shall not be manually handled. They shall be handled and shifted by mechanical means like crane, hydra, trolley, etc. of adequate capacity.
- c) All mechanical transport devices and erection equipment shall be operated with the assistance of a helper / supervisor exclusively for proper signaling.
- d) While erecting fabricated members, suitable guy rope arrangement shall be made to avoid sudden toppling of derrick.
- e) Chain pulley block, D-shackles, and wire ropes (lifting appliances) shall be of rated capacity at least 2.0 times more than the maximum desired load to be lifted. Hooks, jigs, and fixtures used shall be marked with their capacities.
- f) Two or more slings shall be used for lifting the loads and they shall be tied as per the center of gravity of the load to be lifted.

## 17 Electrical Safety:

### 17.1 General Precautions

- a) Guidelines for providing temporary power supply at the site and general safety procedures for using electricity are given as under. Following safety requirements shall be complied with before the Contractor uses the power supply.
- b) The Contractor shall submit a list of licensed electrical staff (approved by Government licensing authority) to be posted at site and shall get competency approval from Company Safety In-charge before deploying him on site. It shall be the responsibility of the Contractor to provide and maintain complete installation on the load side of the supply point about the safety requirements at site. All cabling and installation shall comply with the appropriate statutory requirements given below and shall be subject to approval of the Company Project Manager / Electrical Engineer.
  - i. The Electricity Act, 2003
  - ii. Indian Electricity Rules, 1956 (as amended in 2005)
  - iii. National Electric Code 1985 (as amended in 2005)
  - iv. Other relevant rules of Local Bodies and Electricity Boards
- c) The Contractor shall submit schematic and single line diagram for approval of Company.
- d) For purposes of electrical load and power planning by the electrical section, the contractor shall furnish along with the tender, the estimated load requirement of electric power for the execution of the contract works in terms of maximum Kilo Watt or KVA demand during various periods/months of the contract period along with the details of the construction electrical equipment/machinery with their individual load details and location/locations of power supply required for availing temporary electric power supply.
- e) Where distribution boards are located at different places the Contractor shall submit schematic drawing indicating all details like size of wires, overhead or cable feeders, earthing, etc. The position and location of all equipment and switches shall be given.
- f) The Contractor shall make his own arrangements for main earth electrode, tapping thereof & earth pits. Method of earthing, installation and earth testing results shall conform to relevant IS Specifications [IS: 3043 – 1987 (Reaffirmed in 2001)].
- g) All three-phase equipment shall be provided with double earthing.
- h) All light fixtures and portable equipment shall be effectively earthed to main earthing.



- i) All earth terminals shall be visible, and all earth pits shall be serially numbered and identified. No gas pipes and water pipes shall be used for earth connection. Neutral conductor shall not be treated as earth wire.
- j) The Contractor shall not connect any additional load without prior permission of Company PM.
- k) Joints in earthing conductors shall be avoided. Loop earthing of equipment shall not be allowed. However, tapings from an earth bus may be done.
- l) The entire installation shall be subjected to the following tests before energizing of installation including portable equipment:
  - i. Insulation resistance test
  - ii. Polarity test of switches
  - iii. Earth continuity test
  - iv. Earth electrode resistance.
- m) The test procedures and their results shall conform to relevant IS specifications. The Contractor shall submit a test report for his complete installation every quarter and every time after rectifying any faulty section. One such test report for the complete installation shall be submitted before onset of monsoon.
- n) The following are provided for general guidance of the Contractor and shall be read as specific requirement, in addition to complying with Indian Electricity Act, Indian Electricity Rules and IS Specifications.

#### 17.2 Installation:

- a) Only persons having valid wireman's license/competency certificate shall be employed for carrying out electrical work and repair of electrical equipment, installation, and maintenance at site. The job shall be supervised by a qualified licensed supervisor.
- b) Electrical equipment and installations shall be installed and maintained as to prevent danger from contact with live conductors and to prevent fires originating from electrical causes like short circuits, overheating, etc. Installation shall not cause any hindrance to movement of men and materials.
- c) Materials for all electrical equipment shall be selected regarding working voltage, load and working environment. Such equipment shall conform to the relevant standards.
- d) The minimum clearance to be maintained for all overhead lines along roads and across roads shall be 6.10m (minimum) as per the Rules 77-80 of Indian Electricity Rules, 1956 (Amended in 2005).
- e) Grounding conductor of wiring system shall be of copper or other corrosion resistant material. An extra grounding connection shall be made in appliances/equipment where chance of electric shock is high.
- f) Electric fuses and/or circuit breakers installed in equipment circuits for short circuit protection shall be of proper rating. It is also recommended that high rupturing capacity (HRC) fuses shall be used in all circuits. An Earth Leakage Circuit Breaker shall be provided for all 3 Phase and single-phase supply irrespective of kilo watt rating.
- g) Wires and cables shall be adequately supported, and an approved method of fixing shall be adopted. Loose hanging of wires & cables shall be avoided. Lighting and power circuits shall be kept distinct and separate.
- h) Reinforcement rods or any metallic part of structure shall not be used for supporting wires and cables, fixtures, equipment, earthing, etc.
- i) All cables and wires shall be adequately protected against mechanical damages. In case the cable is required to be laid underground, it shall be adequately protected by covering the same with bricks, Plain Cement Concrete (PCC) tile or any other approved means. Overhead cables shall be routed minimum 6.1m height on MS poles/ stands and all cables inside buildings shall be routed 2.5m height to prevent tripping, tripping, and electrocution etc.



- j) All armored cables shall be properly terminated by using suitable cable glands. Multi-stranded conductor cables shall be connected by using cable lugs/ sockets. Cable lugs shall preferably be crimped. They shall be of proper size and shall correspond to the current rating and size of the cable. Twisted connections shall not be allowed.
- k) All cable glands, armoring and sheathing of electric cables, metal circuits and their fittings, metallic fittings and other non-current carrying parts of electrical equipment and apparatus shall be effectively grounded.
- l) All the Distribution Boards, Switch Fuse units, Bus bar chambers, ducts, cubicles etc. shall have Mild Steel enclosures and shall be dust, vermin and waterproof.
- m) The Site Distribution Boards shall be as per IP-55 specification and above i.e., dust & water ingress proof.
- n) The Contractor shall provide proper enclosures/covers of approved size and shape for protection of the switch boards, equipment etc. against rain. Exposed live parts of all electrical circuits and equipment shall be enclosed permanently.
- o) Iron clad industrial type three-pin plug shall be used. Open /naked wire connections are prohibited.
- p) Open type Distribution Boards (DBs) are prohibited to use at company sites.
- q) Isolating switches shall be provided close to equipment for easy disconnection of electrical equipment or conductors from the source of supply when repair or maintenance work must be done on them.
- r) In front of distribution boards (DBs) a clear space of 1.0 m shall be maintained to have easy access during an emergency. Pathway to DBs shall be maintained free from any obstacles. If there are any attachment/base connection at the back side of the switch board, the space, if any behind the switch board shall be either less than 20cm or more than 75cm in width, measured from the farthest outstanding part of any attachment or conductor. If the space behind the switch board exceeds 75cm in width, there shall be a passageway from either end of switch board clear to a height of 180 cm.
- s) As far as possible electrical switches shall be excluded from a place where there is danger of explosion. All electrical equipment such as motors, switches and lighting fittings installed in work room where there is possibility of explosion hazard shall be explosion proof.
- t) All connections to lighting fixtures, starters or other power supplies shall be provided with PVC insulated, PVC sheathed twin/three/four core wires to have better mechanical protection for preventing possible damage to equipment or injury to personnel. Taped joints shall not be allowed, and the connections may be made in looping system. Electric starter of motors, switches shall not be mounted on wooden boards. Only sheet steel mounting or iron framework shall be used.
- u) All the lighting fixtures and lamp holders shall be of good quality and in good condition. Badly repaired, glass cover broken etc. shall not be used.
- v) Only PVC insulated and PVC sheathed wires or armored PVC insulated, and sheathed cables shall be used for external power supply connections of temporary nature. Taped joints in the wires shall not be used.
- w) Lamps used for illumination and testing purpose shall have cover or guard to protect them from accidental breakages. Only 24 Volt supply system shall be used for hand lamps etc., while working inside metallic tanks, vessels, or confined space.
- x) After installation of new electric system and or other extensive alterations to existing installations, thorough inspection shall be jointly made by electrical engineer of contractor and Company.
- y) As per provision of Rule 47-A of IE Rule 1956, license to operate the DG shall be mandate to contractor.



**17.3 Operation & Maintenance:**

- a) All persons who work with electrical installation/equipment shall be aware of the electrical hazards, use of protective devices and safe operational procedures. At least two persons in a shift shall be given training in firefighting, first aid and artificial resuscitation techniques. First Aid treatment of electrical shock shall be displayed at First Aid Centre.
- b) The supervisor shall instruct the workers for the proper procedure, specify, and enforce the use of necessary protective equipment such as adequately insulated pliers, screw drivers, fuse pullers, testing lamps and similar hand tools. No wooden ladders, Only insulated ladders shall be used to reach the heights in electrical work.
- c) No material or earth work shall be allowed to be dumped below or in the vicinity of the bare overhead line conductors. Minimum clearance of 6.10m shall be maintained.
- d) Separate work permits shall be issued in accordance with IS: 5216-1982 (Reaffirmed in 2010) working on the same system which shall be returned after the completion of the work to Safety Officer and no system shall be restored without the clearance of Safety Officer.
- e) While working on or near a circuit, whenever possible the use of one hand may be practiced even though the circuit is supposed to be dead. The other hand may preferably be kept in pocket.
- f) When it is necessary to touch electrical equipment (for example when checking for overload of motors) back of the hand may be used. Thus, if accidental shock were to cause muscular contractions, one would not 'freeze' to the conductor.
- g) Operation of electrical equipment shall be avoided when standing on wet floor or when hands are wet.
- h) Before blown fuses are replaced, the circuit shall be locked out and an investigation shall be made for the cause of the short circuit or overload.
- i) When two persons are working within reach of each other, they shall never work on different phases of the supply.
- j) When structural repairs, modification or painting works are to be undertaken, appropriate measures shall be taken for the protection of persons whose work may bring them into the proximity of live equipment/circuit.
- k) It shall be ensured that the insulation and wire size of extension cords are adequate for the voltage and current rating.
- l) While tapping electricity from the socket, three-pin plug top must be used. It shall be ensured that no extension boards are overloaded while tapping. Only standard three pin plugs shall be used for tapping electricity. Broken sockets/plugs shall be replaced immediately with good ones. Only joint free cables shall be used for connecting equipment/apparatus.
- m) Floors shall be kept free from trailing electrical cables to avoid tripping hazard.
- n) Power supply to all the machines and lighting fixtures shall be switched off when not in use.
- o) Temporary electrical connections shall be removed as soon as the stipulated work is over. After completion of the works, the contractor shall dismantle the distribution boards and the other facilities he may have erected.
- p) Unauthorized tapping of power by others from distribution boards under the control of the contractor shall be prohibited at all circumstances.
- q) Electrical Safety work permits & LOTO shall be used for switching off the main feeder and equipment by the contractor.
- r) As part of LOTO Permit "MEN ONLINE", "DO NOT SWITCH ON", "DANGER" or "CAUTION" boards as applicable shall be used during maintenance works on the electrical equipment.
- s) Power tapping of electrical equipment shall be as near as possible of the equipment.



## 18 Portable Electrical Equipment:

- a) Portable electrical equipment shall be weekly examined, tested, and maintained to ensure that the equipment and its leads are in good order. Register shall be maintained for inspection, recording the testing dates and results of the equipment. The insulation and winding resistance of the portable electrical equipment shall be checked at least once in a month and report shall be submitted for all such machines.
- b) All portable appliances shall be provided with three core double insulated cables and three pin plugs. The third pin of the plug shall invariably be earthed. It shall be ensured that the metal part of the equipment shall be effectively earthed.
- c) All connections to portable equipment or machines from the panel/distribution board/extension board shall be taken using 3 core double insulated PVC flexible copper wire in one length. No joints shall be allowed in this flexible wire. In case, single length of wire is not sufficient for a particular location then the supply can be tapped by providing another extension board comprising of switch and socket. Isolation switch shall be made available as close as possible to the equipment.
- d) Flexible cables for portable lamps, tools, and apparatus shall be regularly examined for insulation integrity, tested periodically, and maintained to ensure OHS and protected against mechanical damages.

### 18.1 Fire Prevention and Protection

The contractor shall take all necessary precautions to prevent outbreak of fires at the construction site and at the same time keep adequate provisions to extinguish fires should they still break out. Fire is most successfully fought when the equipment is suitable, readily available and personnel are effectively trained in using equipment. To achieve efficient fire-fighting operation the Contractor shall ensure that their employees are trained for following:

- i. Identify the fire source.
  - ii. Assess the situation.
  - iii. If fire is in incipient stage, extinguish using appropriate fire extinguisher.
  - iv. If not, call for outside agency / fire brigade.
  - v. Impart regular training on fire extinguishing
- a) The contractor shall adhere to Rule 35: Fire Protection of BOCW Central Rules and shall make all provision for prevention & fire fighting.
  - b) As per Company Rules entire construction site is “No Smoking Zone” and contractor shall make aware every staff & workers at site about this rule during OHS induction and sufficient awareness by daily pep-talk and signage.
  - c) Display enough signage for No Smoking and prohibition of hot work in restricted flammable / combustible material area.
  - d) All hot work at site like welding, gas cutting, heating etc. shall be undertaken under Hot Work Permit & inspection & clearance of site by contractor’s safety officer.
  - e) Quantities of combustible materials like timber, bamboos, coal, paints, etc. shall be the minimum required to avoid unnecessary accumulation of combustibles at site.
  - f) Containers of paints, thinners and allied materials shall be stored in a separate room which shall be well ventilated and free from excessive heat, sparks, flame, or direct rays of the sun. The containers of paint shall be kept covered or properly fitted with lid and shall not be kept open except while using.
  - g) Fire extinguishers suitable for the different classes of fire such as Class A, B, C & D as per IS: 2190-1992 (Reaffirmed in 2010) and sand buckets shall be made available at designated “Fire Points” in the construction site.



- h) The date of last maintenance of fire extinguisher shall be displayed properly on the same by using maintenance tag. Monthly visual inspection shall be carried out by contractor safety officer and fire extinguishers shall be sent for maintenance/refilling at least once in year or whenever exhausted to competent approved agencies. Hydrostatic test to ensure that extinguisher is still capable of maintaining the pressure necessary to discharge properly in the event of a fire shall be done as per manufacturer recommendation and next date of Hydrostatic test shall be displayed.
- i) The safety officer shall inspect the condition of the plunger, safety pin, switch grip, hose tube, etc. at least once in a month and report shall be submitted to the Company.
- j) Adequate number of contractor's workmen and supervisors, but minimum 50%, shall be given training in fire-fighting and extinguishing methods.
- k) The safety officer of the contractor shall plan for fire drills and site evacuation quarterly in fire emergency to facilitate to easy and safe exits for entire site work force and supervisory staff. He shall identify and train the designated staff or supervisor for specific role in site evacuation plan.
- l) The emergency telephone number of the nearest fire station shall be displayed at suitable locations (near site offices, main entrance of the site, first aid center, stores, security etc.) in bold distinct font.
- m) All flammable items shall be clearly marked and stored safely and securely in properly ventilated areas. Adequate fire-fighting equipment shall be readily available adjacent to those areas for ready use.
- n) All hot work shall be backed by 5kg DCP Type portable extinguisher.
- o) Fire-fighting equipment should be used for fire-fighting purposes only, never place obstructions within 15 ft. of fire extinguishers and hose houses.

## 19 Housekeeping

- a) One of the cornerstones of OHS is good housekeeping. Many accidents can be avoided simply by maintaining good housekeeping on the construction site.
- b) Throughout the contract period, the Contractor shall promote and maintain the practice of good housekeeping in order to create a safe and sanitary working environment on site.
- c) Housekeeping management must be incorporated into the Project OHS Plan and the Site Logistics Plan.
- d) A debris chute or other appropriate means for safe debris removal must be installed in buildings with five or more floors. It is prohibited to drop debris from a height.
- e) The contractor shall stack and store construction materials and components on site in accordance with IS: 40821996 (Reaffirmed in 2003).
- f) The Company PM has the authority to stop work if the Contractor fails to improve housekeeping after being notified.
- g) The Company PM may require the contractor to remove any materials that are hazardous to the public or cause inconvenience.
- h) After the completion of the work, the contractor shall have removed from the work premises all scaffoldings, surplus materials, scrap, rubbish and all temporary structures, huts and sanitary arrangements used/installed for his workmen at site. The contractor shall stack all undesirable materials and debris to the designated area at his own cost, as directed by Engineer-in-charge.
- i) Dewatering of stagnant water from the site shall be a regular activity with adequate pump capacity.
- j) The Contractor shall have a dedicated & sufficient housekeeping team as per the project size but not less than 5% of total work-strength and should be specially identified as "housekeeping" person by their reflecting jackets (recommended "yellow" colour jacket with reflective bands). The



housekeeping team shall be managed by the Contractor's Responsible Person, who shall schedule housekeeping at the site, perimeter, internal access roads, and all associated locations such as offices, stores, workshops, stock yards, batching plants, labour camps, and so on, and keep a register.

- k) Separate gates and access roads for labour entry and material vehicles shall be provided to prevent workers from colliding with vehicle traffic and causing an incident inside premises.
- l) The Site shall have perimeter site fencing of minimum standard around the site to prevent inconvenience & endanger to the public and stop unauthorized entry. The fencing should be of sound construction and aesthetically good with minimum 5m height; 2" to 3" spacing in between the sheets and neatly painted. Site fencing & frontage should be maintained presentable with display of visitors' instructions, OHS guidelines & signage etc. and should be cleaned & repair as required.
- m) Contractor shall provide and maintain hard barriers with top rail at 1150mm, mid rail at 550mm, vertical posts at 3m with toe board of 150mm at all floor edges, cut-outs, voids, shafts, staircases, excavation, trenches etc. to prevent fall of person & material.
- n) Contractor shall provide adequate illumination in the workplace, staircases, landings, passages, lift shafts and maintain general uniform illumination of 50 Lux across length & breadth of the site and access roads.
- o) The Contractor shall ensure that parking of trucks, transit mixers & other construction vehicles not stranded on public roads, which may impair aesthetics & obstruct traffic. The tires of the trucks leaving the site shall be cleaned with water, wherever the possibility of spillage on public roads, particularly during excavation, piling, rainy season etc.
- p) The walkways, gangways with minimum width of 1.2m shall be clear of debris, protruding dowels, timber with nails, oil spillages & other obstructions all the time to prevent tripping and slipping danger. Similarly, all emergency exit, fire doors, firefighting equipment, access to electrical panels & DB's, first aid stations, ambulance station, stairways, ladders, scaffolds etc. should be unobstructed, dry and in good working order.
- q) Electrical cables, welding leads routing shall be overhead to prevent trailing cables, tripping & electric shock. Overhead cable routing height should be minimum 2.5m inside the buildings and minimum 6.1m in open area supported by stable & insulated stands/MS-poles or otherwise ensure that DB's and welding machines are placed near work location.
- r) It shall be daily routine that sufficient time is devoted on housekeeping of the workplace after completion of work & just before leaving the workplace.
- s) Similarly on weekly basis or as required remove all the scraps, debris, waste oils and other disposables, to the designated yard. And same shall be disposed of from the site on monthly basis or depending upon the quantum of scrap.
- t) Contractor shall arrange to clean safety nets, catch platforms & deposits on chajjas weekly. The saleable/ salvage items like wooden scrap, empty cement bags, empty containers and steels scraps etc. shall be removed from the site on quarterly basis or as required.
- u) Similarly, all surplus earth and debris shall be removed/ disposed of from the workplace to officially designated dump yard as per logistics plan fortnightly or as required.
- v) Over and above as a good practice the Contractors must plan at least a day in a week as a "housekeeping day" to keep the site orderly.
- w) Materials shall be stacked at least 2m away from openings, roof edges, excavations, or trenches.
- x) The storage area shall be well laid out with easy access and material stored / stacked in an orderly and safe manner, and shall be segregated and stored in accordance with the logistics plan based on cost, type, shape, and size.



- y) The contractor shall provide the necessary PPE (e.g., helmet, safety shoes, dust mask, hand gloves, goggles, double lanyard full body safety harness, yellow-colored reflective jackets with "Housekeeping" sign, etc.) for housekeeping and debris collection workers.
- z) Steel, shuttering, and other materials shall not be stacked higher than 1.5m, and concrete block and brick shall be stored to a height not exceeding 1.8m at ground level; however, consider the capacity of structures when stacking material at floor level or slab. Cement bag stack piles shall not exceed 10 bags in height unless stacked in a suitable enclosure or otherwise adequately supported.
- aa) Sites with limited space must limit material inventory or stagger inventory, dispose of scrap/debris/excess or waste material more frequently, and plan rack stack methods.
- bb) Ensure that the work area around hot work is clear of all combustibles and trash, and that the work permit procedure is strictly followed.
- cc) Display required nomenclatures and mandatory, cautionary & informative signage such as speed limit, no smoking, electricity danger sign, flammability diamond sign, no spitting, drinking water, urinal/ toilet with gender pictorial sign, empty & full gas cylinders storage, emergency exit, assembly point, numbering of floors/ levels, etc.

## 20 Safe Access & Egress to Workplace:

- a) All building access and egress points must be defined, cordoned, and overhead protected by CGI sheets.
- b) Workmen shall be provided with suitable scaffolds for all work that cannot be done safely from the ground or from solid construction, except for short-duration work that can be done safely from ladders. The ladder safety procedures outlined in the preceding section must be followed. Safety procedures for Scaffolding and working platform shall be as per Scaffolding section given in earlier section.
- c) Adequate, clear, and safe access and exit points must be provided for all workplaces at all elevations. When approaching high elevations, always use a secure ladder.
- d) All access to the workplace shall be well guarded viz. stairs, ramps, etc. and shall be well illuminated.
- e) The access shall not have any water logging; they shall be levelled and dry so that people do not slip.
- f) Sign boards, written in language understood by majority of the workers, and exit signs shall be displayed at suitable location for easy identification. The steps of the stair shall be periodically cleaned for any accumulation of debris, dust, etc.
- g) The contractor shall ensure that each temporary RAMP constructed on site has a slope of no more than one in four and that the total rise of such continuous ramp used by building workers carrying material or using wheelbarrows does not exceed 3.7m, unless broken by a horizontal landing of at least 1.2m in length.
- h) As per Rule 53 of the BOCW Central Rules, the contractor shall ensure that each floor or level of a building or other construction work, particularly building level along the mast of passenger hoists, builder hoists, winches, etc., is prominently numbered and legible at the landings of such floors and the exterior of buildings.

## 21 Common Hazards:

### 21.1.1 Noise Hazard:

The contractor must provide appropriate ear protection (earmuffs) to workers who are exposed to high noise levels (90dBA or higher), such as concrete pump operators, vibrator operators, batching plant operators, air compressor operators, grinding machine operators, breaking rocks with pavement breaker,



cutting marble/granite, DG operators, pile rig operators, and so on. Other workers and personnel who are in close proximity to high noise levels, such as unskilled workers engaged in concreting work, etc., must be provided with ear plugs. The exposure duration for these workers shall be limited to the time specified in the table below and as prescribed in Rule 34 Schedule VI of the BOCW Central Rules, and the contractor shall arrange quarterly noise measurement surveys of the workplace through an external authorized agency. Excessive noise levels in excess of 115dBA are not permitted:

Sr. No	Total time of exposure (continuous or a number of short-term exposure) per day in hrs.	Sound pressure level in dBA
1.	8	90
2.	6	92
3.	4	95
4.	3	97
5.	2	100
6.	1	105
7.	½	110
8.	¼	115

The ambient noise level must not exceed the limit specified in the schedule of “Noise Pollution (Regulation & Control) Rules 2000”.

Area Code	Category of Area/Zone	Limit in dB(A) Leq	
		Day Time	Nighttime
(A)	Industrial Area	75	70
(B)	Commercial Area	65	55
(C)	Residential Area	55	45
(D)	Silence Zone	50	40

Note: - Day time shall mean from 6.00am to 10pm & nighttime shall mean from 10.00pm to 6.00am.

**21.1.2 Illumination Standard:**

- a) The contractor shall provide adequate lighting facilities such as flood lights, halogen lamps, hand lights, and general area lighting at the workplace, material and equipment storage areas, and temporary access roads, staircases, ramps, passageways, landings, and so on. The area illumination shall be such that it promotes work and OHS for all workers on site while also creating a pleasant working environment. The intensity of illumination shall depend on the nature of work and the same shall be planned by the contractor in advance based on the following table however minimum shall be 50Lux. The contractor must follow BOCW Central Rules Rule 50-Illumination and arrange for a quarterly illumination survey to be conducted by an external authorized agency and report to the Company.

Sr. No.	Area	Minimum intensity - illumination in Lux
1.	Passageways, corridors, staircases, warehouses, stockyard, entrances, gates, platforms, basements	50
2.	Landings of hoists, conveyors, batching plants, storerooms, toilets & washrooms	100



3.	Moderate discrimination of details essential: concreting, road construction, brick work, shafts work etc.	200
4.	Close discrimination of details essential: workshops, labs, welding/ cutting, drilling, plastering etc.	300
5.	Fine discrimination of details essential: Offices, carpentry w/s, glass work, assembly of fixtures, fabrications etc.	400

**21.1.3 Dust and fumes:**

- b) Confined areas, such as basements and bunkers, must have forced ventilation (via blowers) for at least 3 to 7 air changes per hour, depending on the presence of dust and fumes from grinding, gas cutting, welding, and other processes. During open-air operations, adequate measures such as dust extractors/arresters must be available to prevent the spread of dust to nearby areas. Workers shall be rested for sufficient time after every one hour of continuous working in dust. The same worker shall not be engaged for grinding for many days continuously and they shall be engaged /kept on job rotation. All necessary PPEs like dust respirators, safety goggles, hand gloves, ear plugs, protective clothes, etc. shall be provided. Any illness due to continuous work in dust or fume shall be immediately reported to the First Aid Centre. The contractor must follow BOCW Central Rules Rule 40 pertaining to Dangerous and Harmful Environment.

**21.1.4 Machine Guarding:**

- c) The Contractor shall ensure that all rotating, reciprocating & dangerous parts of machineries whether driven by mechanical power or not, securely guarded and they are never removed while machines is in motion and positioning is checked weekly by contractors safety officer, work engineer or nominated trained person. On completion of maintenance, oiling/ greasing any guards that had removed must be replaced immediately and whilst maintenance work is being carried out machinery must not be operated. Construction of guards shall be as per IS 9474 and adequate that it will prevent human body access to the rotating parts of machineries. The contractor shall adhere to Rule 37 of BOCW Central Rules in this regard.

**22 Fall Prevention and Protection**

The Contractor's first priority on Company sites shall be the prevention of any accidents and injuries, and all proactive and necessary positive measures shall be taken to prevent the fall of a person or material from a height. The provision of a double lanyard full body safety harness is the bare minimum, but it is no substitute for positive protections such as hard barricades, railing protections, working platforms, access ramps, safety nets and lifelines, and so on.

**22.1 Barricade and Railings Standard:**

The contractor must ensure that all horizontal and vertical openings, open edges inside buildings, and non-tower areas are protected by strong temporary barricades and railings to prevent person/material falls. It is recommended that the Contractor identify all openings, staircases, voids, shafts, etc. based on the building design and work out the schedule of fabrications of railings and Barricade well in advance, and protection fixtures be ready before the floor shuttering work begins. The contractor must obtain approval for temporary barricades and railings from the Company Project Manager. It shall be considered as a common infra by main contractor and will be retained by MLDL till end of the project. The contractor must ensure that railings and barricades meet the following specifications and are in accordance with IS 4014:1967, as reaffirmed in 2005.:



Requirements at	Specifications of Barricade and railings and material of construction
Excavations (deep than 1.5m)	<ul style="list-style-type: none"> <li>• Railings made of 40NB MS pipe with top horizontal guardrail at 1150 with intermediate guardrail at 550mm and intermittent vertical posts at not more than 3m.</li> <li>• Railing pipes shall be secured by scaffold clamps/ nut-bolts with vertical posts.</li> <li>• For open excavations railings shall be fixed at about 1000mm away from the edge of excavation.</li> <li>• Other shallow excavations shall also be barricaded by similar railing protection to prevent fall of person or vehicle.</li> </ul>
Colour & sign	<ul style="list-style-type: none"> <li>• For high visibility, the railings and Barricade shall be coated by paint in red &amp; white or wrapped with danger Barricade tapes of same colour.</li> </ul>
Lift shafts and other shafts/ cut-outs	<p>Vertical and or horizontal secured MS grill with following specifications:</p> <ul style="list-style-type: none"> <li>• Height of MS grills 1.20 m - 1.50 m (Approx.).</li> <li>• Width of MS grill: Based on the shaft openings with 4"-6" more at either side for fastening/ securing with side walls/ floor.</li> <li>• Material of MS grill frame: Outer frame made of 16mm steel rebars or 35mm MS angle and inside mesh of 12mm rebar with spacing not more than 4"-6", properly welded &amp; capable to take minimum 100kgf lateral load.</li> <li>• All shaft gates shall be in lock-key arrangement and removal shall be by permit.</li> <li>• MS mesh shall not be made by tying binding wires, welded mesh is must.</li> <li>• Contractor can use waste / scrap steel for fabrication of Barricade.</li> <li>• Fixed by anchor fasteners (Tie rod holes if available use the same for fixing).</li> <li>• Grills shall be fixed on the shafts/ cut-out openings positively covering entire opening and removal shall be by Permit.</li> <li>• The shafts shall be horizontally covered by MS platform or safety nets (6mm strand pp rope) every after 2 floors to arrest free fall of person/ material through the shaft.</li> </ul> <p>As a rule, all the shafts' openings at working floor shall be positively fully decked by MS planks.</p>
<ul style="list-style-type: none"> <li>• Open slab edges</li> <li>• Working floor</li> <li>• Staircases</li> <li>• Voids/ OTS</li> <li>• Floor cut-out openings</li> <li>• Open/ extended balconies</li> <li>• Platform railings etc.</li> <li>• Scaffold railings</li> <li>• Suspended platforms</li> </ul>	<ul style="list-style-type: none"> <li>• Made of 40NB MS pipe with top horizontal guardrail at 1150mm with intermediate guardrail at 550mm and intermittent vertical posts at not more than 3m.</li> <li>• The vertical posts having MS base plate shall be rigidly fixed with floor by anchor fasteners.</li> <li>• Railing pipes shall be secured with vertical post pipe by scaffold clamps/ nut-bolt fixtures.</li> <li>• Railings shall be provided with toe-board of 150mm.</li> <li>• The railings construction should be strong enough to bear the lateral load of about 100kg.</li> <li>• Neatly painted in red &amp; white bands</li> </ul>



## 22.2 Lifelines & Fall-grab Arresters:

The contractor shall ensure overhead Independent Lifeline of at least 08mm wire rope or 16mm to 24mm polypropylene rope anchor full body safety harness & arrest fall & for horizontal movement.

If working with Rope suspended platform (RSP) also known as gondola, suspended platforms, mast-climber working platforms, cantilever scaffolding platforms or scaffolds, tower crane access ladder, work in lift-shafts and other shafts, the Contractor must provide an independent lifeline of 12mm/14mm Polyamide rope of approved quality and a fall-grab arrester. Ensure that the lifelines are not connected to the equipment/platform on which the person is working and are independently fixed to the building structure or any other rigid support.

## 22.3 Safety Net Protection:

The contractor should provide safety catch nets as per building height & structure but minimum two level of safety nets i.e.

### 22.3.1 Horizontal Netting:

- a) Periphery horizontal safety net also known as catch net extending 5m from the face of the building and first installation shall be at a height not exceeding 5m above the base of the building shall be erected all along the periphery of every building for overhead hazard protection.
- b) A second horizontal safety net just below the working floor but no lower than 6m.
- c) Intermediate Safety Catchnets shall be provided at interval of every 05 floor. Projectile motion of the fall of material shall be give adequately priority.
- d) Additional horizontal safety nets must be installed on floors where work is being done at the edge.
- e) Nets shall be erected at an angle of not more than 200 to its horizontal sloping into the building and shall be secured with building structure or independent props but shall not be tied with any temporary structure like scaffolds, shuttering, temporary railings etc.
- f) In addition to hard Barricade, wherever required or in case where hard protection is not practically possible, vertical safety nets should be effectively used to envelope the vulnerable work fronts to contain fall of material or person from the building such as externally facing open edges of rooms, open balconies, landings of under cast staircase, etc. (Rule 41 & 179: Chapter XVI of BOCW Central Rules)

### 22.3.2 Vertical Netting:

- a) In case wherever Highrise towers close to neighbouring structures, public roads, aluform & other shuttering requirements, etc., the Contractor shall ensure that the vertical surface on the building's external periphery is covered with metal scaffolding and standard safety net with debris nets until the work is completed. This arrangement must be properly anchored and braced to ensure stability, and structural approval from a consultant is required. BOCW Central Rules Rule 41(3). No extra shall be paid for the vertical safety features.
- b) Specification of safety nets shall be as per IS-11057:1980, as described below:
- c) Specification for safety Net at peripheral level (permanent overhead protection) as follows,
  - ✓ Made of PP ropes.
  - ✓ Border rope: 12mm (breaking strength 2995 Kgf)
  - ✓ Inside ropes: 8mm (breaking strength 1345 Kgf) (as height of structure will increase falling impact load on safety net will increase)



- ✓ Main net mesh size: 4"x4" or 3"x3"
- ✓ Overlay net / debris net (HDPE): 10mmx10mm
- ✓ Rope test certificate from supplier is must.
- d) Specification for climbing safety Net (always at one floor below working level not more than 6m),
  - ✓ Made of PP ropes.
  - ✓ Border rope: 12mm (breaking strength 2995 Kgf)
  - ✓ Inside ropes: 4mm
  - ✓ Main net mesh size: 75mm\*75mm with overlay net (mesh size of overlay net should not be more than 10mmx10mm).
- e) Vertical Safety Net for face of building:
  - ✓ Made of PP ropes.
  - ✓ Border rope: 12mm (breaking strength 2995 Kgf)
  - ✓ Inside ropes: 2mm single cord knotted with debris net.
- f) Rope test certificate as per IS 5175 & Safety Net test certificate as per IS 11057 from supplier is must.
- g) Safety nets and safety net installations must be drop-tested at the jobsite,
  - ✓ After initial installation and before being used.
  - ✓ Whenever relocated.
  - ✓ After major repair.
  - ✓ At 6-month intervals if left in one place.

**23 Personal Protective Equipment:**

All necessary personal protective equipment (PPE) must be provided by the contractor at his own expense for his workers, supervisors, staffs, and visitor/visiting staffs, in accordance with BOCW Central Rules 43, 45, 46, 54, and 178. All PPEs must comply with the relevant IS Standard / EN Standard or any other international code of practice, as listed below. The contractor shall make available to workers, supervisors, and visitors on site all types of personal protective equipment deemed necessary by the Company, and they shall be kept in a condition suitable for immediate use. In addition, the contractor must take reasonable steps to ensure that those involved use PPE properly.

Items	Specifications
double lanyard full body safety harness with scaffold hook	IS: 3521-1999/ EN 361; Lan-yard length 1.8m
Fall arrestor & Lifeline	Fall arrestor: EN 353-2:2002 Lifeline: 12mm/14mm polyamide rope
Earmuff / Ear Plug	IS: 6996-1973 (Reaffirmed 1998); IS 9167 or EN 352-1:2002 and EN 352-2:2002; made of sponge or foam; preferably with cord; length of cord not less than 50cm; after squeezing it should return to its original shape within 30 seconds.
Safety Helmet	MOC- HDPE; IS standard: 2925-1984 (Reaffirmed 2000) or EN Standard 397; chin strap & nap strap (adjustable); Inside- plastic head band.
Safety Goggles	IS: 5983-1980 (Reaffirmed 2002) or EN 166:2001; adjustable arm for personalized fit; made of tough polycarbonate material; lenses with anti-scratch treatment; colour of lenses- Clear (UV clear).



Face shield	IS: 8521 (Part II) – 1977 (Reaffirmed 2002) IS: 8521 (Part I) –1994 (Reaffirmed 2002) or EN 175F; IS-1179:1967.
Respirators/ Dust mask	IS: 15321 – 2003, IS: 15322 – 2003 and dust mask IS:9623
Hand Gloves (canvas)	IS 6994-Part-I; MOC-split or chrome leather; stitching should be firm.
Hand Gloves (leather)	IS6994 Part-I; Moc- fabric or coated fabric; additional lining at palm; firm stitching
Electricians hand gloves	IS-4770:1991-rubber gloves
Shoulder pads	Round neck type leather covered with foam cushion, as per manufacturer's specifications.
Safety shoes	IS: 15298 – 2002; EN20 345 certified by laboratory DGMS/CLI; size engraved on sole; ankle height not less than 7cm, acid/alkali resistant sole; foam cushion in inner side for ankle lap.
Gum Boots	IS-5557: 2004; IS 12254: 1993 (PVC)
Electricians' safety shoes	As per manufacturers specifications and test certificate

- a) Safety helmet, safety shoes and reflective jackets is mandatory to access the project.
- b) During OHS induction contractor shall explain to workers in correct usage of basic PPE & double lanyard full body safety harness.
- c) Contractor should maintain minimum 20% buffer stock of PPE at all time.
- d) It is compulsory that all supervisors and site engineers at site should wear safety shoes and helmets and lead PPE culture.
- e) All persons employed or supervising at and / or visiting the construction site shall use safety helmets. The colour coding of helmets may be adopted by the contractor as per site requirement.
- f) The contractor shall provide all applicable standard personnel protective equipment (PPE) for all his workers, supervisors, staffs, and visitor/visiting staffs.
- g) Workers employed on mixing asphaltic materials, concrete, cement, and mortars shall use rubber gum boots & hand gloves and other PPEs such as protective goggles, protective foot wears, respirators, and hand gloves, etc.
- h) Persons engaged in welding and gas cutting works shall use appropriate welding face shields, leather hand gloves and protective clothes. The persons who assist the welders shall use appropriate goggles. Reflective jackets not to be used during welding work.
- i) Workers breaking rock, grinding, and chipping shall use protective goggles, dust respirators, earmuffs/ear plugs, etc. In addition, leather hand gloves shall be used where there is no possibility of entanglement with rotating parts. During work, other workers should maintain the safe distance.
- j) Persons working at height above ground level or floor and exposed to risk of falling shall use double lanyard full body safety harness, kinetic shock absorbers, fall arrestor, lifelines, and grab ropes. The working platform and access shall be protected by cages, guard railings, etc. The area beneath shall be protected by safety net of adequate strength (as per IS: 11057 – 1984) fastened to substantial supports.
- k) Wherever two-wheelers are allowed, motorcycle and scooter drivers and their pillion riders shall wear crash helmets inside the sites. Safety helmets shall not be replaced with crash helmets and vice-versa.
- l) When workers are employed in sewers, septic tanks and inside manholes which are in use, the contractor shall ensure that the manholes are opened and are adequately ventilated. After it has been well-ventilated, the atmosphere inside the space shall be checked for the presence of any explosive mixture, toxic gas, or oxygen deficiency. The workers shall be allowed to get into the manholes under safe working environment only.
- m) The manholes opened shall be cordoned off with suitable railing and provided with warning signals or caution boards to prevent accidents. There shall be proper illumination in the night. All OHS



measures for working in confined space as given in the BOCW shall be ensured. In case of forced ventilation, battery backup for ventilation and measures to rescue workers shall be ensured.

## 24 Occupational Health Management and Medical Facility:

The contractor must provide adequate medical aid and treatment for his employees and workers, including first aid facilities on the job site. The contractor must follow the guidelines in Rule 81 (iv), Schedule VII of the BOCW Central Rules, 1998 for the periodicity of medical examinations of building workers.

### 24.1 Preliminary Medical Examination of Workers:

The Contractors shall at his cost conduct preliminary medical examination of all workers before deploying at site and ensure that the person having defective vision, deafness & tends to giddiness are prohibited from employment. For height work, persons should be subjected to vertigo test and records should be available.

### 24.2 Medical Examination of Operating Staff:

The Contractor shall arrange mandatory medical examination of all plant & machinery operators, vehicles drivers, crane operators & signalers, electricians, and technicians before deploying at work by Medical Officer, which shall include general fitness, mental alertness, vision, hearing, breathing tests and certificates shall be submitted to company in Form XI, Schedule VII and maintain Health Register in Form XII of Rule 223 of BOCW Central Rules.

### 24.3 Medical Examination Record:

The contractor shall keep record of medical examination of every building worker employed by him in a register in Form XII of BOCW Central Rules.

### 24.4 Medical Emergency:

The Contractors individually or collectively shall have official tie-up with the nearest well-equipped hospital for handling any accidental medical emergency at site (with all critical facilities such as X-ray, CT scan, Operation Theatre and ICU is operational condition) and shall be verified physically by contractors safety officer and contractors project manager / in charge. Full time dedicated ambulance should be available any time for emergency transportation. Emergency contact details, Telephone number & address of such hospital shall be prominently displayed. A copy of agreement with hospital shall be furnished to Company

### 24.5 First Aid Centre:

The contractor employing more than 100 workers shall ensure first aid center (ambulance room) at site as per Rule 226, Chapter XXIV, BOCW Central Rules to facilitate immediate relief to the injured person before shifting him to the nearest official hospital. All the provisions of the above-mentioned rules of BOCW Central Rules, viz. medical examination of building workers, duties of qualified Nurse, occupational health center, ambulance room (first aid center), ambulance van or safety vehicle, etc. shall be arranged by the contractor at site.

The articles for first-aid center (ambulance room) with effective communication system shall be arranged by the contractor as per Schedule IV of BOCW Central Rules. The size of the room shall be



adequate for proper treatment of the injured persons and keeping the enlisted articles in an organized manner. The room shall be well ventilated and well illuminated, preferably by natural means. The contractor shall keep a refrigerator of approx. 150 liters capacity for proper storage of injections and temperature sensitive medicines only under custody of medical officer. In case full time medical officer is not deputed then storage of injections and temperature sensitive medicines shall not be permitted.

#### 24.5.1 First-Aid Box:

The Contractor employing less than 100 workers shall provide first-aid box containing bandage, sterilized dressing, ruler bandage, triangular bandage, crape bandage, dry gauge, band aid, antiseptic such as savlon/Dettol, cotton wool, plaster, scissors, antiseptic creams shall be arranged by the contractor, at a readily accessible place in work site. The quantities of the listed items shall conform to Schedule III of BOCW Central Rules. These shall be maintained in good order under the charge of Full-time Medical Nurse or a responsible person in absence of them. Details provided in SCHEDULE III CONTENTS OF A FIRST-AID BOX [RULE 231(B)]

#### 24.5.2 Stretcher:

The contractor shall ensure that sufficient number of stretchers but minimum two are provided in the first aid center and readily available in an emergency (Rule 228 BOCW Central Rules).

#### 24.5.3 Full-time Medical Attendant:

The contractor shall establish the First Aid Centre manned by a full-time qualified male Nurse. The Nurse shall have a degree of B.Sc. in Nursing or equivalent and a minimum 2 years of working experience in any nursing home or general hospital. The contractor shall submit his certificates and credentials to the Company in advance for approval before employing him at site.

#### 24.5.4 Medical Officer:

The contractor shall arrange the visits of medical officer at site and Labour camp at least twice a week and his name, phone number and timing shall be displayed conspicuously, and his duties shall be:

- Medical check-up of workers
- First-aid care including emergency medical treatment
- Medical records upkeep and maintenance
- Immunization services
- Health education including advisory services on family planning, personal hygiene, environmental, sanitation, safety, alcoholism/ drugs/ tobacco habit prevention etc.
- Referral services

## 25 Workmen Habitat / Hutment:

The contractor shall ensure following conditions while planning for respective workmen habitat requirements and no extra will be paid nor alternate arrangement will be done by company:

- a. Contractor shall provide and maintain rest rooms or other suitable alternative accommodation within fifteen days of the commencement of the employment of contract Labour in new establishments as per Contract Labour (Regulation & Abolition) Act, 1970 & Rules 1971
- b. Scheme Drawing of Labour hutment shall be approved by company project manager and company safety in charge.



- c. Accommodation rooms of Labour hutment shall be sufficiently lighted and ventilated and shall be maintained in a clean and comfortable condition.
- d. Accommodation shall be so constructed as to afford adequate protection against heat, wind, rain and shall have smooth, hard and impervious floor surface.
- e. Structure shall be strong enough to withstand load of man & material.
- f. No underground tanks are permitted. tank at ground level is only permitted if appropriate design of water tank is submitted to company project manager and it is approved to ensure the stability of water tank and its operational feasibilities.
- g. No Labour Hutment will be allowed within building area.
- h. Separate Kitchen Facilities shall be provided with at least 03 mtr distance between other adjacent structure and no cooking is allowed inside room.
- i. Inspection of LPG Cylinders shall be carried out by competent authorities.
- j. No sub-standard cylinders (attached burner on top of cylinder) or Kerosene Stove or wooden scrap shall not be permitted for cooking.
- k. All Electrical supply shall be routed through conducting inside or outside hutment.
- l. Only standard electrical figures shall be used inside rooms for fans, charging point etc.
- m. Access to camp shall be security controlled and maintained by full time deployed camp boss.
- n. GI sheet is not allowed for Labour hutment preparation, PPGI Puff panels, block work, containers etc. can be used for the same.
- o. Scavengers shall be engaged for daily cleaning of Toilets, urinals, and hutment area.
- p. Fogging, anti-larva treatment and other sessional disinfectants shall be done by contractors.
- q. It is sole responsibility of contractor to maintain all facilities and services inside workmen habitat without extra cost.
- r. General Facilities required within the camp. Are listed below:
  - i. Fencing from all side – Only gated entry exit.
  - ii. Security post for Access control.
  - iii. Isolated Electrical panels and distribution system.
  - iv. RO Water Station / Plant.
  - v. Sewage treatment plant (STP)
  - vi. Water Arrangements – Drinking and washing.
  - vii. Recreational Facilities / Area
  - viii. Drainage system – at least PCC and flow shall be smooth.
  - ix. Separate Kitchen area with storage area.
  - x. Dedicated washing area (Utensils & Cloths).
  - xi. Dedicated Bathing area.
  - xii. Separate Urinals & Toilets for Male & Female.
  - xiii. Designated area for waste collection point and dust bins.
  - xiv. Smoke detector and alarm system.
  - xv. Emergency assembly points.
  - xvi. Dual emergency exit in case of camp designed multi-layered (above Ground floor)
  - xvii. Isolated quarantine rooms and separate attached toilets & urinals.
  - xviii. Fire Points and appropriate Fire Extinguishers (e.g. Foam in case of Oil fire)
  - xix. First Aid Box

**As per as per Contract Labour (Regulation & Abolition) Act, 1970 & Rules 1971** Liability of principal employer in certain cases **are defined as below:**

(1) If any amenity required to be provided under Section 16, Section 17, Section 18 or Section 19 for the benefit of the contract labour employed in an establishment is not provided by the contractor within the time prescribed therefor, such amenity shall be provided by the company and company project manager shall be responsible to takeover the charge within such time as may be prescribed.



(2) All expenses incurred by the company in providing the amenity will be recovered by the company from the contractor either by deduction from any amount payable to the contractor under any contract or as a debt payable by the contractor.

**26 Welfare and Hygiene:**

The contractor shall ensure sanitation and hygiene at workplace as well as at the Labour Camp for all his workers and staff. He shall submit the plan of Labour colony and Labour toilet in advance for approval of the Project Manager of Company. Labour colony shall be located outside the construction premises.

**26.1 Labour Toilet and Urinals:**

Latrines and urinals, required to be provided, shall be as specified below:

- a. Every latrine shall be under cover partitioned off to secure privacy with proper door and fastenings, adequately lighted, and always maintained in a clean and sanitation condition.
- b. Where both male and female building workers are employed, there shall be displayed outside each block of latrines or urinals a notice containing therein “For Men Only” or “For Women Only” with pictorial sign, written in the language understood by most of such workers. Such notice also bears the figure of a man or of a woman.
- c. The number of urinals and latrines at site and at Labour camp shall be as per following ratio.

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

- d. The contractor shall employ full time sweepers to clean maintain latrines and urinal blocks in clean and hygiene condition. It shall be cleaned at least every day and maintained properly by the contractor throughout the project duration. The privacy of all workers shall be ensured by providing partitions of suitable heights.
- e. Proper disposal of excreta by septic tank and soak pit shall be made by the contractor. In no case, the excreta shall be disposed off in any open drain, nallah, etc. which may cause outbreak of disease or reduce the overall hygiene of the workplace.
- f. The floor area in & around the Labour camp should be of impervious material easy for cleaning & sweeping and water stagnancy is prevented.
- g. Provide adequate urinals conveniently situated & accessible in the high-rise buildings at 5<sup>th</sup> floor & above every after 3 floors.
- h. Daily cleaning and disinfectant treatment of toilets, bathrooms, water tank area, utensil washing area, drainage etc. of Labour camp is must.
- i. Spraying of larva treatment & mosquito fogging shall be weekly or as required by topographical conditions at the cost of contractor.



- j. Whitewash of every latrines/urinal once in every period of four months.
- k. Canteen shall be situated at the distance not less than 15.2 meter away from any latrine/urinal or any source of dust, smoke or fumes and should be equipped with fly catcher. Also waste water from canteen shall be carried away in covered drain.
- l. Arrangements shall be made for the collection & disposal of canteen & Labour camp food waste daily.
- m. Medical examination of canteen food handlers shall be done twice in a year (if applicable).
- n. At site provide & identify lunch shed with drinking water facility& dust bin to prevent eating food in open area & all over the site by workers and unhygienic condition.

### 26.2 Drinking water:

contractor shall provide adequate number of water taps, water purifiers and water coolers for the potable water supply for the staff and workers at his own cost.

- a. Drinking water tanks should be cleaned fortnightly or as required and potability test should be done at every six month (as per IS: 10500) and equipped with appropriate filtration media.
- b. Also ensure that water tank lids are covered or follow directives of local Municipal Corporation, to prevent the larva growth and mosquito breeding etc.

Drinking water shall comply with the requirements given in Tables 1 to 4 of Indian Standard 10500 (2012) specifications. The analysis of pesticide residues given in Table 3 of IS 10500 (2012) shall be conducted by a recognized laboratory using internationally established test method meeting the residue limits as given in Table 5. Drinking water shall also comply with bacteriological requirements (see 4.1), virological requirements (see 4.2) and biological requirements (see 4.3).

### 26.3 Crèche:

The Contractor shall provide crèche at site, if more than 50 female building workers are employed at Company site. The Contractor should make necessary arrangement of crèche for their children under the charge of women trained in the care of children & infants and maintain in sanitary condition and adhere with Section 35 of BOCW Act. The crèche shall ensure safe & adequate accommodation, adequately lighted & ventilated, maintained in clean and sanitary condition etc.

### 26.4 Canteen:

The contractor shall provide and maintain wherein more than 250 workers are employed, a canteen for the use of the workers and adhere with section 37 of BOCW Act.

### 26.5 Shelter:

The Contractor shall arrange suitable weather shelters for lunch and resting of the workers, at a safe distance away from construction activities.

## 27 Monitoring and Reporting

### 27.1 OHS Monitoring:

- a) The contractor shall monitor, measure, and regularly evaluate compliance with objectives & targets of Project OHS Plan, applicable legal requirements, site inspection reports, OHS audits, clients audit etc. He shall recognize the importance of monitoring and reporting of hazards associated with site activities. He shall clearly define the responsibility of his site engineers and safety officer to monitor the unsafe



conditions and unsafe acts regularly to record the observations and to take effective remedial measures in time.

- b) Contractors shall close the observations as per provided time line in observation sheet (in any case it shall not be more than 48 hrs) respective to severity of observations.
- c) The contractor shall not neglect or underestimate the near-misses occurred at site and shall establish a procedure to record & analyze such near-misses since the lessons learnt from them can prevent recurrence of similar or major incidents in future. He shall make available all the legal documents and records as mentioned below, related to OHS for internal as well as external audits from time to time.

**27.2 Incident Reporting:**

- i. The contractor shall have an incident reporting system including near miss in line with Project OHS Plan. The contractor shall immediately notify the Company Project Manager of all accidents to their employees whether employed directly or through sub-contractors or any incidental event involving the visitor, supplier, transporters, customer, or neighboring community resulting in:

<b>Incident</b>	<b>Reporting Time</b>	<b>To</b>
Fatal (Rule 210- BOCW)	Immediately / within 2 hours of incident, by phone, or other faster mode of communication	<ol style="list-style-type: none"> <li>1. Company Project Manager.</li> <li>2. Followed by investigation report within 12 hours</li> </ol>
Reportable Injury disabling workers from working for a period of 48 hours or more (Rule 210- BOCW) and non-reportable but medical treatment injury	Within 4 hours by phone, or other faster mode of communication	<ol style="list-style-type: none"> <li>1. Company Project Manager.</li> <li>2. Followed by investigation report within 72 hours</li> </ol>
Dangerous Occurrence as per Rule 210 (5) – BOCW)	Within 24 hours by phone, or other faster mode of communication	<ol style="list-style-type: none"> <li>1. Company Project Manager.</li> <li>2. Followed by investigation report within 48 hours.</li> </ol>
Fire Incident, Leakage of flammable, toxic gases, and liquids etc.	Immediate/ within 4 hours of incident, by phone, or other faster mode of communication	<ol style="list-style-type: none"> <li>1. Company Project Manager.</li> <li>2. Followed by investigation report within 24 hours.</li> </ol>
Near Miss Incidents	Within 24 hours.	<ol style="list-style-type: none"> <li>1. Company Project Manager.</li> <li>2. Followed by investigation report within 48 hours.</li> </ol>
First aid cases		<ol style="list-style-type: none"> <li>1. Entries in first aid register (prescribed format).</li> <li>2. Submit monthly analysis to company and to joint project OHS committee.</li> </ol>

- ii. The contractor shall submit all incident reports in Form XIV -Rule 210 (7) of BOCW Central Rules to the Company Project Manager as per above time frame.
- iii. It is obligatory on the contractor to submit corrective and preventive plan to prevent such incidents in future and communicate to all concern.
- iv. The Company at site has the right to further investigate any incident by its team and recommend further safety measures to rectify the situation.



- v. The contractor shall maintain up to-date accident register in the prescribed form and shall be available for compliance verification.

### 27.2.1 OHS DWM Activity Planner:

The Safety Officer of Contractor shall chalk out a daily work management in coordination with company safety in charge and perform the activity on time. Planner shall include all OHS activity each month considering various OHS events like training program, mock drills, demonstration, campaigns, inspections, and audit etc. The contractor shall submit a copy of records of OHS activities to the company. This calendar shall be displayed at the site safety office / first-aid center and the contractor shall ensure that these events are conducted as per schedule.

Note: The technological platform provided by company shall be followed by all contractors and no parallel platform shall be acceptable to company, also related resources such as desktop, smart phone, iPad, Wi-Fi connection, adequate personnel etc. shall be provided to contractors without fail. In case of failing to provide the resources or not meeting the smooth flow of process company may provide the resources and deduct the amount from further Bills. Company Project heads decision will be considered as final.

### 27.3 Daily OHS Inspections:

- d) The Safety Officer of Contractor and site engineers shall carry out a walk-through OHS inspection every morning at site to monitor any unsafe conditions and unsafe acts. Every staff shall be involved in site inspection by rotation to create awareness and all-round efforts to proactively identify hazards and prevent incidents. The corrective timely action shall be taken by responsible person. The safety officer shall make a review visit to the place of observation, during next day's walk-through survey, to review whether the corrective actions are taken or not and shall escalate non-conformities to higher authorities / Project Manager in case the corrective measures are not taken.

### 27.4 Internal OHS Audit by Company:

- e) The company safety team will be conducting OHS audits of the site to assess strength & weaknesses of the Contractors safety management system, for which contractor shall devote time & manpower and comply with findings within recommended timeframe.

### 27.5 External OHS Audit:

- f) It is mandatory for the contractor to get done third party OHS audit of entire site once in six months through reputed institute or safety consultant at his time & cost and submit report & action plan to the Project Manager of Company.

### 27.6 Method Statements, Standard Operating Procedures, Checklists etc.

The contractor shall submit method statements, SOP's & checklists for all construction activities and train the staff in usage and all relevant work shall proceed at site as per approved method statements /SOPs only. The method statements / sops shall be risk assessed. The contractor shall ensure that all method statement and SOPs are approved by Company. In the absence of such documents of contractors, it will be obligatory on the contractor to use company's OHS work instructions and checklists as guidelines without any legal or implications of failure on the company.



### 27.7 Ambient Air & Noise Pollution Monitoring:

- g) The Contractor shall conduct ambient air & noise monitoring survey through authorized agency at initial stage of the project and later every six months as per State Pollution Control Board / CPCB Standards and ensure necessary arrangement for control/ elimination of pollution and suppression of dust and noise and adhere with Rule 34, 40, 43, 52 of BOCW Central Rules. Submit copy of report to Company.

### 27.8 Records:

- h) The contractor shall maintain all OHS and first aid / medical related records and registers in the safety office / first aid post at site and such records and reports shall be made available during audits and whenever required. These records and reports shall be updated by safety officer and / or male nurse at site in consultation with their superiors and departmental staff from time to time. A typical list of records under good practices for compliance with legal requirements related to environment, occupational health and safety is given below:
- i. OHS Organization Chart
  - ii. Project OHS Plan
  - iii. OHS induction record
  - iv. Training Records for staff & skilled & semi-skilled workers, supervisors
  - v. Daily pep-talk record
  - vi. OHS event calendar
  - vii. Record of site OHS inspection, walk through survey and observation register
  - viii. Internal & external OHS audits and compliance
  - ix. Accident investigation reports
  - x. Register of Accidents, Near-misses, dangerous occurrences etc.
  - xi. Inventory register of lifting tools, tackles & machines and test and examination certificates of competent person.
  - xii. Inventory register of plant & machineries and inspection logbook
  - xiii. Inspection records of temporary structures like scaffold, staging's, weather sheds, tanks etc.
  - xiv. Inventory register of earth moving & transport vehicles and inspection logbook
  - xv. Standard operating procedure for various site activities
  - xvi. Method statement and risk assessments
  - xvii. Record of work permits
  - xviii. Records of maintaining and testing of firefighting equipment
  - xix. Medical records of workers and staffs (separate register shall be maintained for injury at work and for general ailments and medical checkup for height passes)
  - xx. Site emergency plan
  - xxi. Record of waste disposal
  - xxii. Housekeeping inspection record
  - xxiii. Labour camp sanitation & hygiene up-keep record
  - xxiv. Minutes of Safety Committee meetings.
  - xxv. Monthly OHS reports
  - xxvi. Record of modification carried out in construction equipment
  - xxvii. Preventive maintenance logbook of plant & machineries
  - xxviii. Calibration and testing record
  - xxix. Record of previous audits
  - xxx. Licenses, consents, test & examination certificates etc. under applicable legal requirements
  - xxxi. Safety day celebration and appreciation scheme records
  - xxxii. Health & hygiene management plan



## 28 Training and Awareness:

The contractor shall prepare & submit Annual Training Calendar as part of Project OHS Plan or separately and train and build up a general awareness in OHS among the workers and staffs as a continuous effort throughout the project duration. He shall develop and nurture a good OHS culture among the staff and workers for an incident free completion of the project.

The contractor shall arrange for celebration of National Safety Day, world environment day, fire services day, road safety week etc. every year and shall plan for conducting various OHS events, competitions, etc. during this period. He shall identify good safety performers among different trades of workers and staff and shall acknowledge their performance to motivate the others.

### 28.1 OHS training calendar:

The Safety Officer of Contractor shall chalk out a OHS activity calendar each month for various OHS events, training program, mock drills etc. based on Training need identification in coordination with company safety in charge and shall intimate the concerned people in advance. The contractor shall submit a copy of OHS event calendar to the company. This calendar shall be displayed at the site safety office / first-aid center and the contractor shall ensure that these events are conducted as per schedule.

### 28.2 OHS Induction Training:

It is mandatory that the contractor shall impart OHS induction training to his each & every staff and worker before reporting at place of work. The contractor shall develop a suitable dedicated OHS induction room equipped with audio-visual and OHS film screening facility, display OHS policy, OHS rules and instructions in local language understood by workers in the induction facility. The safety officer of contractor shall impart training to workers, which should cover probable hazards related to the work and shall explain & demonstrate use of PPEs, fire extinguishers, double lanyard full body safety harness, safety nets, fall protection safety measures, emergency plan & assembly point. The medium of instructions shall be chosen depending on the language understood by most of the workers. The duration of such induction training depends on the type of worker and shall be decided by the Safety Officer in consultation with company.

### 28.3 SMAART / Mass Toolbox talk training:

With every specific permit, the work in charge of contractor shall also conduct daily SMARRT training to all workforces before start of job. OHS pep talks / toolbox training for various teams of workers on weekly basis at work-place locations. He shall arrange pep talks / toolbox training on work related topics and shall solicit active participation of workers and site engineers in mass toolbox training and record shall be maintain and submit to company on monthly basis.

## 29 Display management - Signboards, Posters etc.

- a. The contractor shall display adequate numbers of signboards (preferred written / painted in photo-luminescent paint) at various workplaces, movement area of mechanical equipment, diesel store, scaffoldings, first aid post, etc. to warn the workers and staff of probable hazards at work site. Such signboards shall be written in the language understood by majority of the workers.
- b. The contractor shall also arrange for display of posters as an awareness building program.
- c. He shall have to maintain these signboards and posters in good condition throughout the contract period and shall have to replace them periodically.
- d. Put-up OHS Park with display of all PPE and donning instructions.



- e. Some of the important topics for signboards are given as under for guidance; however, work specific sign boards can be designed and displayed at site.
- OHS Policy in Hindi, English and Local Language shall be displayed in prominent locations (Office area, Entry / Exit points for workforce, Induction room, Assembly points)
  - OHS Statistics Board shall be installed and maintained in safety office area.
  - Revise & updated Emergency Contact numbers across projects.
  - Area allocated to contractors for material stacking and working shall be demarcated using caution tape, barrication and name of contractors responsible to maintain the area.
  - List of First Aider & Fire Fighters covering round the clock coverage.
  - Personal Protective Equipment (PPE) pictorial signs viz. Safety helmet, safety shoes, safety Harness, safety goggles, face shield, ear plug / earmuff, gloves, dust respirators, etc.
  - Regulatory Signs. There are several types of OHS signs available and out of which few are mandatory.
  - Display and awareness on Prohibition Signs, Mandatory Signs, Danger Signs, Warning Signs, Fire Safety Signs, Emergency Signs, General Information Signs. Few examples of signages are listed below:
    - Work in progress – Road diversion, Deep Excavation, Height work, Hot work activity, Confined Space, Fabrication work, Welding, Gas cutting, Grinding, Dismantling / demolition work in progress, Fragile roofs work etc.
    - Directions for Exit & Assembly points
    - Man & Material pathways
    - Unauthorized entry prohibited or Authorized entry only
    - Flammable storage area
    - Vehicle speed limit
    - No Smoking / Smoking booth
    - Electrical danger & Shock First aid
    - High voltage equipment's & High-tension line area
    - Distribution panels and Single line diagram (SLD)
    - Drinking water / Toilets (Male & Female) / Rest room
    - Cooking area / Dish wash area
    - High noise level
    - Fire extinguisher & Its operation (PASS) process
    - Good to use inspection tags / stickers
    - Authorized personnel's operation only
    - SWL of Lifting equipment's/ Tools & Tackles / Hoists/ Material baskets etc.

## 30 OHS Performance:

### 30.1 Performance Monitoring:

Compliance with the company's Contractual OHS requirements and OHS Manual is important to the company and an obligation on the contractor. Contractors should be aware that any OHS violations will be taken seriously by the company. The Company has a right to order stoppage of work till rectification is carried out to the satisfaction of the company project manager and safety engineer or safe arrangements are made for the execution of work and all stoppages on this account will be at the entire risk, costs, and consequences of the contractor.

The contractor's OHS performance will be monitored on a routine basis, and feedback will be given to improve within the timeframe specified through observations sheets, Meetings, emails etc. The contractor



shall arrange the necessary resources in terms of Man & Material to ensure the smooth functioning of technologies and platforms adopted by the company.

**31 Reward and Penalty for OHS Violations:**

**31.1 Reward & Recognition**

As a OHS-conscious company, we would like to recognize the contractors' consistent efforts to ensure the OHS of people and the project. Such contractors will be rewarded accordingly and recognized.

The objective is to ensured safe execution and completion of project without loss of a single man hour, which is highly important to eliminate the work disruption, loss of progress, financial burden on the project, legal complications etc. and will certainly increase the moral high of the contractors and down the line their workers and staff. Therefore, as a proactive approach we are setting following milestones for the contractor. The contractor who delivers on OHS without violations to company OHS requirements and maintains safe man-hours intact till end of the project will be rewarded with:

On achieving every 01 million safe man-hours without reportable LTI (Loss Time Injury -incident involving injured person away from work more than 48hrs (as per BOCW Requirement) will be rewarded with Rupees 0.10 per safe man hours worked in next RA Bill and safe man-hours appreciation certificate by the company project manager. In case of happening of LTI the amount paid will be recovered unconditional from next RA bill. The above condition will be applicable for consistence performance and closure of all recorded OHS violations within 48hrs.

**31.2 Penalty against occurrences of Accident / Incident at site:**

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

Sr. No.	Nature of Incident	Penalty
1.	Fire incident	Rs. 10,000/- minimum and max as per investigation and severity potential
2.	Leakages / spillages of flammable or toxic gas & liquids	Rs. 10,000/- per incident
3.	Medical treatment case	Rs. 5,000/- minimum and max as per investigation and severity potential
4.	Dangerous Occurrence with grave potential as defined in BOCW Rules	Rs. 10, 000/-
5.	Lost time reportable incident	Rs. 50,000/- minimum and max as per investigation and severity potential
6.	Fatality/ disability	Heavy Penalty shall be levied based on the investigation by Company team and shall not be less than 2,00,000/- per accident.



31.3 Penalty against non-Fulfilment of Company OHS Requirements

The contractor is required to comply with all the requirements laid down in the Contractual OHS Rules and Regulation and Guidelines of the company, and any other OHS requirements as a matter of general judiciousness. Upon failure to comply with any of these, Project Manager of company is authorized to impose penalty on the contractor as per the details below. Upon observing any of the below non-compliances, the Project Manager/ Safety In charge / its designated representative shall serve a written notice listing the non-compliance, estimated penalty and corrective action due date. The penalty shall be deducted from Contractor’s next running bill, until the Contractor not completely rectifies the situation by the due date and contractor risks dismissal from the site.

**Gravity of the violations & associated penalties:**

31.3.1 System Requirements Violations

***Consequence: Any non-compliance of these will lead to the penalty of Rs. 10,000/- per violation per day in addition to the possible stoppage of job till rectification.***

1. Failure to attend the Joint Project OHS Committee meeting
2. No permits have been approved, and work has begun.
3. Failure to provide OHS infrastructure or medical facilities on-site in accordance with the COMPANY OHS management system.
4. Failure to submit the OHS plan for approval
5. Safety resources were not deployed in accordance with contract requirements.
6. Failure to report on-site incidents to the company project manager

31.3.2 Serious Operational Control Requirements Violations

***Consequence: Serious violations and any non-compliance of these will lead to the penalty of Rs. 5,000/- Per violation per day in addition to the possible stoppage of job till rectification.***

1. Safety resources were not deployed in accordance with contract requirements.
2. Unprotected cut-outs and shafts
3. Permit work to be done without ensuring the requirements.
4. The absence of approved HIRA for the activity.
5. Working at heights without proper safety equipment, such as a double lanyard full body safety harness, as well as proper tie-offs and lifelines.
6. Presence of unauthorized individuals on the premises without fulfilling entry process and submission of required documents.
7. Using passenger hoists and builders' hoists without a lock and key gate on the loading and landing floors.
8. Using electrical appliances without an RCCB/ELCB.
9. Working at a height without a peripheral safety catch net or vertical safety net.
10. Using lifting tools and tackles without a valid TPI or certificate from a competent person.
11. Dumping debris from heights in buildings
12. Violation while working on Rope suspended platform (RSP)

31.3.3 Other Operational control Requirements Violations

***Consequence: Any violation of these will lead to a fine of Rs. 500/- per violation per day.***

1. Adherence of substandard PPE to worker.
2. Workers engaged in work who have not received a OHS induction



3. Working area is not demarcated, and contractor's details not displayed.
4. Lack of adequate and sanitary facilities for respective workers.
5. Obstructed walkways and passageways in workplace.
6. Untrained workers who work without having received OHS training.
7. Workers who work without having authorized ID cards.
8. A-Frame stands not available for marble or granite stacking.
9. The absence of a first aider or first-aid kit.
10. No emergency phone numbers displayed.
11. Incorrect type of fire extinguishers installed.
12. Absence of fire extinguishers.
13. Substandard PPE provided at site.
14. Failure in providing guards to safeguard the equipment.
15. Scaffolding erected does not comply with the checklist requirement.
16. Failure to properly ground equipment.
17. Working at a height without a height pass or a vertigo test.
18. Using a faulty or dangerous ladder or stool or working platform.
19. Inadequate or non-existent shoring of adjacent structures during excavation.
20. Excavation material or equipment is too close to the excavation's edge.
21. Man & Machinery movement pathway are not defined.
22. Improper electric connection and cable routing on the ground.
23. Taking unauthorized electrical connections.
24. Using electric hand tools and machines without sound earthing.
25. Non-use of DA cylinders for gas cutting activity.
26. Improper storage and handling of DA & Oxygen.
27. Non-adherence of Labour hutment & separate cooking facility.
28. Non-availability of Camp boss.
29. Use of incorrect methodology rather than the available method statement
30. Non-availability of trained Fire fighter / First aider / Scaffolders / electrician.
31. Failure to verify equipment prior to performing hoisting operations.

### 31.3.4 Violations to Legal requirements or non-submission of supporting documents:

In addition to above, in case of failure and/ or non-compliance of the applicable BOCW Act & Rules, Labour laws & other Statutory Compliances and OHS requirements of the Company by the contractor in terms of the contract without prejudice to its other rights, the Company shall be entitled to retain 1% towards violations to OHS statutes and Labour compliances and minimum 2% towards negligence to the company housekeeping standard from the monthly RA Bill. The contractor hereby note that no prior notice shall be required to be given by the company before retaining the said amount and get the situation rectified by engaging another agency. If the contractor fails to provide the required compliance evidence and documents to the satisfaction of the company before raising the next RA Bill, the company reserves the right to forfeit the said amount.

### 31.4 Disciplinary action:

Noncompliance of the Contractual OHS requirements and guidelines of the company requirements will result in disciplinary action as per the procedure below:

- First time violations: Written warning by the Project Manager or representative contractor



- Second violations: Imposition of penalty as deemed fit by Project Manager of Company as per degree of violations (referred below).
- Frequent Violations and No Improvement with life threatening situation: Removal of contractors defaulting staffs or contracting firm itself from site as deemed fit by the CPO of the company.

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

### 32 Update, Revision, Change or Modification in Company Requirements

The Company reserves the right to issue additional OHS requirements as and when required particularly under exceptional hazardous working conditions, the new generation plant & machineries, change of operational conditions/ methods, construction of high-rise towers, location & neighboring constraints of construction site etc. and same shall be binding on the contractor to adhere and ensure additional safety precautions for safety of people and property at his time and cost.

### 33 Mitigation Plan in case of Demobilisation or Termination / Descope of contractor

The Company reserves the right to keep the materials provided by the contractor to ensure that no area is left unsafe as a result of the contractor's demobilization or termination or descope or resulting in a situation of arising potential fall of man or material, lack of medical facilities, training & awareness facilities or any other OHS related infrastructures etc.

If the contractor fails or refuses to fulfill, the company reserves the right to settle the amount as actuals from the contractor's full and final settlement.



**Annexure-I: Acknowledgement of OHS requirements by contractor**

(Signed Copy of the Annexure-I shall be obtained by contractors before site mobilization)

I, \_\_\_\_\_ (Name)  
\_\_\_\_\_ (Designation) of  
\_\_\_\_\_ (Company) being a  
Contractor for the project at \_\_\_\_\_, do hereby confirm  
that I have been briefed by the Project Manager/Safety Officer on Safety Rules & Regulations. I fully  
understand the requirements and agree to abide by the rules & regulations while deploying our workers at  
the site. Any contravention of the rules and regulations and incident at project on our part shall render us,  
\_\_\_\_\_ (Company) fully  
accountable to all the consequences.

I confirm that I am a Director/ Authorized and appointed representative of the Company.

My contract value for this project is Rs. \_\_\_\_\_ Crores / Lakhs. The Contract period is from  
\_\_\_\_\_ to \_\_\_\_\_. My peak Labour force is estimated to be  
\_\_\_\_\_ people and they are expected to stay inside/outside of the site compound.

\_\_\_\_\_

Signed by:  
**Contractor Director / Authorized Signatory,**

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Contact No: \_\_\_\_\_

Witnessed by:  
**Company /Project Manager / Head**

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Contact No.: \_\_\_\_\_



**Annexure-II: Contractor’s declaration form on the usage of hazardous substances and chemical at site**

**PROJECT SITE:** \_\_\_\_\_.

I \_\_\_\_\_

Designation \_\_\_\_\_

Of \_\_\_\_\_ (Company) being the Contractor of the above construction site, hereby declare that I have checked and confirm which are the hazardous substances and chemical is being used or handled at above site and its safety operational procedures.

I understand that if any hazardous substances/chemicals are used, then the MSDS / guidelines of the chemical shall be complied with. I agree to submit list of all such hazardous substances/chemicals along with MSDS/ guidelines to the Company before such materials are deployed for use at site. Attached is the hazardous substances/ chemical composition and safety operational procedure.

\_\_\_\_\_

**Contractor Project Manager / Authorized Signatory,**

**Date and Company Stamp**



**Annexure-III: Project OHS Plan of the Contractor- Prescribed Contents**

*(Note: - The safety plan should be prepared in line with the contract safety requirements by contractor and submit to COMPANY for approval)*

PROJECT OHS PLAN OF CONTRACTOR M/S. ....													
Sr. No.	Required Contents												
1	<p><b>Introduction</b> Project Highlights,</p> <ul style="list-style-type: none"> <li>• Name of Project</li> <li>• Location</li> <li>• Client</li> <li>• Sub-Contractor</li> <li>• Start Date of Project</li> <li>• Period of the Project</li> <li>• Scope of work</li> <li>• Project cost</li> </ul>												
2	<p><b>EHS Objectives &amp; Targets for Project</b> EHS Objectives &amp; Targets agreed between client organization &amp; contracting organization should be clearly described For Example:</p> <table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 60%;">Objectives</th> <th style="width: 40%;">Target</th> </tr> </thead> <tbody> <tr> <td>Objective-01</td> <td></td> </tr> <tr> <td>Objective-02</td> <td></td> </tr> <tr> <td>Objective-03</td> <td></td> </tr> <tr> <td>Objective-04</td> <td></td> </tr> <tr> <td>Objective-05</td> <td></td> </tr> </tbody> </table> <p><b>Note:</b> Contractor may include appropriate objectives and targets as per their company policy.</p>	Objectives	Target	Objective-01		Objective-02		Objective-03		Objective-04		Objective-05	
Objectives	Target												
Objective-01													
Objective-02													
Objective-03													
Objective-04													
Objective-05													
3	<p><b>Proactive, Planning &amp; Preparedness:</b> Project Logistic Plan: Mentioning Emergency Assembly Points, Fire Points, Store, First-aid center, Induction center, Canteen, Rest rooms, Drinking water point, Sanitation facility, Tower crane, batching plant etc.... as per applicability to respective package.</p>												
4	<p><b>OHS Policy, SOPs &amp; Method statements for Construction Activities</b></p> <ol style="list-style-type: none"> <li>1. Submit Signed valid OHS Policy</li> <li>2. List of activities respective to Package</li> <li>3. Method statement for the activity</li> <li>4. SOPs</li> </ol>												
5	Definitions & Abbreviations												
6	<p><b>OHS Organization:</b></p> <ul style="list-style-type: none"> <li>• Safety resources qualification &amp; competency approval – Credential submission and approval</li> <li>• Site Organogram including OHS Organization</li> <li>• Corporate safety organogram (if any)</li> </ul>												
7	<b>Role &amp; Responsibility:</b>												



	<ul style="list-style-type: none"> <li>• <b>Project Manager:</b> Overall Responsibility of OHS Implementation on ground. Provide all resources to the team to ensure the OHS implementation is in place. Monitor the OHS performance by regular OHS walkdowns, Chairing safety Committee meetings. Project Manager is accountable to assign the responsibility to relevant person in coordination with Safety professional if any position is not available or not applicable. Adherence to contract OHS requirements shared in tender documents.</li> <li>• <b>Construction Manager / Tower or Area In-charge:</b> Submission of credential to company for approval. Provide all resources (Man &amp; Material) to ensure the OHS Requirements. Active participation &amp; Involvement in OHS activities. Compliance of all OHS findings within 24 hrs.</li> <li>• <b>Site Engineer:</b> Ensure all workmen are inducted and followed the entry process, Verify the area before work start, ensure all workmen are adhering the applicable personnel protective equipment's, Follow the Permit to work system rigorously. Comply the OHS findings within 24 hrs. Arrange and provide resources to Supervisors for implementation.</li> <li>• <b>Supervisors:</b> Physically Verify the area is safe to work. Toolbox Talk or SMARRT briefing etc.</li> <li>• <b>Location Safety In charge:</b> Ensure the system is in place, understood to the team and being implemented on ground. If found any deviation it shall be raised in prescribed formats, take follow-up and ensure it is compiled within 48 hrs. Consult and Involve different levels in OHS activities. Maintain the documents and timely submission of all reports to the company. Reporting Near misses incidents &amp; accidents and carryout detailed investigations. Submission of monthly information system.</li> <li>• <b>Corporate / Regional / Cluster Safety in charge:</b> Self-assessment of workplace safety along with company location OHS In charge at least on monthly basis and submit the assessment report to company followed by compliance status to company location OHS In charge within a week time.</li> <li>• <b>Admin In-charge or Personnel Manager:</b> Plan and submit the Labour compliance to company, Plan and ensure Labour accommodations and welfare facility as per requirement. Provide resources to ensure the monthly OHS activities are being carried out.</li> <li>• <b>Store In-charge:</b> Take concurrence from the safety team before placing any procurement order pertaining to P&amp;M equipment, PPE, Safety Nets etc. and maintain 20% stock of PPE.</li> <li>• <b>MEP In-charge:</b> Ensure the Temporary electrical system is planned and fulfilling the OHS requirements on ground. Ensure the licensed electrician</li> <li>• <b>Plant &amp; Machinery In-charge:</b> Take concurrence from the safety team before placing any procurement order pertaining to Plant &amp; Machinery equipment, Electrical Panels, etc., ensure the pre-inspection of equipment &amp; machinery before entry and schedule preventive maintenance of equipment's, provide fitness certificate, deployment of competent operators &amp; drivers, and routine inspections</li> <li>• <b>Security:</b> Plan &amp; maintain the entry exit process, workmen's frisking, ensure the restricted access by authorized personnel, report any unsafe acts witness during site round, adherence to material management and record keeping, report if witness any horseplay or mental / abnormality in behavior of any workmen.</li> <li>• <b>Labour camp boss:</b> Plan and Maintain the Labour hutment as per company requirement, establish adequate facility to ensure the neat and clean welfare facility, First Aid facility etc.</li> </ul>
<p>8</p>	<p><b>Project EHS Committee</b></p> <ul style="list-style-type: none"> <li>• Formation of Project EHS Committee</li> <li>• Agenda</li> <li>• Workers and sub-contractors' participation in committee</li> </ul>
<p>9</p>	<p><b>Safety Budget for OHS Operation &amp; Implementation</b></p> <ul style="list-style-type: none"> <li>• Safety Consumable items</li> <li>• Celebration of special days / weeks</li> <li>• External Awards nominations fees / charges</li> <li>• Non-consumable items</li> <li>• Fire protection items</li> <li>• Safety infra</li> </ul>



	<ul style="list-style-type: none"> <li>• Awareness Programs</li> <li>• Motivational programs</li> <li>• Miscellaneous</li> </ul>
<b>10</b>	<p><b>Occupational Health center:</b></p> <ul style="list-style-type: none"> <li>• Full-time male nurse as per BOCW and contractual requirement.</li> <li>• Ambulance &amp; Driver</li> <li>• Doctor visits for pre-medical fitness certificate:</li> <li>• Tie-up with Hospital (having all advance facility inhouse)</li> <li>• Bio-medical waste disposal</li> <li>• Record keeping and audit assurance</li> <li>• pre-employment and periodic medical examination.</li> <li>• Stretcher provision (minimum two)</li> </ul>
<b>11</b>	<p><b>Occupational Health &amp; Safety Infrastructure:</b></p> <ul style="list-style-type: none"> <li>• Induction Room – Room, Audio Visual arrangement</li> <li>• Safety Park – PPE Display</li> <li>• Vertigo test platform</li> <li>• Scaffold mock-up.</li> <li>• Entry / Exit Gate setup</li> <li>• Isolated access way for Man &amp; Machinery</li> </ul> <p><b>Logistic Infra:</b> Fencing / boundary, Security check posts, Canteen, Rest Rooms, Material store, Fuel storages, Drinking water, Lavatories, Labour Hutment (As per logistics plan)</p>
<b>12</b>	<p><b>OHS Legal Requirements</b></p> <ul style="list-style-type: none"> <li>• Identification of applicable legal &amp; other requirements</li> <li>• Legal Register – Quarterly Audit &amp; Update</li> <li>• Contract OHS Requirements (attach an annexure to Project OHS Plan)</li> <li>• Submission of OHS returns to authorities</li> </ul>
<b>13</b>	<p><b>Hazard Identification &amp; Risk Assessment (HIRA), Communication &amp; Deployment of controls</b></p> <ul style="list-style-type: none"> <li>• Name of activity pertaining to respective package</li> <li>• Risk assessment team</li> <li>• Identification of activities, hazards and sub-hazards</li> <li>• Legal applicability and Risk Assessment Matrix</li> <li>• HIRA approval hierarchy</li> <li>• Control measures pertaining to every hazard</li> <li>• Severity rating</li> <li>• Probability rating</li> <li>• Assessment of Risk Rating and tolerance limit</li> </ul> <p>Note: The final approval for HIRA is mandatory from Company</p>
<b>14</b>	<p><b>List of Activities and Method Statements and Generic risk assessment</b></p> <ul style="list-style-type: none"> <li>• Approval of Method Statement</li> <li>• Approval of HIRA</li> </ul>
<b>15</b>	<p><b>Environment Aspect Identification, Communication &amp; Deployment of controls</b></p> <ul style="list-style-type: none"> <li>• Identification of Environmental Aspects and determining Impacts</li> <li>• Communication of Environmental Aspects and Impacts</li> <li>• Determining &amp; deploying controls (engineering, administrative &amp; personal)</li> </ul>
<b>16</b>	<p><b>Work Permit System</b></p> <ul style="list-style-type: none"> <li>• Purpose</li> <li>• Permit approval flow chart</li> </ul>



	<ul style="list-style-type: none"> <li>• Identification of activities for permit applications</li> <li>• Permit Formats : Own System or Company System is being followed</li> </ul> <p><b>Note:</b> The final permit approval authority is company (Refer SOP on permit to work system of COMPANY)</p>
<b>17</b>	<p><b>Fire Safety at site and Labour camp</b></p> <ul style="list-style-type: none"> <li>• Identification of fire prone area and calculation of Fire Load</li> <li>• Fire Preventive measures</li> <li>• Fire Protection Measures</li> <li>• Hot work control measures</li> <li>• Training &amp; Mock drill</li> </ul>
<b>18</b>	<p><b>Environmental Monitoring</b></p> <ul style="list-style-type: none"> <li>• Ambient Air Quality,</li> <li>• DG Stacks emission Quality</li> <li>• Water Quality (Ambient water and Portable water),</li> <li>• Noise Monitoring</li> <li>• Lux monitoring (Illumination etc.)</li> </ul>
<b>19</b>	<p><b>General Controls</b></p> <ul style="list-style-type: none"> <li>• Access controls - Prevention of unauthorized entry &amp; working</li> <li>• Housekeeping - Plan</li> <li>• Smoking (Only in designated area) and alcohol Prohibition</li> <li>• Debris collection and disposal</li> <li>• Sanitation &amp; Hygiene for respective workers</li> <li>• Traffic Management</li> </ul>
<b>20</b>	<p><b>General Safety Rules &amp; Regulation</b></p> <ol style="list-style-type: none"> <li>1. Do's &amp; Don't (Occupational Health &amp; Safety instructions) display pertaining to respective package</li> <li>2. Safety Signage's display</li> <li>3. Worker &amp; Visitor safety I-Card</li> <li>4. Labour Insurance</li> <li>5. Monthly Safety activity Planner for contractor</li> <li>6. Safety Inspection &amp; audit Schedule</li> <li>7. Portable Power Tools Inventory &amp; Inspection record</li> <li>8. Vehicle / equipment's Safety (Inside &amp; Outside Project) Inventory &amp; Inspection record</li> <li>9. Hazardous &amp; flammable material safety [Gas cylinders (LPG; DA; Acetylene)/Oil/Fuel/Paint &amp; other lubricant] Inventory &amp; Inspection record</li> <li>10. Pre-Inspection, testing; maintenance &amp; certification of Tower crane / Mobile crane / Material Hoist / Passenger Hoist / Gondola / floor Mounted crane / lifting tools &amp; tackles / Batching Plant &amp; other major Plant &amp; Machinery.</li> <li>11. Operator of a crane, winch or other lifting appliance, transport equipment or vehicle, signal man, technician safety and competency</li> <li>12. Temporary structure scheme submittal approval from competent structure engineer</li> <li>13. Material Safety Data Sheet</li> <li>14. Machine guarding closure of rotating parts</li> <li>15. Plant &amp; Machinery preventive maintenance plan and maintenance record</li> <li>16. Numbering and marking of floors / levels</li> </ol>
<b>21</b>	<p><b>Incident Investigation, Reporting Protocol &amp; Communication.</b></p> <ul style="list-style-type: none"> <li>• Incident/Accident Recording, Reporting, Analyzing, and implementing controls</li> <li>• Preparation of CAPA and related training</li> <li>• CAPA implementation</li> <li>• HIRA Review</li> </ul>
<b>22</b>	<p><b>OHS Training</b></p>







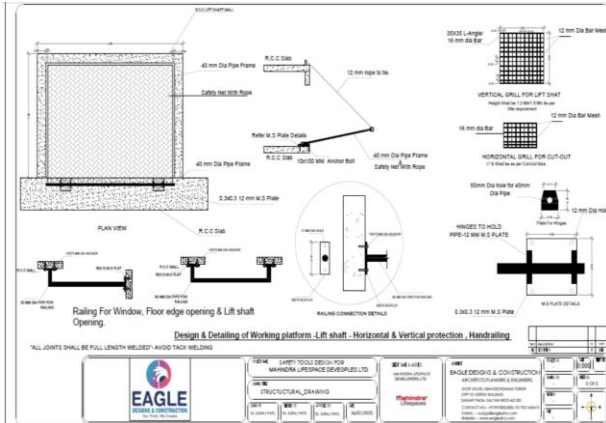
	<ul style="list-style-type: none"> <li>• Training set-up &amp; training aid</li> <li>• Mechanism of identifying Training Needs and imparting training</li> <li>• Safety Training (Induction/Daily PEP TALK/ Job Specific/General/Training/Special Training)</li> <li>• Training Calendar &amp; Training Matrix (Trade wise)– deciding contents &amp; selecting trainers</li> </ul>
<b>23</b>	<p><b>Labour Hutment Management</b></p> <ul style="list-style-type: none"> <li>• Scheme of Hutment shall be submitted for approval by company project manager</li> <li>• Toilets &amp; Urinal facility as per norms</li> <li>• Drinking water facility and cleaning frequency</li> <li>• Inside and outside area illumination facility</li> <li>• Electric supply &amp; safety of the temporary supply</li> <li>• Separate cooking area (at least 3mtr) away from living area</li> <li>• Washing and bathing facility at least 3mtr away from living area.</li> <li>• Fire points and other firefighting arrangement</li> <li>• First aid arrangement</li> <li>• Disinfectant, fogging, anti-larva frequency</li> <li>• Crèche (if applicable)</li> <li>• Recreational Facility</li> <li>• Full time Camp boss availability</li> <li>• Full time Scavengers</li> <li>• Full time Security guards</li> <li>• Do’s &amp; don’ts display and gender etc. pictorial signage</li> </ul>
<b>24</b>	<p><b>OHS Performance – Review</b></p> <ul style="list-style-type: none"> <li>• OHS Performance Indicators, Monitoring &amp; Reporting to company corporate office and location</li> <li>• OHS Audit Schedule (Internal-regional / corporate resource) OR External approved Third Party Audit)</li> <li>• OHS review – Self assessment</li> </ul>
<b>25</b>	<p><b>Reward &amp; Recognition of workers &amp; staff</b></p> <ul style="list-style-type: none"> <li>• OHS Awareness program for workers &amp; staffs and its frequency</li> </ul>
<b>26</b>	<p><b>Personal Protective Equipment’s</b></p> <ul style="list-style-type: none"> <li>• PPE identification &amp; selection as per function, hazard, usage &amp; Indian Standard</li> <li>• PPE reference matrix</li> <li>• PPE stock (minimum 20%)</li> <li>• PPE issue, training, its usage &amp; maintenance</li> </ul>
<b>27</b>	<p><b>OHS Inspection check list, Formats &amp; Reports</b></p> <ul style="list-style-type: none"> <li>• Submit the Checklists &amp; Formats for approval</li> <li>• Submit the reports for documentation and record keeping.</li> </ul>
<b>28</b>	<p><b>Emergency Preparedness Plan</b></p> <ul style="list-style-type: none"> <li>• Objective</li> <li>• Identification of Emergencies and possible scenarios</li> <li>• Role &amp; Responsibilities of Emergency Control Team/Evacuation Team/Administration Team/Medical Help Team &amp; other teams</li> <li>• Assembly locations, fire point, exit route and display etc....</li> <li>• Alarming the Emergency Situation &amp; Clearing off Emergency</li> <li>• Mock drill frequency</li> <li>• Mock drill observation format</li> <li>• Sharing / communication of outcome/ learning from the mock dill and preventive action plan.</li> </ul>
<b>29</b>	Other Information relevant to project specific OHS Plan

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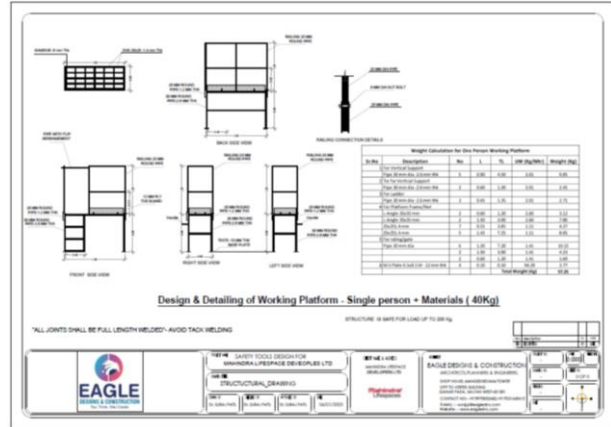


Annexure-IV: Detailing of the Working platform, Lift shaft closure, Handrailing & Catch net:

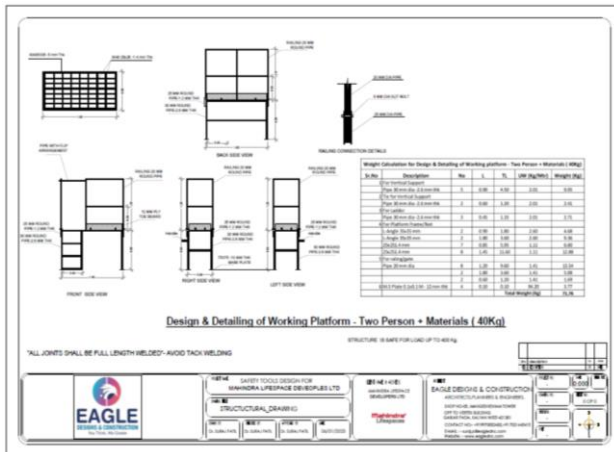
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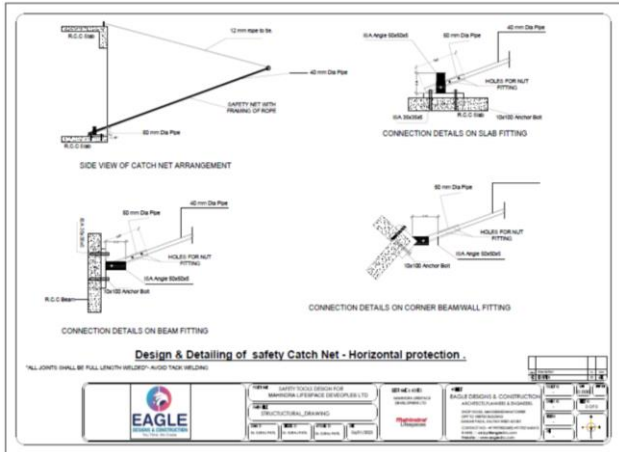
Scheme for Lift Shaft Horizontal, Vertical Closure and Hand railing for floor edges, Windows etc.



Scheme for working Platform for single person usage



Scheme for working Platform for single person usage



Scheme for Safety catch net installation



Annexure-V: Pictorial indicatives on Good Safety Practices at ongoing projects:


Photo / Figure Nos.	Representative Photographs/ sketches		
<p>Fig No. 1: Excavation Barricade</p>	 <p>Good Practice from Mahindra P21</p>	 <p>Good Practice from Mahindra Nestalgia</p>	 <p>Good Practice from Mahindra Luminare</p>
<p>Fig. No. 2: Safety nets Fall prevention system</p>	<div style="text-align: center;"> <h3>HORIZONTAL NETTING SYSTEM</h3>  </div> <div style="text-align: center;"> <h3>VERTICAL NETTING SYSTEM</h3>  </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;">  <p>Catch Nets</p> </div> <div style="text-align: center;">  <p>Active floor netting</p> </div> <div style="text-align: center;">  <p>Vertical Nets</p> </div> </div>		



Fig no 3:  
Debris Management and ensuring Housekeeping at workplace

### Debris Management to prevent fall from height

- Good practice is to plan for "housekeeping Pause" 2 to 3 hrs. to keep once a week for the site orderly.
- A debris chute or other appropriate means for safe debris removal must be installed in buildings with five or more floors. It is prohibited to drop debris from a height.
- The Contractor shall have a dedicated & sufficient housekeeping team as per the project size but not less than 5% of total work-strength and should be specially identified as "housekeeping" person by their reflecting jackets (recommended "yellow" colour jacket with reflective bands).
- Materials shall be stacked at least 1 mtr away from openings, roof edges, excavations, or trenches.



Good Practice from Mahindra Windchimes

Good Practice from Mahindra Happinest @ WMC P21

Fig No. 4:  
Standard scaffolding and working platforms

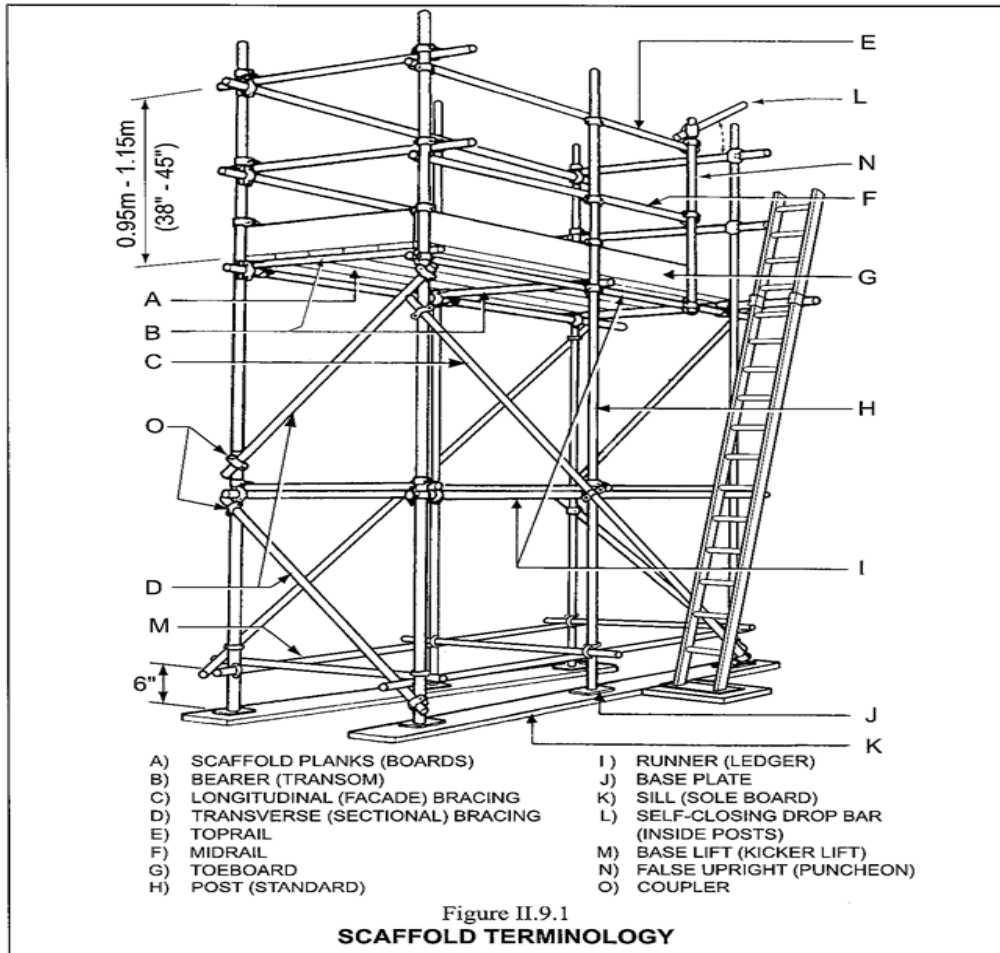


Fig No 5:  
Standard and mobile Scaffolding



Fig No 6:  
Floor mounted Working Platform and Ladder safety

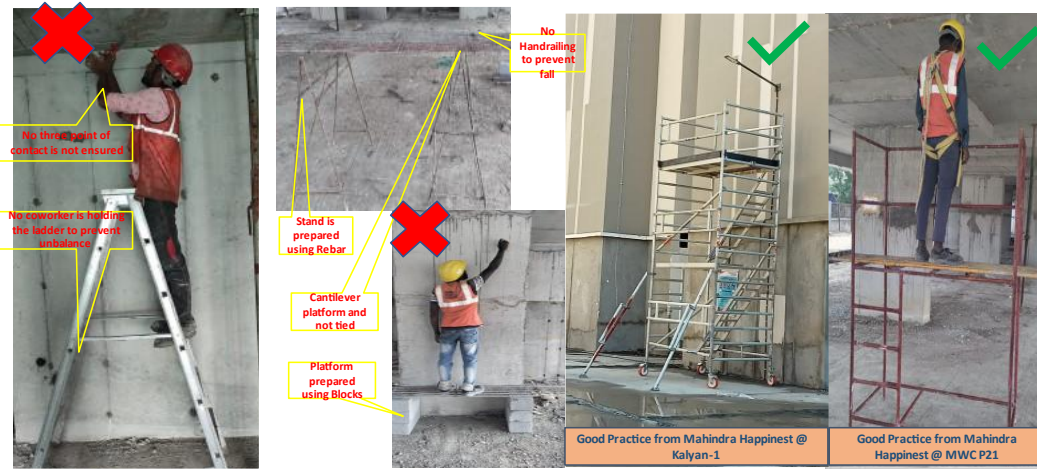


Fig No. 7:  
Gas cylinder handling and storage



<p>Fig No 8: Occupational Health &amp; Medical Facilities</p>	 <p style="display: flex; justify-content: space-around;"> <span>Doctors Visit</span> <span>Full time certified Nurse</span> <span>Full time Ambulance with Driver</span> </p>
<p>Fig No 9: Labour Hutment and its requirements</p>	<ol style="list-style-type: none"> <li>1. Labor camp adjacent to site</li> <li>2. Living rooms with bedding facility</li> <li>3. Dedicated Camp Boss and Security for the camp</li> <li>4. Fire Hydrant System provision</li> <li>5. RO water facility</li> <li>6. Recreation Facility</li> <li>7. Separate cooking facility</li> <li>8. Dedicated housekeeping staff</li> <li>9. Adequate no's of Toilet &amp; urinals</li> <li>10. Separate dining area with seating arrangement</li> <li>11. Separate utensil cleaning arrangement</li> <li>12. Adequate washing and bathing facility</li> <li>13. Weekly ant larva treatment and fogging</li> <li>14. Food waste collection and disposal through BMC</li> <li>15. Monthly water tank cleaning</li> </ol> 
<p>Fig No. 10: Fire extinguisher points</p>	
<p>Fig. No. 11: Access to, building, passenger hoists and overhead protection</p>	



Fig. No. 12:  
Lift shaft Fall Prevention

**Vertical and or horizontal secured MS grill with following specifications:**

- Height of MS grills 1.20 m - 1.50 m (Approx.).
- Width of MS grill: Based on the shaft openings with 4"-6" more at either side for fastening/ securing with side walls/ floor.
- Material of MS grill frame: Outer frame made of 16mm steel rebars or 35mm MS angle and inside mesh of 12mm rebar with spacing not more than 4"-6", properly welded & capable to take minimum 100kgf lateral load.
- All shaft gates shall be in lock-key arrangement and removal shall be by permit.
- MS mesh shall not be made by tying binding wires, welded mesh is must.

Fig. No. 13:  
Hand Railing / Barricade for Floor edges, Cut-outs.

**Specification for floor cut out opening protection :**

Material of MS grill frame: Outer frame made of 16mm steel rebars or 35mm MS angle and inside mesh of 12mm rebar with spacing not more than 4"-6", properly welded & capable to take minimum 100kgf lateral load.

**Hand Railing provision at floor edges**

- Railings made of 40NB MS pipe with top guardrail at 1150 with intermediate guardrail at 550mm and intermittent vertical posts at not more than 3m.
- Railing pipes shall be secured by scaffold clamp/ nuts/bolts with vertical posts.
- Toe guard height shall be 150 mm.
- Railing shall be painted in red and white colour



Fig. No. 14:  
Brackets & Periphery working platforms



They must be closely boarded, have an adequate width (at least two planks/grill plates wide or 600 mm wide, whichever is greater) for easy movement of people, be at least 600 mm wide (only for people without materials) and at least 900 mm wide (for people with materials).

The MS grill plates for the decking of the working platform must be of good quality, free of defects, and have the required load carrying capacity.

The platform shall be provided by double railing to prevent fall from platform.

MS grill plate / Challis overlaps must not be less than 300 mm.

Fig. No. 15:  
Staircase temporary railings



Fig. No. 16:  
Inspection & colour coding system



THE TAJ HOTEL PROJECT  
COLOUR CODING FOR LIFTING TOOLS & TACKLES

JANUARY		
FEBRUARY	YELLOW	YELLOW
MARCH		
APRIL	BLUE	BLUE
MAY		
JUNE	GREEN	GREEN
JULY		
AUGUST		
SEPTEMBER		
OCTOBER		
NOVEMBER		WHITE
DECEMBER		



Colour coding post inspection of tools & Tackles



Fig No 17:  
Workplace Monitoring of Ambient Air, water, Noise, and Illumination



Environment Monitoring & Noise Monitoring

Workplace Illumination Monitoring

Fig No 18:  
Electrical Safety.



Certified Electrician, Approved SLD, Earth pit resistance display, Double earthing, and RCCB 30 mA protection

----- Keep Safe, Work Safe, Stay Safe -----



## **ANNEXURE D**

### **Quality Assurance Violation Clauses**

**QUALITY ASSURANCE VIOLATION CLAUSES**

S.No	Description	1st Instance	2nd Instance	3rd Instance	Remarks
1	Violation to approved work sequence	NCR	Repetitive NCR+Penalty	SWN	20k for each violation+ Hold Amount- 1.5 times of estimated repair cost
2	Work commencement without MLDL/ PMC approval ( <b>work method Statement, ITP, Checklist and mock-up Approval</b> )	Obs	NCR	SWN	Work to start only after MLDL/ PMC approval
3	Work commencement without stage clearance	NCR	Repetitive NCR+Penalty	SWN	10k for each violation+ Hold amount against estimated repair cost
4	Work Commencement without Quality Induction to Engineer, Supervisor, Workmen who is new to site	Obs	NCR	NCR+ Penalty	10K for each violation
5	Work commencement (For RCC) without structural consultant approval	NCR	Repetitive NCR+Penalty	SWN	10K for each violation
6	Work commencement (For Civil, Finishes & MEP) without Architect and mock-up approval	NCR	Repetitive NCR+Penalty	SWN	10K for each violation
7	Work commencement without approved GFC drawings / approved sketches / approved shop drawings	NCR	Repetitive NCR+Penalty	SWN	10k for each violation
8	Work Commencement without Conducting Training for Engineers, Supervisors and Workmen while starting New activity	Obs	NCR	Penalty	10k for each violation
9	Work Commencement without Quality Tool Box Talk for every trade	obs	NCR	Repetitive NCR+Penalty	5k for each violation
10	Use of unapproved / Substandard materials (Without approved test Reports)	Obs	NCR	SWN	-
11	<b>Contractual Documents</b> : Work commencement without BOQ / LOI / Contractual documents etc	NCR	SWN	-	-
12	<b>QC Documents</b> : Incomplete / non updated documents ( Like Concrete cube register / Concrete pour register / Incoming material register / Material rejection register / Concrete pour cards / Pour log sheet / Curing time sheet / Lab testing formats / Work process checklist / Incoming material checklist / Drawing register / WMS / MAS / ITP's etc. )	Obs	NCR	Repetitive NCR+Penalty	20k for each violation
13	Structure defects like Honey comb / offsets / deviation in plum / deviation in alignment / Waviness / undulations / <b>Exposed steel on surface/ Corrosion in tensile members/ Any foreign material embeded in casted concrete</b> etc.	NCR	Repetitive NCR	Hold amount +Penalty	Hold Amount- 1.5 times of estimated repair cost for each violation Penalty- 20k for each violation
14	Defects in Finishes and MEP workmanship like Deviation in plum / deviation in alignment / Waviness / Use of Untreated <b>steel</b> etc.	NCR	Repetitive NCR	Hold amount +Penalty	Hold Amount- 1.5 times of estimated repair cost for each violation Penalty- 20k for each violation
15	<b>Materials</b> : Improper / substandard material stacking / presevation / handling	Obs	NCR	Hold amount +Penalty	10k for each violation+ 1.5 times Hold amount against estimated repair cost
16	Incoming material unloading without checking / intimation to MLDL/ PMC	Obs	NCR	Repetitive NCR+ Hold Amount	Unloaded material not to be used unless tested and approved by MLDL/ PMC, Hold amount- 1.5 times of estimated repair cost for each violation
17	Non closure of FOR ( Field Observations ) within the stipulated time	1st reminder for closure	2nd reminder for closure	Penalty+ Hold amount	10k for each violation+ Hold amount minimum 1.5 times of estimated repair cost for each violation
18	Non closure of NCR within the stipulated time, Non-implementation of Correction/Corrective Action approved by MLDL/ PMC QA	1st reminder for closure	2nd reminder for closure	Penalty+ Hold amount	20k for each violation+ Hold amount minimum 1.5 times of estimated repair cost for each violation
19	Concrete quality ( Cube failure / variation in cube strength / yield / standard deviation / Curing / skippence of testing / slab cracks / unfinished slab surface etc )	NCR	Repetitive NCR	Hold amount +Penalty	Hold Amount- 1.5 times of estimated repair cost for each violation Penalty- 20k for each violation
20	Deployment of non qualified / inexperienced / unskilled staff / labour where Skilled workmen is required e.g. Use of Helper as Mason/Fitter/Carpenter	Obs	NCR	Penalty	5k for each violation
21	Use of non-calibrated equipment/apparatus/instrument	obs	NCR	Repetitive NCR	Penalty for Repetitive NC
22	Use of non specific construction tools	Obs	NCR	Repetitive NCR	Penalty for Repetitive NC
23	Deviation of Process and Product requirements mentioned in PQP/Quality Assurance Plan/ITP/Formats/Checklist	NCR	Repetitive NCR+ Hold amount	Penalty	Hold Amount- 1.5 times of estimated repair cost for each violation Penalty- 10k for each violation
24	Non-compliance to activity checklists (inspections not being done as per approved checklists)	Obs	NCR	Repetitive NC+ Penalty	5k for each violation
25	Contractor's QAQC Engineer's absence in Planned & Communicated Quality Walk/Quality Meetings	Written Instruction	Penalty	Penalty	5k for each violation
26	No Internal NC system implementation at site	Written Instruction	NCR	Repetitive NC	Penalty for Repetitive NC
27	<b>Repititive NC</b> (NC with same root cause)	10k Penalty	20k Penalty	40k Penalty	NC repiting with same root cause
28	Manipulation of official records and reports	NCR	Repetitive NC	20k Penalty	-
29	Non follownace of site instructions of MLDL/ PMC Staff in terms of quality management systems	Written Instruction	Penalty	Penalty	20k for each violation

Notes	
1	All penalty is applicable and will be imposed to Contractor/Agency, this Penalty matrix is not for the Individuals/Workers
2	Any field oservation/ NCR/ Stop Work Notice/ Penalty will be imposed by MLDL/ PMC staff to the Contractor based on 1st/2nd/3rd instances as per Categorization done in above Penalty matrix.
3	Penalty amount mentioned is for each violation
4	Contractor has to perform applicable correction / Corrective Action at his own cost in addition to Imposed penalty
5	Contractor on repeated Process violation shall be blacklisted from MLDL in future Prequalifications
6	Hold amount in RA Bill during Quality certification until closure of NCR with appropriate and approved corrections and corrective actions

Abbreviations
<b>NCR</b> - Non Conformance
<b>SWN</b> - Stop Work Notice
<b>Obs</b> - Field Observation
<b>K</b> - Thousand ( rs. )

## **ANNEXURE E**

### **Supplier/Contractor Code of Conduct**

## Mahindra Lifespace Developer Limited (MLDL)

**Background:** MLDL believes that it is in the mutual interest of both MLDL and its suppliers/contractors to meet the present and future requirements of business and the society. This includes demonstrating responsibility towards the environment and people involved in the manufacture and delivery of products and services. In order to make it's position clear and provide a guidance, MLDL has established the supplier code of conduct. The code describes the environmental and social responsibility requirements for Suppliers/Contractors. As a condition for doing business with MLDL we expect compliance with these requirements. It is our intention to maintain this code in spirit of maintaining a constructive dialogue and collaborative partnership approach for benefit for both parties. The code of conduct is dynamic and evolving and in meant to encourage suppliers/contractors to continually improve their metrics. Code of conduct has to be used in conjunction with the MOU that is signed for each deal.

**Scope:** Mahindra Lifespaces Supplier/Contractor code of conduct is applicable to contractors and Supplier construction materials. Suppliers/contractors to ensure that all the sub-suppliers/sub-contractors must meet the principles in the Code of conduct.

### Levels and grouping

As per this code of conduct there is a provision of :Level 1 – Minimum Standards, Level 2 - Qualifying standard and Level 3 - Leadership standard.

The standards are grouped into three sections

- A. Environment – MLDL expects its suppliers to have an effective environmental policy and to comply with existing legislation and regulations regarding the protection of the environment. Suppliers should wherever possible support a precautionary approach to environmental matters, undertake initiatives to promote greater environmental responsibility and encourage the diffusion of environmentally friendly technologies thereby implementing sound life cycles practices. Suppliers should strive to implement recognized management systems and guidelines such as ISO 14001.
- B. Labour – MLDL expects its suppliers to support and respect the protection of internationally proclaimed human rights and to ensure that they are not complicit in human rights abuses.
- C. Business Ethics – MLDL expects all suppliers to adhere to the highest standard of ethical conduct.

### Level 1 – Minimum Standards

All MLDL suppliers are obliged to fulfill the level 1 as described below. It is expected that all suppliers/contractors comply all statutory ESG compliances.

#### A. Environment

MLDL requires its suppliers to have an environmental policy statement.

Supplier/Contractors shall comply with all the applicable local/regional and national environmental regulatory requirements for the region they operate. Environmental permits/licenses (e.g. discharge

monitoring), endorsements and registrations shall be maintained and updated for all the operational and reporting requirements.

### **B. Labour**

#### **i) Child Labour**

MLDL respects the children's right to development and education. Therefore, MLDL does not accept the use of child labor as a part of work force at the Supplier. This means not to employ Children under the age of 18, children younger than the legal minimum age.

#### **ii) Discrimination**

MLDL respects cultural differences and does not do business with a Supplier if the Supplier practices discrimination at work based on race, religion, gender, age, nationality or sexual orientation, expression or marital status.

#### **iii) Forced Labour**

The Code does not permit forced or involuntary labour at the Supplier. This includes forced prison work; work on a forced contract, slavery and other forms of work, which are done against one's will or choice. MLDL does not tolerate employment which confines the employee in unreasonable debt bondage etc.

#### **iv) Harassment, Harsh or Inhumane Treatment:**

MLDL requires its suppliers to create and maintain an environment that treats all employees with dignity and respect and will not use any threats of violence, sexual exploitation or abuse, verbal or psychological harassment or abuse. No harsh or inhumane treatment or coercion or corporal punishment of any kind is tolerated, not is there to be the threat of any such treatment.

#### **v) Health and Safety**

MLDL supports the fundamental human right to have safe working conditions. Supplier must ensure a good and safe working environment which complies to all applicable rules and laws. As a minimum:

- i) Workers must not be exposed to dangerous work without being properly protected.
- ii) Workers must be provided personal protection equipment and be trained & instructed in its proper use.
- iii) Facilities must comply with applicable laws and rules about construction safety as well as fire protection and fire alarms.
- iv) Facilities must provide appropriate illumination, ventilation and noise protection.
- v) All dangerous materials must be stored in safe places and used in safe and controlled ways.
- vi) All machinery must be properly maintained and shielded.
- vii) Facilities for meals and resting must, if provided, be kept clean and safe.

Suppliers/Contractor should strive to implement recognized management systems and guidelines such as OHSAS 18001.

## C. Business Ethics

### i) Anti bribery

The Company has a zero-tolerance approach to acts of bribery and corruption, by employees or anyone acting on behalf of the Company. Bribery and corruption are recognized as barriers to sustainable development and free trade. MLDL does not accept these practices and therefore does not offer or accept any kind of undue payment in any of our business transactions. Supplier shall act accordingly.

### ii) Conflict of Interest

Suppliers must ensure that if the Supplier's employee or his or her family member has a relationship with MLDL employee who can make decisions that will affect the supplier's business, then the supplier must disclose these types of relationships to the Head of Purchase of the concerned MLDL before entering negotiations.

### iii) Gifts and Hospitality:

MLDL accept gifts or entertainments if they are consistent with common business practices (Mahindra Code of Conduct), are not excessive in value and cannot reasonably be construed as a bribe or payoff and if they do not violate applicable law. MLDL will, however, not accept any benefit to a MLDL employee in order to facilitate the supplier's business with MLDL.

**Level 2 standards – Qualifying standards: All MLDL suppliers/contractors are expected, in case of noncompliance with the qualifying standards in the time of signing a contract with MLDL, to have targets and action plans for reaching the qualifying standards, as they are described below.**

## A. Environment

Supplier/Contractors should recognize environmental responsibility by managing, measuring and minimizing the environmental impact of their facilities. In all the business operations, adverse effects on the community, environment and natural resources are to be minimized while safeguarding the health and safety of the public. Specific focus areas include statutory requirements, waste reduction, water re-use disposal, recovery & management, and greenhouse gas emissions. Recognized management systems such as ISO 14001:2015, the Eco Management and Audit System (EMAS) are used as references in preparing the Code and may be a useful source of additional information. The environmental standards are:

### i.) Compliance with Statutory Regulations

Same as in Level 1

### ii.) Waste reduction and recycling

Supplier/Contractor shall ensure that wastewater and solid waste generated from operations, processes and sanitation facilities are to be monitored, controlled and treated as required by law prior to discharge or disposal.

Other type of waste is to be reduced or eliminated at the source or by practices such as modifying production, maintenance and facility processes, materials substitution, conservation, recycling and reusing materials.

Contractors shall focus on C&D waste management and reduction

### **iii) Air emissions**

Air emissions of dust, volatile organic chemicals, aerosols, corrosives, particulates, ozone depleting chemicals and combustion by-products due to contractual work/ supplier operations are to be characterized, monitored, controlled and treated as required prior to discharge.

### **iv) Hazardous Substances**

Chemical and other materials posing a hazard if released to the environment are to be identified and managed to ensure their safe handling, movement, storage, use, recycling or reuse and legitimate disposal.

### **v) Restriction of specific substances**

Supplier/Contractors shall comply adhere to all applicable laws, regulations and customer requirements regarding prohibition of restricted substances (substances covered under RoHS & REACH)\* in their product and process.

These regulations include, but are not limited to:

- Waste Electrical and Electronic Equipment (WEEE)
- REACH = Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals

### **vi) Greenhouse Gas Emissions**

The supplier/contractor shall strive for continuously decreasing greenhouse gas emissions caused by its business operations, primarily carbon dioxide (CO<sub>2</sub>) emissions. The monitoring and documentation of CO<sub>2</sub> emissions connected to MLDL part of use will be encouraged. Information about the CO<sub>2</sub> management shall be provided to MLDL on request – already part of contractor data requirements.

### **vii) Energy management**

Energy management with focus on minimizing the waste of energy shall be applied in all business operations. Suppliers should strive to implement recognized management system & guidelines such as ISO 50001. Suppliers/contractors are encouraged for adoption of renewable energy in their overall mix of energy used.

### **viii) Reduction in Water consumption**

Suppliers shall take all effective measures to reduce their intensity of water consumption from operations & processes.

## **B. Labour**

# Supplier/Contractor Code of Conduct

All applicable clauses in level 1 in child labour, forced labour, inhuman or harsh treatment and discrimination.

## **a) The Right to Organize and Collective Bargaining**

The Supplier must not interfere with the worker's right to form and join unions or to bargain collectively. This means that Supplier must recognize his employees' right to choose whether or not to associate with or establish any organisation including labour organisations. If trade unions are not allowed in the area of operation, or only state authorized organisations are allowed, the Supplier shall facilitate alternative measures to allow employees to access management to discuss work related matters.

## **b) Working Hours and Salary**

MLDL recognizes the need for a sound balance between working time and leisure time for all employees. Unless the law provides otherwise, the maximum working time at the Supplier's sites is 48 hours per week plus maximum 12 hours overtime work. All workers shall be allowed to have at least one day off in a period of seven days unless the national law/rules provides otherwise. Salaries for work and overtime shall be in accordance with the applicable national law or applicable national rules. Deductions in salary due to company fines or penalties must never compromise minimum salary/ wages as stipulated by relevant law.

c) **Health & Safety** : Same as in level 1 plus the points below.

### **Incident Reporting and Tracking**

Supplier/Contractors shall define procedures to prevent, manage, track and report occupational injury and illness, including provisions to:

- a) Inspire worker reporting;
- b) Categorize and record injury/illness cases;
- c) Deliver essential medical treatment;
- d) Incident analysis and implement corrective actions to eliminate their root causes;
- e) Facilitate return of workers to work, debriefing and post-traumatic stress procedure. Follow MLDL incident reporting processes.

### **Sanitation, Food & Housing**

Supplier/Contractors shall provide ready access to clean toilet facilities, potable water and sanitary food preparation, storage, and eating facilities. Worker dormitories provided by the Supplier/Contractor or a labor agent are to be maintained clean and safe, and provided with appropriate emergency egress and adequate heat and ventilation with appropriate entry and exit privileges. Contractors to follow MLDL guidelines for labor camps.

d) **Right to privacy**

# Supplier/Contractor Code of Conduct

Supplier/contractor shall respect his/her employees' right to privacy when it gathers or keeps personal information or implements employee-monitoring practices.

## **C. Business ethics**

a) Anti bribery, Conflict of Interest and Gifts & Hospitality criteria as mentioned before.

### **b) Information Security**

Suppliers/contractors must ensure secure use and distribution of information and data in their workplace. Suppliers/contractors must maintain physical and electronic security for all confidential information received from MLDL for fulfilling their commitment. Suppliers' employees must use extreme care in protecting confidential and proprietary information of any kind from MLDL.

### **c) Governance**

Suppliers must follow highest standards of ethical behavior in all the processes of operation of business and ensure

- a. Sustainable Development as an integral part of their business.
- b. Internal Auditing Process and actions on the audit findings.
- c. Compliance to the Quality Management System.
- d. Correct Financial Reporting.

### **d) Political Activity**

Suppliers should desist making use of MLDL's association with them for getting any political gain or use the name of MLDL to participate in political campaigns.

### **e) Emergency Preparedness Planning**

The supplier shall be prepared for any disruptions (e.g., extreme weather events, natural disasters, terrorism, software viruses, illness, pandemic, infectious diseases) affecting its business and supplies to MLDL companies. This preparedness especially includes disaster management plans to protect both employees as well as the material and facilities as far as possible from the effects of possible disasters that arise within the domain of operations.

## **Level 3: Leadership standard**

**All suppliers/contractors must strive to move to leadership standards**

### **A. Labour**

All points as per qualifying standards, plus best in class labour welfare and engagement programs which have won external recognition.

### **B. Environment**

# Supplier/Contractor Code of Conduct

All points as per qualifying standards, plus best in class EHS program which have won external recognition.

Suppliers – materials are green rated, green initiatives on energy, waste, water reduction and circular economy (take back, packaging waste reduction)

Contractors – services demonstrate initiatives on energy, water, waste and circulate economy beyond management systems and compliances

## C. Business Ethics and Governance

All points in qualifying standards, plus board leadership in climate action with ESG integrated into strategy. ESG review by board. Reporting as NVG BRR, or per GRI framework.

### Compliance to Supplier Code of Conduct –

By signing this Code of Conduct, Suppliers agree to comply with the requirements stated in this Code of Conduct. MLDL reserves the right, upon reasonable notice, to check the compliance.

Signature

I acknowledge that I have read and understand the MLDL Code of Conduct for Suppliers and agree to comply with the requirements of the Code (fill in using block letters or company stamp):

Supplier's name: \_\_\_\_\_

Address: \_\_\_\_\_

Factory name: \_\_\_\_\_

MLDL Project name:

### Supplier Signature:

Name:

Date

**Annexure F**  
**Energy & Environment**  
**Conservation Measures**

## Context

With a mission of 'Transforming urban landscapes by creating sustainable communities', we uphold the philosophy of Urboonisation and build, promote and maintain dynamic, inclusive and environment-friendly ecosystems. Concurrently, we also seek to achieve the highest possible returns, to strengthen the faith reposed by our shareholders.

As part of our commitment we adhere strictly to our policies and legal requirements. We practice resource conservation, waste minimization and reduce environmental pollution.

As our partner in work it is therefore mandatory for our contractors also to follow our footsteps and adhere to our high stand. Therefore, we have laid out our mandatory requirement for our contractors to follow in the following section along with what we aspire our contractors to achieve while working with us.

## Contractor Responsibilities on MLDL Site

- ✓ **Mandatory and non-negotiable requirements for energy and environment and pollution abatement:**
  - All the rule of the land (as per MLDL policy and applicable legal/ statutory environmental regulations as per Environmental Clearance and Consent To Establish/ operate) to be abide by. All the requirement as per the environmental compliance to be adhered to.
  - Initiatives for the following with help from MLDL to be implemented
    1. Energy: Conservation / reduction in consumption
    2. Water: Conservation / reduction in consumption
    3. Waste: Segregation and storage at designated place. Reduction reuse or recycle of the waste generation.
  - Data requirements as per MLDL requirements
- ✓ **Mandatory and non-negotiable requirements for social (OHS and Human Rights)**
  - As per our policy Child labour, Forced Compulsory Labour, workers' family onsite is not allowed
  - All mandatory PPE must be used as and when required.
  - Site hygiene and housekeeping should be maintained throughout the work tenure.
- ✓ **Aspirational requirements**
  - The contractor shall progressively move towards ISO 14001:2015 certification

**Environmental management Plan: Protection of the Environment:**

The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.

The Contractor shall ensure that emissions, surface discharges and effluent from the Contractor's activities shall not exceed the values indicated in the Specification and shall not exceed the values prescribed by applicable Laws.

The Contractor shall follow the Developer's Environment Management System (EMS) established at site. The Contractor shall read Developer's- Sustainability Policy, Integrated EMS Policy, Standard Operating Procedures, and relevant documents prior to commencement of Works. Developer will give necessary awareness to the contractor's personnel on EMS and Green building implementation requirements at site. Specific details are provided herewith:

- a) Existing numbered trees should be maintained in healthy condition till final handover of site by contractor. No damage to existing trees due to construction activities should be done. Any damage and cost implication due to damage should be borne by contractor.
- b) No dry wood should be used in site labour camps area as burning fuel.
- c) All building material like broken bricks, tiles and damaged shuttering material should be reused by contractor at suitable work areas. Unused or damaged/broken bricks, tiles, glass, wooden frames, shutters, steel etc. and shuttering material should either be reused up to max possible or donated or sold to another party for reuse. All records related to reuse/sale like challans etc are to be kept by the contractors and submitted to the Developer. These initiatives are towards sustainable development and contractors should perform all as stated at his own cost.
- d) Avoiding spillage of oil over the soil in workplace.
- e) If batching plant is established at site, its Consent to operate to be in place there should be a waste water treatment system installed along with the plant at site. Treated water should be reused in construction after approval from In charge QA at site.
- f) Existing well if any should be properly covered. As per the design intent or execution teams instructions
- g) for existing well/ bore well, (post confirmation of CGWA permissions) Optimum use of bore well water – if permitted under Contract - should be done by contractor, avoiding wastage. Water meter should be installed in all bore wells and record of water drawn should be maintained on monthly basis and same should be reported to Project Manager and/or Developer.
- h) All necessary precaution should be taken by contractor to avoid ground water table contamination.
- i) Hygiene at labour camp should be maintained. Proper sanitation facility for labours should be established. Developer and/or Engineer has the right to inspect the labour colony any time and instruct

contractor to modify /upgrade the condition of labour camp at any time during the tenure of the project. Temporary surface drainage should be provided in bathing and washing areas at labour camps.

j) Optimum utilization of electricity should be done, by planning electricity cut off in labour camps every day when not required as labour camps are empty during working hours.

k) The contractor will share data and take measures/initiatives to adhere to MLDL Sustainability requirements as provided in the Sustainability SOPs (list enclosed below).

l) Environment management plan (EMP) to be implemented on site as per the set frequency mentioned in the EMP and to be monitored annually.

**Mitigation of the significant construction and operational environmental impacts are provided below:**

**Site Clearing:**

**Dos:**

- The Contractor shall at all times carefully consider what machinery is appropriate to the task while minimising the extent of environmental damage.
- Topsoil shall be cleared of woody vegetation, and specifically requirements of retention of exotic vegetation if any, trees to be preserved, before ripping and removing in consultation with MLDL sustainability team.
- The topsoil is regarded as the top 200 mm of the soil profile and to be covered with Green netting material or geotextile sheets • Topsoil is to be handled twice only – once during clearing and stockpiling & once during rehabilitation • The topsoil, including the existing grass cover is to be shallowly ripped (only the depth of the topsoil) before removal. This is to ensure that organic plant material, and the natural seed base is included in the stripping process.
- The Contractor shall apply soil conservation measures to the stockpiles to prevent erosion. This can include the use of erosion control fabric or grass seeding
- To prevent soil erosion on the site, contractor to implement sedimentation trenches and basin prior to the monsoon

**Donts**

- Soil stockpiles shall not be higher than 2.5m or stored for a period longer than one year. The slopes of soil stockpiles shall not be steeper than 1 vertical to 2.5 horizontal.
- No vehicles shall be allowed access onto the stockpiles after they have been placed.
- Stockpiles shall not be allowed to become contaminated with oil, diesel, petrol, garbage or any other material, which may inhibit the later growth of vegetation.

**Dust Abatement at site:**

Site operators need to demonstrate both:

- (a) control of 'visible' dust in particular besides
- (b) fine dust from activities within their premises.

Dust abatement due to construction and transport activities can also include the following:

**Do's:**

- Monitor movement of vehicles (incoming/outgoing) - Regular check and maintenance of vehicles (all need valid PUC)
- Prevent vehicle idling during loading and unloading.
- Smooth movement of incoming & out going vehicles / trucks
- Earmark areas for parking vehicles
- Regular water sprinkling on pathways for dust suppression – use of 'treated waste water' (preferably from STP) in sprinklers for dust suppression
- Cover materials with tarpaulin in case of sand/cement
- Topsoil preservation covering with vegetation

**Don'ts:**

- Transportation of materials and waste should be done in covered vehicles to prevent fugitive dust emission.
- Don't use fresh water for dust suppression

**Water pollution management:**

**Do's**

- Avoid excavation during monsoon season
- Take adequate care should be taken to avoid soil erosion
- To prevent surface and ground water contamination by oil/grease, leak proof containers should be used for storage and transportation of oil/grease. The floors of oil/grease handling area should be kept effectively impervious. Any wash off from the oil/grease handling area or workshop shall be drained through impervious drains, Clarifiers or oil/water separators shall be constructed and effluents should be treated appropriately before releasing it.
- Construction activities generate disturbed soil, concrete fines, oils and other wastes. On-site collection and settling of storm water, prohibition of equipment wash downs, and prevention of soil loss and toxic releases from the construction site are necessary to minimize water pollution.
- All stacking and loading areas should be provided with proper garland drains equipped with baffles to prevent run off from the site to enter any water body

**Minimizing water consumption**

**Do's:**

- Contractor must take measures to reduce water consumption for curing. Bunding must be created to minimize wastage
- Reuse of collected rain water for various purposes as permitted by MLDL team

**Fauna and Flora**

**Do's:**

- Natural vegetation shall be kept in as undisturbed a state as possible. Special attention shall be paid to preserve trees and plant communities in conjunction with the design plan.
- Indigenous plants or wild animals (including reptiles, amphibians or birds etc.) may not be damaged or harmed.
- Report all incidents of harm to any animal or natural vegetation (apart from the agreed vegetation areas) must be reported to the MLDL project manager.
- **30 feet barricading/ whichever is stringent as per the local bye laws**
- **Stack height to be provided as per the CTE conditions**
- **Environment parameters monitoring to be done on a monthly basis/ as per EC/ CTE conditions for Air, water, waste and noise parameters**

### **Spoil Material**

- All suitable materials excavated shall be used in the construction of the works. Quantities used at site must be noted.
- All unsuitable and surplus spoil rock shall be removed from the site to govt approved designation dumping site or sites, as per instructions of Project/Site Manager. Quantities sent to dumping site to be noted.
- No dumpsite shall be used without the prior written approval of the Project/Site Manager.
- No spoil material shall be stockpiled in violation of any legal requirement or to obstruct any watercourse or drainage channel.

### **Site Hygiene, Clean Up and Rehabilitation**

#### **Dos:**

- Contractor must ensure regular housekeeping so that no material is waste or causes safety hazard
- Contractor must ensure labelling of waste bins to ensure that construction and demolition wastes as per
- The Contractor must ensure that all structures, equipment, materials and facilities used or created on site for or during construction activities are removed once the project has been completed.
- The construction site shall be cleared, cleaned and rehabilitated to the satisfaction of the MLDL project manager, prior to revegetation.

#### **Don'ts:**

- Contractor must not leave materials in a haphazard fashion
- No material of value will be wasted due to poor housekeeping

### **Waste management**

#### **Dos:**

- Recycled aggregates will be used for filler application, and as a sub-base for road construction. Mixed debris with high gypsum, plaster, shall not be used as fillers, as they are highly susceptible to contamination, and will be given to recyclers.
- Construction contractors shall remove metal scrap from structural steel, piping, concrete reinforcement and sheet metal work from the site. A significant portion of wood scrap can be

reused on site. Recyclable wastes such as plastics, glass fiber insulation, roofing etc shall be sold to recyclers.

### Record keeping

- Data as per the following table must be provided to the project manager with evidence as per mentioned frequency:

Data	Detail	Frequency	Evidence
<b>Diesel consumption</b>	Data for diesel consumption to be provided bifurcated as per use (formats to be provided by MLDL)	Monthly	Diesel purchase bills
<b>Electricity consumption</b>	Electricity consumption is to be provided bifurcated as per use (formats to be provided by MLDL)	Monthly	Electricity bill/Meter reading register (incase separate meter is not available see annexure 1)
<b>Water consumption</b>	Water consumed from different sources (formats to be provided by MLDL)	Monthly	Purchase bill
<b>Waste Generated</b>	a. Quantity of waste generated by type b. Written information on destination of waste (where the waste is taken to) c. Written information on disposal method of waste (landfill/reuse/recycle) d. Distance of the treatment/landfill/reuse/recycle facility	Monthly	
<b>Material Purchased</b>	Materials purchased by weight or volume	Monthly	Purchase bill/SAP entry

**Any other data requirement as the need arises.**

**All payments shall be released only if the mandatory and non-negotiable requirements for environment, energy and social criteria are met.**

### Annexure 1.

In case there is no separate meter available the information to be provided by the contractors as per the table below (names of the equipment are indicative and not exhaustive; the project SPOC should add more equipment as required)

<b>Name of the contractor</b>				
Equipment	Crain	Drilling machine	Light	Fan
Quantity				
Wattage				
Unit	Watt			
Total Wattage	Formula: (Quantity x Wattage)			
consumption of 1 Hr/day-Kwhr	Formula: Total wattage/1000			
Consumption @ 8 Hrs/ Day	Formula: (consumption of 1 Hr/day-Kwhr)*8			
Total for 30 days	Formula: (Consumption @ 8 Hrs/ Day)*30			
Rate				
Amount for Month	Total for 30 days * Rate	Total for 30 days * Rate	Total for 30 days * Rate	Total for 30 days * Rate

**List of SoPs:**

1. EMS.A.01 Procedure for Significant aspect identification
2. EMS.A.02 Environmental Management Program
3. EMS.A.03 Environmental Monitoring
4. EMS.A.04 Statutory Requirement
5. EMS.A.05 External & Internal Communication
6. EMS.A.06 Procedure for Top Soil
7. EMS. A. 07 Environmental Emergency and response plan
8. EMS.A.08 Setting of Objective & Target
9. EMS.A.09 Operational Control
10. EMS.A.10 Hazardous waste management

**Annexure G**  
**Standard for onsite workers**  
**housing quarters**

**STANDARD FOR ON-SITE WORKERS HOUSING QUARTERS**

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**SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)**

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## SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)

### 1.0 Purpose:

To establish a minimum standard for the provision and maintenance of living conditions for the wellbeing and welfare of the workforce in construction projects of Mahindra Lifespaces Developers Ltd (hereafter mentioned as Developer).

### 2.0 Scope:

This standard gives advice to adopting minimum basic requirements of design, construction, installation and maintenance of temporary workers' housing quarters (Labour Camp) on construction site.

At national or regional level of India, regulations tend to contain only general provisions for workers to provide an accommodation by contractor.

These provisions also available in form of policy, guidelines or codes of practice adopted by a wide variety of agencies such as international bodies, industry associations; national, regional or local authorities. However, no specific standards has mentioned, which bound to provided minimum requirement for accommodation of workers. Although, compliance with national and local law is the basic and essential requirement. However, in the absence or clear-cut guideline of such requirement Developer would like to implement and provide minimum requirement for accommodation facilities to workers working on site.

These standards shall be applicable to all real estate project development in India under the influence of Developers.

The site management shall provide, free of cost temporary accommodation as the regulatory requirement to all workers engaged in Developers Project.

This document aims to provide the Project Teams and Contractors with guidance on the planning, design, construction, operation and decommissioning of Construction Camps in a sustainable way:

- Create adequate, respectable living conditions for the Project construction workforce.
- Maximise value over the entire lifecycle of the construction camp (maintenance, cleaning, waste management, energy and water usage management) and minimise footprint.
- Take into account ethnic, religious and cultural differences and managing those.
- Create a secure, safe and hygienic environment, including the logistics.
- Minimise impact on the local communities.
- Lower disease incidence and/or food poisoning outbreaks.
- Promote Health & Wellness and create a facility and community that exudes care for people.

## SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)

- Maximise opportunities for beneficial use of the site, infrastructure, or parts thereof after project execution.
- It is assumed in this document that the facilities will be intended for single or bachelor status occupancy only, unless the Developer specifies differently.

This document does not cover permanent residential areas, neither temporary nor permanent office Units nor buildings located inside fence of hydrocarbon processing projects.

### 3.0 RESPONSIBILITIES

Following are the responsibilities of Project In charge

- Allocating Sufficient Resources for set up and operation of camp
- Ensuring camp operates with respect to the standards

Following are the responsibilities of OHS In charge

- Support in implementation of the standard
- Conduct frequent compliance audits to ensure that standards are followed.

### 4.0 CROSS REFERENCES:

- Clause 7.1, 8.0 of ISO 45001 : 2018
- OHS Plan – MLDL/ OHSM. PLAN.01 Rev 01
- The Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996
- 8.3 The Municipal Solid Wastes (Management & Handling) Rules, 2000.
- 8.4 The India Electricity Act, 1910 and the Indian Electricity Rules, 1956
- 8.5 IS : 10500 Drinking Water Standards

### 5.0 OTHER RELATED PROCEDURES

### 6.0 FLOW CHART NIL

### 7.0 PROCEDURE

#### DESIGN OF TEMPORARY WORKERS' HOUSING QUARTERS

#### 7.1 Plot

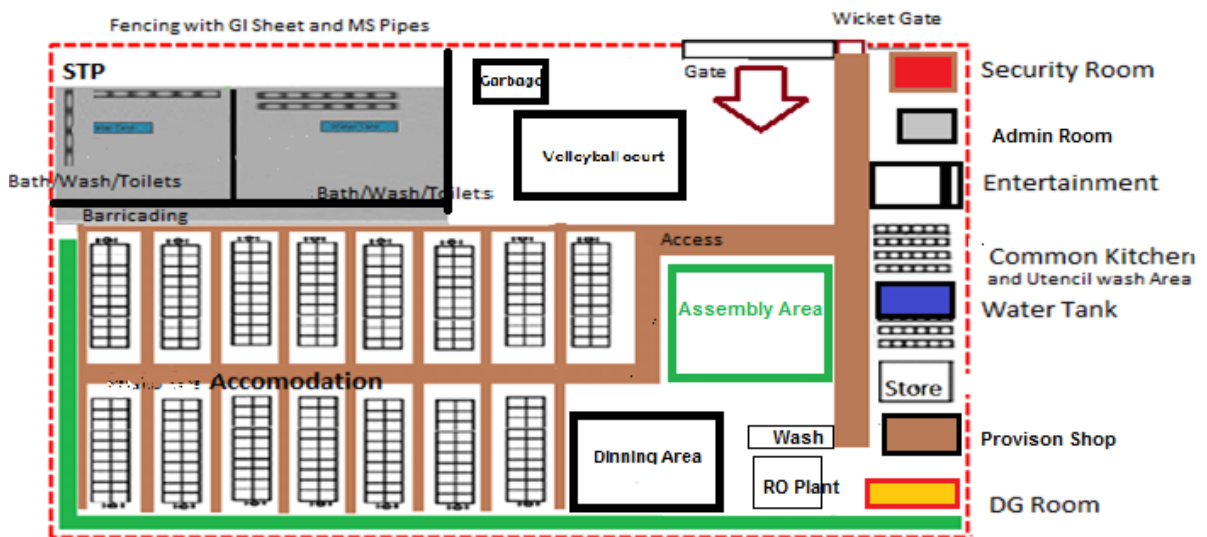
About 20 sq m per occupant is the indicative requirement that may be applied gross for campsite selection purposes, including space required for roads, general facilities, and recreational areas,

**SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)**

depending on existing infrastructure, topography and shape of the available plot. Necessary site investigations required to be produced on technical data for the design of foundations and camp grading layout with sufficient drainage to prevent flooding during rainstorms.

Provision Shop

**7.2 Layout**



The labour camp shall be located in elevated and well drained ground in the locality and at least 500 meters (m) away from sites.

The site location of labour camp (camp) shall be close to the boundary of any public road or any internal site access that is accessible by emergency services like ambulances and fire engines. If the camps are located adjacent to a common boundary of any property regardless of public or private entity or owned by individual, it shall have a setback distance of minimum 4 meter (m) from the common boundary. Where the minimum 4 m setback cannot be achieved, it shall have walls that are facing the common boundary to be without openings and protected by any material that has a resistance to fire for a minimum of 1 hour.

Parallel positioning of the buildings is preferred over a courtyard type configuration. The minimum distance between the various (parallel) buildings should be 8 m, to reduce the chances of

## SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)

spreading of flames in case of a fire and allow for emergency services access. Where this is not possible other measures shall be taken to prevent spreading of fire.

Number and concentration of various people based on their communities/ language/ region shall be considered for dedicated sections of the construction accommodation. (This may influence the size and number of mess halls and kitchens).

### 7.3 General Facilities required within the camp.

General facilities may include one or more of the following functions next to the common accommodation units:

- Access control system
- Clinic/First Aid
- Common Recreational Area
- Potable water supply, storage and distribution
- Drainage
- Electrical power generation and distribution
- Emergency assembly points/ Muster areas
- Facility management building/estate house (general admin, maintenance, services,)
- Fencing
- Fire station / emergency response
- Food store
- Shop
- General maintenance shop
- Security building/ Guard house
- IT/Telecommunications
- Dedicated cloth washing area Mess hall or Restaurant + Kitchen for the various categories of personnel
- Parking areas for buses and private vehicles
- Potable water supply
- Public telephone
- Training facilities
- Service water supply and distribution

### 7.4 Barricading

Barricading to be provided using painted GI sheet up to height of 7 feet without gap and shall be fixed using GI/MS pipe/Ankle fixed using the concrete. Must be of adequate strength and raking to be provided where same are required. Single point of entry to be maintained using the main gate (6 M wide) for vehicular movement and wicket gate (1M wide) for personal movement.

## SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)

### 7.5 Access control, Security Cabin and other requirement.

Access to camp should be controlled to prevent any unauthorized entry and Stay. Security to allow entry only if, the ID card is produced. Single point of entry to be maintained. Visitors to enter their details in the register maintained with security. No Visitor shall be permitted to stay in the camp for more than four hours without approval of Project Head.

Minimum Dimensions of the cabin should be of the 7' x 5' x 8.5. Window 3' x 2.5'

One Table, Two Office Chairs and One Cupboard.

Search Light with charger.

Tube Lighting and fan.

Two external lights (One focusing the gate and access and other focusing the Camp.

First Aid Kit

Walky-talkies

Registers.

1. Visitors Entry, 2. Vehicle Entry 3. Occupants Details, 4. Duty Roster 5. First Aid Register

### 7.6 Structural Requirement

The structures of the camps shall be weather-tight and comparable material. All measures shall be taken to reduce radiant heat. While air pockets between roof and ceiling together with the use of materials with good heat insulation properties is one of the method to prevent radiant heat especially so in the summer. I. Floors used in camp shall be constructed of stone tiles/ concrete or other comparable material with smooth finishing, so that proposed floor can be easily cleanable and maintained in good condition.

The construction of camp area shall be provided minimum 700-750 square (sq) m for 60 labours for camp, which include living rooms, common area, cooking area, toilets, bathrooms etc.

The design for the labour camp need to be certified by an authorised agency for its rigidity and adequateness and approval shall be taken from the Developer before erection.

The ceiling height of camp shall provide at least 3m from plinth level. While camp roof shall have recommended to be pitched type construction to prevent collection of water and become a potential habitat for mosquitoes.

Sr. No.	Particular	Specification
1	External & Internal	The Wall Panels made of PPGI Puff panels in overall thickness of 50 mm The skin thickness of the Panel to be 0.40mm PPGI Sheet both site .

## SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)

2	Roof	The Wall Panels made of PPGI Puff panels in overall thickness of 50 mm The skin thickness of the Panel to be 0.40mm PPGI Hi-Rib on top .
3	Flashing	The all Flashing like - 'U' Channel, 'L' Channels etc will be 0.35mm thick galvanised precoted Sheet
4	Structure	Structure- Superstructure work for roofing structure comprising of 80*40*1.8mm for Column and Truss, 100*60*20*2mm for Truss first floor and 60*40*15*1.4mm for Purling and framework.
5	Floor	The first Floor covered by 18mm commercial plywood fixed with suitable anchor fastener.
6	Staircase	The Staircase will be made of MS Section with chequered plate of 3mm thick and MS railing on one side (Height will be 3').
7	Corridor	The first floor corridor will be made of MS Section grid system covered with chequered plate of 3mm thick and MS railing on one side (Height will be 3').
8	Finishing	The steel structure will be finished with one coat of Red Oxide and two coat of good quality synthetic enamel paint.
9	Flush Door	The door will be wooden flush door size - 7' X 3' X 32mm one Aldrop, 4 no. Hinges, 2 no. Handle and 1 no. tower bolt.
10	Window	Two track Aluminium Anodize Window will be sliding type and all necessary hardware with 4mm thick clear glass (Size- 1800*900mm).
11	Electrical	Two numbers of Socket and one 10 W LED/ CFL, One number of fan common to two bunk beds, one-night lamp common for the room. Distribution Panel for every room with ELCB and proper earthing.
12	Sanitary	Toilet Indian seat with 1 no. tap with internal CPVC fitting and over head wall mounted flush. Refer the standard requirement mentioned in Sanitary requirement.
13	Bunk Bed	Double decker 6.5' X 3' with side railing for top bed and flat bed top with 1 mm GI sheet/12 mm comercial ply board and adequately supported and fastened to frame. Frame, laddar and internal support for the bed flat should be of 25 X 25 having a minimum gauge of 2 mm thickness / 16 Gauge.

### 7.7 Living Space

The floor area of living rooms shall be recommended to consider approximately rate of 2.5 to 3 sq M per worker. All living rooms of the camp shall have proper ventilated system or window size to opening

**SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)**

directly outside for natural light and air. The minimum total window area of living room shall be considered equal ten per cent of the floor area of each room.

**7.8 Cooking Area**

A designated common cooking area shall be provided in the camp. This area shall locate at least 2M to 3M away from the external walls of the living room. Where space constraint does not allow the minimum distance, it shall be compartmented from any room by walls, floors and ceiling of non-combustible materials having a minimum of ½hr fire resistance rating.

The proposed cooking area shall be at least area of 3.0 X 2.0 sq M with minimum 3m ceiling height from plinth level. All practical measures shall be taken to provide the natural ventilation and lighting by means of windows, doors, louvers or other similar openings. Otherwise, mechanical ventilation shall be alternative option to adopt for proper ventilation in cooking area.

A water connection shall be provided in the cooking area with the proper size of sink for washing purpose and final drain of this sink shall be connected to the common sump.

Where firewood used for cooking, a safe storage area shall be provided inside the camp and adequate number of stoves shall be erected in cooking area. The number of stoves to be determine by the size of the workforce and different groups (ethnic or religion) of personnel using the cooking area.

If gas is used for cooking then the cylinders must be stored in a secure external, well-ventilated open area and supplied to stoves via suitable connections and pipe networks. Spare and empty cylinders must be segregated and kept in a separate secure area away from any buildings.

Where electrical cooking equipment are used, adequate power points shall be provided to prevent illegal tapping of electricity and overloading of power points due to inadequate supplies.

Measures shall be taken to ensure that no smell, smoke and other public nuisance arise from the cooking activities. Effective measures shall be taken to prevent infestation by and harbourage of animal or insect vectors or pests.

Suitable sanitary facilities shall be provided for kitchen personnel. Floor shall be concrete with a covering that is easily cleaned, durable, non-absorbent, non-slip and without joints and crevices where dirt, bacteria and insects can lodge. Angles and junctions between floor and wall shall be coved. To prevent ingress of pests, a concrete plinth of at least 30 cm height shall be constructed all-round the structure. Walls shall be smooth, easy to clean, impervious, light in cooler and durable from floor to ceiling. They shall also be provided with adequate insulation to maintain required temperatures. A ceiling shall be provided which is smooth, fire-resistant, light coloured, covered at wall joints and easy to clean. No item shall be kept on window ledges. All windows shall be fixed with mesh fly screens. Suitable extractor fan shall be provided.

**SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)****7.9 Lighting**

The site management shall ensure that living room and cooking area at least equipped with one ceiling type lighting arrangement with capable of providing about 150 to 200 lux and 75 to 100 lux respectively.

In addition, interior areas of the camp like bathroom, toilet etc shall be provided with a minimum of one ceiling or wall type lighting arrangement with capable of providing at least about 50 to 75 lux of light. While, external areas like assembly, corridor or lane between rooms shall be equipped with minimum 75 to 100 lux of light.

All electrical installations and internal/ external wirings of the camp shall installed according to Indian Standard (IS) and undertaken by competent person. All safety measures shall be taken during installation of electrical equipment. All distribution boxes shall be fitted with 30 mA ELCB to avoid any electrical incident. Internal wiring should be routed through the PVC conduit one plug point should be provided for every bed provided. Stand by Power Supply shall be made available in case power failure.

**7.10 Water Supply**

The site management shall ensure sufficient uncontaminated and uninterrupted water available for cooking, washing and other purposes. Depending on climate, weather conditions at least 40 to 80 litres per person per day water shall be available.

Adequate quantity of drinking water shall be available. In case of water supply from intermittent source, filtered /chlorination treatment facility of water shall be provided.

All water tanks provide in camp shall be ensured properly covered to prevent water contamination.

The site management shall ensure that the drinking water provided meets test standards stipulated under IS10500.

For drinking water, RO Plant having suitable capacity enough meet the requirement of camp occupants is recommended.

**7.11 Garbage and Refuse Disposal**

An adequate number of receptacles with proper cover shall be provided at appropriate location in the camp for maximise use for disposal of waste martial. However, ensure that capacity of receptacles should meet the requirement of the camp. Final disposable of the garbage shall be accordance with Municipal Solid Wastes (Management and Handling) Rules, 2000.

**SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)**

**7.12 Sanitary and Toilet Facilities**

Sanitary and toilet facilities are basic facility of camp, which support the hygiene condition in the camp. It is essential to allow workers to maintain good practices of personal hygiene but also to prevent contamination and the spread of diseases outside the camp. Hence, all Sanitary and toilet facilities provided in camp shall keep in a clean and working condition. Sanitary and toilet shall construct with suitable materials that are easily cleanable. Sanitary and toilet facilities of the camp shall at last 15 to 20 meters away from the nearest living room.

A special precaution shall be taken to maintained the privacy; therefore, every toilet shall be cover from top and appropriate partitioned off as to secure privacy and with provision of proper door and fastening from inside.

An adequate number of sanitary and toilet facilities shall be provided to workers, If there are women worker same ratio shall be maintained. The Sanitary and toilet facilities proved in the camp shall be based on every 15 workers or less in the following Table and there after repetition of same for every 25 nos.

Water Closet (WC)	Urinal (UR)	Wash Basin (WB)	Bath Room (BR)
1	1	1	1
Indian seat with overhead mounted flush tank and 1 tap.	Flush tap fitted	With Tap	Tap and drain

It must be taken in to consideration of proper spacing inside the sanitary and toilet facilities in the camp. It shall be recommended that all sanitary and toilet facilities must be constructed as rate of 1.1 X 1.1 m to provide sufficient space with proper smooth surface and gradient so that proposed floor can be easily clean and maintained in good condition.

Every bathroom shall be under cover and shall have a proper door and fastening. The flooring for bathroom should be of hard washable materials, damp-proof and properly drained. Adequate space must be provided for hanging of clothes. Suitable lighting and ventilation should be provided.

**7.13 Sewage and Liquid Waste Disposal**

**SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)**

The sewage system for the camp shall be properly designed, built and operated so that no health hazard occurs and no pollution to the in air, ground or adjacent watercourses.

Drainage system for the wastewater generate from kitchen, washing shall be discharge through underground drainage pipe to final common sump provided. This sump shall maintain capacity of at least 1.3 times the maximum volume of wastewater discharge from various sources of the camp.

The sanitary facilities of the camp shall be connected to the underground pipes, which divert all discharge in the final sewage treatment system of adequate capacity considering the inflow and occupants. Approved facilities like septic tank with sock pit shall provide for treatment and final disposal waste generate from toilets and urinals.

**7.14 First Aid Facilities**

First-aid unit including an adequate supply of sterilized dressing materials, medicines and appliances shall make available. A Special training of first aid from authorized hospital shall be provided to all the security staff deployed at labour camp and to two percentage of occupants of camp. Suitable transport shall be provided to facilitate taking injured and ill persons to the nearest hospital.

Health problems of the workers shall be taken care of by providing basic health care facilities through health centres temporarily set up for the construction camp. The health centre shall have at least a visiting doctor, nurses and duty staff with basic medicines and linkage with nearest higher order hospital to refer patients of major illnesses or critical cases.

**7.15 Individual requirements****7.15.1 Beds.**

Double decker bunker beds shall be provided and should be meeting requirement such as Double decker 6.5' X 3' with side railing for top bed and flatbed top with 1 mm GI sheet/12 mm commercial ply board and adequately supported and fastened to frame. Frame, ladder and internal support for the bed flat should be of 25 X 25 having a minimum gauge of 2 mm thickness / 16 Gauge.

**7.15.2 Electrical**

## SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)

Two numbers of Socket and one 10 W LED/ CFL, One number of fan common to two bunk beds, one night lamp common for the room.

### 7.15.3 Storage.

Arrangement of Four partition MS storage cabinet of the size 6' H X 2'W X 1 D shall be provided for every two double decker bunk beds. This can be placed close to the wall between bunk beds provided and bottom portion can shared by occupants in bottom and to by occupants in top.

### 7.15.4 Provision Store.

Provision store shall run on no loss, no profit basis and no alcohol or unauthorised items as listed by local statute bodies shall not be sold/ present. No drugs or medicine in any form shall not be kept or sold.

## 7.16 LAYOUT AND MEANS OF ESCAPE

All internal corridors have a minimum clear width of 3-3.5 meter for emergency exit. The special exit gate/s shall be provided to escape from camp to out side public road. All exit gate shall be properly marked in local language and language understood by the majority of labours resident in camp.

Exit gate/s shall provide close to the any public road or any internal site access that is accessible by emergency services like ambulances and fire engines in side the camp.

## 7.17 HAZARDOUS AREAS

The storage of highly flammable substances like kerosene and diesel or lubricant shall not allowed to store near occupant area of the camp. A separate storage location shall identify for storage of inflammable substance in the camp. This storage area shall be minimum 15 meters away from occupancy in the isolated area of the camp. Secondary containment or dip try shall make available to containers of kerosene and diesel or lubricant to avoided spillage or leakage.

Adequate no of fire extinguishers based on substances and quantity stored shall be provided. It shall be responsibility of the camp operator to maintain the logbook or register of substance stored in one time in the storage area.

## 7.18 FIRE SAFETY

**SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)****7.18.1.1 Exits, Escape Routes and Passageways**

All exits, escape routes and passageways in the labour camp shall keep free of obstruction, and dumping of unwanted material.

Occupants of the camp shall not be permitted to store their personal material or items along the corridors or internal lanes.

**7.18.1.2 Fire Fighting Equipment**

Fire alarm smoke detector of Independent type produces the sound and flash alarm which is of dustproof charged by DC9v battery shall be provided for every five bunker beds.



Provisions for fire prevention step in labour camp shall be undertake in the initial stage of construction and based on assessment adequate number of fire equipment like fire extinguishers, fire detection system etc. provided. In addition, means of escape root and access for fire fighters shall defined in the camp.

A special trained firefighting team shall be form internally for handling of the fire. The fire extinguisher requirements for the particular area can determine in numbers by the following formula:

Number Required = Floor Area (m<sup>2</sup>) X 0.065/ Rating of Fire Extinguisher or consultate with the competent person/ local fire department or every 10 meter one extinguisher. The extinguisher shall be placed at conspicuous locations and at meter base of the extinguisher shall at one meter height from the ground and should be easily detachable.

**7.19 ELECTRICAL SAFETY**

All electrical supplies shall be planned and adequately provided. Lack of electrical power points will promote the occurrence of illegal tapping and modification.

Electrical installation and wirings shall be done by proper electrical workers / electricians. Electrical installation shall comply with Electrical Installation Code of practices stipulated under IS Code. All electrical installations and internal/ external wirings of the camp shall installed according to Indian Standard (IS) and undertaken by competent person. All safety measures shall be taken during installation of electrical equipment. All distribution boxes shall be fitted with 30 mA ELCB to avoid any electrical incident. Internal wiring should be routed through the PVC conduit one plug

**SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)**

point should be provided for every bed provided. Stand by Power Supply shall be made available in case power failure.

**7.20 LIGHTNING PROTECTION**

Where temporary workers' housing quarters could potentially be struck by lightning, it shall be planned that the workers housing quarters is either constructed with lightning protection or in a safe zone protected by buildings or facilities with lightning protection.

**7.21 GUIDELINES ON USE OF TEMPORARY LABOUR CAMPS**

- Project Manager of site shall be responsible for complying with all statutory requirements and rules issued thereunder relating to labour camp. He /she shall be responsibility of site management to comply with the Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and other respective regional and local regulations applicable to maintain the labour camp associate with the construction site.
- Site management shall be liable to take written permission or No Objection Certificate/ agreement with owner of the land used for construction of temporary labour camp.
- Site management of the construction site shall appoint an authorised person to maintain the standard of camp. This person will directly report to Project Manager regarding day-to-day update of the camp.
- Authorised person shall be liable to inspect daily common-use areas including toilets, kitchens area, corridors etc to ensure that each facility properly maintained in a clean, satisfactory operating condition.
- Authorised person shall be responsible for safety of camp. He/she shall marinated all documents regarding storage of material, internal changes of camp layout, maintenance of consent/ authorisation, first aid facility, hygiene of camp etc,
- No construction materials or unwanted material shall allow to store in the camp. All internal unwanted material shall store in designated storage areas.
- Authorised person shall be coordinate to labour camp representatives to resolve day-to-day issues.
- Authorised person shall form a representative team from occupant labours for coordination and maintenance of camp.
- Project management shall not accommodate any employees who have criminal records or attached to any banned organization by State or Central government.
- Alcoholic beverages will not be consumed, brought onto, or manufactured in to Housing Premises.
- Non-prescription drugs, intoxicants or alike substances will not be used, brought onto or manufactured to Housing Premises.
- Tobacco in any form is prohibited.

## SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)

- Firearms, explosives, knives or other types of weapons will not be allowed to Housing quarters except in approved kind of knife in kitchen.
- Gambling or any other form of betting game is prohibited.
- Discrimination or intimidation on the basis of race, sex or national origin is prohibited.
- Aggressive or abnormal behaviour is prohibited.
- Individuals under the influence of alcohol, drugs or any other narcotics will not be permitted entry to Housing Premises.
- Violation and / or failure to comply with the above requirements will require a written report detailing facts and corrective actions taken.
- It shall be responsibility of representative of labour camp to marinate entire premises of a camp free from rubbish, waste paper, garbage and other litter.
- Provision shall be made by site management to display in-house rules for occupants to minimize disturbance, nuisance and smooth functioning of the camp including code of conducts for occupants.
- After completion of the site work, it shall be responsibility of the site management to demolish and remove all temporary structures of the camp and transform the respective land in its actual/ virgin condition, which is in no way inferior to the condition prior to commencement of work. All rubbish, waste paper, garbage litter and assorted waste, pits, UST/ AST tanks, pipelines etc. shall be removed and clean the site before handover to respective person or authority for clearance

### 8.0 QUALITY METRICS: (Effectiveness & Efficiency Measures)

Measures	Description
Effectiveness	
Efficiency	

### 9.0 RECORDS

The project site management shall ensure the proper records and particulars of the occupants are kept in proper documents. Copies of Government approved ID cards of all individuals must be available. These documents will allow proper accounting of occupants and facilities head count during any occurrence of emergency situations. All the rooms/ Block need to be numbered and the list of occupants along with details like 1. Name 2. Contact Number 3. Blood Group with

**SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)**

Rh factor 4. Emergency contact details (Name, Relation, Contact Number) 5. Previous Medical History (If any?) 6. Allergenic to Medicine (If Any?)

<b>Name of Record</b>	<b>Retention Period and Disposition Method</b>
All work permit	Till completion of project
All Checklist	Post this the hard copies shall be disposed by shredding

**10.0 ATTACHMENTS****Check List - ML D L / OH S / CT 40**

<b>Location</b>		<b>Date/ time</b>	
<b>Inspected by</b>		<b>Company</b>	

## SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)

SI No:	Items	Yes	No
1	Is labour camp safety ensured like sheds are constructed properly, roof sheets are properly locked, Fire Extinguishers availability etc?		
2	Are welfare facilities such as basic amenities like drinking water, proper sanitation facilities provided at labour camp?		
3	Are hygienic conditions ensured at labour camps by maintaining cleanliness?		
4	Are first aid facilities are available in labour camps?		
5	Are sufficient fire extinguishers are available in the labour camps?		
6	Is the security and labour contractor sufficiently trained in firefighting in case of a fire outbreak in labour camp?		
7	Is Day care facility/school facility arrangements in place?		
8	Is provision for regular supply of drinking water made?		
9	Is drainage system found to be efficient in labour camp?		
10	Is medical check-up done periodically to prevent the spread of diseases?		
11	Is proper lighting arrangement provided at labour camps?		
12	Are toilets in labour camp ensured separately for male and female workers and maintained properly?		
13	Are pesticides sprayed every fortnight after removing eatables from the place of application?		
14	Is fogging done every week to prevent mosquitoes?		
15	Is care taken to ensure whether all the water sources are covered and cleaned and disinfected frequently to avoid outbreak of any water borne diseases?		
16	Does the security maintain register for visitors?		
17	Are emergency contact numbers displayed in labour camps?		
18	Is register maintained for drinking water cleaning, authorized vendor for removal		
19	waste food, and pest control?		
20	Are separate electrical sockets provided for each room at labour camp?		

**MAHINDRA LIFESPACES DEVELOPERS LTD**

**SAFE METHODS AND RISK REDUCTION TECHNIQUES(SMARRT)**

Observation / Areas of Concern / Recommendations