

Labour and Staff Colony:

Following are in the contractor's scope of work for labour & staff colony:

1. Labour colony is to be developed by bidder for all the labourers required to be deployed for the works. All labour colony set-up is to be developed as per attached layout drawing (Design Shall be in the scope of Contractor) and in compliance of statutory requirements.
2. Contractor shall ensure establishment & maintenance of workmen/labour colony in line with BHEL layout drawings & Guidelines (As per Annexure A - Standard Guidelines for Worker's Accommodation / Establishments at BHEL-Project Sites)
3. Land for labour colony shall be arranged by Contractor at their own cost as per availability outside project area within 5Km, Necessary levelling/dressing of land shall be done by the contractor. All arrangement for electricity and drinking/service water to be arranged by the contractor within his quoted price.
4. One Medical Centre (24 x7 working) shall be constructed by the contractor in the labour establishment area for the workmen with ambulance facility in line with BHEL layout drawings & Guidelines (As per Annexure A - Standard Guidelines for Worker's Accommodation / Establishments at BHEL-Project Sites).
5. Development of contractor's temporary staff colony and labour colony having adequate no.of rest rooms along with toilets & fencing etc.

Installation of necessary amenities- and temporary infrastructure for construction activities at Project site locations.

Following are the minimum amenities to be provided by the contractor within the quoted price including removal/disposal of the same in environment friendly manner after its intended use/completion of scope of work:

- i. Labour rest sheds near work spot.
- ii. Canteen facility creation.
- iii. Drinking water facility with suitable capacity water tanks near all work locations.
- iv. Labour Bio toilets near work spot in sufficient nos. with regular cleaning & maintenance arrangement.
- v. Labour colony should have all hygienic condition, dining hall, toilets, proper sewerage system, good drinking water arrangements.
- vi. Recreational facilities, etc.

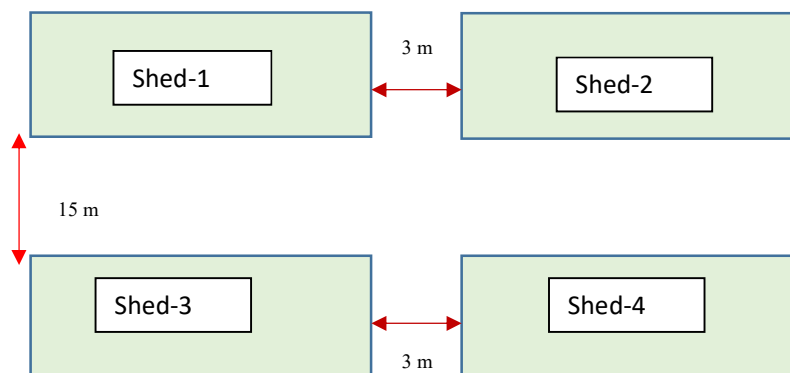
vii. All infrastructure at construction site must be portable/pre-fabricated structures. Permanent installations are not allowed. Contractor shall also be responsible for dismantling and removal of all infrastructure before/while closure of contract.

Annexure-A

Standard Guidelines for Worker's Accommodation / Establishments at BHEL-Project Sites.

1). The following key parameters should be followed during construction of workers accommodation/establishments at project sites: -

- a) Land for labour colony shall be arranged by Contractor at their own cost as per availability outside project area preferably within 5Km. Necessary levelling/dressing of land shall be done by the contractor. All arrangement for electricity and drinking/service water to be arranged by the contractor within his quoted price. However, BHEL may provide land on sharing basis for worker establishment in case Owner provides the same to BHEL.
- b) Water & Electricity for worker establishments shall be suitably arranged by the agency with proper electrical wiring and fitting.
- c) Providing and maintaining facilities for safety, welfare, drinking water and sanitation, hygiene, biennial health check-up etc. for construction workers at their workplaces as well as at labour & staff colonies by the agencies.
- d) The workers accommodation barracks/hutment should be placed as per approved layout plan of BHEL. Agencies to construct temporary labour colony/ hutment, toilets as per attached drawings, after obtaining approval from BHEL site.
- e) **General layout plan for accommodating 120 workers with toilet facilities have been provided in the drawing.** In case, agencies are required to deploy more/less number of workmen at site, the size/nos of shed may be increased/decreased accordingly in consultation with BHEL site. The worker's shed position & its size shall be reviewed & approved by BHEL considering maximum number of workers planned for deployment. No construction shall be permitted without prior approval of proposed layout of worker accommodation by BHEL.
- f) The type and nature of construction for worker accommodation sheds should be preferably uniform for all the agencies so as to bring out a pleasant aesthetic view of the worker's establishment.
- g) For women workers deployed at site, exclusive separate facilities (sheds, bathrooms, etc) considering the privacy & safety of women should be provided by the agency.
- h) The clear ceiling height of the barracks should be minimum 3 metres. There should be minimum 3ft spacing between two beds to ensure adequate privacy & hygiene of the place. The type of sleeping bed in each barrack should be wooden/metal type & no substandard quality sleeping bed will be allowed by BHEL. Wardrobe/shelves for storage of clothes & other essentials to be provided in each hall.
- i) The size of barracks / hutments should be decided considering minimum space requirement of 3.6 sqm / per workers & there should be minimum 3 m spacing between two barrack side by side & 15 m. front to front as shown below. A typical layout plan of labour colony is shown in **Annexure-IA**.



Annexure-A

Standard Guidelines for Worker's Accommodation / Establishments at BHEL-Project Sites.

2). Facilities to be Provided at Labour Establishment

a) Toilet, Bathing & Washing: -

- i). Sufficient numbers of toilets, urinals and bathing room within each barrack/shed with complete water supply system. Minimum 1 nos. urinal cum toilet for every 10 persons and 1 no. bathing room for every 10 persons should be ensured. There should not be any open bathing place in the labour colony to maintain proper hygiene.
- ii). Septic tank/Bio-digester with proper inlet/outlet connection to be provided for each shed
- iii). Suitable / proper arrangements for washing clothes & drying washed clothes shall be made.

b) Service & Drinking Water: -

- i). Proper storage facilities for both service water & drinking water in the labour colony. In case ground water is the source for both service & drinking purpose, water purification plant should be installed for both service & drinking water purpose. The cost of water purification plant has to be borne by the agencies on sharing basis.

c) Medical Facilities: -

- i). One Medical centre (24 x7 working), well finished & furnished, of approx. 150sqm shall be constructed by the contractor in the labour establishment area for the workmen.
 - Doctor's room with attached toilet (approx. 12x12 sqft),
 - Nurses Room with attached toilet (approx 12x12 sqft),
 - Dispensary area (approx. 10x10 sqft)
 - Balance area shall be procedure room/hall.
- ii). Deployment of 2 nos MBBS Doctors and 4 nos trained Male/Female nurses for round the clock service with running medicines.
- iii). Dedicated ambulance in the labour colony for 24x7 hrs emergency medical situation fully equipped with ventilation facilities.
- iv). Cost of medical establishment including payments for medical staffs such as doctors, nurse, ambulance services, consumables, medical instruments/devices & running medicines cost has to be borne by the availing agencies on sharing basis as decided by BHEL site.

d) Safety, Cleaning & Hygiene: -

- i). The regular cleaning and housekeeping of labour establishments, storage water tank, open areas should be ensured by the agencies to maintain proper hygiene. Dedicated persons to be deployed for cleaning of toilets on daily basis.
- ii). Proper ventilation and lighting in both day & night. Proper false ceiling (in extreme hot conditions) & ceiling fans/coolers shall be provided in the barracks.
- iii). Readily accessible adequate first aid boxes, minimum 4 numbers each of fire extinguishers & dust bins shall be provided in each barrack/shed.
- iv). Centralised garbage dumping storage area in the labour colony & its regular clearance should be ensured by the agencies.
- v). Suitable arrangement for regular Pest / ants / Rodent / Rats / Snakes / Mosquito control in the labour colony shall be made with a reputed firm/ organisation by the vendor at their cost. Window mesh for prevention from mosquito shall be ensured.
- vi). Proper surface water drainage system to be followed by the agencies as per BHEL approved layout plan of the labour colony. No water logging should take place in and around labour colony even during peak rainy season.

Annexure-A

Standard Guidelines for Worker's Accommodation / Establishments at BHEL-Project Sites.

- vii). Proper security deployment 24x7 for labour establishment by the respective agency

e) General Points: -

- i). Proper approach road to the labour colony & its connectivity with each barrack with necessary hard surfacing preferably with brick flat soling/paver blocks/PCC paving.
- ii). Separate kitchen facilities with dining hall & clean cooking fuel (without smoke) should be used uniformly in labour establishments to avoid health hazards.
- iii). Space for recreation facilities of the workers like playground etc. The maintenance of the recreation facilities should be ensured by the agencies on sharing basis. Also, weekly or fortnightly games/get-together/entertainment to be organised by the vendor for building motivation & team spirit amongst the labour.
- iv). Proper transportation arrangement / conveyance for going to work place from labour colony would have to be ensured by agency. No two-wheelers would be permitted inside plant premises.

3). Compliances of Guidelines: -

The contractor shall maintain the labour colony for its workmen as per BHEL guidelines. 0.25 % of every RA Bill shall be linked on certification from BHEL for compliance with the guidelines of labour colony.

In case labour establishment is not completed as per the layout drawing and compliance with statutory norms/BHEL Guidelines and any penalty is imposed by Customer, same shall be recovered from contractor's RA Bill.

Regular visit of workmen establishment shall be done by team from BHEL to ensure implementation of above guidelines. Any irregularities observed shall have to be rectified by agencies on immediate basis.

In case, the report submitted by BHEL team is not satisfactory, necessary actions including recoveries (0.25% of RA Bill value) shall be done as per contract. In addition to the recoveries as per contract (0.25% of RA Bill value), expenses incurred (if any) for maintenance & rectification by BHEL shall be recovered from agency along with 5% overheads.

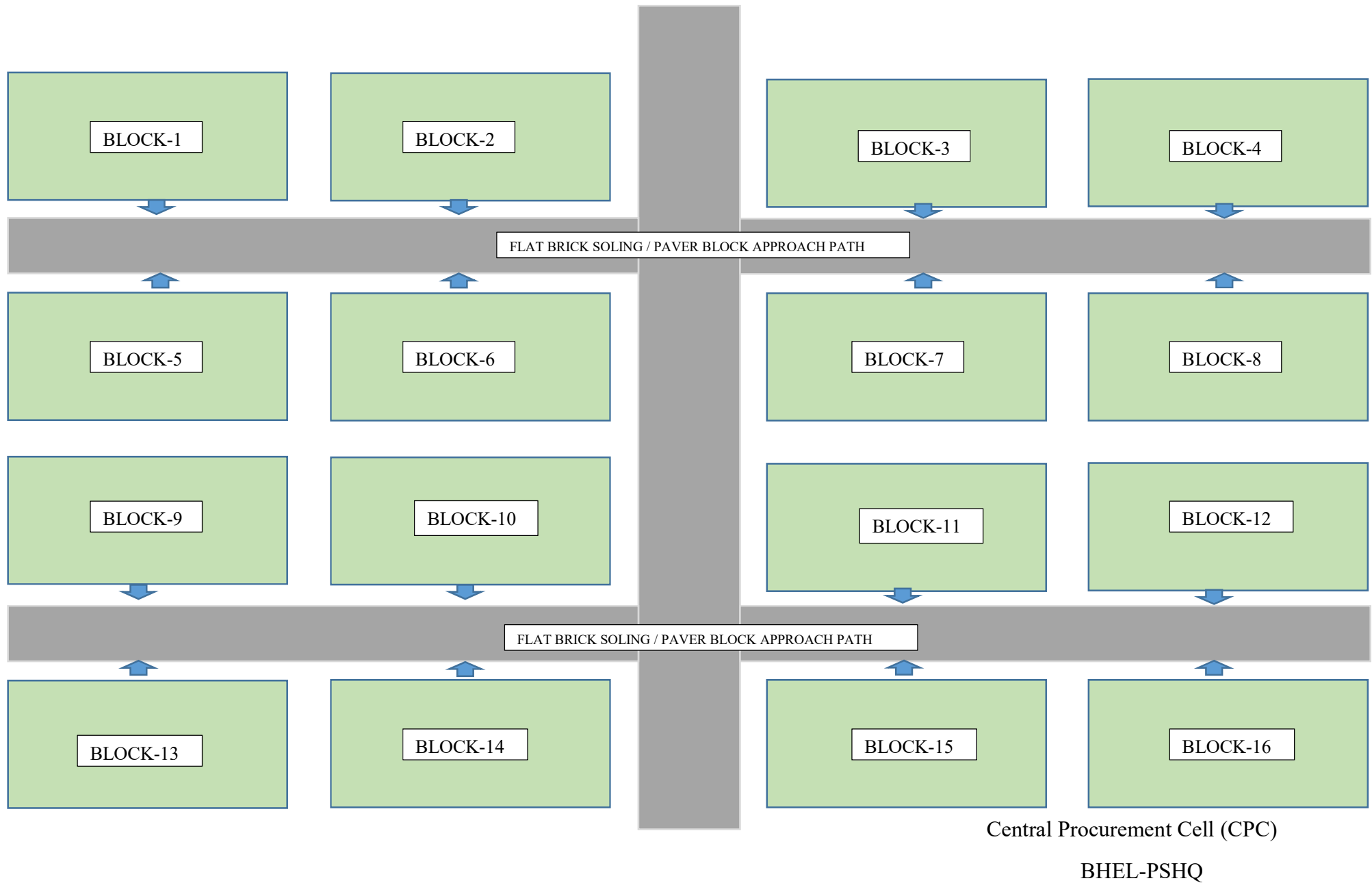
In case Owner/Customer specific guidelines & drawings w.r.t worker's establishment are available in any project, the same shall prevail over and above the BHEL guidelines. Also, in case of conflict of guidelines stipulated in BHEL HSE documents, the more stringent guidelines shall prevail.

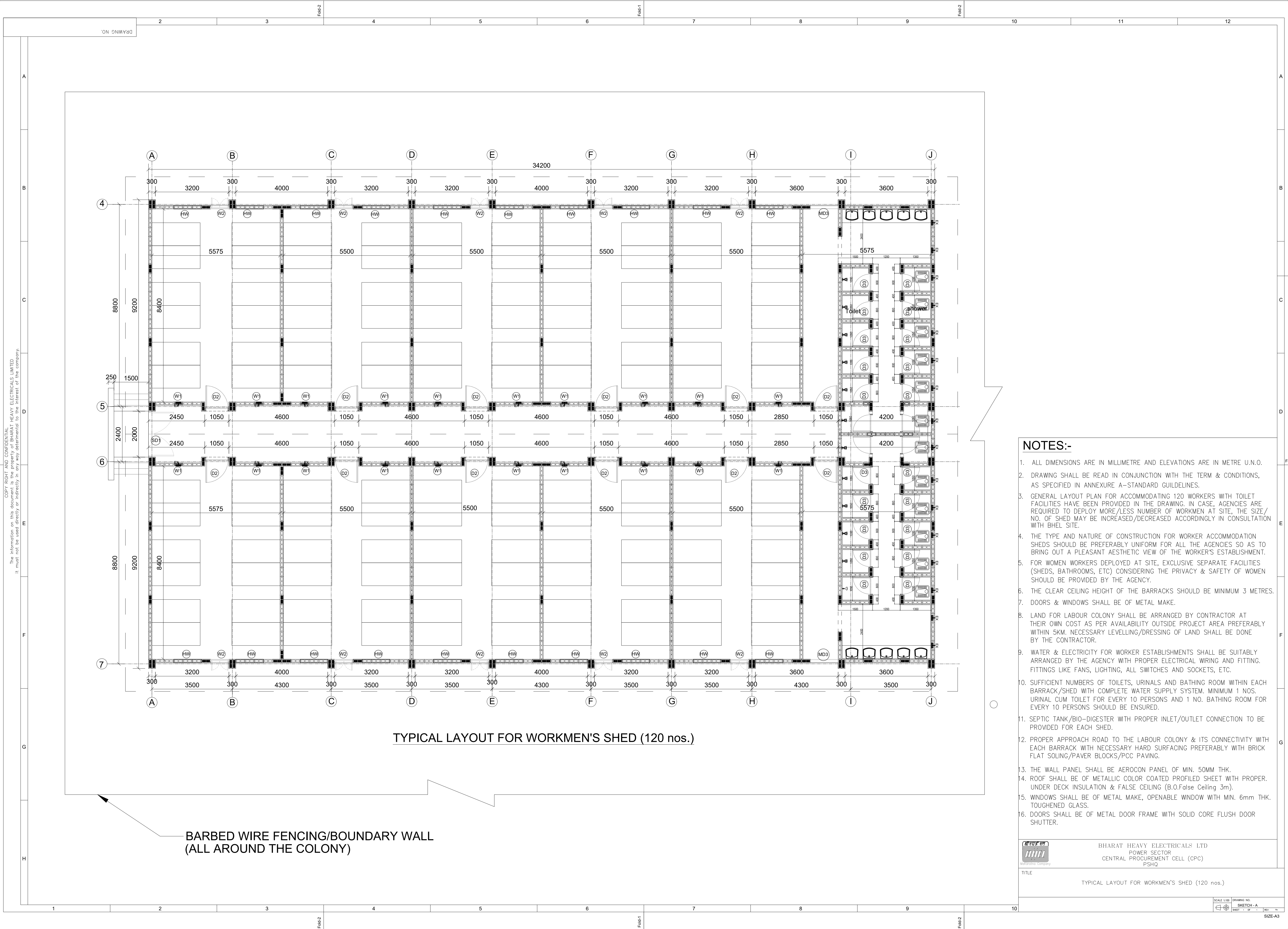
Any other welfare measures which the Central Government considers, under the set of circumstances, as required for decent life of workers shall be ensured as per following applicable Labour Laws: -

- Contract Labour (Regulation & Operative) Act, 1970,
- Inter-State Migrant Workmen (Regulation of Employment and Condition of Services) Act, 1979,
- The Building and Other Construction Workers Act, 1996.
- Labour Code on Occupational Safety, Health and Working Conditions issued by Government of India

Central Procurement Cell (CPC), BHEL-PSHQ

Annexure-IA: General Layout Arrangement of Worker's Establishment for BHEL-Project site





NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRE AND ELEVATIONS ARE IN METRE U.N.O.
2. DRAWING SHALL BE READ IN CONJUNCTION WITH THE TERM & CONDITIONS, AS SPECIFIED IN ANNEXURE A--STANDARD GUIDELINES.
3. GENERAL LAYOUT PLAN FOR ACCOMMODATING 120 WORKERS WITH TOILET FACILITIES HAVE BEEN PROVIDED IN THE DRAWING. IN CASE, AGENCIES ARE REQUIRED TO DEPLOY MORE/LESS NUMBER OF WORKMEN AT SITE, THE SIZE/ NO. OF SHED MAY BE INCREASED/DECREASED ACCORDINGLY IN CONSULTATION WITH BHEL SITE.
4. THE TYPE AND NATURE OF CONSTRUCTION FOR WORKER ACCOMMODATION SHEDS SHOULD BE PREFERABLY UNIFORM FOR ALL THE AGENCIES SO AS TO BRING OUT A PLEASANT AESTHETIC VIEW OF THE WORKER'S ESTABLISHMENT.
5. FOR WOMEN WORKERS DEPLOYED AT SITE, EXCLUSIVE SEPARATE FACILITIES (SHEDS, BATHROOMS, ETC) CONSIDERING THE PRIVACY & SAFETY OF WOMEN SHOULD BE PROVIDED BY THE AGENCY.
6. THE CLEAR CEILING HEIGHT OF THE BARRACKS SHOULD BE MINIMUM 3 METRES.
7. DOORS & WINDOWS SHALL BE OF METAL MAKE.
8. LAND FOR LABOUR COLONY SHALL BE ARRANGED BY CONTRACTOR AT THEIR OWN COST AS PER AVAILABILITY OUTSIDE PROJECT AREA PREFERABLY WITHIN 5KM. NECESSARY LEVELLING/DRESSING OF LAND SHALL BE DONE BY THE CONTRACTOR.
9. WATER & ELECTRICITY FOR WORKER ESTABLISHMENTS SHALL BE SUITABLY ARRANGED BY THE AGENCY WITH PROPER ELECTRICAL WIRING AND FITTING. FITTINGS LIKE FANS, LIGHTING, ALL SWITCHES AND SOCKETS, ETC.
10. SUFFICIENT NUMBERS OF TOILETS, URINALS AND BATHING ROOM WITHIN EACH BARRACK/SHED WITH COMPLETE WATER SUPPLY SYSTEM. MINIMUM 1 NOS. URINAL CUM TOILET FOR EVERY 10 PERSONS AND 1 NO. BATHING ROOM FOR EVERY 10 PERSONS SHOULD BE ENSURED.
11. SEPTIC TANK/BIO-DIGESTER WITH PROPER INLET/OUTLET CONNECTION TO BE PROVIDED FOR EACH SHED.
12. PROPER APPROACH ROAD TO THE LABOUR COLONY & ITS CONNECTIVITY WITH EACH BARRACK WITH NECESSARY HARD SURFACING PREFERABLY WITH BRICK FLAT SOLING/PAVER BLOCKS/PCC PAVING.
13. THE WALL PANEL SHALL BE AEROCON PANEL OF MIN. 50MM THK.
14. ROOF SHALL BE OF METALLIC COLOR COATED PROFILED SHEET WITH PROPER UNDER DECK INSULATION & FALSE CEILING (B.O.False Ceiling 3m).
15. WINDOWS SHALL BE OF METAL MAKE, OPENABLE WINDOW WITH MIN. 6mm THK. TOUGHENED GLASS.
16. DOORS SHALL BE OF METAL DOOR FRAME WITH SOLID CORE FLUSH DOOR SHUTTER.



BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
CENTRAL PROCUREMENT CELL (CPC)
PSHQ

TITLE

TYPICAL LAYOUT FOR WORKMEN'S SHED (120 nos.)

SCALE: 1/50
DRAWING NO.
SKETCH-A
SHEET 1 OF 1
REV. NO.

SIZE-A3

ANNEXURE II

1.1 Cement (Issued by BHEL free of Cost):

1. Cement as received from the manufacturer/ stockiest will be issued free of cost to the contractor. Cement shall be issued normally through bulkers and emptied in cement silos of batching plant. Necessary assistance shall be provided by contractor.
2. Contractor to note that batching plant of capacity 30 Cum per Hour being established at site shall have minimum **two cement silos** of 100 MT capacities each respectively. The number of silos shall be increased based on the site requirement.
3. On advance request of the contractor, the cement shall be supplied in 50kg tamper proof sealed Bags for other than RCC works like masonry, flooring works etc. **(Consumption for rendering purpose will not be considered.)**
4. The contractor shall submit to the engineer, a statement indicating estimated quantity of cement required during a quarter, at least two months in advance of the quarter. In addition, the contractor shall also furnish the estimated requirement of cement during a month by the third week of the previous month indicating his requirement.
5. The theoretical weight of each bag of cement for issued purposes will be considered as 50kg, the contractor shall be accountable for the cement issued to the contractor on this notional weight only. No claim whatsoever will be entertained because of difference between theoretical and actual weight of the bags of cement.
6. The empty cement bags duly accounted for against issue shall be the contractor's property and the same shall be disposed as per statutory regulation prevailing in the project.
7. The contractor shall satisfy himself of the quality and quantity of supplied cement at the time of taking delivery from BHEL stores. No claims whatsoever will be entertained by BHEL because of quality or quantity after the materials are taken by the contractor from BHEL stores.
8. Contractor will be responsible for unloading the cement as soon as the arrival of cement in the weather proof **cement storage sheds** having dense impervious bituminous or concrete floors which shall be kept swept clean at all times. The storage arrangements shall be fully completed and approved by the owner before any cement is delivered to site. The construction of cement storage sheds as per the requirement of BHEL, unloading of cement bags, stacking properly in the storage sheds, removal of the sheds after the completion of the work are in the scope of bidder. Though the cement is unloaded directly at the contractor storage shed, it will be deemed to be considered that the cement was issued from BHEL stores. Necessary documents are to be submitted by the contractor to the BHEL stores for having received cement.
9. Contractor will be responsible for sampling and testing of cement as per Indian Standard / Specification / approved quality plan in the testing laboratory established by the contractor.

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10. One month shall be limit for the maximum quantity of BHEL issued cement that would be with the contractor at any point of time when work is in progress (excluding what has already been incorporated in the works).
11. "BOP Vendor" shall carry out design mix as per IS 456/10262 latest revision and specification, using the OPC and/or OPC and/or PPC (as the case may be) and get the design mix proportions approved by BHEL's Customer/Consultant. The design mix proportion shall be used for concreting at this project.
12. Concrete Mix design of required grade for all concreting shall be carried out from a reputed & approved laboratory of BHEL / NTPC. Contractor may add admixture for minimizing of cement content in line with relevant IS code as advised by BHEL time to time without any additional cost.
13. No cement will be issued on free basis for bought out item like Hume pipe, Interlocking Paver block, Fly ash brick etc. However, cement for mortar for fixing of these items if required will be issued on free basis.

1.2 Return of Materials issued by BHEL free of cost:

1. **Return of Cement:** Sealed cement bags remaining unused and in perfectly good condition at the time of completion or termination of the contract shall be returned promptly, (within 15 days from assessment) if BHEL/ engineer is satisfied of the physical condition of the cement. Return of such cement to the project stores / place as identified within the project area by engineer/ BHEL will not be entitled to handling and incidental charges. Surplus sealed and good conditioned cement bags will be taken back on weightment basis.

Cement that has been unloaded in silo will not be taken back by BHEL. Sweep cement will not be taken back by BHEL.

1.3 Consumption and wastage of materials issued by BHEL free of cost:

1. Cement Consumption:

The theoretical consumption of cement shall be based on the following:

- (a) For design mix concrete as per approved design mix.
- (b) For nominal mix concrete work, as per minimum cement as specified or as approved by engineer-in-charge.
- (c) For item of works, where volume mix is permitted in writing by the BHEL, for masonry works, plaster other miscellaneous items, the cement consumption shall be governed by the "Statement of cement consumption" attached to the Delhi Schedule of Rates CPWD DSR Latest Revision unless otherwise specified in the specifications or the drawing of contract or mutually agreed by engineer-in-charge and the contractor.
- (d) Actual consumption = Issue – Surplus/ unused quantity of cement returned in good condition by the contractor to store.

2. Cement Wastage:

- (a) **Allowable wastage:** One and half percent (+1.5%) of theoretical consumption of cement unless specified otherwise in the technical specification.

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- (b) For cement issued by BHEL to the contractor free of cost, and which is not accounted for by the contractor to BHEL, then recovery for such material shall be affected at penal rates.

Sl. No.	Cement consumption	Basis of issue & penal recovery
1	Theoretical consumption (without considering any wastage or loss).	Free
2	Actual consumption being Limited to one and half percent (+1.5%) of aforesaid theoretical consumption towards allowable wastage.	Free
3	Actual consumption beyond one and half percent (+1.5%) of Sl. No. (1) above.	Penal rate

1.4 Reconciliation of materials issued by BHEL free of cost:

1. The contractor shall submit a reconciliation statement of cement issued to the contractor with each RA Bill.
2. At the time of submission of bills, the contractor shall properly account for the material issued to him as specified herein to the satisfaction of BHEL certifying that the balance material is available in the contractor custody at site.
3. At the time of submission of bills, if it is noticed by BHEL that the wastage is high and calls recovery at the penal rate then, BHEL will proceed for recovery for the excess wastage as per penal recovery rates as specified.
4. The reference drawings for actual material consumption to be used for the purpose of reconciliation shall be drawings prepared by the BHEL and drawings approved by BHEL for fabrication works and such other drawings approved by BHEL. This shall also include the bar bending schedule prepared by the contractor and approved by BHEL.

1.5 General Notes:

1. BHEL reserves the right to recover from the contractor any loss arising out of damage/ theft or any other causes or during verification/stacking or at any time under the custody of the contractor.
2. The contractor shall in no case be entitled for any compensation on account of any delay in supply or non-supply thereof for all or any such materials. However, in case of non-availability of any specific section(s) which delays the completion of work, such cases shall be recorded separately in monthly planning format (F14) and shall be considered for time extension of contract.
3. Contractor will have to make his own arrangement at his own cost for procurement of any other materials except as mentioned above, as required for the works and of such quality as acceptable to BHEL.
4. The contractor shall maintain proper store account for all the BHEL issued materials and shall give Three (03) copies of monthly-computerized reconciliation statement of such account showing total receipt, consumption and balance at site to the BHEL. BHEL Engineer's certification for the reconciliation of

ANNEXURE II

steel shall be final. The detailed reconciliation (diameter/section wise or as required) shall be done at least once in three months (03) or before submission of final bill which comes earlier.

5. Contractor shall also carryout in complete association with BHEL, the material management functions and execution like day-to-day update of materials, issued to contractor, accounting for surplus/scrap material returned etc. These functions shall also be carried out through computerized system utilizing suitable software. Contractor shall engage experienced software personnel to associate on dedicated basis for efficient discharge of the same in time.
6. The contractor shall solely be responsible for the safety & security of material after it is handed over and issued to contractor by the BHEL.
7. BHEL issued materials, shall not be under any circumstances whatsoever, and shall be taken out of the project site unless otherwise permitted by BHEL for outside job.
8. In case of non-finalization of delay analysis, BHEL at its discretion may provide provisional time extension with withholding 10% of running bills.

1.6 Recovery of Materials (Penal Rates):

If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly RA Bills as per following penal rates (excluding GST):

Sl No	Materials	Penal Rate (Rs)
1	Cement (OPC)	6500 /-

Penal Rate will be 1.05 times the actual cost to BHEL or Rate mentioned in above Table, whichever is higher, shall be imposed.

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R.1.1 Reinforcement Steel (Issued by BHEL free of Cost):

1. Only reinforcement steel shall be issued to the contractor on weighment basis. All other steel like **Embedment/Inserts, Earthing Rod/Round Bar, MS/GI Flats, etc. as applicable and required for work completion shall be in scope of vendor.** No material shall be issued to the contractor except as those indicated above steel unless otherwise expressly provided for in the contract. The contractor will have to make the contractor own arrangement at the contractor own cost for procurement of any other material as required for the works and of such quality as acceptable to BHEL
2. All the reinforcement steel (as applicable) issued by BHEL shall be properly accounted for. The total quantity of steel required for the work will be calculated from the approved Bar Bending schedule, approved laps, chairs and lugs etc. The measurement for payment as well as for accounting shall be based on the sectional weights as indicated in the following IS/BS/EN specifications.
3. The reinforcement steel issued to the contractor shall be mainly in standard length and sections as received from the supplier. For available sizes, BHEL is planning to supply TMT in COIL form. Vendor to deploy D Coiling machine suitably for strengthening of coil. However, the contractor shall be bound to accept the steel in length and section as available in the project stores, no claims for extra payment because of issue of non-standard length will be entertained.
4. The contractor shall satisfy himself of the quality and quantity of the materials at the time of taking delivery from BHEL stores. No claims whatsoever will be entertained by BHEL because of quality or quantity after the materials are taken by the contractor from BHEL stores.
5. The contractor shall submit to BHEL, a statement indicating estimated quantity of steel required during a quarter. In addition, the contractor shall also furnish the estimated requirement of steel during a month by the third week of the previous month indicating his requirement.
6. One month shall be limit for the maximum quantity of BHEL issue materials that would be with the contractor at any point of time when work is in progress (excluding what has already been incorporated in the works).
7. The contractor must note that steel required for the contractor's enabling job like store/site office/batching plant/temporary woks etc. shall be arranged by the contractor at his own cost.
8. Open levelled and graded land shall be provided by BHEL on free of cost basis. The contractor shall maintain one centralized fenced store cum bar bending yard (Area approx 70 m x 70 m). Hard surfacing of this yard and all round drain shall be carried out by the contractor at the contractor's own cost within the accepted rate. The contractor shall make complete arrangement of necessary security personnel, to safeguard it.
9. Materials in the contractor's custody. Materials issued will be used only for construction of permanent work. The contractor shall take care of material issued by BHEL and shall protect the same from theft, damage and weathering.

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R 1.2 Return of Materials issued by BHEL free of cost:

1. **Return of reinforcement Steel including Scrap:** All surplus reinforcement steel and all wastage materials will be taken back on weight basis. Surplus, unused and untampered steel shall be sorted section-wise and returned separately at a place directed by BHEL/Engineer within the project area. All wastage/ scrap (including melting scrap, wastage, and unusable scrap) shall be promptly returned to the stores and a receipt obtained for material accounting purposes. Return of such material will not be entitled to any transportation and incidental charge.

R 1.3 Scrap and Serviceable Materials:

1. All reinforcement steel bar measuring 3 metre and above in length shall be treated as serviceable material provided they are in good acceptable condition otherwise shall be treated as scrap.

R 1.4 Consumption and wastage of materials issued by BHEL free of cost:

1. **Steel Consumption:**

The theoretical consumption of various sections of /or diameter of reinforcement steel shall be based on approved construction drawing and bar bending schedule. Weight shall be calculated considering the sectional weights as per Indian standards. No extra cost shall be payable to the contractor for any deviation in weights for the different procedures adopted for issue and calculation of the theoretical consumption including rolling tolerances.

2. **In case any such sectional weights are not available in the above documents, the manufacturer recommendation shall be binding.**
3. The steel issued to the contractor shall be mainly in standard length and sections as received from the supplier. However, the contractor shall be bound to accept the steel in length or coil form as available in the project stores, no claims for extra payment because of issue of non-standard length will be entertained.

- Actual consumption = Issue – Surplus.
- Surplus = Un-tampered, unused quantity of steel returned by the contractor including serviceable material to BHEL store along-with relevant documents.
- Wastage = Actual consumption – Theoretical consumption.

R 1.5 Steel Wastage:

- (a) **Allowable Wastage of Reinforcement steel:** Three percent (+3%) of the theoretical consumption shall be considered as allowable wastage. Invisible wastage (Maximum limit to 0.5%), if any, shall be considered to be included in the specified 3% allowable wastage.
- (b) For steel issued by BHEL to the contractor free of cost, and which is not accounted for by the contractor to BHEL, then recovery for such material shall be affected at penal rates.

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Sl. no.	Steel	Basis of issue & penal recovery
1	Theoretical consumption (without considering wastage and scrap or loss)	Free
2	Wastage limited to plus Three percent (+3%) for reinforcement steel of aforesaid theoretical consumption (1) towards allowable wastage.	Free
3	Wastage beyond Three percent (+3%) for reinforcement steel of the theoretical consumption as per Sl. No. (1) above.	Penal rate

R 1.6 Reconciliation of materials issued by BHEL free of cost:

1. The contractor shall submit a reconciliation statement of reinforcement steel issued to the contractor with each RA Bill.
2. At the time of submission of bills, the contractor shall properly account for the material issued to him as specified herein to the satisfaction of BHEL certifying that the balance material is available in the contractor custody at site.
3. At the time of submission of bills, if it is noticed by BHEL that the wastage is high and calls recovery at the penal rate then, BHEL will proceed for recovery for the excess wastage as per penal recovery rates as specified.
4. The reference drawings for actual material consumption to be used for the purpose of reconciliation shall be drawings prepared by the BHEL and drawings approved by BHEL for fabrication works and such other drawings approved by BHEL. This shall also include the bar bending schedule prepared by the contractor and approved by BHEL.

R 1.7 General Notes:

1. BHEL reserves the right to recover from the contractor any loss arising out of damage/ theft or any other causes or during verification/stacking or at any time under the custody of the contractor.
2. The contractor shall in no case be entitled for any compensation on account of any delay in supply or non-supply thereof for all or any such materials. However, in case of non-availability of any specific section(s) which delays the completion of work, such cases shall be recorded separately in monthly planning format (F14) and shall be considered for time extension of contract.
3. Contractor will have to make his own arrangement at his own cost for procurement of any other materials except as mentioned above, as required for the works and of such quality as acceptable to BHEL.
4. The contractor shall maintain proper store account for all the BHEL issued materials and shall give Three (03) copies of monthly-computerized reconciliation statement of such account showing total receipt, consumption and balance at site to the BHEL. BHEL Engineer's certification for the reconciliation of steel shall be final. The detailed reconciliation (diameter/section wise or as required) shall be done at least once in three months (03) or before submission of final bill which comes earlier.

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5. Contractor shall also carryout in complete association with BHEL, the material management functions and execution like day-to-day update of materials, issued to contractor, accounting for surplus/scrap material returned etc. These functions shall also be carried out through computerized system utilizing suitable software. Contractor shall engage experienced software personnel to associate on dedicated basis for efficient discharge of the same in time.
6. The contractor shall solely be responsible for the safety & security of material after it is handed over and issued to contractor by the BHEL.
7. BHEL issued materials, shall not be under any circumstances whatsoever, and shall be taken out of the project site unless otherwise permitted by BHEL for outside job.

R 1.8 Recovery of Materials (Penal Rates):

If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly RA Bills as per following penal rates (excluding GST):

Sl. No.	Materials	Penal rate (Rs)
1	Reinforcement Steel	60,000 /- Per MT

Penal Rate will be 1.05 times the actual cost to BHEL or Rate mentioned in above Table, whichever is higher, shall be imposed.

T&Ps TO BE DEPLOYED BY CONTRACTOR

Below given Nos are tentative for planning purposes by the bidder. At the time of start of work, BHEL and contractor shall jointly make MOM about deployment period of each of following T&P.

Sl. No.	Description	
A	Major T&Ps for Civil Works	
A.1	Concrete Batching Plant (30 Cum/Hr.) with two Nos. of Silos of 100 MT capacity each.	1 No. minimum
A.2	Concrete Transit Mixer	3 No. or as per requirement
A.3	Concrete Mixer	As per Requirement
A.4	Concrete Pump of Suitable Capacity with Sufficient lift / Concrete Boom Placer of sufficient boom length	As per Requirement
A.5	Hydraulic Excavator /Poclain	2 nos. - As per Requirement
A.6	JCB	01 No. Additional 01 No. as per Requirement
A.7	Dumper	5 Nos- as per requirement.
A.8	Tower Crane of suitable capacity for height of approx. 200m and bottom radius 75m along with operator and necessary spares	1 No. for each NDCT
A.9	Jump Form for Shell Concreting along with all accessories etc. complete required for smooth operation of jump form	1 No. for each NDCT
A.10	Suitable Passenger Hoist/Lift with cabin for carrying of minimum 8 Passenger along with all accessories	1 No. for each NDCT
A.11	Suspended Platform of suitable size	As per Requirement
A.12	Scissor Platform/ Ladder	As per Requirement
A.13	D Coiling Machine-	As per requirement
A.14	Pneumatic hydraulic rotary piling rigs with all accessories	It shall be decided based on no of Piles and Schedule considering the rate of 3 piles per day with 1 rig
B	Major T&Ps for Structural Work	
B.1	FARANA crane (12/14 MT Capacity)	As per Requirement
C	Other T&Ps for Civil & Structural Works	
C.1	Electrical Winch (of required capacity)	As per Requirement
C.2	Vibrators (electrical/diesel)	As per Requirement
C.3	Welding Machine with all accessories	As per Requirement
C.4	Self-priming Dewatering pump of various capacity (Diesel/Electric) From 7.5 HP to 10 HP	Minimum 1 nos -As per Requirement
C.5	Curing / dewatering pump 1.5 / 2 HP	As per Requirement

C.6	1. Ply Shuttering board with adequate supporting structure (Old steel shuttering plates will not be allowed). 2. Steel shuttering (fare face)	Lot (As per requirement)
C.7	Trailer (20MT Capacity)	As per Requirement
C.8	Tractor with Trolley	As per Requirement
C.9	Pipe Scaffolding, Clamps / Swivel Couplers (One/Two Way), Props, Jacks, Screw Heads, MS Pipes, Wooden Battens, Planks, Bullies, H Frames, Tie Rods with Nuts, Adjustable Achro Span (Considering Individual Areas)	Minimum 1000 set of scaffolding pipe and clamp.
C.10	Reinforcement bending machine	As per Requirement
C.11	Reinforcement cutting machine	As per Requirement
C.12	MS scaffolding pipe with matching Couplers	As per Requirement
C.13	Optical/laser plumb	As per Requirement
C.14	Total Station	3 Nos.
C.15	Auto level & staff	As per Requirement
C.16	Water Tanker	As per Requirement
C.17	All Equipment for area Lightning like halogen bulbs and Portable light Towers etc.	As per Requirement
C.18	Computer with printing/photocopy & CD writing facility	As per Requirement
C.19	DG Set of Suitable Capacity	As per Requirement
D	Installation of Chiller Plant along with Batching Plant.	For temperature controlled concreting as per requirement.
E	Min. Four (04) sets of shuttering materials shall be available for Racker Column.	
F	Min Twenty (20) sets of shuttering material shall be available for Grillage column.	
G	Min. Two (02) set of shuttering material shall be made available for Ring beam/Raft.	

(Payment towards mobilization and installation for sr no A.8, A.9 A.10, A.14, E, F & G shall be allotted during detailed BBU approval based on expenditure/cost incurred proof to be submitted by contractor with maximum cumulative 5% of Civil contract value)

A. Tentative Manpower Requirement

1. Project manager – with 10 Years' experience in Industrial Foundation, Building & Power Plant Civil & Architectural Works/Power plants civil work.

2. Experienced Civil Engineers – 1 heads
3. Experienced Structural/Mechanical Engineer - 1 Head
4. Experienced Foreman / Supervisors –2 heads
5. Planning & Billing Engineer – 02 heads
6. Stores, Gate Pass – 01 heads
7. Accounts & Administration- 01 heads
8. Quality Control Engineer/Chemist – 1 head
9. Safety Engineer – to be governed as per prevailing BHEL's Safety Manual applicable for Korba West EPC Project which is enclosed herewith.
10. Operator, Licensed Electrician, Mechanic - As per requirement
11. Experienced Carpenters & Helpers – lot for similar nature of work
12. Experienced Bar Benders & Helpers – lot for similar nature of work
13. Security Guards (Round The Clock) – As per requirement.

B-1 Deputation of above man-power shall be jointly decided at site in line with construction Schedule.

- 2 Engineer/supervisor for other functions like store & purchase, material management, planning, finance, administration etc. are to be provided as per site requirement and not considered in above list.
- 3 In the event of non-deputation of engineer/ supervisor by the bidder as per above agreed schedule, BHEL shall reserve the right to deduct Rs. 50,000.00 per man-month for engineer, Rs. 35,000.00 per man-month for the supervisor from RA bills. Further induction of manpower regarding site supervisor & site engineer will be decided at site as per requirement without any financial implication to BHEL.
- 4 BHEL reserves the right to reject or approve the list of personnel proposed by the contractor. The persons whose bio-data have been approved by BHEL will have to be posted at site and deviation in this regard will not be permitted unless specific & reasonable justification is made.
- 5 The contractor should also submit the fitness/calibration certificate for T&Ps regularly and renew it as per applicable IS standards and statutory requirements. The tools & tackles shall not be removed from site without written permission of BHEL.

Annexure-IV
(For Better Understanding Only)

Globalization of free issue items such as cement & steel quantities means that any individual free issue item can vary and vendor should not be penalized in case total value of free issue item does not change. There will be no penalty on excess quantity as long as total cost of free issue items remain unchanged i.e. quantity of one item can go up and quantity of other item can go down within total cost of free issue arrived based on the quantity quoted by the bidders.

EXAMPLE-1 (one item exceeds the quoted free issue quantity but total value doesn't exceed the total value of free issue quantity)

1) The value of the quoted quantities of the free issue items by a bidder for the project is as below:

Cement: 15,000 tons @ Rs. 5,836.00 per ton =	Rs. 8,75,40,000/-
Reinforced steel: 5,000 tons @ Rs. 54,000 per ton =	Rs. 27,00,00,000/-
Total	Rs. 35,75,40,000/-

Assuming that the actual reinforcement steel requirement goes down to 4,000 tons and actual cement quantity goes up to 25,000 MT, final evaluated value of free issue item will be as under:

Cement: 23,000 tons @ Rs. 5,836.00 per ton =	Rs. 13,42,28,000/-
Reinforced steel: 4,000 tons @ Rs. 54,000 per ton =	Rs. 21,60,00,000/-
Total	Rs. 35,02,28,000/-

Since actual value of free issue item (Rs. 35,02,28,000/-) is less than the value of quoted free issue item (Rs. 35,75,40,000/-), there will be no penalty on account of excess quantity of cement 8,000 Tons i.e. (23000-15000).

EXAMPLE-2 (Total value exceeds the total value of free issue quantity)

1) The value of the quoted quantities of the free issue items by a bidder for the project is as below:

Cement: 15,000 tons @ Rs. 5,836.00 per ton =	Rs. 8,75,40,000/-
Reinforced steel: 5,000 tons @ Rs. 54,000 per ton =	Rs. 27,00,00,000/-
Total	Rs. 35,75,40,000/-

Assuming that the actual reinforcement steel final requirement goes up to 5,250 tons and actual cement final quantity goes up to 15,500 MT, final evaluated value of free issue item will be as under:

Cement: 15,500 tons @ Rs. 5,836.00 per ton =	Rs. 9,04,58,000/-
Reinforced steel: 5,250 tons @ Rs. 54,000 per ton =	Rs. 28,35,00,000/-
Total	Rs. 37,39,58,000/-

In this case as soon as the total value of free issue items crosses the total quoted value of free issue items (i.e. Rs. 35,75,40,000/-), any quantity issued thereafter irrespective of quoted free issue items quantity, will be considered excess quantity and penalty will be applicable on that quantity. Assuming

that free issue items crossed the total quoted value of free issue items (Rs. 39,43,60,000/-) at following quantities

Cement: 14,000 tons @ Rs. 5,836.00 per ton =	Rs. 8,17,04,000/-
Reinforced steel: 5,108.07 tons @ Rs. 54,000 per ton =	Rs. 27,58,36,000/-
Total	<u>Rs. 35,75,40,000/-</u>

Then in this case any quantity issued beyond 14,000 tons Cement i.e. 1500 tons (15,500-14,000) and beyond 5,108.07 tons Reinforced steel i.e. 141.93 tons (5250-5,108.07) will be considered as excess quantity for recovery

Penalty amount= 1500 * penal rate for Cement as per NIT.
141.93 tons * penal rate for Reinforced steel as per NIT.

HEALTH, SAFETY & ENVIRONMENT PLAN

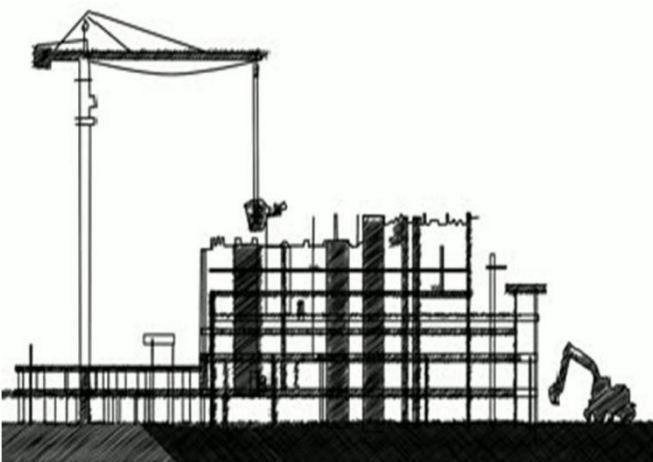
for

SITE OPERATIONS

by

**CONTRACTOR
(HSEP14)**

**2x660 MW SUPER CRITICAL
TPP, HTPS, KORBA WEST of
CSPGCL**



**BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR WESTERN REGION**

HSE PLAN FOR SITE OPERATIONS BY BHEL CONTRACTORS AT A GLANCE

BEFORE START		
SIGNING OF MOU		
Agree to comply to HSE requirement- Statutory and BHEL's		

MANPOWER PLANNING			
HSE ORGANISATION			
No. of Workers	No. of Safety Supervisors	No. of Safety Officers	HSE Roles and responsibilities - Site In-charge- As per clause 7.3.2 - Safety officer- As per clause 7.3.4 Qualification - As per clause 7.2
Up to 20	1	0	
20 to 50	0	1	
50 to 100	1	1	
101 to 250	2	1	
251 to 500	4	1	
501 to 1000	6	2	
1000 to 2000	6+ One additional supervisor up to every additional 250 workers	3	
2000-3000	10+ One additional supervisor up to every additional 250 workers	4	
3000-4000	14+ One additional supervisor up to every additional 250 workers	5	
Above 4000	18 + One additional supervisor up to every additional 250 workers	5 + one safety officer up to addition 1000 workers	

HSE PLANNING	
For Man, Machine / Equipment /Tools & Tackles	

PROVIDE	
HSE INFRASTRUCTURE	
- PPEs - Drinking Water - Washing Facilities - Latrines and Urinals - Provision of shelter for rest - Medical facilities - Safety Labels	- Canteen facilities - Labor Colony - Emergency Vehicle - Pest Control - Scrap yard - Illumination

TRAINING	
HSE TRAINING, AWARENESS & PROMOTION	
Training - Induction training - Height work and other critical areas - Safety Walk by Top Management - Tool Box talk & Pep Talk	Awareness & Promotion - Signage - Poster - Banner - Promotional activity/ Competition - Awards (To Motivate Workers/ Employee)

COMMUNICATION	
HSE COMMUNICATION	
Incident Reporting - Accident- Fatal & Major - Minor, Fire Incident - Property damage - Near Miss	Event Reporting - HSE Celebrations - HSE Training - Medical camp - Mock drill (Fire, Medical, emergency, height etc.)

EXECUTIVE SAFETY**OPERATIONAL CONTROL PROCEDURES****PERMIT TO WORK**

Height work (above 2 meters), Hot Work, Heavy Lifting, Confined Space, Radiography, excavation, Safety Facility Removal, Night / Holiday Work, Loading / Unloading, Lockout / Tag out, Alignment etc..

SAFETY DURING WORK EXECUTION

- Height work
- Welding
- Rigging
- Lifting
- Cylinder- storage & Movement
- Demolition work
- T&Ps

- Chemical Handling
- Electrical works
- Fire
- Scaffolding
- Working on Platform
- Excavation
- Ladder
- Hoisting appliance

HOUSE KEEPING**WASTE MANGEMENT****TRAFFIC MANAGEMENT****ENVIRONMENTAL CONTROL****EMERGENCY PREPAREDNESS AND RESPONSE PLAN****HSE CHECKS****HSE AUDITS & INSPECTION**

- Daily Checks
- Inspection of PPEs
- Inspection of T& Ps
- Inspection of Cranes & Winches
- Inspection of Height work
- Inspection of Welding and Gas cutting
- Inspection of elevators etc.

HSE PERFORMANCE EVALUATION PARAMETER**CONFEORMANCE****PENALTY FOR NON CONFORMANCE****REFER FORMAT NO. HSEP:14-F14****INCREMENTAL PENALTY**

- Any additional penalty or any other penalty levied by the customer/ authorities on account of safety violations by the contractor shall be payable by the contractor.
- In case of non-fulfilment of mandatory / contractual HSE requirements, BHEL shall have the right to fulfil such requirements at the risk & cost of contractor with applicable overheads.

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1.0 PURPOSE

1.1	The purpose of this HSE Plan is to provide for the systematic identification, evaluation, prevention and control of general workplace hazards, specific job hazards, potential hazards and environmental impacts that may arise from foreseeable conditions during installation and servicing of industrial projects and power plants.
1.2	This document shall be followed by BHEL's Contractor's/ Sub Contractor's for EPC scope at 2x660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST of CSPGCL. In case customer specific documents are to be implemented, the same will be followed in conjunction with customer specific documents in complementary manner.
1.3	Although every effort has been made to make the procedure and guideline in line with statutory requirements, in case of any discrepancy wherein the relevant statutory guidelines or HSE contract requirements supersedes this document , the same shall be followed.
1.4	We will promote and maintain a safe, healthy & environmentally complaint workplace for all employees, agency/ contractor, visitors and any others that may be affected by construction activities in line with BHEL HSE Policy may be displayed in its office and strive for a "GOAL TO ZERO RECORDABLE INCIDENTS" at project site.
1.5	All safety rules & codes applied by the BHEL/ Customer as per the contract at site shall be ensured by the contractor and hence customers HSE policy and local state/ central HSE rules will be part of HSE policy.
1.6	Vendors have to comply requirements of HSE & Statutory requirement in line with BHEL HSE plan, 2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST of CSPGCL Safety requirement, and Chhattisgarh/BOCW/Central statutory requirement.
1.7	In case there is any specific HSE requirement from BHEL/ Customer Korba west of CSPGCL, not explicitly indicated in this document the same shall be required to be fulfilled as per the decision of BHEL Project Director/ Construction Manager.

2.0 SCOPE

2.1	Health, Safety, and Environment (HSE) Plan for site operations by contractors is a mandatory framework applicable to all contractors, agencies, and sub-contractors engaged in the 2x660 MW Super Critical Thermal Power Project (TPP) at HTPS, Korba West, under CSPGCL. This plan aligns with BHEL's General Safety Rules and is designed to ensure comprehensive safety and environmental compliance across all project phases, including dismantling, material management, erection, commissioning, testing, civil works, and labour colony operations. BHEL's HSE Plan emphasizes the systematic identification, evaluation, prevention, and control of workplace hazards and environmental impacts. It mandates that all subcontractors adhere to this plan in conjunction with any customer-specific requirements, ensuring compliance with statutory and contractual HSE obligations. The plan outlines clear objectives, such as ensuring the health and safety of all personnel, protecting the environment, providing trained and competent personnel, and maintaining safe work systems. It also sets ambitious targets aiming for zero incidents across various categories, including explosions, fatalities, lost-time injuries, fires, vehicle incidents, and environmental incidents. As a dynamic and living document, the HSE Plan is subject to revisions to accommodate evolving project needs and regulatory requirements.
2.2	This document is applicable for BHEL's Agency/ contractors/ Sub contractor at all activities of BHEL 2x660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST of CSPGCL as per the relevant contractual obligations.

3.0 OBJECTIVES AND TARGETS

- ❖ **To achieve “Zero Incident at Site”**
- ❖ **100% PPEs compliance in high and medium risk activities.**
- ❖ **100% compliance to all legal/statutory requirements related to EHS.**
- ❖ **100% incident reporting, recording and reviewing for corrective actions.**
- ❖ **100% Health, Safety and Environmental Induction training attendance for all workers.**
- ❖ **Regular Safety Reviews to assess HSE program compliance and closure of any recognized gaps to improve safety management and incident prevention.**
- ❖ **100% High Risk activities to be carried out only after approved Method Statement, HIRA / Aspect-Impact / JSA / OCP and Permit to Work are implemented.**

3.1	Prevent injury and ill health of all workers at site ('Workers' refers to all personnel including managerial, supervisory, professional, technical, clerical and other workers including contract labour).
3.2	Prevent Pollution to environment as per ISO 14001:2015 (Environment Management System) and Occupational Health & Safety as per ISO 45001:2018.
3.3	Ensure the Health and Safety of all persons at work site is not adversely affected by the work.
3.4	Ensure protection of environment of the work site.
3.5	Comply at all times with the relevant statutory and contractual HSE requirements.
3.6	Provide trained, experienced and competent personnel. Ensure medically fit personnel only are engaged at work.
3.7	Provide and maintain plant, places and systems of work that are safe and without risk to health and the environment.
3.8	Provide all personnel with adequate information, instruction, training and supervision on the safety aspect of their work.
3.9	Effectively control, co-ordinate and monitor the activities of all personnel on the Project sites including contractors in respects of HSE.
3.10	Establish effective communication on HSE matters with all relevant parties involved in the Project works.
3.11	Ensure that all work planning takes into account all persons that may be affected by the work.
3.12	Ensure fitness testing of all T&Ps. Lifting appliances like cranes, chain pulley blocks etc. are to be certified by competent authority.
3.13	Ensure timely Provision of resources to facilitate effective implementation of HSE requirements.
3.14	Ensure continual improvements in HSE performance
3.15	Ensure conservation of resources and reduction of wastage
3.16	Capture the data of all incidents including near misses, process deviation etc. Investigate and analyze the same to find out the root cause.
3.17	Ensure timely implementation of correction, corrective action and preventive action.

HEALTH, SAFETY AND ENVIRONMENT PLAN

FOR SITE OPERATIONS BY CONTRACTORS

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NOTE

- A. The contractor shall also comply with HSE Targets/ Compliance stipulated by BHEL/ Customer from time to time.
- B. BHEL install IP based CCTV system along with IP based announcement system which shall be used for monitoring safety during construction from Safety control room. It shall be possible to make announcements to alert the workers. Whenever required. These cameras shall be installed at all strategic locations in the plant area. This camera can be wired or wireless as per suitability at site. Initially these installations will be temporary & locations will keep on changing depending upon the work in progress. Drone based safety monitoring shall be done during day to day monitor of all construction activity at a close range.
NOTE :- Assistance for Camera positioning and its safety will be responsibility of contractor working in that area.
- C. Contractor shall take all necessary precautions to protect all the existing equipment, structures, facilities and buildings etc. from damage. In case any damage occurs due to the activities of the contractor on account of negligence, ignorance, accidental or any other reason whatsoever, the damage shall be immediately made good by the contractor at his own cost to the satisfaction of the BHEL/ Customer (2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST of CSPGCL. The contractor shall also take all necessary safety measures with specific reference to excavation in rock, at his own cost, to avoid any harm or injury to his workers and staff from the equipment and facilities of the power plant.

4.0 REFERENCES

4.1	Contract Documents
4.2	Relevant Legislations
4.3	BHEL Power Sector HSE Management System
4.4	BHEL to provide contractor hard / soft copies of all applicable HSE Procedures, Work Permits (Soft Copy/ via HSE observer App), Operational Control Procedures, Job Safety Analysis, Hazard Identification & Risk Assessment formats and any other instructions required to be followed by the contractors, as a minimum before commencing operations at site. These shall include, but not limited to: i. HSE Procedures ii. Method Statements iii. JSA & HIRA Standard Format iv. Operational Control Procedures v. Work Permits vi. Inspection & HSE Formats
4.5	Relevant Indian & international standards in case of any ambiguity in/ lack of procedure/ specifications. All IS & BS standards mention in this HSE Plan must follow wherever applicable.
NOTE	1. All contractor must use HSE observer App for raising HSE observation, Near miss, weekly Safety Walk by top management, TBT, Asset Management system (T&Ps etc.), HSE Inspection, All Work Permit system etc.. In case of any technical error or any specific requirement HARD Copy of work permit system shall be implement at site, as per Work Permit Format Attached under Annexure - 10. 2. However, in case Customer have their own Safety Work Permit system, then same shall be followed. 3. Contractor shall ensure availability and understanding of these requirements prior to commencing work at site. In case the statutory requirements i.e. State or Central Acts and / or applicable rules like the Building and Other Construction Workers Regulation of Employment and Conditions of Service- Act,1996 or State Rules (wherever notified),the Factories Act, 1948 or Rules (wherever notified), etc. are more stringent than the requirements stipulated in this document, they shall be applicable.

5.0 BHEL HEALTH, SAFETY & ENVIRONMENT POLICY

In BHEL, Health, Safety and Environment (HSE) responsibilities are driven by our commitment to protect our employees and people we work with, community and environment. BHEL believes in zero tolerance for unsafe work/non-conformance to safety and in minimizing environmental footprint associated with all its business activities. We commit to continually improve our HSE performance by:

- Developing safety and sustainability culture through active leadership and by ensuring availability of required resources.
- Ensuring compliance with applicable legislation, regulations and BHEL systems.
- Taking up activities for conservation of resources and adopting sound waste management by following Reduce/Recycle/Reuse approach.
- Continually identifying, assessing and managing environmental impacts and Occupational Health & Safety risks of all activities, products and services adopting approach based on elimination/substitution/reduction/control.
- Incorporating appropriate Occupational Health, Safety and Environment criteria into business decisions, design of products & systems and for selection of plants, technologies and services.
- Imparting appropriate structured training to all persons at workplace and promoting awareness amongst customers, contractors and suppliers on HSE issues.
- Reviewing periodically this policy and HSE Management Systems to ensure its relevance, appropriateness and effectiveness.
- Communicating this policy within BHEL and making it available to interested parties.

Chairman & Managing Director
BHEL

5.1

MEMORANDUM OF UNDERSTANDING:

After award of work, contractors are required to enter into a memorandum of understanding as given below:

Memorandum of Understanding

BHEL, Power Sector _____ Region is committed to Health, Safety and Environment Policy (HSE Policy).

M/s (Contractor) _____ do hereby also commit to comply with the same HSE Policy while executing the Contract Number.

M/s _____ have gone through and understood all the HSE requirements of the contract including HSE manpower, tools & equipment, systems & procedures, and agree to fulfill the same as a minimum. Any additional resources and support required for ensuring fulfillment of HSE Objectives shall be provided by contractor at no extra cost.

M/s _____ agree that in case they fail to comply to the HSE requirements as stipulated in the contract, BHEL shall have the right to implement the same at the risk and cost of the contractor with applicable overheads.

M/s _____ agree that delays on account of non-implementation of HSE requirements by contractor, incidents etc. shall not be attributed to BHEL.

M/s _____ shall ensure that safe work practices as per the HSE plan. Spirit and content therein shall be imbibed in all workers and supervisors for compliance.

In addition to this, M/s) _____ shall comply to all applicable statutory and regulatory requirements which are in force in the place of project and any special requirement specified in the contract document of the principal customer.

M/s _____ shall co-operate in HSE audits/inspections conducted by BHEL /customer/ third party and ensure to close any non-conformity observed/reported within prescribed time limit.

Signed by authorized representative of M/s -----

Name:

Place & Date:

5.2 TERMS & PROCEDURE FOR THE PAYMENT LINKED TO RA BILL FOR SAFETY:

There is an amount linked to each RA bill w.r.to safety. Contractor must fulfill all the details mention below to process the amount linked to RA bill for Safety aspect/ safety Rule/ Compliance etc.

Agency/ Contractor are advised to price their bids in such a manner that the component for 'Amount linked to Safety Aspects/ compliance to Safety Rules' should not be less than 1.5 % of the cumulative total of Service Portion of the Contract, i.e. Civil + Installation/ Erection + Structural Works etc.. In case 'Amount linked to Safety Aspects/ compliance to Safety Rules' is less than aforesaid minimum percentage specified of the cumulative total of Service Portion of the Contract, i.e. Civil + Installation/ Erection + Structural Works etc., the amount by which it is lower shall be retained proportionately from the other components mention below of the Contract price while releasing payments of each RA bill. No interest shall be payable on the amounts linked to Safety Aspects / Compliance to Safety Rules including aforesaid retained amount. The amounts linked to Safety Aspects / Compliance to Safety Rules including aforesaid retained amount shall be payable in part or full based on safety compliance duly certified by Project Manager (Package In charge)/ Construction manager and Safety-in-charge on quarterly basis/ 3 month period.

5.2.1	The amount linked to Safety Aspects/ compliance to Safety shall be paid in two parts, viz,
5.2.1.A	10% of Y amount (calculated as 0.1 Y of the service portion amount of RA bill) shall be linked to Fatal/Major Accidents, and
5.2.1.B	90% of Y amount (calculated as 0.9 Y of the service portion amount of RA bill) shall be linked to various Safety Aspects specified in HSE Plan for Site operation by Contractor.
	NOTE : Y = 1.5 % of service portion of gross amount (excluding taxes as applicable) of each RA bill raised in 3 months, envisaged for Safety Aspect.
5.2.2	Contractor shall claim Amount linked to Safety Aspects/ Compliance to Safety in such a manner that amount claimed is equal to Y of service portion of gross amount (excluding taxes as applicable) of RA bill.
5.2.3	The amount as elaborated at PARA 5.2.1 (above) shall be withheld from first and second monthly RA bill of the respective quarter/three-month period and shall be released in part or full based on safety compliance duly certified by Project Manager and Safety-in-charge on quarterly basis. The amount for the entire quarter (i.e. RA bills raised during a 3-month period) shall be paid to the Contractors at the end of that three months period along with 3rd/last RA Bill for the quarter/three months period upon complying the following conditions:

5.2.3.A Amount of RA bill linked to FATAL/ Major Accidents (0.1Y as mention at clause 5.2.1.A).

I.No fatal injury or accident-causing death in that three months' period.
AND

II.No Major injury or accident causing 25% or more permanent disablement to workmen or employees in that three-month period. Permanent disablement shall have the same meaning as indicated in The Workmen's Compensation Act' 1923 or IS 3786.

In case of any fatal injury or accident as elaborated above occurs during that three-month period, the stipulated amount (0.1Y) subject to minimum of **Rs 10 Lakh per fatality** shall be forfeited and shall not be payable to the contractor under the contract. In case, the amount to be deducted/forfeited exceeds the amount linked to Fatal/ Major Accidents, the same shall be recovered from remaining Amount (0.9Y) linked to Compliance of Safety Rules and/or any other payments immediately due to the contractor under the Contract.

In case of any Major injury or accident causing **25%** or more permanent disablement to workmen/worker or employees occurs during that three-month period, **Rs 4 lakh per Major injury** shall be deducted from the amount (0.1Y) linked to Fatal/ Major Accidents and shall not be payable to the Contractor under the contract. In case, the amount to be deducted/forfeited exceeds the amount linked to Fatal/ Major Accidents, the same shall be recovered from remaining Amount (0.9Y) linked to Compliance of Safety Rules and/or any other payments immediately due to the Contractor under the Contract.

Further, in case, Contractor doesn't raise RA Bills in any three-month period/quarter and if any fatal injury and/or major accident takes place in that period, Construction Manager shall deduct the amount [**Rs 10 Lakh per fatality and Rs 4 lakh per Major injury**] pertaining to this particular quarter from his next RA bill/due payment. In case, the amount to be deducted/forfeited exceeds the amount linked to Safety, the same shall be recovered from any other payments immediately due to the contractor under the Contract.

The amount deducted/forfeited as mentioned above shall be in addition to the compensation payable to the workmen / employees under the relevant provisions of the Work-men's Compensation Act' 1923 and rules framed there under or any other applicable laws as applicable from time to time.

5.2.3.B Amount of RA Bill linked to Compliance of Safety Rules (0.9Y i.e. 90% of amount as elaborated as mention at clause 5.2.1.B).

Aforesaid amount (on quarterly basis) shall be payable to Contractor in five equal parts under five heads as under:

- (i) Amount payable on deployment of required Safety Personnel One fifth of the amount specified at clause 5.2.3.B (calculated as 0.18Y of Service portion amount of RA Bill), on quarterly basis, shall be paid upon certification by Construction Manager in consultation with Safety dept. that required number of Safety personnel/ Officer/ Supervisor etc. as per Clause 7.0 (HSE Organization) have been deployed. The aforesaid amount linked to deployment of requisite safety personnel shall be paid as under:

- a. 50% of the amount referred at 5.2.3.B (i), for deployment of Safety Supervisors shall be paid on pro-rata basis depending upon the actual no. of Safety Supervisors deployed vis-à-vis actual requirement:

(Amount to = $0.09Y \times \text{Service portion of RA bill amount} \times (a/b)$ be paid)

Where 'a' is actual no. of Safety supervisors deployed.

And

'b' is required no. of Safety supervisors as per, This HSE Plan for site operation by contractor.

In case, actual no. of Safety supervisors deployed is more than requisite number (i.e. a/b is more than 1), the amount to be paid shall be restricted to 0.09Y.

- b. 50% of the amount referred at clause 5.2.3.B (i), for deployment of Safety Officers shall be paid on pro-rata basis depending upon the actual no. of Safety Officers deployed vis-à-vis actual requirement:

(Amount to be paid) = $0.09Y \times \text{Service portion of RA bill amount} \times (a/b)$

Where 'a' is actual no. of Safety Officers deployed

And

'b' is required no. of Safety Officers as per HSE plan for site operation by contractor.

In case, actual no. of Safety Officers deployed is more than requisite number (i.e. a/b is more than 1), the amount to be paid shall be restricted to 0.09Y.

- c. In case aforesaid requisite no. of Safety personnel are not deployed by contractor, amount not to be paid as calculated above for that particular quarter/three-month period shall be forfeited and shall not be payable to the contractor under the contract.

NOTE: - In case as per this HSE plan, contractor/ agency has to deploy only Safety supervisor (where worker < 20) & only Safety officer (where worker >20 & <50), then Both a & b portion will be released/ deducted as per compliance.

5.2.3.B

(ii) Amount payable on providing requisite Personal Protective Equipment & Safety Equipment

One fifth of the amount specified at Clause 5.2.3.B (calculated as 0.18Y of Service portion amount of RA Bill), on quarterly basis, shall be paid upon certification by Construction Manager in consultation with Safety dept. that contractor has adhered to the requirements of Clause 8.7 (Personal Protective Equipment) and Annexure - 1 (List of Safety Enables - PPEs).

In case of non-compliance by contractor, warning letter/Noncompliance shall be issued by Construction Manager /Safety Officer of BHEL. Further, if more than two such warning letters/Non Compliance Memos are issued in a quarter/three monthly period, above mentioned amount for that particular quarter/three- month period shall be forfeited and shall not be payable to the contractor under the contract.

Note:- The agency should ensure sufficient inventory of personal protective equipment (PPEs) prior to initial mobilization. After identifying the need of the required PPEs for various activities performed at the site, an additional inventory of approx. 20% of required PPEs should be maintaining during the execution of the work. If sub agency fails to provide the PPEs to worker the same may be issued by BHEL and cost for the PPEs will be recovered from the contractor from regular RA Bill with overhead as per contract.

(iii) Amount payable on providing requisite Safety Induction and Training

One fifth of the amount specified at Clause 5.2.3.B (calculated as 0.18Y of Service portion amount of RA Bill), on quarterly basis, shall be paid upon certification by Construction Manager in consultation with Safety dept. that contractor has adhered to the requirements of imparting Safety training as per Clause 9.0 (HSE Training & Awareness) to at least 90% of its employees/workmen (who have not been previously provided with requisite training) in a quarter/ three months' period. In case contractor fails in meeting the aforesaid requirement, above mentioned amount for that particular quarter/three-month period shall be forfeited and shall not be payable to the contractor under the contract.

5.2.3.B	(iv)	Amount payable on providing requisite Medical and First Aid Amenities One fifth of the amount specified at clause 5.2.3.B (calculated as 0.18Y of Service portion amount of RA Bill), on quarterly basis, shall be paid upon certification by Construction Manager in consultation with Safety dept. that contractor has adhered to the requirements of Clause 8.8.5 to Clause 8.8.8 and Annexure -A (i.e. Medical Centre with First Aid Amenities & Ambulance & First Aider & First Aid Box). In case contractor fails to support BHEL in complying Clause 8.8.5 (i.e. Medical Centre with First Aid Amenities & Ambulance & Annexure-A) and Providing First Aider & First aid box nearby construction activity area (i.e. Clause 8.8.6 & Clause 8.8.7 & Annexure-A for First Aider & First aid box), then even on one incidence in any quarter/three-month period, above mentioned amount for that particular quarter/three-month period shall be forfeited and shall not be payable to the contractor under the contract.
	(v)	Amount payable on compliance to Work Permit System One fifth of the amount specified at Clause 5.2.3.B (calculated as 0.18Y of Service portion amount of RA Bill), on quarterly basis, shall be paid upon certification by Construction Manager in consultation with Safety dept. that contractor has adhered to the requirements of Clause 11.2 (i.e. Work Permit System). In case of non-compliance by contractor, warning letters/Non Compliance Memos shall be issued by Construction Manager/ Safety Officer of BHEL. In case of issuance of more than two such warning letters/Non Compliance Memos in a quarter/three monthly period, above mentioned amount for that particular quarter/three-month period shall be forfeited and shall not be payable to the contractor under the contract.

NOTE :-

- In case 'Amount linked to Safety Aspects / compliance to HSE Plan for site operation by contractor' is less than 1.5 % of the cumulative total of Service Portion of the Contract, i.e. Civil/ Installation/ Erection /Structural Works etc., the amount by which it is lower shall be retained proportionately from the other components of RA Bill while releasing payments of each RA bill. No interest shall be payable on the amounts linked and withheld for Safety Aspects / Compliance to HSE Plan for Site operation by contractor including aforesaid retained amount. The amounts linked to Safety Aspects / Compliance to HSE Plan for site operation by contractor including aforesaid retained amount shall be payable in part or full based on safety compliance duly certified by Construction Manager and Safety-in-charge on quarterly basis/ after 3 month period.**
- Amount deducted by customer against amount/ payment linked to RA bill for safety mention in above para, shall be distributed amongst the agencies responsible for the same proportionate to violation made by contractor/ agency.**
- In case BHEL have deducted any penalty for Safety violation and this penalty category match with above mention terms & procedure for the Payment linked to RA bill for safety (Clause 5.2), then total higher amount penalty shall be deducted from quarterly claim raised for Safety amount withheld for safety aspect by contractor/ vendor.**

6.0 TERMS & DEFINITIONS

6.1	SAFETY WALK: - It's conducted periodically by an official – it's a walk through a portion or whole of a site as a HSE officer who notes down HSE observations, speak to concerned workmen and supervisor on observation, get the same corrected with personal follow up- this sends out a strong message on Management's commitment to safety.
6.2	BUILDING OR OTHER CONSTRUCTION WORK: - Building or other construction work means the construction, alteration, repairs, maintenance or demolition, of or, in relation to, buildings, streets, roads, railways, tramways, airfields, generation, transmission and distribution of power, water works, oil and gas installations, electric lines, tunnels, bridges, viaducts, pipelines, towers, cooling towers and such other work as may be specified.
6.3	BUILDING WORKER: - Building worker means a person who is employed by a contractor to do any skilled, semi-skilled or 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.
6.4	ESTABLISHMENT: - Establishment means an establishment who or which employs building workers in any building or construction work, and includes an establishment belonging to a contractor.
6.5	CONTRACTOR/ SUB CONTRACTOR: - 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 contractor or any other agency engaged on his behalf.
6.6	CUSTOMER / EMPLOYER: - Employer in relation to an establishment, means the owner thereof that is the contractor himself.
6.7	COMPETENT PERSON: - 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 purpose of testing, examination or annealing and certification of lifting appliances, lifting gears, wire ropes or pressure plant or equipment.
6.8	DANGER: - Danger means danger of accident or of injury or danger to health.
6.9	HAZARD: - Hazard means danger or potential danger.

6.10	HAZARDOUS SUBSTANCE: - Hazardous substance means any substance, which due to its explosiveness, inflammability, radioactivity, toxic or corrosive properties and similar hazardous characteristics may Cause injury; or Affect adversely the human system; or Cause loss of life or damage to property or environment;
6.11	HAZARDOUS PROCESS: - Hazardous Process comprises roof work, steel erection, and work under and over water, demolition and work in confined space etc.
6.12	NATIONAL STANDARD/ INDIAN STANDARD: - National Standard/ Indian Standard means standards as approved by the Bureau of Indian Standards (BIS) and in the absence of such standards, the standards approved by the Central Government for a specific purpose.
6.13	LIFTING APPLIANCE: - Lifting Appliance means a crane, hoist, derrick, winch, jack, pulley block etc. or other equipment used for lifting materials, objects or building workers etc.
6.14	LIFTING GEAR: - Lifting gears means ropes, chains, hooks, slings and other accessories of a lifting appliance etc.
6.15	SAFE OPERATING PRACTICE: - Safe operating practice/ method statement/ operating control procedure means the practice followed in building and construction activities for the safety of workers and for safe operation of machinery and equipment used in such activities. Such practices shall conform to all or any of the following: Relevant Standards approved by BIS; National Building Codes Manufacturer's instruction on safe use of equipment and machinery; Code of practice on safety in construction industry published by International Labour Organization.
6.16	SAFE WORKING LOAD: - 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 conditions as assessed and certified by a competent person.
6.17	INCIDENT: - Work- related or natural event(s) in which an injury, or ill health (regardless of severity), First aid, Minor/ Major ,damage to property or fatality occurred, or could have occurred.
6.18	NEAR MISS: - An incident where no ill health, damage or other loss occurs, but it had a potentialto cause is referred to as "Near-Miss".

6.19	MAN-HOURS WORK: - The total number of man hours worked by all employees including contractors working in the premises. It includes managerial, supervisory, professional, technical, clerical and other workers including contract labours. Man-hours worked shall be calculated from the payroll or time clock recorded including overtime. When this is not feasible, the same shall be estimated by multiplying the total man-days worked for the period covered by the number of hours worked per day. The total number of workdays for a period is the sum of the number of men at work on each day of period. If the daily hours vary from department to department separate estimate shall be made for each department and the result added together.
6.20	FIRST AID CASES: - First aids are not essentially all reportable cases, where the injured person is given medical treatment and discharged immediately for reporting on duty, without counting any lost time.
6.21	LOST TIME INJURY: - Any work injury which renders the injured person unable to perform his regular job or an alternative restricted work assignment on the next scheduled work day after the day on which the injury occurred.
6.22	MEDICAL CASES: - Medical cases come under non-reportable cases, where owing to illness or other reason the employee was absent from work and seeks Medical treatment.
6.23	TYPE OF INCIDENTS & THEIR REPORTING: - i) Near Miss: A near miss is an unplanned event that did not result in injury, illness or damage – but had the potential to do injury, illness or damage. ii) Non-Reportable Cases: An incident, where the injured person is given medical help and discharged for work without counting any lost time. iii) Reportable Cases: In this case the injured person is disable for 48 hours or more and is not able to perform his duty. iv) Injury Cases: These are covered under the heading of non-reportable cases. In these cases the incident caused injury to the person, but he still continues his duty.
6.24	TOTAL REPORTABLE FREQUENCY RATE: - Frequency rate is the number of Reportable Lost Time Injury (LTI) per one Million Man hours worked. Mathematically, the formula read as: (Number of Reportable LTI x 1,000,000) / Total Man Hours Worked

6.25	SEVERITY RATE: - Severity rate is the Number of days lost due to Lost Time Injury (LTI) per one Million Man hours worked. Mathematically, the formula reads as: $(\text{Days lost due to LTI} \times 1,000,000) / \text{Total Man Hours Worked}$
6.26	INCIDENCE RATE: - Incidence Rate is the Number of LTI per one thousand manpower deployed. Mathematically, the formula reads as: $(\text{Number of LTI} \times 1000) / \text{Average number of manpower deployed}$
6.27	PERSONAL PROTECTIVE EQUIPMENT (PPE): - PPEs are the protective devices made available for individual or collective use of the workers likely to be affected by the hazards of the workplace or process.
6.28	HIRA :- Hazard Identification and Risk Assessment (HIRA) is a process of identifying Hazards in work area and then assessing them properly.
6.29	METHOD STATEMENT: - A method statement is prepared by the Execution/ Engineering Department detailing the steps, equipment, competencies and safety precautions required for carrying out any activity.
6.30	JOB SAFETY ANALYSIS: - A job safety analysis (JSA) is a procedure which helps integrate accepted safety and health principles and practices into a particular task or job operation. In a JSA, each basic step of the job is to identify potential hazards and to recommend the safest way to do the job. Other terms used to describe this procedure are job hazard analysis (JHA) and job hazard breakdown.
6.31	HEAVY & COMPLEX LIFTING: - A heavy and complex lifting activity includes: 1. Lifting above 20 Tons 2. Tandem Lifting using multiple cranes Total load exceeding 75% of capacity of crane. Depending up the condition of cranes, hydra/ Farana cranes, winch machines & other lifting accessories 3. Lift of unusual difficulty or geometry or rigging 4. Lift over operating units 5. Any other lift as decided by site HSE / Erection
6.32	NIGHT WORK: - Work conducted after sunset when only a fraction of total manpower is available

7.0 HSE ORGANIZATION

7.1	Deployment: The contractor should deploy sufficient HSE Officers and HSE Supervisors/Stewards, as per requirement given above, since initial stage and add more in proportion to the added strength in work force.		
	The schedule of requirement of safety personnel is given below.		
	No. of Workers	No. of Safety Supervisors	No. of Safety Officers
	Up to 20	1	0
	20-50	0	1
	50 to 100	1	1
	101 to 250	2	1
	251 to 500	4	1
	501 to 1000	6	2
	1000 to 2000	6+ One additional supervisor up to every additional 250 workers	3
	2000-3000	10+ One additional supervisor up to every additional 250 workers	4
	3000-4000	14+ One additional supervisor up to every additional 250 workers	5
	Above 4000	18 + One additional supervisor up to every additional 250 workers	5 + one safety officer up to addition 1000 workers
7.1.A	DEPLOYMENT PLAN		
1	Above requirement is for every shift for each unit.		
2	The dynamic deployment plan of Safety manpower at various locations containing names, areas, time periods, shifts etc. shall be submitted to BHEL for approval by subcontractor		
3	BHEL may modify the deployment plan based on nature and volume of jobs, Risks and hazards associated etc.		
4	For less than 20 workers HSE Officer is not mandatory. In case the number of workers exceed 20 for 3 consecutive months, HSE Officer is to be engaged. The HSE Officer shall be deployed for a minimum period of 6 months, even if the number of workers fall below 20 in any month subsequent to deployment. If within that 6-month period, the number of workers is more than 20 for at least 3 months, the deployment duration of HSE Officer will extend further 6 months after completion of previous 6-month period.		
5	NOTE :- Site Material Management/ Handling (Loading/ Unloading) contracts, 1 no. HSE Officer shall be required irrespective of the total manpower deployed. Additional Safety Supervisor shall be deployed, if material yard are at different locations as per instructions from construction manager/ GM/ PD.		
6	HSE Officers/Supervisors of all the vendors may be required to report directly to BHEL HSE Officer at site & shall comprise as a total team for handling all HSE issues. However, each safety officer/ agency shall be individually responsible for the safe execution of work in their respective areas.		

7.2 MINIMUM QUALIFICATION & EXPERIENCE REQUIREMENTS OF HSE PERSONNEL

1. HSE Officer	i) Recognized degree in any branch of Engg. Or Tech. or Architecture with practical experience of working in a building or other construction work in supervisory capacity for a period of not less than three years, OR Recognized diploma in any branch of Engg. Or Tech with practical experience of working in a building or other construction work insupervisory capacity for a period of not less than five years. AND ii. Recognized degree or diploma in Industrial safety. iii. (Preferably) have adequate knowledge of the language spoken by majority of the workers at the construction site. Alternatively: B. Graduation Degree in Science with Physics & Chemistry and degree or diploma in Industrial Safety (from any Indian institutes recognized by AICTE or State Council of Tech. Education of any Indian State) with practical experience of working in a building, plant or other construction works (as Safety Officer, in line with Indian Factories Act, 1958) for a period of not less than five years.
2. HSE Supervisor	i) Possesses recognized degree in any branch of Engineering. OR Diploma in any branch of Engineering with atleast one-year construction experience. ii). Should possess Requisite skills to deal with construction safety & fire related day-to- day issues.
3. HSE Steward	i) Class XII pass certificate AND ii) Trained in fire- fighting as well as in safety / occupation al health related subjects, with: a) Minimum two year of practical experience in construction work environment AND b) Should have adequate knowledge of the local language spoken by majority of the workers at the construction site.

7.2.1	Appointment of Safety Officer/ Safety Supervisor/ Safety Steward: - Each contracting Agency shall provide a sufficient number of qualified, suitable and experienced persons to manage all safety related matter on Site relating to the works. Irrespective of manpower employed by the agency whether temporary, casual, and probationer, regular or permanent or on contract, Agency shall deploy a qualified Safety Officer/executive, responsible for carrying out the safety management programme before start of the work.
7.2.2	Safety Steward – I. 01 nos steward for every 20 nos worker for up to 100 workers. II. for above 100 workers; 1 nos additional steward for every 50 workers in addition to 5 nos steward (i.e. up to 100).
7.2.3	In case there is more than one HSE Officer with any Contractor/ subcontractor, one of them, who is senior most by experience & meets qualification as per clause 7.2 of this HSE plan, may be designated as HSE In-charge who will be the nodal point of contact on HSE matters.
7.2.4	For Safety compliance against HSE/ Safety Observation at site, Contractor/ Subcontractor shall provide adequate number of workers as and when required, in order to attend and comply to Safety observations raised by BHEL/ Customer.
7.2.5	Appointment of HSE Officer at Project site
1	The subcontractor shall submit the certificates of qualification & experience of HSE manpower before deployment for BHEL to assess suitability as per requirement detailed in this document
2	In case of rejection, subcontractor shall arrange additional candidates and submit resume to BHEL. Penalties will be applicable during the period of non-deployment in such cases as well.
3	Subcontractor shall ensure physical availability of safety personnel at the place of specific work locations.
4	The Subcontractor shall deploy the HSE Officers as per the site's requirement. Non-deployment shall lead to stoppage of the work and final decision shall rest with Site HSE & Construction manager.
5	The Subcontractor shall prepare an organization chart identifying the areas of operations, responsibilities and reporting structure of all safety personnel for each shift and submit the same to BHEL.

7.2.6	AVAILABILITY AND PENALTY FOR NON-DEPLOYMENT: - In case contractor fails to deploy the required Safety professionals mention under Clause no 7.1 i.e. Safety Engineer/ Officer & Safety Supervisor at Project site, BHEL will impose penalty mention under Clause 7.2.6 and This penalty shall be deducted from contractor's monthly RA bill. 1. Safety Engineer/ Officer Rs. 2,500 / day. 2. Safety Supervisor Rs. 1,500 / day Note :- 1. Penalty shall be collected for the period of non-availability of safety personnel after allowing a grace period of 10 days for finding a replacement. The same shall be deducted on pro-rata basis till the required manpower is deployed. In case agency could not provide replacement/ deployment for more than 10 days, then penalty will be calculated from day 1 of absence/ deployment.

	2. In case of abnormal delay & frequent rejections of candidates proposed by the subcontractor, BHEL shall exercise the right to deploy the safety manpower & deduct the amount from subcontractor's running bill with applicable overheads. In such cases also, the provision of logistics, transportation, accommodation and other logistical support to the HSE personnel shall be in the scope of subcontractor in addition to the salary. After deployment of manpower by BHEL, the penalty for non-deployment specified above shall not be applicable.
7.3	HSE – A LINE RESPONSIBILITY RESPONSIBILITIES FOR IMPLEMENTATION OF SAFETY RULES: - • The term “Line” includes management, Executives, Supervisors, Foremen, and Workers who are part of the workforce. Line is to be fully involved in HSE Planning & Implementation with the aid and advice of HSE organization. • Line, having control of resources and manpower is responsible for action on the HSE non-conformities reported by the HSE personnel. • HSE organization should play a supporting role to line management and should work closely with them on executing HSE Planes) all together.
7.3.1	SAFETY RULES
1	The Contractors / Subcontractors shall ensure proper safety of all the workmen, materials, plant and equipment belonging to him or to the Employer or to others, working at the Site.
2	All equipment's used in construction and erection by the contractor shall meet BIS / International Standards and where such standards do not exist, the Contractor shall ensure these to be absolutely safe. All equipment's shall be strictly operated and maintained by the contractor in accordance with manufacturer's operation manual. The contractor should also follow Guidelines / Rules of the Employer in this regard.
3	The Contractors / Subcontractors shall provide suitable latest Personal Protective Equipment's of prescribed standard to all their employees and workmen according to the need. The Engineer I/c shall have the right to examine this safety equipment's to determine their suitability, reliability, acceptability and adaptability. The contractor should also ensure these before their use at worksite.
4	The Contractors / Subcontractors shall provide safe working conditions to all workmen and employees at his workplace including safe means of access, railings, stairs, and ladders, scaffolding, work platforms, toe guards etc. The scaffoldings shall be erected under the control and supervision of an experienced and competent person. For erection of scaffolds, access, work platforms etc. shall be good and the contractor shall use standard quality of material.
5	The Contractors / Subcontractors shall follow and comply with all the Safety Rules, standards, code of practices of BHEL and relevant provisions of applicable laws pertaining to the safety of workmen, employees, plant and equipment as may be prescribed from time to time without any protest or contest or reservation. In case of any nonconformity between statutory requirement and the Safety Rules of the Employer referred above, the latter shall be binding on the Contractor unless the statutory provisions are more stringent. As and when required he can refer / obtain copy of BHEL safety documents as stated above.

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6	The Contractors / Subcontractors shall have his own arrangements/ tie up with nearby hospitals for treatment of sick and injured. The medical examination of the workers employed in hazardous areas shall be conducted as per Rule 223 of The Building and Other Construction Worker (Regulation of Employment and Condition of Service) Central Rule 1998 Their health records shall be maintained accordingly and to be submitted to Engineer I/c when asked for. If any worker found suffering from occupational health hazard, the worker should be shifted to suitable place of working and properly treated under intimation to Engineer I/c. The medical fitness certificate to be submitted to Engineer (I/c).
7	First Aid boxes equipped with requisite articles as specified in the Rule 231 of The Building and Other Construction Worker (Regulation of Employment and Condition of Service) Central Rule 1998 OR Annexure – 2 (Details & Contents of First Aid Box as per Contract Labour (Regulation & Abolition Act), Central Rules, 1971) whichever is applicable to site shall be provided at construction sites for the use of workers. Training has to be provided on first aid to workmen & office bearers working at site.

7.3.2	SITE IN-CHARGE OF CONTRACTOR
1	Shall sign Memorandum of Understanding (MoU) for compliance to BHEL's HSE Plan for Site Operations as per clause 5.1
2	Shall engage (HSE Organization) qualified safety officer(s), supervisor(s) and steward (s) as per clause 7.0
3	Shall adhere to the rules and regulations mentioned in this code, practice very strictly in his area of work in consultation with his concerned engineer and the safety coordinator.
4	Shall screen all workmen for health and competence requirement before engaging for the job and periodically thereafter as required.
5	Shall not engage any employee below 18 years of age.
6	Shall ensure that all T&Ps engaged are tested for fitness and have valid certificates from competent person.
7	Shall ensure closure of all HSE non-conformities reported by BHEL or observed during internal inspection by providing appropriate resources in a timely manner.
8	Shall ensure that provisions stipulated in contract Labour Regulation Act 1970 for canteen, rest rooms/washing facilities to contracted employees at site.
9	Shall adhere to the instructions laid down in Operation Control Procedures (OCPs) available with the site management.
10	Shall ensure that person working above 2 meter should use Safety Harness tied to a life line/stable structure.
11	Shall ensure that materials are not thrown from height. Cautions to be exercised to prevent fall of material from height.
12	Shall report all incidents (Fatal/Major/Minor/Near Miss) to the Site engineer / HSE officer of BHEL.
13	Shall ensure that Horseplay is strictly forbidden.
14	Shall ensure that adequate illumination is arranged during night work.

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15	Shall ensure that all personnel working under contractor are working safely and do not create any Hazard to self and to others.
16	Shall ensure display of adequate signage/posters on HSE.
17	Shall ensure that mobile phone is not used by workers while working.
18	Shall ensure conductance of HSE audit, mock drill, medical camps, induction training and training on HSE at site.
19	Shall ensure full co-operation during HQ/External /Customer HSE audits.
20	Shall ensure submission of look-ahead plan for procurement of HSE equipment's and PPEs as per work schedule.
21	Shall ensure good housekeeping.
22	Shall ensure adequate valid fire extinguishers are provided at the work site.
23	Shall ensure availability of sufficient number of toilets /restrooms and adequate drinking water at work site and labour colony.
24	Shall ensure adequate emergency preparedness.
25	Shall be member of site HSE committee and attend all meetings of the committee
26	Power source for hand lamps shall be maximum of 24 v.
27	Temporary fencing should be done for open edges if Hand – railings and Toe-guards are not available.
28	To record all incidents including near miss and report to BHEL and to ensure analysis & corrective actions for the same
29	Shall conduct weekly Safety Walks in the work area.
30	Shall arrange for all the necessary PPE's like Safety Helmets, Safety Belts, Full Body Harness, Safety Shoes, Face Shield (if required), Hand Gloves etc. including RFA – Retractable Fall Arrestor, Safety Net as a Secondary line of Protection before start of work.
31	Shall ensure the implementation of provisions of applicable acts and rules pertaining to HSE.
32	Shall ensure availability of updated (Hazard Identification and Risk Assessment) Register for the area of activity
33	Shall ensure availability of Method Statements & Job Safety Analysis for all hazardous activities
34	Shall ensure necessary controls to minimize risk in all applicable hazardous activities including Height Work, Hot Work, Lifting & Rigging, Confined Space, Maintenance, excavation, Radiography, Loading/ Unloading, Drilling/ Blasting etc.
35	Shall ensure implementation of HSE requirements mentioned in this document and as specified in the BHEL HSE management System including training, inspection, awareness, reporting etc.
36	Shall ensure that person working above 2.0 meter should use Safety Harness tied to a life line/stable structure.
39	Shall ensure a secondary means of fall protection (Safety Net, Retractable Fall Arrestor etc.) for preventing fall from height
40	Construction of Canteen at Site, Office Infrastructure: Printer, PC, Fire Extinguishers etc.
41	Shall analysis HSE Performance regularly in work area and take steps to improve the same.
42	Shall ensure stoppage of work in case of unacceptable Safety hazards.

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7.3.3	SITE HSE COMMITTEE
1	Site HSE/ Safety committee shall be formed within each contracting agency comprising of worker representatives with equal no. of management representatives as per the provisions of BOCW Act/rules. This committee in each agency shall meet at least once in every month. The safety officer of the concerned agency shall coordinate these meetings. BHEL/ 2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST of CSPGCL Safety officer shall be special invitee for Safety Committee meetings. The safety committee functioning shall be in line with the provisions of BOCW Act/Rules.
2	Apart from the above, each agency shall organize safety meetings every day before start of day's work to educate & motivate the workers about the necessity of safety. Case study of accident/ incident can be shared in these meetings.
3	The contractor shall also regularly organize safety meetings for all job supervisors/foremen.
4	Weekly meeting with contractors Safety Officers to be organized by safety department of BHEL/ 2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST of CSPGCL and minutes to be recorded, circulated and compliance status to be checked on regular basis.
5	Site HSE committee shall consist of BHEL Project Director/ Construction Manager (Chairman), Site BHEL HSE coordinator (Secretary/Convener), BHEL HOS (Member), Site In charge of contractor (Member) and Safety officer of contractor (Member).
6	Shall evaluate a suitable course of action for the effective implementation of safety system & procedures. Committee will also ensure that all the relevant codes & acts / rules are followed.
7	Shall meet monthly and as and when required, to discuss ways and means to eliminate unsafe acts/condition.
8	Shall monitor the performance of the HSE programs and suggest improvements as required.
9	Shall discuss exception points relating to HSE Audits, sub-contractor HSE practices, incident reports, near miss reports, etc.
10	Shall analyze the high risk activities to be undertaken in the near future to identify hazards and decide on the control measures to be taken.
11	Shall inspect the site on regular intervals to locate unsafe conditions with reference to the inspection checklist.
12	Shall investigate all incidents and strengthening the safety programme by additional precautions, if any based on the incident investigate.
7.3.4	HSE OFFICER/ INCHARGE OF CONTRACTOR
1	Carry out safety inspection of Work Area, Work Method, Men, Machine & Material, P&M and other tools and tackles.
2	Facilitate inclusion of safety elements into Work Method Statement.
3	(HSE Head of Contractor) To prepare deployment plan of HSE personnel for all shifts, so as to ensure constantsupervision of all areas. The plan to be submitted to BHEL.
4	Highlight the requirements of safety through Tool-box / other meetings.
5	Help concerned HOS to prepare Job Specific instructions for critical jobs.
6	Conduct investigation of all incident/dangerous occurrences & recommend appropriate safety measures.
7	Advice & co-ordinate for implementation of HSE Systems & Procedures.

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8	To stop work in case of any critical safety violation until the violation is cleared
9	Convene HSE meeting & minute the proceeding for circulation & follow-up action.
10	Plan procurement of PPE & Safety devices and inspect their healthiness.
11	Report to BHEL on all matters pertaining to status of safety and promotional program at site level.
12	Support administration of Medical Centre.
13	Facilitate screening of workmen and safety induction.
14	Conduct fire Drill, Mock Drill, Electrocution Drill, Fall from Height Rescue Drill etc. and facilitate emergency preparedness at project site.
15	Design campaigns, competitions & other special emphasis programs to promote safety in the workplace.
16	Apprise BHEL on safety related problems.
17	Notify site personnel non-conformance to safety norms observed during site visits / site inspections.
18	Recommend to Site In charge, immediate discontinuance of work until rectification, of such situations warranting immediate action in view of imminent danger to life or property or environment.
19	To decline acceptance of such PPE / safety equipment that do not conform to specified requirements.
20	Encourage raising Near Miss Report on safety along with, improvement initiatives on safety.
21	Shall work as interface between various agencies such customer, package-in-charges, contractors on HSE matters
22	The contractor shall submit the certificates of qualification & experience of HSE manpower at least 10 days before deployment for BHEL to assess suitability as per requirement detailed in this document.
23	The deployment of HSE personnel shall be part of payment terms
24	BHEL shall have the right to reject in case of any deviation. In case of rejection, contractor shall arrange suitable candidates as a replacement and submit resume to BHEL. Penalties will be applicable during the period of non-deployment in such cases as well.
25	At any point of time (in case contractor is not deployed HSE officer), BHEL shall have the right to deploy the required HSE manpower at the risk and cost of contractor with applicable overheads at market determined rates with applicable overheads.
26	In such cases also, the provision of logistics, transportation, food and other logistical support to the HSE personnel shall be in the scope of contractor in addition to the salary.
27	Contractor shall ensure physical availability of safety personnel at the place of specific work locations. No work shall be started at any of the project sites until above safety personnel & concerned Site Engineer of contractor are physically deployed at site.
28	The Contractor shall prepare an organization chart identifying the areas of operations, responsibilities and reporting structure of all safety personnel for each shift and submit the same to BHEL.

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29	Blood Alcohol test must be performed regularly/ daily basis by contractor Employee/ designated worker to ensure safe working environment at project site. In case of any employees or workers observed that they consume alcohol, same are not allowed at project site for the day.
30	Any worker found misbehaving, using abusive language, or engaging in physical altercation with fellow workers, BHEL staff, customer representatives, or any site personnel shall be liable for immediate removal from the site. Such action will be taken at the sole discretion of BHEL.
7.3.5	HSE RESPONSIBILITIES OF HSE SUPERVISOR OF CONTRACTOR
1	All requirements as per 7.2 and their sub clause.
2	To assist Safety officer for all the Construction activity at site.
3	To monitor allotted area by Safety Officer for any unsafe act, unsafe condition, Safety Violation, take immediate action for unsafe construction activity & inform the concern safety officer (Contractor/ BHEL) or supervisor of contractor.
7.3.6	HSE RESPONSIBILITIES OF ALL EMPLOYEES (INCLUDING ABOVE)
1	To be aware of, get involved in and ensure implementation of all HSE related Systems and Procedures including but not limited to: a. BHEL HSE Management System including HSE Procedures and OCPs b. Work Permit System c. Emergency Preparedness Response Plans d. Contractual HSE requirements e. Legal Requirements f. Penalty System g. Training requirements
2	To ensure that the persons engaged in respective area follow the safety rules like using appropriate PPEs.
3	To record all incidents including near miss and report to BHEL.
4	To adopt safe working practices at all times and act as role model for Safety
5	To take immediate corrective action in case any non-conformity is observed on product / process / system with respect to Occupational Health, Safety and Environment.
6	In case any particular activity / work has extremely high consequential risk or high environmental impact, same shall be brought to the notice of BHEL Package In-charge before starting the work.
7	To interfere/ stop work as & when identified unsafe.
8	To maintain & promote improved level of house-keeping all the time at site.
9	To support/co-operate with audit team members as & when safety audits are carried out.
10	To involve in investigation, if any incident occurs in his work area.
11	To participate in safety promotional programmer.
12	To attend the safety committee meeting, if member/invitee
13	To ensure that only fit T&Ps and qualified persons are engaged for all activities.
14	Shall ensure that person working above 2 meter should use Safety Harness tied to a life line/stable structure.
15	Shall ensure that materials are not thrown from height. Cautions to be exercised to prevent falloff material from height.

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16	Shall ensure that all T&Ps engaged are tested for fitness and have valid certificates from competent authorities.
17	To develop Method Statement and ensure availability of Job Safety Analysis (JSA) for all construction activities/ Execution in scope.
18	To ensure that the reported HSE Non-Conformities in the work area are resolved immediately before start of work /resuming work.
7.3.7	HSE RESPONSIBILITIES OF SUB CONTRACTOR WORKERS:
1	It shall be the responsibility of the worker to comply with the requirements of safety as laid down for him and the group of workers to which he belongs and fully cooperate in the discharge of the responsibility for work that has been assigned to the contractor.
2	If he discovers any defects in the lifting appliance, lifting gear, lifting device or those concerning any transport equipment or other construction equipment or tools as well as the physical work conditions, he will report such defects promptly to his agency or BHEL or BHEL or other person in authority;
3	No building worker shall, unless duly authorized or in case of absolute necessity, remove or interfere with any fencing, guards, gangways, gear, ladder, hatch covering, lifesaving appliances, lighting or other things whatsoever required and provided for safety and health. If any of the aforesaid things is removed, the persons engaged in the work shall restore such thing at the end of the period during which its removal was necessary;
4	Every worker shall use only means of access provided in accordance with the approved norms and no person shall authorize or order another to use such means of access or method other than those approved;
5	Workers shall use such means of access and egress for going to and exiting from the workplace as provided.
6	All worker must ensure that they are not consume alcohol during Working hours or under work/ plant premises.
7.3.8	PUNITIVE ACTIONS ON WORKERS AND EMPLOYEES FOR “CRITICAL SAFETY VIOLATIONS”
	“CRITICAL SAFETY VIOLATIONS”
1	Not wearing required PPEs when provided and not following safe work procedure
2	Taking unnecessary risks especially in height work, hot work, radiation work, lifting activity
3	Coming to work under influence of sedatives like alcohol, drugs etc.
4	Coming to work without ID Card/ Gate Pass (if provided)
5	Smoking while working at site.
6	Bringing arms or firearms to work.
7	Intimidating/ threatening at work
8	Using cell phones during height work, hot work, lifting activity, driving
9	Any legal implication: - Any Legal Costs incurred by BHEL, on account of accidents taking place in the activities of the subcontractor, shall be debited to the subcontractor on actual cost basis. For any accident occurring at site to any worker/ employee of the subcontractor leading to legal implications to BHEL Employee/ Management shall be safeguarded by BHEL legal department. All legal expenses incurred by BHEL on this account shall be recovered from the subcontractor. The accident also includes fire, loss of property or life at site.

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10. In case any worker/ employee carries out any of the critical safety violations as above, punitive action shall be ensured in following manner:

FIRST OFFENCE	1 (One) Punch hole on Gate Pass/ Induction Card/ ID Card/ Competency Card etc. and 1 hour HSE Training with 1 day Off from Duty/ Site.
SECOND OFFENCE	2 (Two) Punch hole on Gate Pass/ Induction Card/ ID Card/ Competency Card etc. and 2 hours HSE Training with 1 day Off from Duty/ Site.
THIRD OFFENCE	3 (Three) Punch hole on Gate Pass/ Induction Card/ ID Card/ Competency Card etc. and the worker will be dismissed or do not allow to work at site with any agency. Gate Pass to be confiscated.

Note :-

- For above violations, guilt of the worker/ employee has to be established through appropriate evidence and records for the same will be maintained at site.
- If worker/ employee has not been given the required PPEs and safety equipment by the agency and/or not facilitated by the agency to follow safety rules, he/ she will not be considered liable but the agency will be penalized as per penalty provision in this document. In such cases, the contractor shall not pass the penalty over to the worker/ employee through wage deduction etc.
- These critical safety violations and their consequences shall be shared with all workers and employees during induction and other training programmes / meetings etc.
- Gate Pass shall have provision of Punching as indicated above.
- Warning Letters shall contain documentary proof and signature of erring worker/ employee, contractor safety officer and BHEL Safety Officer, and shall be approved by and submitted to Contractor site in-charge by BHEL Package In-charge.
- The appellate authority in this case shall be the BHEL Site In-charge whose decision shall be final on the matter and binding on all parties.

8.0 HSE PLANNING BY CONTRACTOR

8.1	IDENTIFYING HAZARD ANALYSIS AND RISK ASSESSMENT (HIRA), METHOD STATEMENTS (MS) AND JOB SAFETY ANALYSIS (JSA)
1	Contractor/ Sub Contractor shall identify all OHS Hazards and Risks applicable to all activities in scope throughout the duration of the job as per HSEP01: HSE Procedure for Register of OHS Hazards and Risks, and plan & implement the required control measures.
2	Contractor shall identify all Environmental Aspects and Impacts applicable to all activities in scope throughout the duration of the job as per HSEP02: HSE Procedure for Register of Environmental Aspects and Impacts, and plan & implement the control measures.
3	Contractor / Sub Contractor shall develop Method Statement & Job Safety Analysis documents for all hazardous activity in scope and ensure the required control measures. Job Safety Analysis is to be attached along with any work permit request.
4	The procedures referred above are for reference purposes only, shall be tailored to the requirements of the activities in the contract, and shall cover all activities throughout the duration of the task.
NOTE	Contractor shall ensure availability and understanding of these requirements prior to commencing work at site. In case the statutory requirements i.e. State or Central Acts and / or applicable rules like the Building and Other Construction Workers' Regulation of Employment and Conditions of Service- Act, 1996 or State Rules (wherever notified), the Factories Act, 1948 or Rules (wherever notified), etc. are more stringent than the requirements stipulated in this document, they shall be applicable.
8.2	REGISTER OF REGULATIONS
	Contractor shall prepare a register of applicable rules and regulations in the scope as per HSEP03: HSE Procedure for Register of Regulations and plan to ensure compliance. Note:- These Registers of regulations, HIRA Register, Method Statement, Job Safety Analysis shall be submitted to BHEL at least 10 days prior to start of work at site and shall be reviewed: a. At a fixed frequency of 3 months b. Addition/ deletion/ modification of a process/ activity c. After an accident/ incident d. After any change in applicable rules/ regulations/ laws
8.3	MONTHLY HSE PLANNING & REVIEW OF HSE ACTIVITIES ALONG WITH BHEL:
	Monthly planning and review of HSE activities shall be carried out by contractor / Sub Contractor as per provided format jointly along with BHEL
8.4	MOBILISATION OF MACHINERY/EQUIPMENT/TOOLS BY CONTRACTOR
1	As a measure to ensure that machinery, equipment and tools being mobilized to the construction site are fit for purpose and are maintained in safe operating condition and

	complies with legislative and owner requirement, periodic inspection shall be arranged by in-house competent authority for acceptance as applicable. Inspection by Third Party competent person shall be arranged: a. Before first time use at site b. After carrying out any modification c. After repairs subsequent to involvement in any accident/ incident. The machinery and equipment to be covered shall include but not limited to the following: <table><tr><td> ▪ Mobile cranes. ▪ Side Booms. ▪ Forklifts. ▪ Grinding machine. ▪ Drilling machine. ▪ Air compressors. ▪ Man lifter ▪ Scissor lift etc. </td><td> ▪ Welding machine. ▪ Batching Plants ▪ Generator sets. ▪ Dump Trucks. ▪ Excavators. </td><td> ▪ Dozers ▪ Grit Blasting Equipment. ▪ Hand and power tools. ▪ Lifts </td></tr></table>	▪ Mobile cranes. ▪ Side Booms. ▪ Forklifts. ▪ Grinding machine. ▪ Drilling machine. ▪ Air compressors. ▪ Man lifter ▪ Scissor lift etc.	▪ Welding machine. ▪ Batching Plants ▪ Generator sets. ▪ Dump Trucks. ▪ Excavators.	▪ Dozers ▪ Grit Blasting Equipment. ▪ Hand and power tools. ▪ Lifts
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2	Contractor shall notify the engineer, of his intention to bring on to site any equipment or any container, with liquid or gaseous fuel or other substance which may create a hazard. The Engineer shall have the right to prescribe the condition under which such equipment or container may be handled and used during the performance of the works and the contractor shall strictly adhere to such instructions. The Engineer shall have the right to inspect any construction tool and to forbid its use, if in his opinion it is unsafe. No claim due to such prohibition will be entertained.			
3	As a further measure to ensure that machinery, equipment and tools being mobilized to the construction site are fit for purpose and are maintained in safe operating condition and comply with legislative and owner requirement, inspection as per provided format shall be arranged by in-house expert / competent authority (preferable) for acceptance. The equipment considered for this purpose shall include all those in the T&P list in the tender document.			
8.5	MOBILISATION OF MANPOWER BY CONTRACTOR			
1	As a measure to ensure that manpower being mobilized to the construction site is fit and competent for safe working, screening arrangement shall be made by the sub-subcontractor to ensure competency and fitness through following measures: a. Medical Checkup: Examination of medical fitness shall be conducted through qualified medical professional for all workers to be deployed as per provided format. For height workers, vertigo (height phobia) test to be carried out as qualification criteria as per Annexure - I – Vertigo Test and recorded in BHEL provided format. b. Induction Training: Induction training of all workers to be ensured as per provided procedure and format. Training evaluation to be carried out and training to be repeated if not passed c. Only on successfully meeting above criteria, permanent gate passes to be issued			

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2	The contractor shall arrange induction and regular health check of their employees as per schedule VII of BOCW rules by a registered medical practitioner.
3	The contractor shall take special care of the employees affected with occupational diseases under rule 230 and schedule II of BOCW Rules. The employees not meeting the fitness requirement should not be engaged for such job.
4	Ensure that the regulatory requirements of excessive weight limit (to carry/lift/ move weights beyond prescribed limits) for male and female workers are complied with.
5	Appropriate accommodation to be arranged for all workmen in hygienic condition.
6	Cost of contractual, statutory and regulatory requirements like Training, medical checks, PPEs etc. shall not be transferred to the workers and such activities shall be considered as part of the job.
8.6	START UP, COMMISSIONING & TESTING There are various activities involved prior to commissioning- the major ones not limited to – Hydraulic Test, Steam Blowing, charging of transformers, Boiler Light Up, Rolling and Synchronization and Full loading of unit etc. These activities shall be personally supervised by the site executive along with the commissioning engineer. The readiness of upstream and downstream system shall be ensured before taking up. These shall be handled strictly by the authorized persons only and the team shall be suitably briefed about the activity including hazards & risks involved and control plan by the concerned executive-in-charge before start. Entry of persons to the area of activity shall be suitably restricted and the emergency functions like Ambulance, Medical Centre and Fire Tender at site shall be intimated about the plan well in advance. Lock-out/ Tag-out shall be in place while charging transformer and whenever necessary. Electricians with valid wiremen license only shall be permitted to work on power lines. The area and the passage shall be adequately illuminated.
8.7	PROVISION OF PERSONAL PROTECTIVE Equipment's (PPE's)
1	The agency should ensure sufficient inventory of personal protective equipment (PPEs) prior to initial mobilization. After identifying the need of the required PPEs for various activities performed at the site, an additional inventory of approx. 20% of required PPEs should be maintaining during the execution of the work. A PPE plan shall be prepared which gives fair idea regarding issue of PPEs to various personnel. If sub agency fails to provide the PPEs to worker the same may be issued by BHEL and cost for the PPEs debited to the Sub agency from regular RA Bill. Overhead charges applicable as per contract.
2	Personnel Protective Equipment (PPEs), shall be provided by the subcontractor to all workers as per requirement of the job.
3	The choice of PPE's to ensure multiple (at least more than 1) means of protection against any hazard. All applicable safety precautions for a job shall be ensured notwithstanding the duration or perceived importance of the task.
4	The applicability of PPEs shall be as per the concept of Hierarchy of controls, i.e.: iv. Elimination->Substitution->EngineeringControls->AdministrativeControls-PPEs.
5	Relying solely on PPEs without ensuring necessary controls to be strictly avoided

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6	Safety PPE's, Equipment and Devices etc. shall be ensured as per Annexure - 1. However it is not limited to Annexure - 1, contractor must comply for PPE's as per construction activities or instruction from BHEL.	
7	Mandatory PPEs: Wearing of Safety Helmet, Safety Shoes and reflective jacket is mandatory for all work at site and it should be ensured that all employees and project visiting personnel shall invariably wear safety helmet, safety shoes & reflective jacket.	
8	Personnel Protective Equipment (PPEs), in adequate numbers, will be made available at site & their regular use by all concerned will be ensured	
9	The following matrix recommends usage of minimum PPEs against the respective job.	
	S. No	Type of work
	1	Concrete and asphalt mixing
	2	Welders/Grinders/ Gas cutters
	3	Stone/ concrete breakers
	4	Electrical Work
	5	Insulation Work
	6	Work at height
	7	Grit/Sand blasting
	8	Painting
	9	Radiography
		PPEs
		Nose mask, hand glove, apron and gum boot
		Welding/face screen, apron, hand gloves, nose mask and ear muffs if noise level exceeds 90dB. Helmet fitted with welding shield is preferred for welders
		Ear muffs, safety goggles, hand gloves
		Rubber hand glove, Electrical Resistance shoes, Arc Suit for High Tension Lines
		Respiratory mask, Hand gloves, safety goggles
		Double lanyard full body harness, Safety Harness/ Fall arrestor (specific cases), Retractable fall arrestor.
		Blast suit, blast helmet, respirator, leather gloves
		Plastic gloves, Respirators (particularly for spray painting)
		As per BARC guidelines
10	The PPEs shall conform to the relevant standards (ISI mark) as per Annexure - 6 – Indicative List of Indian Standard Codes for Safety.	
11	Where workers are employed in sewers and manholes, which are in use, the contractor shall ensure that the manhole covers are opened and ventilated at least for an hour before the workers are allowed to get into manhole, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent incident to the public.	
12	Besides the PPEs mentioned above, the persons shall use helmet and safety shoe. The visitors shall use Helmet and any other PPEs as deemed appropriate for the area of work.	
13	Proposed Color scheme for Helmets shall be followed: a) Workmen: Yellow b) Safety staff: Green or white with green band c) Electrician: Red d) Others including visitors: White e) Height Work, Special Markings/ Stickers on Helmets beside induction on Gate Pass/ ID Card	
14	The contractor shall maintain register for issue and receipt of PPEs.	
15	All the PPEs shall be checked for quality before issue and the same shall be periodically re-checked. The users shall be advised to check the PPEs themselves for any defect before putting on. The defective ones shall be replaced.	

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16	The Helmets shall have logo or name (abbreviation of agency name permitted) affixed or printed on the front.
17	The agency should ensure sufficient inventory of personal protective equipment (PPEs) prior to initial mobilization. After identifying the need of the required PPEs of various activities performed at site, an additional inventory of approx. 15-20 % of required PPEs should be maintaining during the execution of the work/ while working at site. If agency fail to provide the PPEs to worker the same may be issued by BHEL site and cost for the same debited to Contractor from regular RA bill. overhead charges as per contract terms and condition.
18	Mandatory PPEs: Wearing of Safety Helmet, Safety Shoes and reflective jacket is mandatory for all work at site and it should be ensured that all employees and project visiting personnel shall invariably wear safety helmet, safety shoes & reflective jacket.
19	PPEs required while execution of work: Face Shield, Chemical splash goggles, Helmet mounted welder's shield, gum boot, Double lanyard full body harness, Safety goggles, Dust mask, supplied air mask/hood, Ear plug/Ear Muff, Cotton hand gloves, Leather hand gloves, Leather apron, Rubber gloves, PVC Gloves, PVC Apron, Self-contained breathing apparatus, Welding goggles, Electrical Rubber Gloves. Breathing apparatus etc...
20	The above-mentioned PPEs should be made available with contractor at site and issued to the concerned workers on the day of employment. All PPEs shall comply with ISI standards with valid test certificates.
21	At least two breathing apparatus sets (complying requirement as per IS: 10245) shall be provided at each site where excavation/tunneling works and Welding/ Cutting operations in confined areas are being carried out, to rescue the victims under exposure to harmful gases/vapors, if any.
22	The body harnesses shall be serial numbered.
23	Eye Protection: - the contractor shall provide suitable personal protective equipment to his workmen depending upon the nature of hazards and ensure their usage by the workers engaged in operations like welding, cutting, chipping, grinding or similar operations which may cause injuries to his eyes.
8.7.A	CRITICAL REQUIREMENTS W.R.T. EQUIPMENTS, HEAVY EQUIPMENTS & PPE's
1	Conventional Hydra/ Farana crane with carriage in front shall not be permitted. Pick & carry tyre mounted Front Cabin mobile crane (FX or TRX/ Next Gen series of 'ESCORT' or equivalent make) shall only be permitted.
2	Any Heavy equipment (cranes, winch machines, etc.) shall be deployed only after pre-safety inspection by safety dept. Valid AMCs/ Fitness/ other statutory clearances as per local rules shall be required to be submitted before mobilizing the equipment at site.
3	During movement of all earth-moving equipment, deployment of flag men is mandatory to ensure safe movement of all earth moving equipment.
4	All other Hand tools and power tools should not be older than 5 years.
5	For Chimney passenger lift, winch to have double drum rope for passenger and double safety devices must be used. Winch should not more than 3 years old and winch rope must be inspected with valid certificate from competent authority within 6 months and should meet the IS standard 9507 provision of OLR and push back button arrangement or dead man switch.
6	Gate pass for all the lifting T&Ps and construction machinery/ equipment shall be made after obtaining written acceptance (Pre-entry Safety Clearance) from BHEL Site Safety Department after physical verification and checking all requisite documents/ compliance to Safety norms
7	All motor vehicles should have valid registration certificate, insurance, Pollution under control (PUC) and fitness certificate as per Motor Vehicle Act 2020. The certificates should be pasted in the glass from inside.

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8	PPEs shall be from reputed manufactures viz. 3M, Udyogi, Karam, Frontier, Freedom, Honeywell, Liberty, Bata, Nomex, Acme, Unicare, Life Gear or equivalent. In case Subcontractor recommends any other name the same can be approved at site level by the Construction manager & Site HSE
9	For height work, where fall could result in death or disability, a secondary means of fall protection (Safety Net, Retractable Fall Arrestor etc.) shall be mandatorily provided by the subcontractor, failing which, a penalty of INR 5,000 per case will be imposed. In addition, there should be constant supervision for such critical height work. Any non-erection activities at height eg. Housekeeping etc. shall also fall under the category of height work.
8.8	ARRANGEMENT OF INFRASTRUCTURE
8.8.1	DRINKING WATER
1	Drinking water shall be provided and maintained at suitable places at different elevations
2	Container should be labeled as "Drinking Water" in languages understood by the workers
3	Cleaning of the container shall be ensured at least once in a week or whenever required. The tank shall be thoroughly cleaned with potable water only before it is refilled (also applicable to Labour Colony)
4	Suitability of water source for drinking to be tested as per IS10500 at least once in six months or whenever required.
5	Drinking Water tank shall be so installed so as to be available within 200 Meters of each work area.
8.8.2	WASHING FACILITIES
1	In every workplace, adequate and suitable facilities for washing shall be provided and maintained.
2	Separate and adequate cleaning facilities shall be provided for the use of male and female workers. Such facilities shall be conveniently accessible and shall be kept in clean and hygienic condition and dully illuminated for night use.
3	Water suitable for washing and not for drinking shall be clearly indicated as "Not for Drinking" in language understood by workers.
4	Overalls shall be supplied by the contractor to the workmen and adequate facilities shall be provided to enable the painters and other workers to wash during the cessation of work.
8.8.3	TOILETS :- Toilets (Latrines and urinals shall be ensured at Site and Labour Colony in accordance with the Inter-State Migrant Workmen Act, 1979 as given below:
A	LATRINES
1	Latrines shall be provided in every work place as per BOCW Act or as per Site requirement/ BHEL Instruction.
2	Every latrine shall be under cover and so partitioned off as to secure privacy, and shall have a proper door and fastenings.
3	Where workers of both sexes are employed there shall be displayed outside each block of latrine and urinal a notice in the language understood by the majority of the workers 'For Men Only', or For Women Only', as the case may be.
4	The notice shall also bear the figure of a man or of a woman, as the case may be.
5	They shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times, by appointing designated person.

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B	URINALS
1	There shall be at least one urinal for male workers up to fifty and one for female up to fifty employed at a time and further as per BOCW Act.
2	The urinals shall be designed and located so as to ensure privacy.
3	The latrines and urinals shall be conveniently situated at different elevations and accessible to workers at all times at the establishment.
4	The latrines and urinals shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times.
5	Latrines and urinals other than those connected with a flush sewage system shall comply with the requirements of the public health authorities.
6	Water shall be provided by the means of tap or otherwise so as to be conveniently accessible in or near the latrines and urinals.
NOTE	i) Latrines and Urinals shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times, by appointing designated person. ii) At Site, on ground, Modular Bio-toilets as per industry standard specifications and regular professional cleaning shall be ensured. The toilets should be sufficient in number and easily accessible to workers from every work area iii) At Site, in various elevations, suitable urinals with proper drainage to be ensured at each elevation in line with IS 2064 (1993). Same to be cleaned regularly iv) Latrines and urinals other than those connected with a flush sewage system shall comply with the requirements of the public health authorities.
8.8.4	PROVISION OF SHELTER FOR WORKERS DURING REST PERIOD
1	Proper Rest Shed (s) with shelter shall be provided for rest during break so as to accommodate all workers as indicated in the Annexure-D (REST SHEDS)
2	The sheds shall be cleaned, ventilated with fans, windows etc. as required and have provision of seating and drinking water facility etc
8.8.5	MEDICAL CENTRE WITH FIRST AID FACILITY AND AMBULANCE (As per Schedule V, X and XI of BOCW central Rules, 1998)
1	Medical Centre/ Medical facilities, Medical officer, Ambulance with 24 hrs. First Aid Trained Driver (Spec. / mention in Annexure - A), Nursing staff & Medical consumable etc. (Spec. / mention in Annexure - A) will be centrally arranged by BHEL on cost sharing model basis (i.e. expense for this will be apportioned among all the working contractors proportionate to their Awarded contract value).
2	A Medical Centre shall be ensured/identified at site by BHEL with basic facilities for handling medical emergencies.
3	Medical waste shall be disposed as per prevailing legislation (Bio-Medical Waste —Management and Handling Rules, 1998)
4	Following Condition shall be prevailing before start of work.
I	Ambulance as required will be centrally arranged by BHEL on cost sharing model basis & shall be used by all contractors as & when required. Ambulance with proper equipment for prompt transportation of the injured persons to a physician or a hospital shall be available at work place. (i.e. The expense for this will be apportioned among all the working contractor's proportionate to their Awarded contract value).

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II	BHEL will deploy full time construction medical officer as per BOCW (qualification as per Schedule XI of BOCW Central Rules -1998) on cost sharing model basis. One additional construction medical officer if required as per BOCW, for providing adequate medical treatment by qualified medical officers and nursing staff, as and when required. Note: Medical officer will be centrally arranged by BHEL on cost sharing model basis & shall be used by all contractors. (i.e. The expense for this will be apportioned among all the working contractors proportionate to their Awarded contract value).																		
III	Additional staff including one nurse, one dresser-cum compounder, one sweeper-cum-ward boy with each construction medical officer for full working hours shall be arranged by BHEL on cost sharing model basis and distributed to all working contractor proportionate to their Awarded contract value.																		
IV	The Telephone nos. of Medical officer, Hospital(s) or ambulance shall also be conspicuously displayed at each work place/ site and Medical Centre.																		
V	Health Management: The site manager shall implement health examinations for the working personnel on a regular basis. <table><tr><th>TYPES OF HEALTH EXAMINATION</th><th>TARGET</th><th>FREQUENCY</th></tr><tr><td>General health examination</td><td>All workers</td><td>Annual</td></tr><tr><td>Occupational health examination (Audiometric,PFT, Vision etc.)</td><td>Worker engaging in noise, dust, vibration, harmful light generating work</td><td>Annual</td></tr><tr><td>Occupational health examination (Vision)</td><td>Personnel involved in operation of Cranes, heavy vehicles</td><td>Annual</td></tr><tr><td>Occupational health examination (Vertigo/Heightpass)</td><td>Workers engaged at Height Works</td><td>At the time of induction training and every year</td></tr><tr><td></td><td></td><td></td></tr></table>	TYPES OF HEALTH EXAMINATION	TARGET	FREQUENCY	General health examination	All workers	Annual	Occupational health examination (Audiometric,PFT, Vision etc.)	Worker engaging in noise, dust, vibration, harmful light generating work	Annual	Occupational health examination (Vision)	Personnel involved in operation of Cranes, heavy vehicles	Annual	Occupational health examination (Vertigo/Heightpass)	Workers engaged at Height Works	At the time of induction training and every year			
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Occupational health examination (Vertigo/Heightpass)	Workers engaged at Height Works	At the time of induction training and every year																	
5	In addition to Medical Centre with first aid Amenities & ambulance Hiring by BHEL, All contractor must ensure first aid Box as approved by medical officer shall be provided at accessible points nearby construction activity area in the ratio of at least one first aid box for every 50 employees/ workers.																		
6	In addition to Clause 8.8.5 sub clause 1, sub clause 2, sub clause 3 & sub Clause 4 being arranged by BHEL on behalf of all contractor on sharing basis and In addition to this all Contractor has to arrange one trained and certified first aider for every twenty workers in each shift. To ensure compliance of first aider, list of first aider along with gate pass / identification no. shall be submitted every month to HSE Officer for his Clearance before RA bill processing. List of First aider must be displayed at Medical Centre.																		
7	Notwithstanding anything stated above, Contractor/Agency shall strictly comply with the requirements of relevant BOCW Act/ BOCW Rules/ Factory Act/Factory Rules/ any other statutory Act/Rules/Law with regards to providing suitable medical facilities to the workers.																		
8	All the Contractor shall be liable to arrange and pay for the expenses towards the medical treatment in respect of all labour employed by him for the execution of the Contract.																		
8.8.6	FIRST AIDER																		
1	Ensure availability of Qualified First aider throughout the working hours.																		
2	Every injury shall be treated, recorded and reported.																		

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3	The First Aider should have undergone through valid certification course and have valid certificate.
4	The First Aider shall refer any victim to doctor or any other medical facilities for further treatment if necessary.
5	Refresher course on first aid shall be conducted as necessary.
6	List of Qualified first aiders and their contact numbers should be displayed at conspicuous places
7	The first aider along with first aid box should be available at a point nearest to the work location wherein majority of the workers are working.
	FIRST AID TREATMENT: GENERAL: ➤ Test area will be cordoned off and unauthorized person's entry shall be prohibited. Suitable signboard shall be displayed. ➤ Hydro test need to be conducted for the whole system including temp connections. Test the integrity of temp piping's. ➤ Whenever any inspection is made during the cleaning process, the location should be adequately ventilated. ➤ The valve to the acid cleaning tank should be erected 2-3 meters away from the tank, so that during spillage/overflow from tank it will be safe to handle/operate. ➤ Adequate illumination should be available near the activity area including arrangement for emergency lighting. ➤ Any gland leakage in valve/pipeline leakage of permanent /temporary system prior to hot water rinsing and alkali flushing during system fill test, the same may be isolated and attended before putting acid into the system/boiler. SPLASHES OF THE EYE: ➤ Immediately flood the eye with water. To be effective the eyelids must be opened. The eyelids should be pushed apart using the thumb and index finger of the left hand. The injured personnel will probably not be able to open the eye himself because of painful spasms. ➤ If an eye wash bottle is used the jet should not be directed at the front of the eye. It should be directed in from the side, so that flow is over the surface of the eye. ➤ Irrigation should be continued for 5 – 10 minutes after which the casualty should be taken to the first aid room at Medical Centre. ➤ Irrigation should be continued in the first aid room at Medical Centre. Remember vision is saved by thorough Irrigation; no other treatment can prevent damage if this is omitted. ➤ After thorough irrigation the eye should be covered with a pad; the patient should be referred for medical opinion.
8.8.7	FIRST AID BOX (as per BOCW)
1	The contractor shall provide necessary first aid facilities as per schedule III of BOCW.
2	The first aid box shall be kept by first aider who shall always be readily available during the working hours of the work place. His name and contact no to be displayed on the box
3	The first aid boxes should be placed and maintained at various elevations/ every workplace so as to make them available within the reach and at the quickest possible time.
4	The first aid box shall be distinctly marked with a Green Cross on white background.
5	Details of contents of first aid box is given in Annexure – 2 & in this HSE Plan.
6	A slip of contents shall be pasted/display on the First Aid Box.
7	The first aid box shall be distinctly marked with a Green Cross on white background.
8	Monthly inspection of First Aid Box shall be carried out by the BHEL as per format.

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9	The contractor should conduct periodical first-aid classes to keep his supervisor and Engineers properly trained for attending to any emergency.
8.8.8	HEALTH CHECK UP (As per BOCW) The persons engaged at the site shall undergo health check-up as per the format no. HSEP: 14-F02 before induction. The persons engaged in the following works shall undergo health check-up at least once in a year for all workers including below mention: - Height workers - Drivers/crane operators/riggers - Confined space workers - Shot/sand blaster - Welding and NDE personnel - Civil workers etc.
8.8.9	HEIGHT PHOBIA/ VERTIGO TEST
1	The persons engaged in working at heights (above 2 meters) to be assessed for Vertigo and associated conditions and recorded as per provided format. Suggested Vertigo Test procedure is given in Annexure – I (Vertigo Test).
2	Such workers are to be allowed only on successful completion of test, otherwise shall be allocated ground based jobs.
3	Gate-Pass/ ID / Height Passes shall be issued to such workers, besides special marking / Stickers on Helmets for easy identification.
8.8.10	PROVISION OF CANTEEN FACILITY
1	Canteen facilities shall be provided for the workmen of the project inside the project site.
2	Proper cleaning and hygienic condition shall be maintained.
3	Proper care should be taken to prevent biological contamination.
4	Adequate drinking water should be available at canteen.
5	Fire extinguisher shall be provided inside canteen.
6	Regular health check-up and medication to the canteen workers shall be ensured as per applicable regulations.
7	Canteen waste to be disposed of in hygienic manner.
8.8.11	PROVISION OF ACCOMODATION - LABOUR COLONY
1	The Contractor shall have total responsibility for providing and maintaining facilities for safety, welfare, drinking water and sanitation, hygiene etc. for construction workers at their workplaces as well as at labour & staff colonies. The facilities for occupational safety, healthy environment, first aid, drinking water, resting place & toilets, canteen, crèche, etc. shall be provided at the workplace for construction workers by the contractor.
2	Labour Colony shall have inspected every week by Contractor Safety Officer or Contractor Team and report the same submitted to BHEL site safety officer as per BHEL provided format.
3	Proper accommodation to worker / workforce to be provided in line with minimum requirements indicated in Annexure – E (LABOUR COLONY)
4	The area in which the quarters and/or barracks are located as well as the latrines and bathrooms provided therein shall be kept in a clean and sanitary condition at all times
5	All contractors shall ensure that provision of adequate power backup arrangements are in place at the labour colony to avoid any disruption in essential services.

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6	Adequate number of toilet facilities with water for workers as per norms to be provided. There must be separate toilet for women workers. Drinking water and electricity to be provided at the labour colony.
7	Potable water shall be tested once in one year as per IS10500.
8	Availability of Bathing/ Washing bay to be ensured.
9	Availability of local market to be ensured by the contractor.
10	Room ventilation and safe electrification to be ensured
11	Labour colony shall be inspected each week by Safety Officer and report submitted to BHEL as per Format No. HSEP:14-F16.
12	MSDS of LPG shall be put up prominently. This shall be included in the induction training as well.
13	The labour colony shall be appropriately secure so that only authorized persons have access to it.
14	First aid facility shall be provided in the labour colony under the administration of trained first aiders by contractor.
15	Common kitchen facilities to be ensured and cooking inside the room to be avoided. The canteen should be maintained in hygienic condition.
16	No. of occupants in room to be as per the standards practice.
17	Adequate drainage and approach roads to be done.
18	Perimeter fencing, security and main gate entrance shall be established and maintained.
19	Monthly inspection to be done to ensure the compliance and for opportunity of improvement
20	For sprinkling on roads, it is to be kept in respective vendor's scope for sprinkling water near by labour colony as well as at site approached road (towards concern agency) for construction activity
21	A "Suggestion Register" shall be made available at the labour colony for workers. The feedback shall be reviewed on weekly basis and acted upon
22	Awareness training shall be organized for the workers regarding fire safety, safe use of LPG, Health & hygiene and electrical safety etc. on monthly basis.
8.8.12	PROVISION OF EMERGENCY VEHICLE Dedicated emergency vehicle shall available at site and same shall be coordinate with BHEL to handle emergency situation/ condition occur at site. However, Ambulance shall be used exclusively for taking victim/ injured person to hospital.
8.8.13	PEST CONTROL Regular pest control should be carried out at all offices, mainly laboratories, canteen, labour colony and stores.
8.8.14	SCRAPYARD
1	In consultation with customer, scrapyard shall be developed to store metal scrap, wooden scrap, waste, hazardous waste.
2	Scrap/Waste shall be segregated as Bio-degradable and non-bio-degradable and stored separately.

8.8.15	CONFINED SPACE ENTRY (CONTRACTOR TO HAVE OXIMETER AND TOXIC GAS METER) A hazard assessment must be completed prior to any entry into a confined space. The hazard assessment must identify the sequence of work to be performed in the confined space, the specific hazards known or anticipated, and the control measures to be implemented to eliminate or reduce each of the hazards to an acceptable level. No entry must be permitted until the hazard assessment has been reviewed and discussed by all persons engaged in the activity. Personnel who enter confined spaces must be trained per role e.g. entrant (worker), confined space supervisor & attendant, and must be informed of known or potential hazards associated with the confined spaces to be entered. Number of persons entering shall be kept at minimum. All confined spaces must be inventoried at site and kept on file. Confined spaces must be posted at the entrance with similar type wording "DANGER – Do Not Enter – Confined Space – Permit required".
8.8.16	ILLUMINATION
1	The contractor shall arrange at his cost adequate lighting facilities e.g. flood lighting, hand lamps, area lighting etc. at various levels for safe and proper working operations at dark places and during night hours at the work spot as well as at the pre-assembly area.
2	Lamp (hand held) shall not be powered by mains supply but either by 24V or dry cells.
3	Lamps shall be protected by suitable guards where necessary to prevent danger, in case of breakage of lamp.
4	Emergency lighting provision for night work shall be made to minimize danger in case of main supply failure.
5	Adequate and suitable light shall be provided at all work places & their approaches including passage ways as per IS: 3646 (Part-II).
6	Each phase of construction will create its own illumination and lighting challenges; whether the work is related to confined spaces, hazardous atmospheres, stairways, pedestrian walkways or night work. Proper and adequate illumination is critical in order to perform the work in a safe and healthy manner. The following are the minimum requirements: Lamp (hand held) shall not be powered by mains supply but either by 24V or dry cells.
7	Temporary lighting used in damp and / or hazardous locations and confined areas must be of not more than 24 volts.
8	Lamps shall be protected by suitable guards where necessary to prevent danger, in case of breakage of lamp. Broken and burnt-out bulbs must be replaced immediately.
9	Emergency lighting provision for night work shall be made to minimize danger in case of main supply failure.
10	Adequate and suitable light shall be provided at all work places & their approaches including passage ways as per 29 CFR 1926.56.

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Foot-Candles		Area of Operation
5		General construction area lighting.
3		General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.
5		Indoors: warehouses, corridors, hallways, and exit ways.
5		Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights shall be acceptable for use in the tunnel heading)
10		General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active store rooms, mess halls, and indoor toilets and workrooms.)
30		First aid stations, infirmaries, and offices.

11	Illuminations shall be inspected on weekly basis as per provided Format using a calibrated Lux Meter.
12	Prior to the extension of any work permit, illumination levels shall be verified in accordance with Clause 8.8.16, same must be recorded on work permit.
13	Suitable illumination levels for various areas shall be decided based on broad guidelines indicated below:

S. No.	Location	Lux Level (lumens/sqm)
A	Construction Site	
1	Outdoor areas like store yards, entrance and exit roads	20
2	Platforms	50
3	Entrances, corridors and stairs	100
4	General illumination of work area	150
5	Rough work like fabrication, assembly of major items	150
6	Medium work like assembly of small machined parts	300
7	Fine work like precision assembly, precision measurement etc.	700
8	Sheet metal works	200
9	Electrical and instrument labs	450
B	Office	
1	Outdoor area like entrance and exit roads	20
2	Entrance halls	150
3	Corridors and lift cars	70
4	Lift landing	150
5	Stairs	100
6	Office rooms, conference rooms, library reading tables	300
7	Drawing table	450
8	Manual telephone exchange	200

8.8.17 Safety Labels

Safety Labels and Placement Guidelines to be provided Prior to operating the conveyor or any of the associated accessories or equipment, all safety markings, guards and warnings must be in place in accordance with governmental regulations and site specific requirements.

All safety labels should be bilingual. Some of safety labels are indicated below:

To be placed on removable guards to warn that operation of the machinery with guards removed would expose chains, belts, gears, shafts, pulleys, couplings, etc. which create hazards.

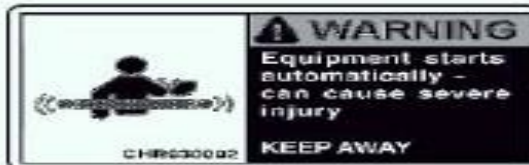


To be located on conveyors where there are exposed moving parts which must be unguarded to facilitate function, i.e. rollers, pulleys, shafts, chains, etc.



LOCATE ON INSPECTION DOOR (S)

General warning to personnel that a conveyor's moving parts, which operate unguarded by necessity of function, i.e. belts, rollers, terminal pulleys, etc., create hazards to be avoided; in particular, conveyors which stop and start by automatic control near operator work stations would use this label.

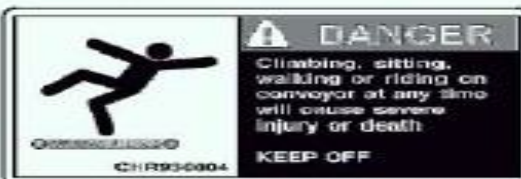


LOCATE AT ENTRANCE TO CONVEYOR

To be placed on removable guards to warn that operation of the machinery with guards removed would expose chains, belts, gears, shafts, pulleys, couplings, etc. which create hazards.

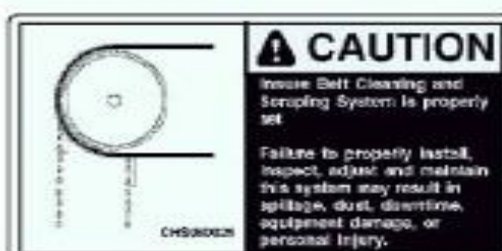
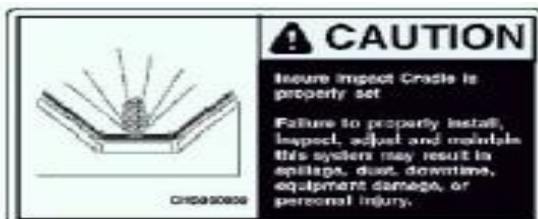
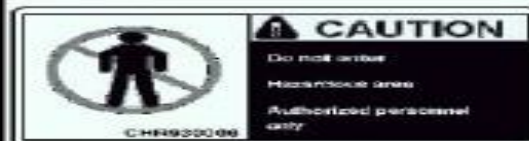


To be placed up to a maximum of 50' centers along the walkway side.



SPACE UP TO A MAXIMUM OF 50 FT CENTERS (WALKWAY SIDES)

To be placed at entrances to enclosed areas which would expose personnel to operational or environmental hazards which should only be entered by trained and authorized personnel under specific conditions; Examples, lifting conveyors, transfer car aiseways, confined spaces, etc.



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8.8.18	Dust Suppression During Construction Activities
	All contractors, whether engaged in civil or mechanical works, must implement effective dust suppression measures during all construction-related activities. This requirement is applicable to all construction to control dust emissions, safeguard workers' health, reduce environmental impact, and ensure compliance with relevant HSE (Health, Safety & Environment) regulations.
	❖ Key Dust Suppression Measures During Construction Activities: ● Regular water sprinkling on excavation areas, earthwork zones, and haul roads. ● Limiting vehicle speed inside the construction site to reduce dust generation. ● Routine inspection by the HSE team to verify dust control implementation and effectiveness.

9.0 HSE TRAINING AND AWARENESS

9.1	HSE TRAINING PLANNING																																		
1	All training programs to be carried out in a planned manner. Monthly/ Annual Training Calendar to be submitted to BHEL for approval and shall cover HSE Training requirements of all activities, workers, hazards applicable to the area(s) of work.																																		
2	Subcontractor shall nominate workers as per the schedule of specific training plan, failing which, penalty shall be imposed.																																		
3	One safety trainer is to be deployed by contractor/ agency, where total number of worker exceeds 200 nos workers.																																		
4	Training records of all workers along with attendance, signatures, faculty details etc. shall be maintained in soft/ hard copy as per provided formats.																																		
5	Each labour (workers) should undergo at least 0.5% of total man-hours worked in HSE training.																																		
9.2	HSE INDUCTION TRAINING																																		
1	All persons entering into project site shall be given HSE induction training by the HSE officer of BHEL /contractor before being assigned to work.																																		
2	The induction training shall be imparted through audio-visual medium, and shall be minimum of 1 complete day and as required.																																		
3	Evaluation to be carried out after training and training shall be repeated in case of failure.																																		
4	Safety Induction Card shall be printed by Subcontractor and provided to all trained workers. A Safety induction book shall also be printed and issued to each worker after induction training (Format for the same may be provided by BHEL).																																		
5	In-house induction training subjects shall include but not limited to: <table border="1"> <tr><td>A</td><td>Briefing of the Project details.</td></tr> <tr><td>B</td><td>Safety objectives and targets.</td></tr> <tr><td>C</td><td>Site HSE rules.</td></tr> <tr><td>D</td><td>Critical Safety Violations and consequences</td></tr> <tr><td>E</td><td>Site near miss, Major hazards and risks, aspects & impact and mitigation measures related to the jobs to be performed by the person or group of person.</td></tr> <tr><td>F</td><td>First aid facility.</td></tr> <tr><td>G</td><td>Fire Fighting</td></tr> <tr><td>H</td><td>Emergency Contact No.</td></tr> <tr><td>I</td><td>Near Miss & Incident reporting.</td></tr> <tr><td>J</td><td>Fire prevention and emergency response.</td></tr> <tr><td>K</td><td>Rules to be followed in the labour colony (if applicable)</td></tr> <tr><td>L</td><td>Use and maintenance of PPEs (i.e. Shoes/ Helmets/ Goggles/ Leg guard/ Apron etc.)</td></tr> <tr><td>M</td><td>Accident case studies.</td></tr> <tr><td>N</td><td>General traffic rules / Pedestrian rules.</td></tr> <tr><td>O</td><td>House keeping</td></tr> <tr><td>P</td><td>HSE & Environmental compliance requirement.</td></tr> <tr><td>Q</td><td>No smoking/alcohol/gambling/fights/theft/damaged to property and cell phone use restrictions.</td></tr> </table>	A	Briefing of the Project details.	B	Safety objectives and targets.	C	Site HSE rules.	D	Critical Safety Violations and consequences	E	Site near miss, Major hazards and risks, aspects & impact and mitigation measures related to the jobs to be performed by the person or group of person.	F	First aid facility.	G	Fire Fighting	H	Emergency Contact No.	I	Near Miss & Incident reporting.	J	Fire prevention and emergency response.	K	Rules to be followed in the labour colony (if applicable)	L	Use and maintenance of PPEs (i.e. Shoes/ Helmets/ Goggles/ Leg guard/ Apron etc.)	M	Accident case studies.	N	General traffic rules / Pedestrian rules.	O	House keeping	P	HSE & Environmental compliance requirement.	Q	No smoking/alcohol/gambling/fights/theft/damaged to property and cell phone use restrictions.
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6 GENERAL

A	First aid facility.
B	Fire Fighting
C	Emergency Contact No.
D	Near Miss & Incident reporting.
E	Fire prevention and emergency response.
F	Accident case studies.
G	General traffic rules / Pedestrian rules.
H	House keeping
I	HSE & Environmental compliance requirement.
J	Rules to be followed in the labour colony (if applicable)
K	They must arrive fully dressed in safety wear & gear to attend the induction.
L	Any one failing to conform to this safety wear& gear requirement shall not qualify to attend.
M	Use and maintenance of PPEs (i.e. Shoes/ Helmets/ Goggles/ Leg guard/ Apron etc.)
N	They may only then be qualified to be issued with a personal I.D. card, for access to the work site subject to clearing the medical fitness test.
O	No smoking/alcohol/gambling/fights/theft/damaged to property and cell phone use restrictions.
P	Proper safety wear & gear must be issued to all the workers being registered for the induction (i.e. Shoes/Helmets/Goggles/Leg guard/Apron etc.)
Q	On completing attending contractor's in-house HSE induction, each employee shall sign an induction training form (format no. HSEP: 14-F03) to declare that he had understood the content and shall abide to follow and comply with safe work practices.
R	Each worker deployed by the agency shall be given 1-days induction training, which shall include the medical examination and instruction related to particular job, firefighting, first- aid and reporting of accidents. All employees shall be given safety training as per BOCW Act/Rules.
S	The contracting agency shall also impart job specific skill based safety training to all its employees (Minimum one day) on various related safety topics using internal/external safety professionals/consultants as per the matrix given below. However, training matrix list is not limited to topic mention below, more topic may add in future as decided by BHEL/ customer. Record of such trainings and attendance particulars shall be maintained in a register for ready reference to statutory authorities/engineer-in charge.

SAFETY INDUCTED	
Name :	
Date :	
Sign By Trainer :	

ABOVE STICKER SHALL BE PASTED ON HELMET OF WORKERS AFTER SAFETY INDUCTION TRAINING

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TRAINING MATRIX

Name of topic	Executives	Super visors	Skilled Workmen	Other Workers
Safety Induction	Y	Y	Y	Y
Accident - Causes, factors, cost	Y	Y	Y	-
Industrial hazards & Accident Prevention	Y	Y	Y	-
Investigating, reporting, records	Y	Y	-	-
Personal Protective Equipment	-	Y	Y	Y
Construction Safety & Role of Supervisory personnel	-	Y	-	-
Permit to Work (PTW)	-	Y	Y	y
Statutory Provisions (BOCW Act/Rules, Factories Act 1948 etc.)	Y	Y	y	y
Material handling	-	y	Y	Y
Emergency Management	Y	Y	Y	-
Electrical Safety	-	Y	Y	-
Fire safety	Y	Y	Y	Y
First Aid & CPR (cardiopulmonary resuscitation)	-	Y	Y	Y (Selected)
Safety in Welding & Cutting	-	-	Y	-
Safety Audit	Y	Y	-	-
Safety in Lifting Tools & Tackles	-	Y	Y	y
Safety in Working at height	-	Y	Y	Y
Safety in Confined space work	-	Y	Y	Y
Defensive Driving	-	Y*	Y*	Y*

Note:

- *for construction vehicle operators, helpers & crane operators Y=YES
- Subcontractor shall prepare a training plan/ matrix covering all hazards and implement the same after approval of BHEL.
- It is to be ensured that every worker undergoes Job-Specific training once every 3 months.
- Records of training programmes along with attendance shall be maintained by the subcontractor
- Each worker to be issued a Card indicating the types of trainings undergone.

9.3	HSE TOOLBOX TALK																
1	HSE tool Box talk shall be conducted by frontline foreman/supervisor of contractor to specific work groups prior to the start of work and shall be randomly attended by contractor engineers/ officials. The agenda shall consist of the following: <table border="1"> <tr> <td>A</td><td>Details of the job being intended for immediate execution.</td></tr> <tr> <td>B</td><td>The relevant hazards and risks involved in executing the job and their control and mitigating measures.</td></tr> <tr> <td>C</td><td>Specific site condition to be considered while executing the job like high temperature, humidity, unfavorable weather etc.</td></tr> <tr> <td>D</td><td>Recent non-compliances observed.</td></tr> <tr> <td>E</td><td>Appreciation of good work done by any person.</td></tr> <tr> <td>F</td><td>Any doubt clearing session at the end.</td></tr> </table>	A	Details of the job being intended for immediate execution.	B	The relevant hazards and risks involved in executing the job and their control and mitigating measures.	C	Specific site condition to be considered while executing the job like high temperature, humidity, unfavorable weather etc.	D	Recent non-compliances observed.	E	Appreciation of good work done by any person.	F	Any doubt clearing session at the end.				
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E	Appreciation of good work done by any person.																
F	Any doubt clearing session at the end.																
2	Tool box talk to be conducted before start of work in every shift.																
3	During toolbox talk, visual check-up of workers regarding health, any signs of fatigue, intoxication etc. shall be conducted and any suspected workers to be acted upon.																
4	Record of Tool box talk shall be maintained as per format no. HSEP:14-F04																
9.4	PRE JOB BRIEFING (OJT- On Job Training) A separate documented daily pre job briefing must be conducted at the actual job/work site location with the supervisor and work crew, to cover working environment/conditions, safe work practices for the activities to be carried out, required PPE and review of the work package, JSA and permit requirements. Each crew member and the supervisor will sign off on the pre job briefing form, and form will be submitted to the HSE department at the end of each shift.																
9.5	TRAINING ON HEIGHT WORK																
1	Training on height work shall be imparted to all workers working at height by in-house/external faculty at least once every 3 months.																
2	The training shall be of minimum 2-hour duration, through audio-visual medium and followed by evaluation. In case of poor scoring, training shall be repeated.																
3	The training shall include following topics: <table border="1"> <tr> <td>A</td><td>Proper use of PPEs - safety harness, lanyard, fall arrester, retractable fall arrester, life line, safety nets etc.</td></tr> <tr> <td>B</td><td>Provision of Secondary means of Fall Protection i.e. Retractable Fall Arrester (RFA), Safety Net etc.</td></tr> <tr> <td>C</td><td>Safe climbing through monkey ladders.</td></tr> <tr> <td>D</td><td>Inspection of PPEs.</td></tr> <tr> <td>E</td><td>Medical fitness requirements.</td></tr> <tr> <td>F</td><td>Mock drill on rescue at height.</td></tr> <tr> <td>G</td><td>Dos & Don'ts during height work.</td></tr> <tr> <td>H</td><td>Accident case Studies</td></tr> </table>	A	Proper use of PPEs - safety harness, lanyard, fall arrester, retractable fall arrester, life line, safety nets etc.	B	Provision of Secondary means of Fall Protection i.e. Retractable Fall Arrester (RFA), Safety Net etc.	C	Safe climbing through monkey ladders.	D	Inspection of PPEs.	E	Medical fitness requirements.	F	Mock drill on rescue at height.	G	Dos & Don'ts during height work.	H	Accident case Studies
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9.6	HSE TRAINING DURING PROJECT EXECUTION																		
1	Other HSE training shall be arranged by BHEL/ contractor as per the need of the project execution and recommendation of BHEL/ HSE committee of site. Specifically: <table border="1"> <tr> <td>A</td><td>Regular on-the-job training for hazardous activities (Frequency: every 3 months) :- The training shall cover all workers involved in hazardous activities including but not limited to height work , hot work, lifting & rigging, confined space work, radiography, excavation, electrical work, storage/ preservation/ chemical handling, material handling, waste disposal etc.</td></tr> <tr> <td>B</td><td>Re-induction training (Frequency: every 6 months) :- This training shall be conducted for each and every worker, and shall be a pre-requisite for renewal of Gate Pass/ ID card. For details, refer Clause 9.0.</td></tr> </table>	A	Regular on-the-job training for hazardous activities (Frequency: every 3 months) :- The training shall cover all workers involved in hazardous activities including but not limited to height work , hot work, lifting & rigging, confined space work, radiography, excavation, electrical work, storage/ preservation/ chemical handling, material handling, waste disposal etc.	B	Re-induction training (Frequency: every 6 months) :- This training shall be conducted for each and every worker, and shall be a pre-requisite for renewal of Gate Pass/ ID card. For details, refer Clause 9.0.														
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2	The training shall be of minimum 2-hour duration, through audio-visual medium and followed by evaluation. In case of poor scoring, training shall be repeated.																		
3	Contractor shall ensure a training calendar/ plan and nominate workers as per requirement for training.																		
4	The topics of the HSE training shall be as follows but not limited to: <table border="1"> <tr><td>A</td><td>Hazards identification and risk analysis (HIRA)</td></tr> <tr><td>B</td><td>Work Permit System</td></tr> <tr><td>C</td><td>Incident investigation and reporting</td></tr> <tr><td>D</td><td>Fire fighting</td></tr> <tr><td>E</td><td>First aid</td></tr> <tr><td>F</td><td>T & Ps fitness and operation</td></tr> <tr><td>G</td><td>Electrical safety</td></tr> <tr><td>H</td><td>Welding, NDE & Radiological Safety</td></tr> <tr><td>I</td><td>Storage, Preservation & Material handling</td></tr> </table>	A	Hazards identification and risk analysis (HIRA)	B	Work Permit System	C	Incident investigation and reporting	D	Fire fighting	E	First aid	F	T & Ps fitness and operation	G	Electrical safety	H	Welding, NDE & Radiological Safety	I	Storage, Preservation & Material handling
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H	Welding, NDE & Radiological Safety																		
I	Storage, Preservation & Material handling																		
5	A matrix shall be maintained to keep an up-to-date record of attendance of training sessions carried out.																		
6	Each Skilled labour i.e. fitter, electrician, rigger, scaffolder, carpenter etc. will pass through the trade test (oral, written and/ or practical) conducted at site by the respective engineer. A pass sticker of qualified person to be marked on their ID Card/Gate Pass.																		
7	Training records of all workers along with attendance, signatures, faculty details etc. shall be maintained in soft/ hard copy.																		
8	HSE induction for Visitors: No visitors are allowed to visit the construction site without safety induction, mandatory PPEs and All official while on tour.																		
9	Safety Induction for all (Staff/ Engineers/ Sub-Contractor officials/ Supervisors): it is compulsory to provide safety induction and briefing about the site HSE Management systems, requirements and individual's roles and responsibility to carry out the activities in safe manner, before deploying them.																		

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9.7	HSE PROMOTION-SIGNAGE, POSTERS, COMPETITION, AWARDS ETC
1	Display of HSE posters and banners shall be installed as indicated in Annexure – B (HSE DISPLAYS)
A	Contracting agencies shall arrange for display of safety hoardings depicting suitable safety cartoons/messages/ cautionary notices at appropriate places of project site to remind the workers to perform their duties safely.
B	Apart from safety hoardings, each agency should maintain a safety bulletin board at all their work locations. Such safety bulletin boards should depict the activities being planned for the day, good practices, permit details etc.
C	Safety suggestion boxes shall be kept at each subcontractor's office at site for obtaining safety suggestions from the workers. Best suggestions should be implemented and may be rewarded suitably to encourage the workers for safety.
D	Safety awareness campaigns, competitions, plays, movie shows, songs etc. to be organized for workers at Site and Labour colony from time to time to enhance Safety Awareness
E	Contractor shall arrange appropriate HSE posters, banners, slogans in local / Hindi / English languages at work place, walkways, stair cases etc. understood by all workers. Posters should have minimum 60% graphic content and shall be weather proof.
2	Display of HSE signage Appropriate HSE signage shall be displayed at the work area to aware workmen and passersby about the work going on and do's and don'ts to be followed. Signage for evacuation plan, emergency assembly location and route shall also be displayed.
3	HSE Rewards & Incentive Scheme Contractor shall arrange competition (i.e. Slogan, poster, essay, extempore etc.) on HSE topic time to time (i.e. National Safety Day, BHEL Day, World Environment Day etc.) and winner will be suitably awarded. Monthly safety shall be observed by BHEL/Customer. Agency site in charge along with his safety team and workers are to compulsory participate in these monthly safety meetings. Agency has to display safety poster/ banners at stores/office/workplace and need to be changed from time to time. No. of safety poster shall be decided by BHEL. Implement a reward & incentive scheme for workers & supervisors displaying adherence to safety principles. Such workers shall be felicitated in a monthly function, attended by Contractor top management and BHEL representatives. Suitable gift shall be given to such workers for encouragement.
4	HSE Awareness Programme for Officials Contractor shall arrange monthly HSE awareness programme on different topics including medical awareness for all engineers/ supervisors / officials working at site. This programme can be part of progress/ safety review meetings
9.8	PENALTY TRAINING: - The personnel/ worker involved in Safety Violations/ Incidents shall mandatory undertake penalty training pertaining to the violation/ incident. Penalty training shall be at least half-day duration.

10.0 HSE COMMUNICATION AND PARTICIPATION

10.1	REPORTING AND INVESTIGATION OF ACCIDENTS AND DANGEROUS OCCURRENCES:		
1	Reporting of accidents: Notice of any accident (the prescribed format is annexed to the manual) to a worker at the building or construction site that		
	a.	Causes loss of life; or	
	b.	Disables a worker from working for a period of 48 hours or more immediately following the accident; Shall forthwith be sent by Telegram, Telephone, Fax, Email or similar other means including special Telephone/ Messenger within four hours in case of fatal accidents and 72 hours in case of other accidents, besides the Engineer-in-charge, to	
		I. The Regional Labour Commissioner (Central); II. The Board with which the worker involved was registered as a beneficiary; III. Director General of Building and other construction (regulation of employment and conditions of service) Act/Rules; and IV. The next of kin or other relative of the worker involved in the accident; V. The Regional Labour Commissioner (Central); VI. The Board with which the worker involved was registered as a beneficiary; VII. Director General of Building and other construction (regulation of employment and conditions of service) Act/Rules; and VIII. The next of kin or other relative of the worker involved in the accident;	
2	Further, notice of accident shall be sent in respect of an accident which		
	a.	Causes loss of life; or	
	b.	(a) Disables the injured worker from work for more that 10 days to (1) The Officer-in-charge of the nearest Police Station; (2) The District Magistrate or, if the District Magistrate by order so desires, to (3) The Sub-Divisional Magistrate;	
3	Where any accident causing disablement that subsequently results in death, notice thereof in writing of such death, shall be sent the Authorities mentioned above within 48 hours of such death.		
4	In case of an accident causing minor injury, first aid shall be administered and that resulting in disability of 48 hours or more, the injured worker shall be given first aid and immediately transferred to a Hospital or other place for medical treatment.		

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5	All near-miss accidents shall be reported to BHEL Engineer and Safety Officer as per prescribed format.
6	Reporting of dangerous occurrences: The following classes of dangerous occurrences shall be reported to the Inspector having jurisdiction, whether or not any disablement or death caused to the worker, namely:
7	Collapse or failure of lifting appliances, or hoist, or conveyors, or similar equipment for handling of building or construction material or breakage or failure of rope, chain or loose gears; or overturning of cranes used in construction work;
8	Falling of objects from height;
9	Collapse or subsidence of soil, any wall, floor, gallery, roof or any other part of any structure, platform, staging, scaffolding or means of access including formwork;
10	Contract work, excavation, collapse of transmission;
11	Explosion of receiver or vessel used for storage at a pressure than atmospheric pressure, of any gases or any liquid or solid used as building material;
12	Fire and explosion causing damage to any place on construction site where building workers are employed;
13	Spillage or leakage of any hazardous substance and damage to their container;
14	Collapse, capsizing, toppling or collision of transport equipment;
15	Leakage or release of harmful toxic gases at the construction site;
16	In case of failure of a lifting appliance, loose gear, hoist or building and other construction work, machinery and transport equipment at a construction site, such appliances, gear, hoist, machinery or equipment and the site of such occurrence shall, as far as practicable, be kept undisturbed until inspected by the Authorities;
17	Every notice given for fatal accidents shall be followed by a written report to the concerned Statutory Authorities and the Engineer In-charge in the specified Form annexed as Schedule, under acknowledgement.
18	Incident / injury statistics shall be maintained by all agencies cause wise.
19	Investigation of accidents and dangerous occurrences
20	Besides reporting, it shall be the responsibility of the contractor to constitute a team (members as per the gravity of the incident) of responsible person to thoroughly investigate all incidents involving near-miss accidents, lost-time and reportable accidents and dangerous occurrences with a view to finding out the causative factor, taking remedial measures and fixing responsibility, and make a copy of the investigation report along with action-plan, specifying a definite time-frame for implementation of the findings, available to the Engineer in-charge forthwith.

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10.2	HSE INCIDENT REPORTING, INVESTIGATION & CORRECTIVE ACTION	
1	The contractor shall submit report of all incidents, fires and property damage etc to the Engineer immediately after such occurrence, but in any case not later than 24 hours of the occurrence. Such reports shall be furnished in the manner prescribed by BHEL. (Refer HSE procedure for incident investigation, analysis and reporting for details)	
2	In addition, periodic reports on safety shall also be submitted by the contractor to BHEL from time to time as prescribed by the Engineer. Compiled monthly reports of all kinds of incidents, fire and property damage to be submitted to BHEL safety officer as per prescribed formats.	
3	HSE incidents of site shall be reported to BHEL site Management as per Procedure for Incident Investigation and Reporting in format no. HSEP:14-F15. Corrective action shall be immediately implemented at the work place and compliance shall be verified by BHEL HSE officer and until then, work shall be put on hold by Construction Manager.	
4	All incidents (near misses, property damage, first aid cases, minor, major and fatal incidents) shall be reported to BHEL as they happen immediately through SMS and Hard/Soft copy as per Format No. HSEP:14-F15	
5	All incidents including near miss, minor, major and fatal incidents shall be recorded	
6	All incidents shall be investigated for Root Causes and corrective actions ensured to prevent recurrence.	
7	Work shall be put on hold in the area till corrective actions are verified by BHEL	
8	The Root Cause Analyses and Corrective actions taken shall be recorded	
10.3	HSE EVENT REPORTING	
1	Important HSE events like HSE training, Medical camp etc. organized at site shall be reported to BHEL site management in detail with photographs for publication in different in-house magazines.	
2	Celebration of important days like National Safety Day, World Environment Day etc. shall also be reported as mentioned above.	
10.4	MONTHLY HSE REPORTING	
1	All routine and non-routine HSE activities shall be reported to BHEL on monthly basis by the contractor. The reporting medium can be hard/soft as per BHEL requirement and format for the same shall be provided to the contractor.	
2	The period of reporting shall be 25 th of the preceding month to 24 th of the present month and shall be submitted by the end of the calendar month.	
3	Report shall include good quality image or in pdf format for HSE Activities.	
10.5	HSE COMMUNICATION	
10.5.1	MONTHLY & WEEKLY HSE REPORTING	
	A	HSE information of Site shall be reported monthly and weekly through Monthly/Weekly Site HSE report (MSHR) as per format no. (HSEP:14-F05).
	B	Weekly, Monthly safety meeting conducted by BHEL/Customer are to be attended compulsorily by site in charge, senior area engineers, safety officers.
	C	In case Site-In-charge is not available on meeting day, next in command has to attend meetings.

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	D	Preparation of MSHR shall be done as per" Guidelines for filling up Monthly HSE report"
	E	The period of reporting shall be 25 th of the preceding month to 24 th of the present month and shall be submitted to Regional HQ by the end of the calendar month.
	F	The following documents and reports are to be maintained at site, but not limited to: • HSE induction sign in roster • Pre-employment Health Record Form 31-A. • HSE Inspections and audit reports • Environmental monitoring documentation • Method Statements and JSA • Training records • HSE corrective action tracking sheets • 3rd party inspection report of crane, lifting tools & tackles • PPE inspections • First report of incident • Incident investigation reports • Chemical inventory documentation • MSDS of chemicals • PTW and separate permits of critical activities • Vehicle and equipment inspections • Toolbox talk • Pre job briefings • Trade test details • Safety statistics monthly • Noise monitoring reports • Written safety violations • HSE committee and other MOM • HSE Plan & Emergency Plan • Weekly & Monthly HSE report
10.5.2	INCIDENT REPORTING	
1	HSE incidents of site shall be reported to Regional HQ and PS-HQ as per HSE procedure for incident investigation, analysis and reporting.	
2	Corrective action shall be immediately implemented at the work place and compliance shall be verified by HSE officer until then work shall be put on hold by Construction Manager.	
10.5.3	HSE EVENT REPORTING	
1	Important HSE events like HSE training, Medical camp etc. organized at site shall be reported to PS Regional HQ in detail with photographs for publication in diff house magazines.	

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2	Celebration of important days like National Safety Day, World Environment Day etc. shall also be reported as mentioned above.
10.5.4	DAILY HSE ACTIVITY REPORTING Daily HSE activities shall be reported by contractor to BHEL as per Format No. HSEP:14-F31A
10.5.5	HSE SUGGESTIONS All workers and employees shall be encouraged to provide suggestions for improvement in Health, Safety & Environment performance at site. The suggestions shall be recorded in a "Suggestions Register". Suggestions found suitable for implementation shall be implemented and recognition / reward to be given to the submitter. Suggestion register to be maintained & placed at site and Labour colony. This suggestion register shall be reviewed on periodic basis.
10.5.6	COMMUNICATON FROM BHEL/CUSTOMER All HSE related communication from BHEL, customer (2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL) / external statutory and regulatory agencies to be handled on priority. Same to be recorded and issues to be resolved in expeditious manner.

11.0 SAFETY DURING WORK EXECUTION

11.1	HSE SYSTEMS AND PROCEDURES Safety during work execution shall be ensured by following appropriate Safety Rules, providing adequate resources, deploying competent and trained manpower, regular training & inspection and non-conformity resolution. Main aspects are indicated as under: BHEL Power Sector HSE Management System (HSEMS) shall be referred for carrying out HSE activities at site. Contractor shall get familiar with and follow the HSEMS documents provided by BHEL, as required for implementation of HSE, which are listed as follows: BHEL POWER SECTOR HSE MANAGEMENT SYSTEM The Systems and procedures of BHEL Power Sector HSE Management System shall be implemented by the subcontractor, including: • HSE PROCEDURE FOR REGISTER OF OHS HAZARDS AND RISKS • HSE PROCEDURE FOR REGISTER OF ENVIRONMENTAL ASPECTS AND IMPACTS • HSE PROCEDURE FOR REGISTER OF REGULATIONS • HSE PROCEDURE FOR TRAINING AND AWARENESS • HSE PROCEDURE FOR EMERGENCY PREPAREDNESS AND RESPONSE PLAN • HSE PROCEDURE FOR PERMIT TO WORK • HSE INSPECTION AND OTHER FORMATS • HSE OBSERVER APP Note: - BHEL reserves the right to revise/ update these systems and procedure as per requirement to address any changing HSE needs - BHEL will provide hard / soft copies of applicable HSE Procedures, Work Permits (Must be raised through HSE Observer app), Operational Control Procedures, Inspection/ Other Formats etc. that are necessary for ensuring safe work to the successful Contractor at Site. It is the responsibility of the subcontractor to ensure availability of these documents before commencing work at site. - The subcontractor can get soft copies of these documents from respective Region SCT/ HSE for reference. The signed hard copies of the same shall not be required to be submitted along with tender document - Subcontractor shall use the Digital (Web & App-Based) HSE management Software Systems provided by BHEL whenever provided. In case not provided, hard copy systems will continue to be used. All information technology resources (Computers, mobile phones, mobile data, internet access etc.) for the use of such systems shall be ensured by the subcontractor.
A	HSE Procedures: All HSE Procedures as referred in various sub-clauses of this Section as given in Annexure – 3 (LIST OF HSE PROCEDURES).

B

OPERATIONAL CONTROL PROCEDURES

In order to reduce the risk associated with hazardous activities, all applicable OCPs (Operational control procedures) will be followed by contractor as per BHEL instructions, outcomes of Hazard Analysis & other requirements. This will be done as part of normal scope of work. Illustrative list of reference OCPs is given below.

LIST OF REFERENCE OCPs

SL. NO	TOPIC	SL. NO	TOPIC
0	General Safety	31	Storage in open yard
1	Safe Handling of chemicals	32	Drilling, reaming and grinding(machining)
2	Electrical safety	33	Stress relieving
3	Energy conservation	34	Hydraulic test
4	Welding and gas cutting operation	35	Trial run of rotary equipment
5	Fire safety	36	Batching
6	Use of hand tools	37	Cable laying/tray work
7	First aid	38	Spray insulation
8	Food safety at canteen	39	Compressor operation
9	Safety in Use of cranes	40	Gas distribution test
10	Storage and handling of gas cylinders	41	Cleaning of Hot well / Deaerator
11	Manual arc welding	42	Electrical maintenance
12	Use of helmets	43	O&M of control of AC plant & system
13	Good house keeping	44	Material preservation
14	Safe excavation	45	Electro-resistance heating
15	Working at height	46	Blasting
16	Safe Filling of hydrogen in cylinder	47	Transformer charging
17	Illumination	48	Handling of battery system
18	Handling and erection of heavy metals	49	DG set
19	Safe Acid cleaning	50	Sanitary maintenance
20	Safe Oil flushing	51	Piling rig operation
21	Safe Alkali boil out	52	Passivation
22	Steam blowing	53	EDTA Cleaning
23	Working in confined area	54	Chemical cleaning of Pre boiler system
24	Operation of passenger lift, material hoists & cages	55	Boiler Light up
25	Vehicle/ Crane maintenance	56	Rolling and Synchronization
26	Radiography	57	Loading of Unit
27	Waste disposal	58	Air compressor

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28	Handling & storage of mineral wool	59	Hydra/ Farana Operation
29	Working at night	60	Duct Pre-assembly
30	Computer operation		
61	Resumption of construction activities after lockdown and prevention of coronavirus infection during site operations.		
61 A	Prevention of Covid-19 infection in labour colony		
62	Truss/ Structure fit-up and alignment		

However, these are only reference OCPs and following shall be ensured with information of BHEL:

- a. The cost implications to implement these OCPs shall be borne by the contractor
- b. The reference OCPs shall be suitably modified by contractor as per specific requirements.
- c. In case any other OCP is found to be applicable during the execution of work at site, then contractor will prepare and follow those as well, within quoted rate.

11.2

WORK PERMIT SYSTEM

1

The following activities shall come under Work Permit System

- I. General Work Permit
- II. Work at Height Permit
- III. Burning/ Welding/ Hot Work Permit
- IV. Confined Area Work Permit Excavation Permit
- V. Radiation/ Radiography Permit
- VI. Heavy / Complex / Critical Lifting Activity Permit
- VII. Night / Holiday Work Permit
- VIII. Material Loading / Unloading Permit
- IX. Grating, Safety Net, Safety Facility Removal Permit
- X. Lockout / Tag out Permit – (viz. Live Electrical Maintenance etc.)
- XI. Beam / truss/ duct/ structure alignment permit
- XII. Drilling & Blasting Permit
- XIII. Winch Operation Permit
- XIV. Batching Plant Operation Work Permit
- XV. Elect Motor Operated Sky Climber Operation Work Permit
- XVI. Abrasive Shot Blasting Permit
- XVII. Scaffolding Erect & Dismantle Permit
- XVIII. Construction Db Installation Work Permit

2

HSEP12: HSE Procedure for Work Permit System” Rev-01 shall be followed while implementing permit system. Where customer is having separate Work Permit System the same shall be followed.

3

The Work Permit Formats shall be provided by BHEL at Site. It is the responsibility of the subcontractor to ensure their availability.

4

The above list is not exhaustive. BHEL reserves right to introduce additional Permits or modify requirements for usage of existing Permits. The conditions for using the Permit are specified in the Format (General Requirements).

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5	Where customer is having separate Work Permit System the same shall be followed in conjunction / merged to ensure all activities and checks are covered in all systems.
6	Details of working Group to be attached along with work permit request
7	All the Permits along with JSA/HIRA must be initiated by Agency Execution Team
8	Permit applicant shall apply for general work permit and other permits as referenced above of particular work activity at particular location before starting of the work with Method Statement and HIRA/Job Hazard Analysis.
9	In case any Permit requirement is not available, work will not be allowed/ stopped till it is made available.
10	Signatory shall physically visit the area of work and ensure all required safe guard before signing the work permit.
11	Signatories shall periodically visit the area to confirm the availability of required safeguards throughout the currency of Permit
12	All Permit signatory (including contractor's package in-charge and safety officer) shall check that all the control measures necessary for the activity are in place and issue the permit to the permit holder. Only then the permit shall be issued.
13	Permit holder shall implement and maintain all control measures during the period of permit. He will close the permit after completion of the work. The closed permit shall be archived in HSE Department of site.

11.3

SAFETY DURING HAZARDOUS OPERATIONS

The philosophy of hierarchy of controls as below shall be followed



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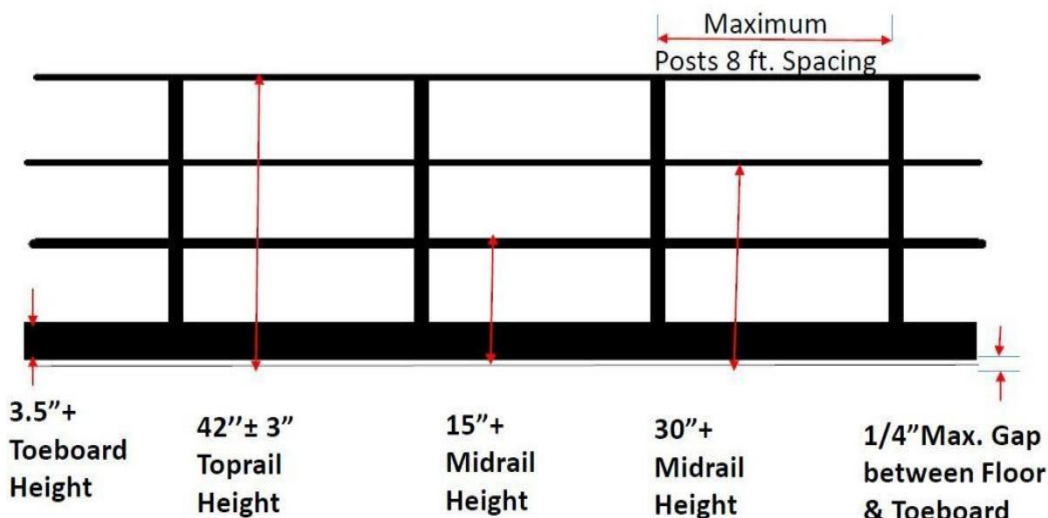
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	It shall be ensured that there are multiple protections against any accident/ incident. For example, for height work there shall be safe platforms and walkways, Safety Nets and Lifelines for hooking double lanyard Safety harness by workers. Monitoring and modifying worker behavior shall be part of ensuring safety. All personnel should be competent and trained for the job. Brief Safety guidelines for various hazardous activities are indicated below, besides the mandatory requirements based on Hazard Identification studies, HSE Procedures, Operational Control Procedures, Work Permits, applicable Indian Standard Codes and other provisions detailed in this document. Constant supervision at all times to be maintained by Execution & Safety Team to ensure implementation of these provisions.

11.4	POWER SUPPLY & UPKEEP OF INSTALLATION –
1	Only licensed person shall maintain and operate power installations.
2	All distribution boxes shall be locked and the key controlled by site management of concerned contractor.
3	Electrical appliance shall have proper earthing and for appliances equal to & more than 415V shall have two separate earthing as per IS: 3043:1987
4	All temporary connection should be provided through 30mA ELCB/RCCB using 3 core double insulated cable and only 3 pin industrial plug top will be used for connection.
5	The working condition and sensitivity of ELCB/RCCB shall be checked periodically.
6	All fuses and fuse wires shall be of standard size and rating.
7	All power supplies through cables shall be underground or overhead via insulated j hook over pole with height > 3mtrs.
8	TAG IN/ TAG OUT must be in force in Switch Room and all Distribution Boxes for live power line. The authorized person's name and contact no shall be displayed

11.5	WORK AT HEIGHT:
1	Height work is defined as any activity carried out 2 m above ground/ excavation
2	All height workers to be trained in height work and shall be tested and cleared in vertigo test. No untrained/ medically checked person shall be allowed to work at height.
3	Height workers shall be identifiable through Gate Pass and helmet marking.
4	All height workers shall wear double lanyard safety harness. The primary lanyard is never unhooked until the secondary lanyard is secure. Under no circumstances, worker to have both lanyards unhooked while at height.

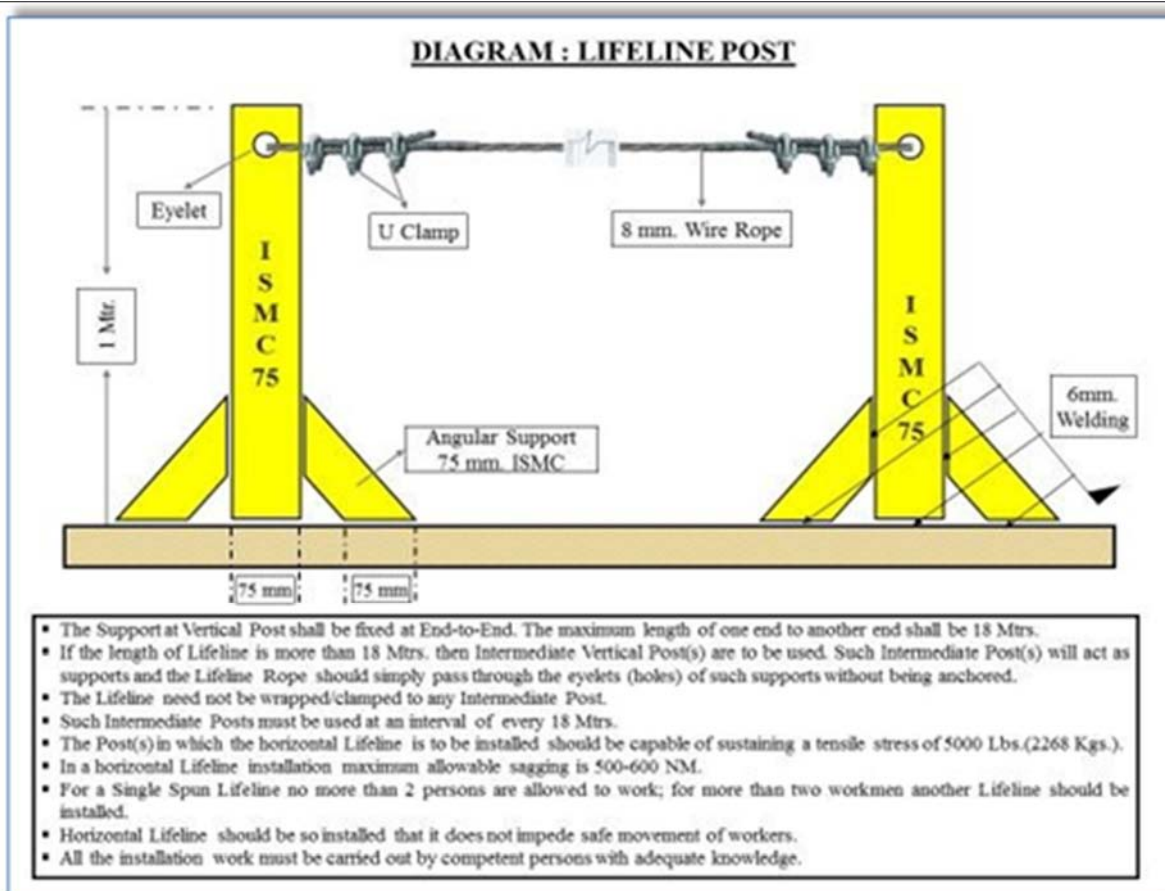
11.6	PRECAUTIONS AGAINST THE FALL OF MATERIALS AND PERSONS AND COLLAPSE OF STRUCTURE: -
1	Adequate precautions should be taken such as the provision of fencing, or barriers to protect any person who might be injured by the fall of materials, or tools or equipment being raised or lowered. Cradle may be used for lifting materials or men- however this shall be made of MS angles and flats only and duly certified by the HSE officer. Operators may also use bags or box or sound ropes for lifting small tools.
2	Guardrails (including scaffolding) erected over/adjacent working areas must have the guardrails screened (opening < 0.5), to prevent material from falling outside the platform/decking.
3	Guardrails must be able to withstand a 200 pound force exert in any one direction.
4	Where necessary to prevent danger, guys, stays or supports should be used or other effective precautions should be taken to prevent the collapse of structures or parts of structures that are being erected, maintained, repaired, dismantled or demolished.
5	All openings through which workers are liable to fall should be kept effectively covered or fenced and indicated in the most appropriate manner. As far as practicable, guard-rails and toe-boards in accordance with Indian laws and regulations as depicted below:
6	Guardrails and toe-board/barricades and sound platform conforming to IS:4912-1978 should be provided. Guard Rail System  The diagram illustrates a guard rail system with the following specifications: Maximum Posts 8 ft. Spacing: Indicated by a horizontal double-headed arrow at the top. 3.5"+ Toeboard Height: Indicated by a vertical double-headed arrow on the left. 42"± 3" Toprail Height: Indicated by a vertical double-headed arrow from the toeboard to the top rail. 15"+ Midrail Height: Indicated by a vertical double-headed arrow from the toeboard to the midrail. 30"+ Midrail Height: Indicated by a vertical double-headed arrow from the toeboard to the midrail. 1/4"Max. Gap between Floor & Toeboard: Indicated by a vertical double-headed arrow at the bottom right.
7	Use of retractable fall arrestor (as Second Line of Protection) to be ensured in critical/ tricky areas
8	Safety Net as per IS: 11057:1984 should be used extensively for prevention/ arrest of men and materials falling from height. The safety nets shall be fire resistant, duly tested and shall be of ISI marked and the nets shall be located as per site requirements to arrest or to reduce the consequences of a possible fall of persons working at different.
9	Reaching beyond barricaded area without lifeline support, moving with support of bracings, walking on beams without support, jumping from one level to another, throwing objects and taking shortcut must be discouraged.

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10	Use of Rebar steel for making Jhoola and monkey-ladder (Rods welded to vertical or inclined structural members), temporary platform etc. must be avoided. Jhoola should be made with angles and flats and tested like any lifting tools before use.
11	Monkey Ladder should be properly made and fitted with cages.
12	Lanyard must be anchored always and in case of double lanyard, each should be anchored separately.
13	In case of pipe-rack, persons should not walk on pipes and walk on platforms only.
14	In case of roof work, walking ladder/ platform should be provided along with lifeline and/ or fall arrestor.
15	Empty drums must not be used.
16	For chimney or structure painting, both hanging platform and men should be anchored separately to a firm structure along with separate fall arrestor. Rope ladder should be discouraged.
17	Guardrails shall be provided to protect workers from falling from elevated work places. The rails are generally made of MS pipes of suitable dia. Rebar shall not be used for any handrails, ladder or cover purpose. Wherever the guard-rails and toe-boards cannot be provided: (a) adequate safety nets or safety sheets shall be erected and maintained; or (b) adequate safety harnesses shall be provided and used and or (c) adequate fall arrestor shall be provided and used. As mentioned under PPE clause, all these PPEs shall be defect free and regularly inspected for any defect. The full body safety harness shall have double lanyard only with max 2 m length. The monkey ladders shall have sufficient fall arrestors. Adequate lifelines of 8mm steel wire rope shall be provided across the work area. The HSE officer shall recommend appropriate PPEs after analyzing hazards and risks involved. Wherever necessary, life-line (8mm SS) and fall arrestor along with Polyamide rope or Retractable lifeline should be provided. Lifelines shall be connected to independent & rigid structure. Lifeline is not to be installed on a structure which is temporary/ hanging for example a load being aligned.



11.7	SAFETY NETS: -
1	All safety net systems shall meet the requirements of Indian Standard (IS: 5175)
2	Double Net System with one higher mesh size and lower mesh size to be used whenever work at height is in progress. Safety nets to be of 02 layers.
3	Safety net mesh openings shall have a maximum size of 6 inches' x 6 inches and be secured at each crossing to prevent elongation of the opening. All nets must meet IS: 5175 standard.
4	Safety nets must be installed with sufficient clearance to prevent contact with the surface or structures under them.
5	Safety nets shall be installed as close as possible to the working level but in no case more than 25 feet below the working level.
6	The safety nets shall extend out at least 8 ft. from the side of the open edge.
7	Material, equipment and other items that fall into the net are to be promptly removed.
8	Safety nets are to be inspected before use and then daily for wear or damage caused by falling materials.
9	Safety net installation shall be inspected by a competent person.

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10	Safety nets must be installed below the working decks of the super structure for protection from falls of personnel and material.
11	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.
12	The drop test consists of a 400-pound bag of sand 28-32 inches in diameter dropped into the net from the highest surface at which employees are exposed to fall hazards, but not from less than 42 inches above that level.
13	When the employer can demonstrate that it is unreasonable to perform the drop-test described above, the employer or a designated competent person shall certify that the net and net installation have sufficient clearance and impact absorption by preparing a certification record prior to the net being used as a fall protection system. The certification must include:
14	Identification of the net and net installation.
15	Date that it was determined that the net and net installation were in compliance.
16	Signature of the person making the determination and certification.

11.8	NIGHT SHIFT WORK EXECUTION/ ACTIVITY Night shift operation shall be avoided to the extent possible, so shall be any complicated or heavy job. However, prior administrative approval shall be obtained from BHEL for such operation and a detailed work plan developed. The following shall be ensured:
1	Adequate illumination along access, work area and egress
2	Supervision
3	Issue of strict instruction to workmen not to stray away from the work area and earmarked approach
4	Non-deployment of women workforce
5	Non-deployment of fatigued workforce
6	Vacating the area immediately on completion of the job
7	Informing Medical Centre and ambulance in advance

11.9	SAFETY WHILE WORKING AT HEIGHTS
1	All working platforms, ways and other places of construction work shall be free from accumulations of debris or any other material causing obstructions and tripping.
2	Every opening at elevation from ground level through which a building worker, vehicle, material equipment etc. may fall at a construction work shall be covered and/or guarded suitably by the contractor to prevent such falls.

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3	Wherever the workers are exposed to the hazards of falling from height, the contractor shall provide full harness safety belts fitted with fall arresting systems to all the employees working at higher elevations and life line of 8 mm diameter wire rope with turn buckles for anchoring the safety belts while working or moving at higher elevations.
4	Safety nets shall also be provided for saving them from fall from heights and such equipment should be in accordance with BIS standards.
5	Wherever there is a possibility of falling of any material, equipment or construction workers while working at heights, a suitable and adequate safety net should be provided.
6	The safety net should be in accordance with BIS Standards.
7	The contractor shall provide standard prefabricated ladders on the columns where the workers are required to use them as an access for higher elevations till permanent staircase is provided.
8	The workers shall be provided with safety belts fitted with suitable fall arresting system (fall arrestors) for climbing/getting down through ladders to prevent fall from height.
9	The only permissible personal fall arrest system is an industry approved safety harness. Employees can use positioning belts with Two-D ring attachment points as long as they are used in conjunction with a safety harness. Safety harnesses must be secured to an overhead object of substantial capacity capable of supporting weight. In order to accomplish this and ensure 100% protection, the worker may need to use two lanyards. The primary lanyard is never unhooked until the secondary lanyard is secure.
10	Secondary line of protection from fall (i.e. Retractable Fall Arrestor, Safety Net etc.) shall be provided during Working at Height.
11	For execution of any height work, strict supervision of work in presence of agency safety officer/ package in charge/ BHEL Official is must and mandatory.
11.9.1	WORKING PLATFORMS
1	Working platforms, gangways and stairways shall be so constructed wherever required irrespective of any height for execution to avoid any near miss at site.
2	Every opening in the floor or a building or in a working platform shall be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 90 cm.
3	Suitable scaffolds shall be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except in the case of short duration of work which can be done safely from ladders. The scaffolds shall be duly checked and tagged by certified scaffolding inspector.
4	Safety related to chutes (i.e. used for removal of material shall be closed on all sides except their opening during construction & use) shall be ensure during execution / erection.

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11.10	SAFETY IN THE USE OF HAND TOOLS AND POWER-OPERATED TOOLS
11.10.1	General provisions
1	All hands and power tools and similar equipment, shall be maintained in safe condition.
2	All job-made/field-made tools are prohibited, unless designed with engineered stamp.
3	When power operated tools are designed to accommodate guards, they shall be equipped
4	with such guards, when in use;
5	Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains and other reciprocating, rotating or moving parts of the equipment shall be similarly guarded;
6	Personnel using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, mists, vapours, or gases shall be provided with the particular personal protective equipment necessary to protect them from the hazards;
7	All hand-held powered platen sanders, grinders, grinders with wheels of 5 cm or less, routers, planers, laminate trimmers, nibblers, shears, scroll saws and jigsaws with blade shanks of 0.5 cm wide or less shall be equipped with only a positive on-off control.
8	All hand-held powered drills, tappers, fastener drivers, horizontal, vertical or angle grinders with wheels greater than 5 cm in diameter, disc sanders, belt sanders, reciprocating saws, saber saws and other operating powered tools shall be equipped with a momentary contact on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.
11.10.2	WALKWAYS AND PLATFORMS
	Walkways and platforms, at least two in each orthogonal direction, shall be provided inside the tower at distribution pipe level. Walkways shall be at least 1000mm wide with 50 mm (minimum) safety toes along each edge. These walkways and platforms shall provide safe and clear access to all sprayers and all distribution pipes. A FRP platform of 1500 mm clear width shall be provided around the tower periphery which will be a means of access to next walkways and all end valves. Access ways shall be clear of all obstructions such as distribution pipe support beams, drift eliminator support beams, etc. The walkways shall be provided with transverse slots or other opening which will permit the free passage of air and water.
2	Contractor shall provide necessary approach & Platforms for all the instruments required during commissioning and testing. These approach platforms shall be provided to meet all required safety norms and these shall be of permanent nature.

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11.11	SCAFFOLDING SAFETY
11.11.1	SCAFFOLDS
	The contractor shall take all precautions to prevent any accidental collapse of scaffolding or fall of persons from scaffolding. The contractor should ensure that scaffoldings are designed by a competent person and its erection and repairs should be done under the expert supervision. The scaffolding shall meet the required strength and other requirements for the purpose for which the scaffold is erected. The material used for scaffold should conform to the BIS / International standards.
1	Every Scaffolds in their component shall be adequate construction, made of sound material & free from any defect and safe for the purpose for which it is intended for use.
2	The safe and efficient erection, use, dismantling, and storage of scaffolds, ladders and elevated work platforms are considered important objectives in maintaining a safe work environment. This procedure provides the guidelines for erection, use, dismantlement, and storage of scaffolding and elevated work platforms.
3	There is no such thing as a temporary scaffold. All scaffolds must be erected and maintained to conformed standard (IS 3696 & IS 4014).
4	The Scaffold Tagging defines satisfactory, incomplete or defective scaffolds.
5	Management must ensure or have each worker who performs work while on a scaffold trained by a person qualified in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control or minimize those hazards.
6	Agency has to engage and retain trained scaffolding inspectors from statutory authorities/institutes in sufficient numbers right from job starting till job completion.
7	Scaffolding inspectors have to issue fitness certificates for each scaffolding and apply tags for safe use for respective job application to take care of load, heights etc.
8	Scaffolding pipes, clamps, safety nets, floor grills for working platforms are to be made of good quality with proper certifications as per IS Codes.
9	Scaffolding's to be used by sub-agencies should be of good quality
10	All Indian Standard (IS Code) related to Scaffolding Safety shall ensure/implemented during execution.
11	No Scaffold shall be erected, added, altered or dismantled except under the supervision of HSE Official.
12	In case of Scaffolding can't be used during execution, necessary warning notice/ scaffolding Tag shall be used all display at scaffold.
13	Adequate measure is taken to prevent displacement of standard of scaffold either by providing base plate or sole plate, as necessary.
14	All the safety measure related with scaffold platform shall ensure before use. Board, plank and decking used in working platform shall be adequate, uniform size & strength.

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15	Adequate measure shall be taken to prevent injury which may be caused by fall of material or object by using toe guard at platform, safety Nets, temporary barricading, hard barricading area or other suitable means.
16	No material, concrete, other debris shall be allowed to accumulate at any platform on a Scaffold.
17	No worker shall be permitted to work on scaffold that has been damaged or weakened unless adequate safety measure have been taken to ensure the safe use of scaffold.
18	There shall be no opening in any working platform allowing access to such working platforms. However, in case opening in platform is unavoidable, necessary safety measure along with safety net, safety belt etc shall be provided for protection against falling of object or worker.
19	Safe Access shall be provided for movement of worker from one working platform to another working platform.
20	Each side of working platform must be covered with suitable & safe guard and toe guard of adequate strength to prevent fall of any materials, tools & Workers.
21	In case of any rectification, alteration or modification in a scaffold or part thereof, needed to suit its use, shall be made in consultation with the BHEL HSE Official or Competent Authority.
22	The Contractor shall ensure all the necessary measures to prevent workers from coming into contact with the electrical wire or any dangerous equipment.
23	No part of the building shall be used as a support or part of scaffolding unless such a part of building is made of sufficient strength if any.
24	Hanging scaffolding shall not be used in areas of general movement.
25	After use, scaffolding shall be removed after clearing the area and taking necessary Work Permit for Safety Facility Removal.
11.11.2	SCAFFOLD TAGGING Scaffolds being erected, modified or dismantled must be tagged as suitable for use. The scaffolds can only be accessed by those involved with the process. Tagging shall be done with standard tag holder. Scaffolding tag should be certified by scaffolding inspector having valid certificate. GREEN scaffold tag- shall be fixed when scaffold is complete and safe for use, signed and dated by the scaffolding competent person daily. RED scaffold tag – to be fixed if scaffold is defective and cannot be used, or is still under erection. YELLOW scaffold tag – to be fixed if scaffold is in under construction/ maintenance. Examples of scaffold tags:



FIG. SAMPLE SCAFFOLD TAGS AND TAG HOLDER

11.11.2A	T&P TAGGING:
	All deployed Wire Rope Slings, Chain Pulley Blocks, Hooks, slings etc. shall be Tagged using aluminum or any other metal tag with punching.
11.11.3	LADDER SAFETY
1	Safe means of access shall be provided to all working places.
2	Every ladder shall be securely fixed and extended about 1 meter above top platform.
3	No portable single ladder shall be over 9 m in the length while the width between side rails in rung ladder shall in no case be less than app.29.2 cm for ladder up to and including 3 m in length. For longer ladders this width shall be increased at least ¼” for each additional foot of length.
4	Monkey ladders shall be protected with cage(s).
11.12	RADIOGRAPHY:
1	Wherever the process requires examination by radiography,
2	CONTRACTOR /sub-contractor shall use approved radiography contractor for the work on site.
3	Site radiography shall be carried out after advance notification to the HSE officer and client personnel. All radiography on the site shall be subject to receipt of client/BHEL work permit and shall normally be performed outside of normal working hours. No ionizing radiation sources shall be left unsupervised whilst on site.
4	A minimum of 2 qualified persons from the radiography contractor are required for each activity involving ionizing radiation. Adequate warning signs shall be posted on barriers and the work area shall be marked off at a safe distance with tape or hard barricades prior to starting radiography by concerned job sub-contractor.
5	All personal executing radiography operations shall carry calibrated radiation monitoring devices at all times.
6	The storage of radioactive sources on the site is prohibited, they shall be present only for the time required to complete the work. Whilst not in use, radiation sources and their container shall be secured in a safe location with adequate warning signs displayed as per Atomic Energy Regulatory Board (AERB) guidelines.

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11.13	WELDING & GAS CUTTING SAFETY
1	When possible, items to be welded, cut, heated, etc. shall be moved to a safe location free of combustible or flammable material. If this is not possible, then all combustibles/flammables that can be removed from the area shall be removed within a 35-foot circumference and a positive means of confining arcs and sparks generated by the process shall be taken and additional person(s) shall be stationed as fire watch for the area(s) still exposed, along with obtaining the Hot Work Permit as applicable.
2	Appropriate fire-fighting equipment is to be available in close proximity of any welding and gas cutting operations at all times.
3	Drums, tanks, and similar containers that have contained flammable or toxic material shall not be welded, cut, or heated until they have been made safe by water filling, thorough cleansing, or similar accepted practices. The container shall also be ventilated during the welding, cutting, or heating process.
4	Proper ventilation is required for any welding or torch operations performed in a confined space.
5	Any welding or gas cutting operations performed on metals of toxic compounds or coating such as zinc, stainless steel, lead, cadmium, chromium, and beryllium shall be properly ventilated and/or proper respiratory protection shall be worn by any person that could be exposed to fumes, vapors, and gasses created by the welding and gas cutting processes.
6	Wherever it is practical, all arc welding operations shall be shielded to prevent direct light rays or sparks from contacting persons in the vicinity or from reaching areas normally used to travel through or into the vicinity. Where this is not practical, persons who shall be in the area are to use proper eye and skin protection. Other persons who are not participating in the welding or gas cutting operations are not to be allowed into the hazard zone.
7	Welders and other employees who are exposed to arc welding radiation shall wear suitable clothing and protective apparel to prevent burns and other types of ultraviolet radiation damage to the skin.
8	Arc welding machines shall be shut down when being moved or when they are not in continuous use.
9	Electrode holders left unattended shall have electrodes removed and shall not be left where they might contact employees or conducting objects.
10	Arc welding power supply cable shall be of proper rating and material, e.g. copper.
11	Welders shall guard against allowing materials adjacent to or behind them to reflect radiation back toward them or towards others in the area. Reflected radiation can cause skin burns and eye flash burns.
12	Compressed gas cylinders shall always be secured from tipping or falling, whether in use, in storage or in transit. The cylinders shall always be secured upright, except during times when actually being hoisted or carried.
13	Valve caps shall be in place when cylinders are not in use. Valve caps shall never be used for lifting the cylinder vertically.

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14	Regulators shall be removed when cylinders are not in use or are in transit, unless the cylinder is firmly secured on a special carrier designed for this purpose.
15	Cylinders being transported by a powered vehicle shall be secured in an upright position. Gas cylinders are not allowed to be used in man-basket when occupied.
16	Cylinders containing oxygen or fuel gasses shall not be taken into confined spaces.
17	Oxygen cylinders shall be stored a minimum of (6) meters from fuel gas cylinders or shall have an approved firewall between them.
18	Torches shall only be lit by approved strikers; never with matches, cigarette lighters, or hot work.
19	While carrying out job at height, the sparks or molten slag shall be prevented from falling down by putting a fire-resistant (non-asbestos) sheet or even MS Sheet. If such cannot be provided, the passage of falling sparks or molten slag shall be barricaded till ground floor and any cable/ tubes/ any other objects interfering in the passage shall either be removed or covered with Fire-resistant sheet or M S Sheet.
20	Separate sheds for all kinds of gases with clear demarcation/partition of empty & full cylinders/partly filled cylinders of gases are to be by agency.
21	Welding cable must be free from any repair or splices. However in case of any broken cable use, a minimum distance of 10 feet from the cable end to which the electrode holder is connected shall be used, except that cables with standard insulated connectors or with splices whose insulating quality is equal to that of the cable are permitted.
22	All safety precautions shall be taken for welding and cutting operations as per IS-818.
23	Flashback arrestors, ISI marked, shall be ensured at both cylinder and torch ends.
24	Pressure gauges shall be ensured and in working condition
25	Cylinders shall be protected from falling splinters by proper metallic cover

11.14	RIGGING (Safe Rigging Practices):-
1	Review the planned operation and requirements with the operator and rigging crew.
2	Ensure a pre-lift meeting is conducted with crane operator, tagline operator, signal personnel, and Safety Manager.
3	Designate a qualified person from the rigging crew to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desire clearance by visual means.
4	Clear the lift area of all unnecessary personnel.
5	Farana shall only be allowed for loading & unloading works & shall not be allowed to move with load. Farana are not allowed for materials transport.
6	Cranes, D-Shackles, Slings all lifting equipment are to tested by statutory authorities/approved by Third Party agency. Agencies with in their cost has to do it at least once in a year or as per applicable clauses regarding frequency of testing, inspection, fitness certification requirement.

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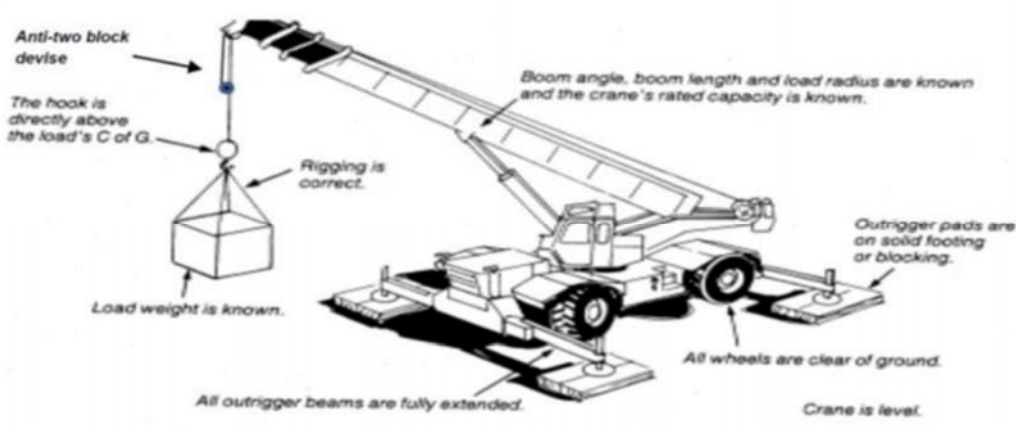
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7	Rigging equipment shall not be loaded in excess of its recommended safe working load. Rigging equipment, when not in use, shall be removed from the original work area so as not to present a hazard to employees.								
8	To enhance HSE culture and create safe working environment at project site rigging Handbook/ Leaflet shall be provided to all riggers & their gangs. Rigger hand book / leaflet attached as Annexure-7 in this HSE plan.								
11.15	LIFTING OPERATION SAFETY								
1	It will be the responsibility of the contractor to ensure safe lifting of the equipment, taking due precaution to avoid any incident and damage to other equipment and personnel.								
2	All the cranes and lifting tools & tackles shall be inspected on daily basis and as well as monthly by expert and as per the law, third party for annual certification. These shall be tested and certificates of fitness shall be obtained from 3rd party State Govt. approved competent agency before deploying at site and later periodically. The last date of Third Party Inspection and the next Due date shall be conspicuously displayed on all cranes. A copy of certificate shall be pasted on operator's cabin of all the lifting equipment. <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">A</td><td>The manufacturer's instruction for maintenance shall also be followed. All safety measures shall be followed.</td></tr> <tr> <td style="text-align: center;">B</td><td>All tools tackles, lifting appliances, material-handling equipment etc. used by the contractor shall be of safe design and construction.</td></tr> <tr> <td style="text-align: center;">C</td><td>The operators, slingers and signalers shall be qualified as per IS 13367 (part-1):2003 "Safe use of cranes- code of practices".</td></tr> <tr> <td style="text-align: center;">D</td><td>There shall be a person responsible for co-ordination among cranes where multiple cranes are used, and lifting over 75% of the crane capacity to be avoided.</td></tr> </table>	A	The manufacturer's instruction for maintenance shall also be followed. All safety measures shall be followed.	B	All tools tackles, lifting appliances, material-handling equipment etc. used by the contractor shall be of safe design and construction.	C	The operators, slingers and signalers shall be qualified as per IS 13367 (part-1):2003 "Safe use of cranes- code of practices".	D	There shall be a person responsible for co-ordination among cranes where multiple cranes are used, and lifting over 75% of the crane capacity to be avoided.
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4	Any Heavy equipment (crane, winch machine, etc.) manufactured less than 15 years from the current year shall be only allowed to be used at our project Site's. Pre-SAFETY Inspection of the equipment by SAFETY dept. shall be done before mobilizing the equipment at our project site.								

11.16	CRITICAL LIFTS
	A written rigging procedure and plan must be prepared for:-
1	Lifts or movements over 50 tons
2	Lifting over 75% of crane capacity
3	Erection of process columns, towers or vessels, NSSS and turbine/generator systems.
4	Lifts over operating units/equipment
5	Other instances deemed prudent by the Company.

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6	Lifts or movements of unusual difficulty, geometry or rigging.
7	Where required by contract.
8	Lifting a Personnel Basket.
	Note: - Tandem operation for materials handling/ erection/ lifting/ lowering from heights needs to be approved by BHEL/ Customer.
11.17	CRANE APPLIANCE/EQUIPMENTS:
1	On every crane or piece of hoisting equipment notices of all rated load capacities, recommended operating speeds, and any hazard warnings or special instructions shall be conspicuously posted. All instructions and warning shall be visible from the equipment operator's station.
2	Cranes shall have an Anti-Two-block safety device installed
3	All mobile cranes shall have overload and backup alarms
4	Load angle indicators and limit switch: -
5	All areas within swing radius of cranes that are potentially accessible by pedestrian, vehicular, or equipment movement shall be barricaded to prevent anyone or any vehicle or equipment from being struck by the crane or hoisting equipment, or its load(s).
6	No part of the lifting equipment or its load shall be within the distance as specified in the Indian Electricity Act from an energized power line
7	Cranes shall have annual certified third party inspection and be inspected before use by the operator. Any defects shall be corrected before use. Logs of crane inspection shall be kept with the crane.
8	Make certain that the rigging personnel, material, and equipment have the necessary capabilities for the job and are in safe condition.
9	Communicate with person(s) directly responsible for accomplishing the work and / or work area to establish requirements/responsibilities and make certain that all preparatory work is complete.
10	Mats/Pads must be used on all lifting equipment, equipped with outriggers.
11	Pick and carry must have the load secured to the rig in front.
12	Proper Crane Setup:- 

11.18	COMPETENCY OF OPERATORS/ DRIVERS OF CRANE, WINCH, LIFTING/ CONSTRUCTION EQUIPMENT ETC. i. The Operators / Drivers of crane, winch, construction/ lifting equipment etc. shall be experienced and have valid driving license for the class of vehicle / machinery as applicable (like Crane/ Forklift/ Rig, Construction equipment driving license etc.). ii. Minimum HMV driving license is required for all heavy equipment/ heavy vehicle (trailer/ Hyva /dumper /TM) operators at site. iii. The subcontractor shall certify competence of these persons in writing as and when they are posted at site. iv. Crane, Winch, Construction & lifting equipment operator should have certificate on subject course or experience certificate in employer letterhead. v. Where state is providing license for operating crane, tractor and other construction vehicles, same to be ensured. Note: 1. In case the statutory requirements i.e. State or Central Acts and / or Rules as applicable like the Building and Other Construction Workers' Regulation of Employment and Conditions of Service- Act,1996 or State Rules (wherever notified), the Factories Act, 1948 or Rules (wherever notified), etc. are more stringent than above, the same shall be followed. 2. In case of any stringent requirement of BHEL's customer over and above the specifications mentioned in current document, the same shall also be required to be complied at site by contractor.
11.19	HOISTING APPLIANCE/EQUIPMENT
	Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safe guards. Fencing of Machinery The contractor shall provide suitable fencing or guard to all dangerous and moving parts of machinery. The contractor shall not allow any of the employees to clean, lubricate, repair, adjust or examine during machinery in motion, which may cause injury to the person.
11.20	CYLINDERS STORAGE AND MOVEMENT (OR COMPRESSED GAS CYLINDER)
1	Hose lines shall be adequately protected, inspected and tested for leaks in line with the safety Requirements. Flash back arrestor /NRV must be used at both ends of the hoses and all hose should be free from damage and fixed properly preferably using crimping clamps. Leakage test must be done before every use by soap solution and physical inspection of hose must be carried out regularly. Only trolley attached with wheel will be used for cylinder transportation in which cylinders must be kept secured with chain. Only Industrial type regulator fitted with two stage double dial pressure gauge is allowed to be used.
2	All gas cylinders shall be stored in upright position.

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3	Suitable trolley shall be used.
4	There shall be flash-back arrestors conforming to IS-11006 at both cylinder and burner ends.
5	Damaged tube and regulators must be immediately replaced.
6	No of cylinders shall not exceed the specified quantity as per OCP
7	Cylinders shall be moved by tilting and rolling them on their bottom edges.
8	They shall not be intentionally dragged, struck or permitted to strike each other violently.
9	When cylinders are transported by powered vehicle they shall be secured in a vertical position.
11.21	PAINTING Painting requirements — prior to commencement of painting job, provide a detailed procedure to be implemented by all concerned employees and sub-contractor involved in painting activities.
11.22	DEMOLITION WORK Contractor and Subcontractor must take prior permission from BHEL/ Customer (2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL) and statutory body (if required) before any demolition work is commenced and also during the process of the work the following shall be ensured:
1	All roads and open areas adjacent to the work site shall either be closed or suitably protected.
2	No electric cable. or apparatus which is liable to be a source of danger nor a cable or an apparatus used by the operator shall remain electrically charged.
3	All water supply line, Gas line etc. shall be put off and suitably capped before start of demolition work.
4	All practical steps shall be taken to prevent danger to persons employed from the risks of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render them unsafe.
5	All the laying material in exterior opening shall be removed before commencing any demolition work.
6	Ensure Safety / protection of adjacent structure, wall, partition if any during demolition work.
7	Ensure continues inspection to observe any hazard related to Floors or Walls or Loosen Material etc. during the demolition work. All the hazard observed shall be compliance immediately.
8	Ensure adequate display of Warning Sign, Safety Posters, barricading at the demolition area.
9	No persons other than Building workers & other persons essential to the operation of demolition work shall be permitted to enter a demolition zone along with substantial barricades.

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11.23	TOOLS & PLANTS
1	All T&Ps/ MMEs should be of reputed brand/appropriate quality & must have valid test/calibration certificates bearing endorsement from competent authority of BHEL. Contractor to also submit monthly reports of T&Ps deployed and validity test certificates to BHEL safety Officer as per the format/procedure of BHEL.
2	All requisite tests and inspection of handling equipment, tools & tackle shall be periodically done by the contractor by engaging only the Competent Persons as per law.
3	Defective equipment or uncertified shall be removed from service.
4	Any equipment shall not be loaded in excess of its recommended safe working load.
5	Handling of Hazardous Chemicals :- The contractor will notify well in advance to the BHEL/ Customer for any hazardous chemicals used at site.
i	The Contractor will notify well in advance to the authorized representative of BHEL/ CSPGCL at site of his intention to bring to the Site any container filled with liquid or gaseous fuel or explosive or petroleum substance or such chemicals which may involve hazards. Employer shall have the right to prescribe the conditions, under which such container is to be stored, handled and used during the performance of the works and the Contract shall strictly adhere to and comply with such instructions.
ii	The authorized representative of BHEL/ CSPGCL at site shall have the right at his sole discretion to inspect any such container or such construction plant / equipment for which material in the container is required to be used and if in contractor opinion, its use is not safe, Contractor may forbid its use. No claim due to such prohibition shall be entertained by Employer and Employer shall not entertain any claim of the Contractor towards additional safety provisions / conditions to be provided for / constructed.
iii	Further, any such decision of the authorized representative of BHEL/ CSPGCL at site shall not, in any way, absolve the Contractor of his responsibilities and in case, use of such a container or entry thereof into the Site area is forbidden by Employer, the Contractor shall use alternative methods with the approval of the Employer without any cost implication to the Employer or extension of work schedule.
iv	Where it is necessary to provide and / or store petroleum products or petroleum mixtures and explosives, the Contractor shall be responsible for carrying-out such provision and / or storage in accordance with the rules and regulations laid down in Petroleum Act 1934, Explosives Act 1948, and Petroleum and Carbide of Calcium Manual published by the Chief Inspector of Explosives of India. All such storage shall have prior approval of the authorized representative of BHEL/ CSPGCL at site. In case any approvals are necessary from the Chief Inspector (Explosives) or any statutory authorities, the Contractor shall be responsible for obtaining the same.
11.24	CHEMICAL HANDLING
1	Displaying safe handling procedures for all chemicals such as lube oil, acid, alkali, sealing compounds etc. at work place where it is necessary to provide and/or store petroleum products or petroleum mixture & explosives, the contractor shall be responsible for carrying out such provision / storage in accordance with the rules & regulations laid down in the relevant petroleum act, explosive act and petroleum and carbide of calcium manual, published by the chief inspector of explosives of India. All such storage shall have prior approval if necessary from the chief inspector of explosives or any other statutory authority. The contractor shall be responsible for obtaining the same.

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2	MSDS (Material Safety Data Sheets) for all chemicals shall be prominently displayed near respective storage areas
3	Availability of running service water near the activity area should be ensured.
4	Suitable and safe place for draining and neutralization of used chemicals should be kept identified.
5	Chemical must be away from heat/steam and must be keep away from sunlight.
6	Disposal plan of chemicals must be ensured if required. (Disposal plan can jointly prepared with BHEL/ Customer (2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL).
7	EMERGENCY PROVISIONS: - Flushing and washing water supplies: Ample supplies of tepid flushing and washing water supplies shall be provided at all possible points of discharge, spillage or escape of chemicals. - Adequate provisions shall be made for emergency treatment of the eyes, comprising eye wash bottles, located conveniently to places where discharge, spillage or escape of chemicals can occur. - Safety shower and eye washer shall be provided near the location of chemical handling place. - Safety shower arrangement shall be provided in close proximity to the Ammonia dosing skid. i.e. Two (2) numbers of safety shower units and two (2) number of Eye-fountains. - A suitable first aid treatment room with outside telephone facilities shall be provided within a reasonable distance of the place where chemicals are being used. Chemicals shall be stored with proper identification and with necessary caution boards. - The protective clothing and apparatus required for emergency use shall be made available also near the acid cleaning area. - If signs of skin irritation occur the persons should be removed from contact and referred for medical opinion/ emergency. In the event of the splashing of the chemical to skin, the affected area should be washed thoroughly avoiding spreading contamination to the face and eyes. - Temperature limitations specified for various steps/ area should not be exceeded wherever applicable.
8	Posters & Danger boards sign for chemicals.
9	Safety requirement above ground Track Hopper area: - Proper walkway and handrail all along the Track Hopper length shall be provided as per the specification. - Steel grating (as specified elsewhere) shall be provided securely at Hopper top. - Proper barricading of the Crane/Hoist floor opening shall be provided. - Proper illumination shall be provided throughout the entire area of Track Hopper Complex. - Track Hopper walkway area shall be free from any intermediate crossing of utility pipes, structures, cables etc.

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10	Safety requirement underground Track Hopper area & equipment:
	a. Direct Communication from track Hopper (inside) & Paddle Feeder with the Control Room shall be provided. b. Side walkway inside Track Hopper shall be of adequate width & free from any intermediate crossing of utility pipes, structures, cables etc. Width/height of central walkway shall be sufficient for ease working of maintenance people. c. Proper illumination shall be provided inside Track Hopper area so that Side walkways & central portions between two Track hopper conveyors and Hopper table shall be clearly visible. Emergency lighting shall also be provided in case of tripping of regular lighting supply. d. Staircase inside Track Hopper shall be with minimum 1200 width with proper Hand railing & toe guards. e. All drains and sump pump pit inside hoppers shall be covered with gratings. f. Underground area shall be well ventilated as specified elsewhere
11	Earthling & Shielding
A	A complete earthling system with double path to the ground for all equipment and ESP structure shall be furnished. Each casing shall be provided with two earthing pads located on diagonally opposite corners of each casing. The pad surfaces shall be tinned, drilled and shall be connected to earthling mat by 50x6 galvanized steel flats.
B	Manual safety earthling switches shall be furnished so that individual equipment can be grounded during maintenance. All access doors, gas distribution baffles or perforated plates located in the inlet or outlet nozzles of the precipitators shall have ground straps connected to the precipitators casing if they are not welded permanently to the casing.
C	In case special earthling requirement is needed for electronic cabinets the same shall be furnished by the Bidder.
12	Safety Interlocks
A	Contractor shall provide a full proof manual key sequence type interlock system for the safety of operating personnel from contacting energized high voltage equipment. Key interlocks shall be provided such that for a particular ESP casing any TR set cannot be energized until all insulator housing compartments, disconnect switch boxes, casing inspection doors are locked and emitting and collecting electrode rapping motors are prevented from energization. Also it shall prevent opening of any inspection door unless all TR sets of that stream are de-energized and all HV disconnect switches are opened to earthed position. Rapping motors operation shall be prevented under this condition unless interlock is specifically defeated for testing.
B	Key interlock system shall be simple, robust, weather proof in construction suitable for outdoor mounting and positive in action. It shall be suitable for high degree of repeatability without wearing out.

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11.25	CHEMICAL CLEANING
1	The Contractor shall provide adequate safety and protective equipment for all his employees and ensure that they are worn at all times of danger. Specialized treatment equipment (such as required for first aid when using hydrofluoric acid/chemical) must be provided at the place of handling acid/chemical.
2	The hazardous substances and chemicals shall be stored in a cool, well ventilated, dry and covered space with restricted entry only
3	The loading, unloading, issue and use of these materials shall be strictly in accordance with the Material Safety Data Sheet (MSDS) and under strict supervision. Every supply shall accompany a MSDS as per standard purchase order clause.
4	The site HSE team shall maintain MSDS of all these items and the same shall be shared with the stores or the user as and when required.
5	Each container shall be labeled.
6	Damaged containers are replaced or repaired immediately.
7	The stores shall check the expiry date of perishable chemicals while receiving and store in such a fashion so as to follow First-in-first-out queue.
8	There shall be enough space for movement of material and people in the stores.
9	Bulk chemical storage areas with secondary containment shall be provided so as to arrest spillage from spreading.
10	Dispose the cleanup waste to an industrial waste site or approved temporary storage location.
11	There shall be sufficient fire extinguishers and sand buckets in the stores and at point of use. In case of any spillage, dry sand shall be put on the spill and soaked sand shall be disposed as per the procedure for hazardous waste.
12	Control measures on use of flammable and combustible fluids shall be undertaken to limit quantities in storage area and cabinets.
13	There shall be provision of water preferably flowing one and a face shower at stores and point of use.
14	The persons handling these items shall strictly wear appropriate PPEs like Gum Boots & helmets, rubber/neoprene gloves, apron, required transparent face Mask shield etc.
15	No smoking signage should be displayed.
16	Availability of First Aid Box containing dilute ammonium hydroxide, 50% Sodium bicarbonate solution, eye lotion, Bandage, Tincture iodine, Cotton, Burnol etc. should be ensured

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11.26	EXPLOSIVES
	The contractor shall take all precautions while handling, using, storing or transporting of all explosives. Before usage of any explosive necessary warning / danger signals be erected at conspicuous places to warn the workers and general public. The contractor should strictly ensure that all measures and precautions required to be complied for use, handling, storing or transportation of explosives under the rules framed under the Explosives Act, 1884.
1	As specified by the appropriate authority and only Permissible explosives shall be used.
2	Smoking and open flames shall not be permitted near explosives and detonators storage magazine.
3	All the local laws, rules & regulations and relevant statutory provisions, shall be complied with.
11.27	ELECTRICAL SAFETY
1	Only electricians licensed by appropriate statutory authority shall be employed by the contractor to carry out all types of electrical works.
2	All electrical supply shall be provided through ELCB of 30mA sensitivity.
3	The working condition and sensitivity of ELCB shall be checked periodically.
4	Providing adequate no. of 24 V sources and ensure that no hand lamps are operating at voltage level above 24 Volts.
5	Fulfilling safety requirements at all power tapping points.
6	High/ Low pressure welders to be identified with separate color clothing. No welders will be deployed without passing appropriate tests and holding valid welding certificates. Approved welding procedure should be displayed at work place.
7	The contractor shall not use any hand lamp energized by Electric power with supply voltage of more than 24 volts in confined spaces like inside water boxes, turbine casings, condensers etc.
8	All portable electric tools used by the contractor shall have safe plugging system to source of power and be appropriately earthed. Details of earth resource and their test date to be given to BHEL safety officer as per the prescribed formats of BHEL
9	The contractor shall use only properly insulated and armored cables which conform to the requirement of Indian Electricity Act and Rules for all wiring, electrical applications at site.
10	BHEL reserves the right to replace any unsafe electrical installations, wiring, cabling etc. at the cost of the contractor.
11	All electrical appliances used in the work shall be in good working condition and shall be properly earthed.
12	No maintenance work shall be carried out on live equipment.
13	The contractor shall maintain adequate number of qualified electricians to maintain his temporary electrical installations.

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14	Area wise Electrical safety inspection is to be carried out on monthly basis as per "Electrical Safety Inspection checklist" and the report is to be submitted to BHEL safety officer
15	Adequate precautions shall be taken to prevent danger for electrical equipment. No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or the public
16	The contractor shall carefully follow the safety requirement of BHEL/ the purchaser with the regard to voltages used in critical areas.
17	Lockout/ Tag out Permit shall be taken for work on live installations
18	Double earthing protection must be provided for every electrical equipment and earthing value should be less than 1 Ohm
19	Deployment of trained, experienced & licensed electrician as well as licensed electrical supervisor must be ensured at site as per the Indian Electricity Rules, 1956.
20	All PPE's used while being involved in electrical work must be as per IS Standards available for electrical work
21	All motor/ rotatory equipment shall be with key operated switch.
22	Adequate/ Good Quality Meggers & tester/ electric tester must be used to check the availability of Low Voltage (up to 415V).
23	Adequate/ - Good quality Insulation tester must be used for charging of electrical equipment's or LV/MV/HV power cables
24	Adequate ELCB feeder must be used for checking of ELCB/ RCCB.
25	Adequate/ Suitable quality earth rods must be used before coming in close contact of shutdown equipment's for any maintenance.
26	Rubber mat must be used whenever applicable (i.e. electric panel/ connection shed/room etc)
27	Whenever applicable fuse pullers must be used for insertion & removal of fuses along with electrical gloves.
28	Cable locator to be used before excavation at the workplace.
29	High Voltage buried cables to work with electrical safety TAG above the ground for alarm/attention.
30	Suitable Fire Extinguisher must be used during Electrical Fire accident. (i.e. dry type fire extinguisher etc.)
31	Electrical Insulation mats in front of every switchgear/MCC shall be provided as per relevant Indian standards.
32	All trailing cables/festooning arrangement in trippers, hoists etc., shall be easily accessible with proper approach for operation & maintenance people.
33	All lighting fixtures in TPs, Crusher house shall be wall mounted type and shall be easily accessible with proper approach for operation & maintenance people.

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34	"Earth Mat of CHP Area" shall be connected to nearest "main plant area earth mat" at minimum of two locations. All buildings/structures shall be interconnected together by minimum two parallel conductors.
35	Where a transformer or transformers are used, suitable provision shall be made, either by connecting with earth, a point of the circuit at the lower voltage or otherwise, to guard against the danger by reason of the said circuit becoming accidentally charged above its normal voltage by leakage from or contact with the circuit at the higher voltage.
36	Where the oil filled transformers with capacity more than 2000litres are installed, suitable baffle walls of four hours fire rating shall be provided.
37	Only dry type transformers shall be used inside the buildings.
38	All Switchgear/ MCC Shall be "Closed door" operation type.
39	Metallic frame of all electrical equipment shall be earthed by two separate and distinct connections to earthing system, each of 100% capacity. Crane rails, tracks, metal pipes and conduits shall also be effectively earthed at two points. Steel RCC columns, metallic stairs and rails etc., of the building housing electrical equipment shall be connected to the nearby earthing grid conductor by one earthing ensured by bonding the different sections of hand rails and metallic stairs.
40	All switchgear room shall have minimum two exit doors suitable for two hours of fire rating.
41	All cable shall be Fire Retardant Low Smoke (FRLS) type having minimum two hours of fire rating.
42	All cable trestles and trenches shall have a minimum of clear 600mm walkway for ease of accessibility.
43	All cables shall be segregated by voltage wise as HV/MV/LV/Control/ instrumentation type and a minimum of 300mm clearances shall be maintained between cable trays of each type.
44	Suitable Earth flat shall be laid along the cable trays and connected to nearest earth riser at every 50 meters.
45	All push button stations in CHP area shall be IP65 degree of ingress protection.
46	CHP 220V DC system shall be separate and independent from other DC systems of plant. The DC emergency lighting fixtures shall be fed from Contractor's 220 V LDBs through DC lighting panels so that tracing and isolation of DC earth fault is convenient. Each switchgear/MCC room shall have a DC LDB and corresponding LPs.
47	The DC emergency lighting fixtures shall be mounted suitably on wall/columns at strategic locations for safe movement of operating personnel and access to important control points during an emergency, when the normal AC lighting system fails. The supply to the DC lighting panels shall be automatically switched on in case of loss of AC supply. The DC supply will be automatically switched off after about 3 minutes following the restoration of AC lighting system.
48	Four (4) nos. 240V AC lighting fixtures fed from UPS shall be provided on each stacker re-claimer machine as emergency lighting.
49	The contractor should ensure use of single / double insulated hand tools or low voltage i.e., 110 volts hand tools.

50	100W,220V incandescent (or equivalent LED) DC Emergency lighting shall be provided as follows: One (1) no. in each local control area Three (3) nos. in each MCC/ Switchgear room and control room One (1) no in each office room and each pump house Six (6) nos. in Track hopper shed Twelve (12) nos in track hopper tunnels Two (2) nos in each underground portion of TPs One (1) no at every 5.0m height interval in the staircases of various TPs and buildings and one no in each drive floor in each TP
11.28	FIRE SAFETY (i.e. Fire Tender along with firefighting staff etc.)
11.28.1	Fire Tender of 5000 Ltr Tank Capacity along with Pressure Pump (proposed 2250 LPM) and firefighting Staff - 02 Nos Driver and 04 Nos Crew for 24 Hrs. Service (1 nos. Driver & 2 nos Crew for 12 hours each) and this fire tender must be equipped with essential firefighting accessories.
1	Fire tender as required above shall be centrally arranged by BHEL on cost recovery model basis & shall be used by all contractor. Fire tender with complete equipment/ accessories shall be available at site for all the emergency fire condition at site.
2	Out of pocket expenses or Total expenditure for hiring of Fire tender & 2 nos DCPO & 4 nos Firefighting staff/ crew (including fuel cost to run fire tender & fire tender pump, Accommodation, transportation of Firefighting staff etc.) be apportioned among all the working contractor's proportionate to their Awarded Contract value. This expenses shall be proportionate deducted from contractor monthly RA bill.
3	Maintenance of fire tender is in scope of Rate contracting agencies, which is part of Rate contract for Fire tender, however in case of any additional expenses which is to be incurred for maintenance, then same shall apportioned among all the working contractor's proportionate to their Awarded Contract value. This expenses shall be proportionate deducted from contractor monthly RA bill.
11.28.2	Fire prevention, protection & preparedness –
1	The Fire Prevention, Protection and Preparedness Program is an integral part of the overall HSE Program. Effort and consideration must be given to safety, life and potential for delays in construction schedules and plant startup, as well as protection of property on a given project.
2	The purpose of which is to prevent – • Inception of fire • Loss of life or personal injury • Loss of Property • Interruption of operations
3	Site-in-charge / Safety Officer will make periodical review of the site Fire Protection, Prevention Preparedness Programme, Site conditions and available fire protection equipment. In addition to deployment of fire tender mention under clause 11.28 and sub clause 11.28.1.

4	Fire Protection, Prevention and Preparedness Inspections - The Contractor /Sub-Contractor will be required to make frequent fire prevention inspections of his work site and operating facilities. Deficiencies will be corrected at once.
5	Area where Hot work activities are carried out (Gas cutting / Welding/ any other spark producing work) above a working spot, a GI / fire-resistant non-asbestos sheet or suitable material shall be placed to prevent the fall of hot sparks. A bucket of water shall be kept nearby while doing hot work
6	Hot work shall be preferably carried out in a designated area with a standing Hot Work Permit, to be renewed monthly. The designated area shall have fire extinguishers.
7	Any hot work outside designated area shall require a Hot Work permit and fire watch.
8	Emergency telephone number to be displayed at all conspicuous places.
9	All the safety requirements recommended in NFPA -2001 or as specified by listing authorities shall be incorporated in the installation by the contractor.

Fire Extinguisher Chart						
Extinguisher		Type of Fire				
Colour	Type	Solids (wood, paper, cloth, etc)	Flammable Liquids	Flammable Gasses	Electrical Equipment	Cooking Oils & Fats
	Water	✓ Yes	✗ No	✗ No	✗ No	✗ No
	Foam	✓ Yes	✓ Yes	✗ No	✗ No	✓ Yes
	Dry Powder	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✗ No
	Carbon Dioxide (CO2)	✗ No	✓ Yes	✗ No	✓ Yes	✓ Yes

11.28.3	General flammable material storage requirements:
1	All flammable material shall be stored in deigned areas and/or in flammable storage cabinets, as necessary.
2	Fire extinguishers shall be located nearby and have unobstructed access
3	Numbers and types of Fire Extinguishers shall be ensured as per Annexure – 4 (Numbers and type of Fire Extinguishers)
4	Providing appropriate firefighting equipment at designated work place and nominate a fire officer/warden adequately trained for his job.
5	Contractor shall provide enough fire protecting equipment of the types and numbers at his office, stores, temporary structure in labour colony etc. Such fire protection equipment shall be easy and kept open at all times.

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6	The fire extinguishers shall be properly refilled and kept ready which should be certified at periodic intervals. The date of changing should be marked on the Cylinders.
7	All other fire safety measures as laid down in the "IS Codes for fire safety at construction site" issued by safety coordinator of BHEL shall be followed.
8	Non-compliance of the above requirement under fire protection shall in no way relieve the contractor of any of his responsibility and liabilities to fire incident occurring either to his materials or equipment or those of others.
9	Emergency contacts nos must be displayed at prominent locations
10	Tarpaulin being inflammable should not be used (instead, only non-infusible covering materials shall be used) as protective cover while preheating, welding, stress relieving etc. at site.
11	Fire extinguishers shall be inspected at least annually by a certified person and visually inspected monthly and documented by the Contractor
12	No smoking shall be allowed at or in the vicinity of operations, which constitute fire hazards and shall be conspicuously posted with No smoking or open flame signs.
13	The contractor shall educate his or his contractors' men working in the vicinity of fire risk, on how to operate this equipment and know in particular circumstances which type of extinguishers is to be used

11.29	EXCAVATION All safety precautions shall be taken for foundation and other excavation marks as per IS-3764. Wherever there is open excavation in ground, they shall be fenced off by suitable railing and danger signals installed at night so as to prevent persons slipping in to the excavations. The contractor shall take all necessary measures during excavation to prevent the hazards of falling or sliding material or article from any bank or side of such excavation which is more than one and a half meter above his footing by providing adequate piling, shoring, bracing etc. against such bank or sides. Adequate and suitable warning signs shall be put up at conspicuous places at the excavation work to prevent any persons or vehicles falling into the excavation trench. No worker should be allowed to work where he may be stuck or endangered by excavation machinery or collapse of excavations or trenches.
	The following safety measures are to be ensured before and during excavation:
1	Check for underground utilities like electrical / telephone cables, sewage, water lines and proper care has to be exercised to protect and prevent damage to it.
2	Proper and adequate slope is maintained while excavating.
3	Adequate shoring or sheeting is done wherever require to prevent soil sliding.
4	Safe access through ladder or steps for exit & entry to excavation.
5	No material /excavated soil is kept within one meter from the edge.
6	Safe way is planned and provided for movement of HEM /transport equipment near excavation.
7	Safety helmet and shoes/gum boots are provided and worn by the workmen at excavation works.
8	Wherever waterlogging is observed, appropriate dewatering arrangements shall be ensured. All electrical connections related to the dewatering pump must be safe and secure.

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9	Stop blocks are provided to avoid vehicles reversing into the excavated trenches.
10	Danger signs /Caution boards are displayed at work spot.
11	Barricading is provided at excavated pits.
12	Ensure adequate illumination at workplace where excavation works are carried out.
13	Ensure adequate safety for worker in the affected zone or in the work area of excavation from collapse.
14	All struts, brasses and walls if any in excavation shall be adequately secured along with all safety measures so as to prevent any accident.
15	No loose material shall be kept very close to excavated area, possibility of falling into excavated area, a safe distance or at least 1 meter shall be maintained.
16	To carry out safe excavation, it is to ensure any hazard related to excavation shall be compliance or all the safety measure to avoid unsafe condition to such excavation.
17	Suitable warning sign or safety poster shall be displayed at prominent places to create awareness among workers.
18	Ladders, staircases or ramps are provided, as the case may be, for safe access to and egress from excavation where the depth of such excavation exceeds one point 1.5 m and such ladders, staircases or ramps comply with the relevant national standards (IS Code).
19	Any machinery used in excavation work shall be positioned and operated in such a way that such machinery will not endanger the operator of such machinery or any other person in/worker the vicinity.
20	Suitable breathing apparatus shall be provided to a building worker while working in compressed air environment for his use at excavation work and such breathing apparatus shall be maintained in good working condition at all times.
21	Signal man along with whistles shall be made available at all times at the locations as are necessary for the safety of persons at excavation area for vehicle movement.
22	Adequate number and types of fire extinguishers, in accordance with relevant national standards, shall be provided and made readily available to fight any outbreak of fire at an excavation or tunneling work.
23	Fire extinguishers with vaporizing liquids and high pressure carbon dioxide shall not be used in tunnels or other confined spaces.
24	All portable electrical hand tools and inspection lamps used underground or in a confined space shall be operated at a voltage not exceeding 24 V.
25	Adequate numbers of differential ground fault circuit breakers shall be installed for every electrical distribution system and its sub-systems used at an excavation work.
26	There shall be no exposed live wire in working areas at an excavation work which are accessible to building workers other than those authorized to work on such live lines.
27	Ensure NO entry to person who has consumed alcoholic drink.
28	Deep excavation for Track Hopper shall be done as per approved excavation and dewatering scheme. It shall adhere IS: 3764 safety code for excavation work. Due care for dewatering shall be taken care while excavation and construction.

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11.30	BATCHING PLANT
1	Installation of external Electric moto-vibrators in the feeding hopper of all batching plants to reduce human intervention.
2	Installation of safety devices like pull-chord on both the sides of conveyor for stopping the conveyor in emergency
3	Workers carrying cement / sand to be given appropriate PPEs like respiratory masks & gloves.
4	Conveyor belt/rotating parts must be guarded properly.
5	Safety awareness shall be inculcated in workmen about the risk involved in rotating parts.
6	The agency shall ensure to erect the batching plant as per original drawing including installation of all safety devices as provided by manufacturer and witnessed by BHEL in-charge before starting of machine in future.
7	Adequate/ Suitable safety norms must be followed at ASH Silo. (If required Checklist shall be prepared at Project site).
11.31	HSE PREPAREDNESS FOR ADVERSE CLIMATES AND WEATHER
1	The contractor shall ensure HSE precautions for adverse weather and climatic conditions, epidemics & pandemics as per Annexure – 5 (Precautions for adverse weather & climate conditions, epidemics & pandemics).
2	In addition, site to remain updated on possible adverse weather conditions through reliable sources and all precautions taken accordingly.
11.32	ENVIRONMENTAL CONTROL & SOCIAL RESPONSIBILITY
1	Environment protection has always been given prime importance by BHEL. Environmental damage is a major concern of the principal contractor and every effort shall be made, to have effective control measures in place to avoid pollution of Air, Water and Land and associated life. Banned substances like asbestos and Chlorofluorocarbons such as carbon tetrachloride and trichloroethylene shall not be used. Waste disposal shall be done in accordance with the guidelines laid down in the project specification.
2	Any chemical including solvents and paints, required for construction shall be stored in designated bonded areas around the site as per Material Safety Data Sheet (MSDS).
3	In the event of any spillage, the principle is to recover as much material as possible before it enters drainage system and to take all possible action to prevent spilled materials from running off the site. The contractor shall use appropriate MSDS for clean-up technique
4	All contractors shall be responsible for the cleanliness of their own areas.
5	Regular dust suppression using sprinklers shall be carried out in respective area.
6	The contractors shall ensure that noise levels generated by plant or machinery are as low as reasonably practicable. Where the contractor anticipates the generation of excessive noise levels from his operations the contractor shall inform to Construction Manager of BHEL accordingly so that reasonable & practicable precautions can be taken to protect other persons who may be affected.
7	It is imperative on the part of the contractor to join and effectively contribute in joint measures such as tree plantation, environment protection, contributing towards social upliftment, conversion of packing woods to school furniture, enhancing good relation with local populace etc.
8	The contractor shall carry out periodic air and water quality check and illumination level checking in his area of work place and take suitable control measure.

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	EXCESSIVE NOISE:
A	Adequate measures shall be taken against the harmful effects of an excessive noise;
B	Use of earplugs/muffs and anti-vibration gloves shall be ensured to protect the workers from the impact of exposure to such dangers;
C	The noise level in no case shall exceed as prescribed under the Indian standard.
D	The ambient noise should not exceed the limits prescribed under the concerned rules, Noise Pollution (Regulation and Control) Rules, 2000.
E	Generally for brownfield projects background noise is in the range of 58-60 DB, however it shall be responsibility of contractor to collect and measure the latest noise data at site.
11.33	HOUSEKEEPING
1	The contractor shall ensure that their work area is kept clean, tidy and free from debris generated by their activities. All debris/scrap should be stored in separate bins. The work areas must be cleaned on a daily basis and a full cleaning session of each area shall be conducted on a weekly basis. All equipment, materials and vehicles shall be stored in an orderly manner. Access to emergency equipment, exits, telephones, safety showers, eye wash stations, fire extinguishers, pull boxes, fire hoses, etc. shall not be blocked or otherwise disturbed, restricted or delayed.
2	Keeping the work area clean/ free from debris, removed scaffoldings, scraps, insulation/sheeting wastage /cut pieces, temporary structures, packing woods etc. will be in the scope of the contractor. Such cleanings have to be done by contractor within quoted rate, on daily basis by an identified group. If such activity is not carried out by contractor /BHEL is not satisfied, then BHEL may get it done by other agency and actual cost along with BHEL overheads will be deducted from contractor's bill. Such decisions of BHEL shall be binding on the contractor.
3	Proper housekeeping to be maintained at work place and the following are to be taken care of on daily basis.
4	All surplus earth and debris are removed / disposed of from the working areas to identified locations.
5	Unused/Surplus cables, steel items and steel scrap lying scattered at different places/elevation within the working areas are removed to identified locations.
6	Different work places for easy collection of scrap/waste. Scrap chute shall be installed to remove scrap from high location.
7	Workmen shall be educated through tool box talk about the importance of housekeeping and encourage not to litter.
8	Labour colony area shall be kept clear and materials like pipes, steel, sand, concrete, chips and bricks, etc. shall not be allowed in the Labour colony to obstruct free movement of men and machineries.
9	Fabricated steel structures, pipes & piping materials shall be stacked properly.
10	No parking of trucks/trolleys, cranes and trailers etc. shall be allowed in the camp, which may obstruct the traffic movement as well as below LT/HT power line.

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11	Utmost care shall be taken to ensure over all cleanliness and proper upkeep of the working areas Keeping the work area clean/ free from debris, removed scaffoldings, scraps, insulation/sheeting wastage /cut pieces, temporary structures, packing woods etc. will be in the scope of the contractor. Such cleanings have to be done by contractor within quoted rate, on daily basis by an identified group. If such activity is not carried out by contractor / BHEL is not satisfied, then BHEL may get it done by other agency and actual cost along with BHEL overheads will be deducted from contractor's bill. Such decisions of BHEL shall be binding on the contractor.
12	Dedicated Housekeeping gangs shall be deployed, who shall be provided all required PPEs and safety training.
13	Mass housekeeping shall be carried out for half a day in a week.
14	Sufficient waste bins shall be provided at different work places for easy collection of scrap/waste. Scrap chute shall be installed to remove scrap from high locations.
15	Fabricated steel structures, pipes & piping materials shall be stacked properly.
16	Utmost care shall be taken to ensure over all cleanliness and proper upkeep of the working areas.
17	Access & egress (stair case , gangways, ladders etc.) path should be free from all scrap and other hindrances.
18	All wooden scrap , empty wooden cable drums and other combustible packing materials, shall be removed from workplace to identified locations.

11.34	ACCESS TO AND FROM THE WORKPLACE
1	Safe, clean, well lit, unencumbered access and egress to and from work areas shall be maintained at all times in normal operating conditions.
2	The number and location of accesses and egresses from and to the workplace shall be adapted to the number of people likely to be present at any time, and therefore to evacuate from the workplace in case of emergency.
3	If access and egress to work areas are restricted due to operational conditions (e.g. access restricted due to pressure testing, etc.), alternative access and egress ways must be implemented, so far as is reasonably practicable. If this is not reasonably practicable, all concerned organizations and persons must be informed of the access restrictions, and work scheduling must be adapted in consequence.
4	Temporary access to height or into ground openings shall be of purpose made material such as scaffolds, stair cases/towers and ramps, which incorporate guardrails.
11.35	WASTE MANAGEMENT
1	There are operations on construction projects that may create hazardous waste, which would require handling, storage, transferring, and transporting. Therefore, hazardous waste guidelines apply for Hazardous Waste Planning:
2	Take suitable measures for waste management and environment related laws/legislation as a part of normal construction activities. Compliance with the legal requirements on storage/ disposal of paint drums (including the empty ones), Lubricant containers, Chemical Containers, and transportation and storage of hazardous chemicals will be strictly maintained.
3	Details of E-Waste , Hazardous Waste, Biomedical waste etc. and their disposal plan, shall be submitted to BHEL every 6 months as per formats Provided by BHEL.

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11.35.1	MINIMUM REQUIREMENTS:
1	Contractor must designate a Material Manager who is responsible for checking delivered materials as potential hazardous waste and informing the Contractor's Safety Manager.
2	Contractor who create, may be expected to create or could accidentally create a material that could be classified to be hazardous waste must provide Disposal number (or equivalent) and other pertinent information on file.
3	All hazardous waste or waste which could be considered hazardous waste, as determined by the methodology and definitions from environmental regulators must be stored and collected in special areas and properly disposed of by the Contractor.
4	No waste haulers, disposers, recyclers, or scavengers will be allowed on the site without the permission of the owner. It will be the responsibility of the Contractor to provide copies of all licenses, permits, and authorizations to the.
5	No waste may be removed from the site by any person without the authorization of the Contractor. No waste may be brought onto the site and disposed of using the Contractor's systems or facilities.
6	Take suitable measures for waste management and environment related laws/legislation as a part of normal construction activities. Compliance with the legal requirements on storage/ disposal of paint drums (including the empty ones), Lubricant containers, Chemical Containers, and transportation and storage of hazardous chemicals will be strictly maintained.
7	Details of E-Waste, Hazardous Waste, biomedical waste etc. and their disposal plan, shall be submitted to BHEL every 6 months as per Formats No HSEP:14-F17 and HSEP:14-F18.
11.36	BINS AT WORK PLACE
1	Sufficient rubbish bins shall be provided close to workplaces.
2	Bins should be painted yellow and numbered.
3	Sufficient nos. of drip trays shall be provided to collect oil and grease.
4	Sufficient qty. of broomsticks with handle shall be provided.
5	Adequate strength of employees should be deployed to ensure daily monitoring and service for waste management.
11.37	STACKING AND STORAGE PRACTICE
1	Contractor/ Agency shall ensure stacked material is bonded on a stable and level footing capable of carrying the mass of the stack. Adequate clearances shall be provided between the sides of the stack and top to facilitate unimpeded access to service equipment like overhead wiring, cranes, forklifts and firefighting equipment, and hoses. Circular items shall be sufficiently choked with wedges not with odd bits of materials. Free-standing stacks of gunny bags and sacks such as Cement bags shall be stacked to prescribe safe stacking heights with layers formed for stable bonding, preventing slippage causing accidents. Stacking against walls shall not be permissible.
2	Contractor shall maintain the premises and surrounding areas in clean and clear manner with safe access and egress. There shall be sufficient and adequate storage racks, shelving, bins and pallets and material handling equipment to stack his construction materials such as Pipes, Structural and his construction enabling materials. Unwanted materials shall be promptly moved away for efficient material movement.

3	Any temporary store shed will be built in conformity with fire safety requirements. The stores must be provided with adequate lighting arrangement (Flame proof / intrinsically safe depending upon the Zone category) and must be equipped with sufficient fire extinguishing arrangement. "No Smoking" and other relevant signage must be displayed conspicuously at strategic locations and safety precautions must be strictly enforced.
11.38	OVERHEAD PROTECTION
1	The contractor shall ensure that any area exposed to risk of falling materials, articles or objects is roped off or cordoned off or otherwise suitably guarded from inadvertent entry of any person.
2	Wherever there is a possibility of falling of any material, equipment or construction workers while working at heights, a suitable and adequate safety net should be provided. The safety net should be in accordance with BIS Standards.
11.39	STORAGE AND COLLECTION
1	Different types of rubbish/waste should be collected and stored separately.
2	Paper, oily rags, smoking material, flammable, metal pieces should be collected in separate bins with close fitting lids.
3	Rubbish should not be left or allowed to accumulate on construction and other work places.
4	Do not burn construction rubbish near working site.
11.40	SEGREGATION
1	Earmark the scrap area for different types of waste.
2	Store wastes away from building.
3	Oil spill absorbed by non-combustible absorbent should be kept in separate bin.
4	Clinical and first aid waste stored and incinerated separately.
11.41	DISPOSAL
1	Sufficient containers and scrap disposal area should be allocated.
2	All scrap bin and containers should be conveniently located.
3	Provide self-closing containers for flammable/spontaneously combustible material.
4	Keep drainage channels free from choking.
5	Make schedule for collection and disposal of waste.
11.42	WARNING AND SIGNS
1	Appropriate sign to be displayed at scrap storage area
2	No toxic, corrosive or flammable substance to be discarded into public sewage system.
3	Waste disposal shall be in accordance with best practice.
4	Comply with all the requirements of Pollution Control Board (PCB) for storage and disposal of hazardous waste.
11.43	TRAFFIC MANAGEMENT SYSTEM
11.43.1	SAFE WORKPLACE TRANSPORT SYSTEM
1	Traffic routes in a work place shall be suitable for the persons or vehicles using them. This shall be sufficient in number and of sufficient size. This shall reflect the suitability of traffic routes for vehicles and pedestrians.

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2	Where vehicles and pedestrians use the same traffic routes there shall be sufficient space between them. Where necessary all traffic routes must be suitably indicated. Pedestrians or vehicles must be able to use traffic routes without endangering those at work. There must be sufficient separation of traffic routes from doors, gates and pedestrian traffic routes.
3	For internal traffic, lines marked on roads / access routes and between buildings shall clearly indicate where vehicles are to pass.
4	Temporary obstacles shall be brought to the attention of drivers by warning signs or hazard cones.
5	Speed limits shall be clearly displayed for each kind of vehicle.
6	Speed ramps preceded by a warning signs or marker are necessary.
7	The traffic route should be wide enough to allow vehicles to pass and re-pass oncoming or parked traffic and it may be advisable to introduce on-way system or parking restrictions.
8	Safest route shall be provided between places where vehicles have to call or deliver.
9	Avoid vulnerable areas/items such as fuel or chemicals tanks or pipes, open or unprotected edges and structures likely to collapse.
10	Safe areas shall be provided for loading and unloading.
11	Avoid sharp or blind bends. If this is not possible hazards should be indicated e.g. blind corner.
12	Ensure road crossings are minimum and clearly signed.
13	Entrance and gateways shall be wide enough to accommodate a second vehicle without causing obstruction.
14	Set sensible speed limits which are clearly sign posted.
15	Where necessary ramps should be used to retard speed. This shall be preceded by a warning sign or mark on the road.
16	Forklift trucks shall not pass over road hump unless of a type capable of doing so.
17	Overhead electric cable, pipes containing flammable hazardous chemical shall be shielded by using goal posts height gauge posts or barriers.
18	Road traffic signs shall be provided on prominent locations for prevention of incidents and hazards and for quick guidance and warning to employees and public. Safety signs shall be displayed as per the project working requirement and guideline of the state in which project is done. Vehicles hired or used shall not be parked within the 15m radius of any working area. Any vehicle, that is required to be at the immediate/near the vicinity, shall be approved by the person in-charge of the site.
11.43.2	TRAFFIC ROUTE FOR PEDESTRIANS
1	Where traffic routes are used by both pedestrians and vehicles road shall be wide enough to allow vehicles and pedestrians safely.
2	Separate routes shall be provided for pedestrians to keep them away from vehicles. Provide suitable barriers/guard at entrances/exit and the corners or buildings.
3	Where pedestrian and vehicle routes cross, appropriate crossing shall be provided.
4	Where crowd is likely to use roadway e.g. at the end of shift, stop vehicles from using them at such times.
5	Provide high visibility clothing for people permitted in delivery area.

11.43.3	WORK VEHICLE											
	Work vehicle shall be as safe stable efficient and roadworthy as private vehicles on public roads. Site management shall ensure that drivers are suitably trained. All vehicle e.g. heavy motor vehicle forklift trucks dump trucks mobile cranes shall ensure that the work equipment conforms to the following:											
1	A high level of stability.											
2	A safe means of access/egress.											
3	Suitable and effective service and parking brakes.											
4	Windscreens with wipers and external mirrors giving optimum all round visibility.											
5	Provision of horn, vehicle lights, reflectors, reversing lights, reversing alarms.											
6	Provision of seat belts.											
7	Guards on dangerous parts.											
8	Driver protection - to prevent injury from overturning and from falling objects/materials.											
9	Driver protection from adverse weather.											
10	No vehicle shall be parked below HT/LT power lines.											
11	Valid Pollution Under Control certification for all vehicles											
12	Wheel stopper shall be use during the parking of vehicle.											
13	Helper to be deployed in each vehicles as per site requirement.											
11.43.4	DAILY CHECK BY DRIVER											
1	There should also be daily safety checks containing below mentioned points by the driver before the vehicle is used. <table><tr><td>Brakes</td><td>Mirrors</td><td>Warning signals</td></tr><tr><td>Tires</td><td>Windscreen waters</td><td>Specific safety system i.e. control interlocks</td></tr><tr><td>Steering</td><td>Wipers</td><td></td></tr></table>			Brakes	Mirrors	Warning signals	Tires	Windscreen waters	Specific safety system i.e. control interlocks	Steering	Wipers	
Brakes	Mirrors	Warning signals										
Tires	Windscreen waters	Specific safety system i.e. control interlocks										
Steering	Wipers											
2	Management should ensure that drivers carry out these checks.											
11.43.5	TRANSPORTATION OF PERSONNEL AND MATERIALS BY VEHICLES											
1	All drivers shall hold a valid driving License for the class of vehicle to be driven and be registered as an authorized BHEL driver with the Administration Department.											
2	Securing of the load shall be by established and approved methods, i.e. chains with patented tightening equipment for steel/heavy loads. Sharp corners on loads shall be avoided when employing ropes for securing.											
3	All overhangs shall be made clearly visible and restricted to acceptable limits											
4	Load shall be checked before moving off and after traveling a suitable distance.											
5	On no account is construction site to be blocked by parked vehicles Drivers of vehicles shall only stop or park in the areas designate by the stringing foreman.											
6	Warning signs shall be displayed during transportation of material.											
7	All vehicles used by BHEL shall be in worthy condition and in conformance to the Land Transport requirement.											
8	Wheel stopper shall be use during the parking of vehicle.											

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9	Helper to be deployed in each vehicle as per site requirement.
11.43.6	MAINTENANCE
	All Vehicles used for transportation of man and material shall undergo scheduled inspections on frequent intervals to secure safe operation. Such inspections shall be conducted in particular for steering, brakes, lights, horn, doors etc. Site management shall ensure that work equipment is maintained in an efficient, working order and in good repair. Inspections and services carried out at regular intervals of time and or mileage. No maintenance shall be carried below HT/LT power lines.
11.44	EMERGENCY PREPAREDNESS AND RESPONSE PLAN
	The contractor shall prepare an emergency action plan approved by his competent authority to handle any emergency occurred during construction work. Regular mock drills shall be organized to practice this emergency plan. The Emergency Action Plan should be widely circulated to all the employees and suitable infrastructure shall be provided to handle the emergencies. This plan covers fire, medical and other environmental incidents. It aims at controlling the emergency and generally mitigating the adverse effects of a major Incident. This plan is applicable to all activities carried at the project site. Determination of hazard potential and identification and assessment of hazards is the first part in emergency planning. This requires systematic study of the site / plant to identify emergencies that can occur.
1	Emergency preparedness and response capability of site shall be developed as per Emergency Preparedness and Response plan issued by BHEL
2	Availability of adequate number of first aiders and fire warden shall be ensured with BHEL and its contractors
3	All the contractor's supervisory personnel and sufficient number of workers shall be trained for fire protection systems. Enough number of such trained personnel must be available during the tenure of contract. Contractor should nominate his supervisor to coordinate and implement the safety measures.
4	Assembly point shall be earmarked and access to the same from different location shall be shown
5	Fire exit shall be identified and pathway shall be clear for emergency escape.
6	Appropriate type and number of fire extinguisher shall be deployed as per Fire extinguisher deployment plan and validity shall be ensured periodically through inspection
7	Adequate number of first aid boxes shall be strategically placed at different work places to cater emergency need. Holder of the first aid box shall be identified on the box itself who will have the responsibility to maintain the same.
8	In addition to medical Centre along with first aid amenities mention under clause no. 8.8.5 separate/ additional first aid facility near work place/ construction activity area shall be developed by contractor with first aid box & First aider.
9	Emergency contact numbers (format given in EPRP) of the site shall be displayed at prominent locations.
10	Tie up with hospital to be made by agency at his cost, in case customer is not having hospital.
11	Disaster Management group shall be formed at site
12	Mock drill shall be arranged at regular intervals. Monthly report of the above to be given to BHEL safety Officer as per prescribed BHEL formats

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13	Mock drill shall be conducted on different emergencies periodically to find out gaps in emergency preparedness and taking necessary corrective action
14	The contractor shall ensure that an Emergency Management Plan is prepared to deal with emergencies arising out of: • Fire and explosion; • Collapse of lifting appliances and transport equipment; • Collapse of building, sheds or structure etc.; • Gas leakage or spillage of dangerous goods or chemicals; • Drowning of workers, sinking vessels, and • Landslides getting workers buried; floods, storms and other natural calamities.
15	While arrangements shall be made for emergency medical treatment and evacuation of the victim in the event of an accident or dangerous incident occurring, the chain of command and the responsible persons of the contractor with their telephone numbers and addresses for quick communication shall be adequately publicized and conspicuously displayed in the workplace.
16	It is also required that there is a tie-up with the hospitals located in the neighborhood for attending to the casualties promptly and emergency vehicle kept on standby duty during the working hours for the purpose.
17	It shall be the responsibility of the contractor to keep the Local Law & Order Authorities informed and seek urgent help, as the case may be, so as to mitigate the consequences of an emergency. Prompt communication to BHEL, telephonic initially and followed by a written report, shall be made by the contractor.

12.0 HSE INSPECTION

Inspection on HSE for different activities being carried out at site shall be done to ensure compliance to HSEMS requirements. The contractor shall maintain and ensure necessary safety measures as required for inspection and tests HV test, Pneumatic test, Hydraulic test, Spring test, Bend test etc. as applicable, to enable inspection agency for performing Inspection. If any test equipment is found not complying with proper safety requirements then the Inspection Agency may withhold inspection, till such time the desired safety requirements are met.

Formats & Checklists as indicated in this document including those referred in Annexure - 09 (Formats used for inspection & checklist and penalty details) and part of the HSE Systems & Procedures referred to shall be used for inspections a minimum, and maintained for records. BHEL shall reserve the right to modify any Format in this document or introduce new Formats as per requirement.

A. NON-CONFORMANCE'S: -

Contractor shall identify separate worker gang to resolve HSE issues.

Any non-conformance identified during inspection observed shall be addressed immediately.

In case immediate closure of non-conformity is not possible:

- work to be halted in the area
- Non-conformance to be generated and submitted to responsible person and BHEL.
- non-conformance to be resolved through responsible agency / person Only after closure of non-conformance, work to be allowed to resume.

B. INSPECTION PLAN: -

- Subcontractor shall prepare an inspection plan covering all areas/ activities/ equipment/ hazards and implement the same after getting approval of BHEL. Responsibility to ensure coverage of all areas/ activities rests with the subcontractor.
- All Inspections shall be witnessed by BHEL - only then they shall be considered as valid

C. INSPECTION REPORTS: -

- Monthly inspection reports as per plan shall be submitted to BHEL HSE Head

D. Online/ App-based HSE inspection system shall be used for inspection whenever provided by BHEL otherwise Hard-copy based system shall continue.

 ☒ OK	☐ NOT OK
Contractor Name:	
Equipment Identification No :	
Inspection Date :	
Next Inspection Date :	
Inspected By :	

Every Inspected Equipment shall display above sticker

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12.1	DAILY HSE CHECKS											
	Both the Site Supervisors and safety officer of Contractor are to conduct daily site Safety inspection around work activities and premises to ensure that work methods and the sites are maintained to an acceptable standard. The following are to form the common subjects of a daily safety inspection: 1. Personal Safety wears & gear compliance. 2. Complying with site safety rules and permit-to-work (PTW). 3. Positions and postures of workers. 4. Use of tools and equipment etc. by the workers. The inspection should be carried out just when work starts in beginning of the day, during peak activities period of the day and just before the day's work ends.											
12.2	INSPECTION OF PPE											
1	PPEs shall be inspected by HSE officer at random once in a week as per format no. HSEP:14-F06 for its compliance to standard and compliance to use and any adverse observation shall be recorded in the PPE register.											
2	The applicable PPEs for carrying out particular activities are listed below.											
12.3	INSPECTION OF T&Ps & COLOR CODING											
1	A master list of T&Ps shall be maintained by each contractor.											
2	All T&Ps being used at site shall be inspected by HSE officer once in a month as per format no. HSEP:14-F07 for its healthiness and maintenance.											
3	The T&Ps which require third party inspection shall be checked for its validity during inspection. The third party test certificate should be accompanied with a copy of the concerned competent person's valid qualification record.											
4	BHEL shall be given advance intimation of Third Party Inspection. BHEL shall associatewith Inspection as per discretion.											
5	The validity of T&P shall be monitored as per "Status of T&Ps" format no. HSEP:14-F08											
I	Inspections and tests shall be documented by means of color coding which shall verify that inspections or testing are current and that all receptacles, portable Power tools, Lifting Tools & Tackles have been inspected and tested as required. The Proposed color codes used onthe project shall be as follow (colour code may vary as per BHEL/Customer instruction): <table><tr><td>GREEN</td><td>BLUE</td><td>YELLOW</td><td>PURPLE</td></tr><tr><td>January February March</td><td>April May June</td><td>July August September</td><td>October November December</td></tr></table> T&P COLOR CODING PROCEDURE:				GREEN	BLUE	YELLOW	PURPLE	January February March	April May June	July August September	October November December
GREEN	BLUE	YELLOW	PURPLE									
January February March	April May June	July August September	October November December									
II	The cycle of colors shall be Quarterly. The color code tape / Sticker shall be clearly visibleto designate the period for which the inspections and tests were conducted.											
III	Following the initial inspection, the equipment must be color-coded quarterly as per color-coding instructions that will be issued by the contractor.											
IV	Fire extinguisher with the current month color-coding inspection sticker must be providedand secured in the platform.											

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V	All slings shall be regularly inspected in accordance with the requirement of the project for frequent and periodic inspections and removed from the job site if they fail to meet the minimum requirements of the project.
VI	The Contractor's Safety Officer shall ensure that all PPE is inspected prior to its issue. He is to ensure all contractor personnel are using safe and proper PPE equipment. Regular inspections on the PPE shall be carried out and personnel not adhering to those inspections shall be removed immediately from the site.
VII	A Ten (10) day interval period shall be given into each monthly color code change. During this Ten (10) day period either color shall be acceptable.
12.4	INSPECTION OF CRANES AND WINCHES
1	Cranes and winches shall be inspected by the operator through a daily checklist for its safe condition (as provided by the equipment manufacturer) before first use of the day.
2	Cranes and Winches shall be inspected by HSE officer once in a month as per format no. HSEP:14-F09 (A&B) for healthiness, maintenance and validity of third party inspection.
3	The date of third party inspection and next due date shall be painted on cranes and winches.
4	The operators/drivers shall be authorized by contractor based on their competency and experience and shall carry the I-card.
5	The operator should be above 18 years of age and should be in possession of driving license of HMV man & goods), vision test certificate and should have minimum qualification so that he can read the instructions and check list.
6	Ensure Proper protection shall be provided to the winch machine & operator against abnormal weather.
7	The power supply shall shut off, if the Crane and Winch is left unattended. Control levers shall be secured in the neutral position.
8	The operator should be above 18 years of age and should be in possession of driving license of HMV man goods), vision test certificate and should have minimum qualification so that he can read the instructions and check list.
12.5	INSPECTION OF HEIGHT WORKING
1	Any activity carried out at more than 2 m height is classified as height work
2	Inspection of height working shall be conducted daily by Supervisors before start of work to ensure safe working condition including provision of a. Fall arrestor b. Lifelines – connected to rigid & independent structure c. Safety nets deployed below all height work activities d. Fencing and barricading e. Warning signage f. Covering of opening g. Proper scaffolding with access and egress. h. Illumination
3	For full duration of height work, constant supervision to be maintained by dedicated HSE personnel
4	Inspection on height working shall be conducted once in a week by HSE officer as per format no. HSEP:14-F10.
5	Medical fitness of height worker shall be ensured.
6	Height working shall not be allowed during adverse weather.

12.6	INSPECTION OF WELDING AND GAS CUTTING OPERATION
1	Supervisor shall ensure that no flammable items are available in near vicinity during welding and gas cutting activity.
2	Inspection during welding and gas cutting operations shall be carried out by HSE officer once a month as per format no. HSEP:14-F11.
3	Use of fire blanket to be ensured to avoid falling of splatters during welding or gas cutting operation at height.
4	Availability of fire extinguisher at vicinity shall be ensured
5	Inspection during welding and gas cutting operations shall be carried out by HSE officer once a month as per format provided by BHEL.
6	Use of fire blanket to be ensured to avoid failing of splatters during welding or gas cutting operation at height.
12.7	INSPECTION OF ELECTRICAL INSTALLATION / APPLIANCES
1	Ensure proper earthing in electrical installation
2	Use ELCB at electrical booth
3	Electrical installation shall be properly covered at top where required
4	Use appropriate PPEs while working
5	Use portable electrical light < 24 V in confined space and potentially wet area.
6	Monthly inspection shall be carried out as per format provided by BHEL.
12.8	INSPECTION OF ELEVATOR
1	Elevators shall be inspected by concerned supervisors once in a week as per format no. HSEP:14-F13.
2	All elevators shall be inspected by competent person and validity shall be ensured.
3	The date of third party inspection and next due date shall be painted on elevator.
4	EMERGENCY SAFETY DEVICES: The lift shall be provided with safety Device attached to the lift car frame and placed beneath the car. The safety device shall be capable of stopping and sustaining the lift car up at governor tripping speed with full rated load in car.
5	Elevator shall have Floor announcement system & Braille switches
12.9	INSPECTION OF EXCAVATION Excavation activities shall be inspected as per Format HSEP:14-F13E
12.10	INTERNAL/ EXTERNAL HSE AUDIT / INSPECTIONS 1) All non-conformities and observations on HSE identified during internal or external HSE audit shall be disposed of by site in a time bound manner and reported back the implementation status. 2) Corrective action and preventive action on HSE issues raised by certification body issued by BHEL shall be implemented by site and reported to Site management.

12.11

INDICATIVE LIST OF INSPECTIONS AND PERIODICITIES

Indicative list & periodicity of Inspections is given as under. It is the responsibility of the subcontractor to develop an inspection plan covering all areas & activities in the scope.

SL. No.	Format Name	Frequency of check (if applicable)
01	Inspection of First Aid Box	Weekly
02	Inspection of PPE	Weekly
03	Inspection of T&Ps	Monthly
04	Inspection of Cranes	Monthly
05	Inspection of Winches	Monthly
06	Inspection on Height Working	Weekly
07	Inspection on Welding & Gas Cutting	Monthly
08	Inspection on Electrical Installation	Monthly
09	Inspection on Elevator	Weekly
10	Inspection of Excavation	Weekly
11	Inspection of Labour Colony	Monthly
12	Inspection of Illumination Levels	Weekly

The checklists shall be provided by BHEL at Site. It is the responsibility of the subcontractor to ensure their availability before start of work. This list is indicative list and in future for inspection BHEL shall be issue other format if required.

13.0 HSE PERFORMANCE

13.1	Contractor shall be assessed on monthly basis for HSE Compliance by BHEL Safety In-charge at site.
13.2	The HSE compliance shall be based on Online HSE Evaluation System of BHEL as perFormat No. HSEP:14-F33.
13.3	BHEL shall reserve the right to use this assessment for evaluating agency capacity for future tenders.
13.4	Suitable HSE reward system shall be developed at site level to promote HSE complianceamongst workmen by the contractor.
13.5	To decide HSE reward, performance towards HSE shall be evaluated for workmen and it shall be awarded regularly in public gathering.
13.6	If safety record of the contractor in execution of the awarded job is to the satisfaction of safety department of BHEL, issue of an appropriate certificate to recognize the safety performance of the contractor may be considered by BHEL after completion of the job

14.0 HSE PENALTIES

14.1	Nonconformity of safety rules and safety appliances will be viewed seriously and BHEL has right to impose fines on the contractor for every instance of violation noticed.
14.2	As per contractual provision HSE penalties shall be imposed on contractors for non-compliance on HSE requirement as per format no. HSEP:14-F14.
14.3	The list in the format is only indicative. For any other violation, not listed in the format, the minimum penalty amount is to be decided as per BOCW act.
14.4	If principal customer/statutory and regulatory bodies impose some penalty on HSE due to the non-compliance of the contractor the same shall be passed on to them.
14.5	The penalty amount shall be recovered by Site Finance department from contractors from the RA/Final bill.
14.6	Any other non-conformity noticed not listed in this HSE plan/ above will also be fined as deemed fit by BHEL. The decision of BHEL engineer is final on the above. The amount will be deducted from running bills of the subcontractor. The amount collected above will be utilized for giving award to the employees who could avoid incident by following safety rules. Also the amount will be spent for purchasing the safety appliances and supporting the safety activity at site.
14.7	If any penalty is imposed by the customer on BHEL due to safety violations (e.g., minor, major, fire, etc.) caused by the contractor or the contractor's subcontractor, the same amount of penalty will be passed on to the contractor or subcontractor responsible for the unsafe act or unsafe condition or Safety violation at the site."
14.8	If the Contractor fails in providing safe working environment as per BHEL HSE Plan for site operations by contractor / 2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL or continues the work even after being instructed to stop the work by the Engineer, I/C as provided in the relevant Clause of BHEL's contract with the customer. the Contractor shall be penalized till the instructions are complied by Engineer I/C.
14.9	Permanent disablement shall have the same meaning as indicated in The Workmen's Compensation Act' 1923. The penalty mentioned above shall be in addition to the compensation payable to the workmen/ employees under the relevant provisions of the workmen's Compensation laws as applicable from time to time.
14.10	If two or more fatal accidents occur at same BHEL/ 2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL site under the control of contractor during the period of contract and he has I. not complied with keeping adequate PPEs in stock or II. defaulted in providing PPEs to his workmen III. not followed statutory requirements BHEL/ 2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL safety rules IV. been issued warning notice/s by BHEL/ 2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL head of the project on non-observance of safety norms V. not provided safety training to all his workmen, the contractor can be debarred from getting tender documents in BHEL/ 2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL for two years from the date of last accident.

14.11	The safety performance will also be one of the overriding criteria for evaluation of overall performance of the contractors by BHEL/ 2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL. The contractor shall submit the accident data including fatal / non-fatal accidents for the last 3 years where he has undertaken the construction activities Projects-wise along with the tender documents. This will also be considered for evolution of tender documents. If the information given by the contractor found incorrect, his contract will be liable to be terminated.								
14.12	The Contractor will make available minimum quantity of all safety equipment's and safety PPEs of required specifications as per suggestive list included bidding documents as a part of "List of minimum T & P". Further Contractor will ensure availability of additional requirement for individual worker and safety equipment as per site requirement during execution of the contract till its completion.								
14.13	The Contractor shall abide by the following during Construction and Erection activities: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; width: 10%;">I</td><td>Chain pulley block shall not be used for Holding loads more than 2 (Two) ton.</td></tr> <tr> <td style="text-align: center;">II</td><td>Hydra shall not be used for material transport and any work at site.</td></tr> <tr> <td style="text-align: center;">III</td><td>Cage shall necessarily be used to Monkey ladders of height more than 4m.</td></tr> <tr> <td style="text-align: center;">IV</td><td>Fencing shall be provided to all Electrical Distribution boards and transformers for safety.</td></tr> </table> Note – Only Farana is allowed for work at site and BHEL Material Yard etc.	I	Chain pulley block shall not be used for Holding loads more than 2 (Two) ton.	II	Hydra shall not be used for material transport and any work at site.	III	Cage shall necessarily be used to Monkey ladders of height more than 4m.	IV	Fencing shall be provided to all Electrical Distribution boards and transformers for safety.
I	Chain pulley block shall not be used for Holding loads more than 2 (Two) ton.								
II	Hydra shall not be used for material transport and any work at site.								
III	Cage shall necessarily be used to Monkey ladders of height more than 4m.								
IV	Fencing shall be provided to all Electrical Distribution boards and transformers for safety.								

15.0 OTHER REQUIREMENTS

15.1	In case of any delay in completion of a job due to mishaps attributable to lapses by the contractor, BHEL shall have the right to recover cost of such delay from the payments due to the contractor, after notifying the contractor suitably.
15.2	If the contractor fails to improve the standards of safety in its operation to the satisfaction of BHEL after being given reasonable opportunity to do so and/or if the contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instruction regarding safety issued by BHEL, BHEL shall have the right to take corrective steps at the risk and cost of the contractor after giving a notice of not less than 7 days indicating the steps that would be taken by BHEL.
15.3	If the contractor succeeds in carrying out its job in time without any fatal or disabling injury incident and without any damage to property BHEL may, at its sole discretion, favorably consider to reward the contractor suitably for the performance.
15.4	In case of any damage to property due to lapses by the contractor, BHEL shall have the right to recover the cost of such damages from the contractor after holding an appropriate enquiry.
15.5	The contractor shall take all measures at the sites of the work to protect all persons from incidents and shall be bound to bear the expenses of defense of every suit, action or other proceeding of law that may be brought by any persons for injury sustained or death owing to neglect of the above precautions and to pay any such persons such compensation or which may with the consent of the contractor be paid to compromise any claim by any such person, should such claim proceeding be filed against BHEL, the contractor hereby agrees to indemnify BHEL against the same.
15.6	The contractor shall not employ men below the age of 18 years and women on the work of painting with products containing lead in any form. Wherever men above the age of 18 are employed on the work of lead painting, overalls shall be supplied by the contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash during the cessation of work.
15.7	The contractor shall notify BHEL of his intention to bring to site any equipment or material which may create hazard.
15.8	BHEL shall have the right to prescribe the conditions under which such equipment or materials may be handled and the contractor shall adhere to such instructions.
15.9	BHEL may prohibit the use of any construction machinery, which according to the organization is unsafe. No claim for compensation due to such prohibition will be entertained by BHEL.

16.0 HSE AUDITS/ INSPECTION

16.1	INTERNAL HSE AUDIT
1	Internal HSE Audit shall be carried out as per HSE audit calendar at least once in 6 months
2	Qualified HSE auditor shall be engaged for the internal HSE audit.
3	HSE checklist shall be used for carrying out audit and report shall be submitted to Head (HSE) of the Region with a copy to concerned site. Final audit report will be issued by Head (HSE) of the Region.
4	All non-conformities and observations on HSE shall be disposed off by site in a time bound manner.
5	Corrective action and Preventive action on HSE issues issued by Regional HQs shall be implemented by site and reported to HQ.
16.2	EXTERNAL HSE AUDIT
1	External HSE audit may be carried out once in a year by third party or by BHEL/customer (2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL)/consultant as second party audit or by certification body/government body as third party audit, with prior intimation to Customer and BHEL Safety Dept. The audit report along with time bound action plan should be submitted to BHEL.
2	Contractor shall facilitate smooth conduct of HSE audit and make available all the necessary information data which are not confidential in nature.
3	All non-conformities and observations on HSE identified during external HSE audit shall be disposed of by contractor in a time bound manner and reported back the implementation status.
4	Corrective action and Preventive action on HSE issues raised by certification body issued by CONTRACTOR Regional HQs shall be implemented by site and reported to HQ.
5	In case External audit conducted through third party, the external auditing agency should be reputed SAFETY institution or a certified SAFETY Auditor under any statutory legislation. The audit report along with time bound action plan should be submitted to BHEL HSE Head/ site CM/ Site GM/PD.
6	Apart from above, Electrical Safety Audit shall be conducted quarterly by a site team comprising Electrical engineer, Safety representative of Agency, BHEL and Customer representative covering the following and submit the report to BHEL/ Customer.
6 - i	Electrical incidents investigation findings and remedial measures implemented.
6 - ii	Adequacy of power supply requirements, Power distribution system in place and covered by temporary, Electrical protection devices – ELCBs, O/L protections etc.
6 - iii	Earth or ground connection and earth pit maintenance shall be maintain.
6 - iv	Education and training of electrical personnel undertaken.
7	All non-conformities and observations on HSE identified during internal or external HSE audit shall be disposed of by site in a time bound manner and reported back the implementation status.
8	Corrective action and Preventive action on HSE issues raised by certification body issued by BHEL shall be implemented by site and reported to Site management.

17.0 MONTHLY HSE REVIEW MEETING

1	BHEL shall hold HSE review meeting every month to discuss and resolve HSE issues of site and improve HSE performance. It will also discuss the incidents occurred since previous meeting, its root cause and Corrective action. The agenda is given below: a. Implementation of earlier MOM points b. HSE performance c. HSE inspection d. HSE audit and CAPA e. HSE training f. Health check-up camp g. HSE planning for the erection and commissioning and installation activities in the coming month h. HSE reward and promotional activities
2	The meeting shall be Site In-charge of Contractors and HSE officers of Contractors.
3	MOM on the discussion along with HSE observations will be circulated to the concerned (contractor) for action/ compliance.
4	The Subcontractor shall close the observations to the satisfaction of BHEL within stipulated time frame.

18.0 FORMATS USED

List OF FORMATS USED (Formats in Annexure - 9). The frequency is indicative and can be modified as per requirement by BHEL

SL. No.	Format Name	Format No.	Frequency of check (if applicable)
01	Inspection of First Aid Box	HSEP:14-F01	Weekly
02	Health Check Up	HSEP:14-F02	With new Induction
03	HSE Induction Training	HSEP:14-F03	With New Inductions
04	Tool Box Talk	HSEP:14-F04	Daily before job start
05	Monthly Site HSE Report	HSEP:14-F05	Monthly
06	Inspection of PPE	HSEP:14-F06	Weekly
07	Inspection of T&Ps	HSEP:14-F07	Monthly
08	Status of T&Ps	HSEP:14-F08	-
09	Inspection of Cranes	HSEP:14-F09A	Monthly
10	Inspection of Winches	HSEP:14-F09B	Monthly
11	Inspection on Height Working	HSEP:14-F10	Weekly
12	Inspection on Welding & Gas Cutting	HSEP:14-F11	Monthly
13	Inspection on Electrical Installation	HSEP:14-F12	Monthly
14	Inspection on Elevator	HSEP:14-F13	Weekly
15	HSE Penalty	HSEP:14-F14	-
16	Incident Reporting Format	HSEP:14-F15	
17	Format for Inspection of Labour Colony	HSEP:14-F16	Monthly
18	Format for Maintaining Records of E-waste Handled / Generated	HSEP:14-F17	Annually
19	Format for Maintaining Records of Hazardous Waste at the Facility	HSEP:14-F18	Annually
20	Inspection of Illumination Levels	HSEP:14-F19	Weekly
(Note: Serial Numbers from F20-F29 and F32 intentionally excluded)			
21	Monthly HSE Planning & Review Format		Monthly Twice
22	Daily HSE Reporting Format	HSEP:14-F31A&B	Daily
23	HSE Performance Evaluation Checklist	HSEP:14-F33	Monthly (by BHEL)

19.0 BHEL GENERAL SAFETY RULES

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INTRODUCTION :-

RESPONSIBILITIES OF CONTRACTORS FOR IMPLEMENTATION OF BHEL GENERAL SAFETY RULES:

The Safety Rules for 2x660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST of CSPGCL, as outlined hereunder, while setting out a broad parameter of safety norms, are not exhaustive. The contractor and his agencies are advised to follow BHEL general Safety Rules along with all aforesaid condition mention in this HSE plan. However statutory provisions as amended from time to time for details and strict compliance therewith.

FOR GREENFIELD PROJECTS:

Building and Other Construction Workers (regulation of employment and conditions of service) Act, 1996 (briefly referred to as BOCW Act),

Building and other construction workers (regulation of employment and conditions of service) Central Rules, 1998 (briefly referred to as BOCW Rules) as adopted by the various State Governments,

FOR EXPANSION, MODIFICATION, ALTERATION AND, OR CONSTRUCTION ACTIVITY WITHIN AN EXISTING PLANT OPERATING AS PER APPROVED SITE PLAN UNDER THE FACTORIES ACT;

- a. Factories Act, 1948,
- b. Factories Rules, as adopted by the various State Governments
- c. BOCW Act
- d. BOCW Rules
- e) In case a new act/ statutory guideline/ modification/ consolidation of acts is implemented the same shall be required to be adhered by the subcontractor.
- f) The latest amendment of the above-mentioned acts/ rules shall be followed at site.

The contractor is also required to ensure compliance with all the relevant Acts/Rules in addition to above.

shall be incumbent on the contractor to ensure that the requirements of safety, statutory or otherwise specified, are fully met. Thus the onus of implementation of the norms so prescribed shall squarely rest with the contractor concerned or, on his behalf, his sub-contractor or any other agency deployed by him, indemnifying BHEL/ 2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL from all the liabilities that may arise out of any failure to comply with the above mentioned Acts/Rules or any contravention thereof by the contractor or any other sub- agency on his behalf.

Safety cannot be ensured solely through Rules and Regulations or Codes. It is the responsibility of the Contracting Agency to ensure that basic safety principles are incorporated in the planning stage of their mobilization, execution, installation of machines, equipment, storage, etc., and initiate and maintain safety programs. It is desirable to have a planned programme and secure adequate cooperation of senior management, EICs, sub-contracting agencies, supervisory personnel and workers involved to ensure the implementation of the provisions of these Rules in true spirit so as to achieve the ultimate goal of accident prevention.

It shall also be the responsibility of the contracting agency to provide amenities and safety requirements on each construction job in order to reduce or to eliminate hazards of construction activities and also to provide necessary first aid facilities nearby construction activity area and coordinate for ambulance for prompt transportation of injured persons to a physician or hospital.

It is also mandated that the authorized representative of BHEL, namely, Project Director/ Construction Manager & 2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL, namely, the Engineer-in-charge, may, at his convenience, exercise such superintendence, supervision and, or control as may be deemed necessary, but this shall not absolve the contractor of his basic responsibility for strict compliance with the norms, standards and, or legal provisions as applicable under the Factories Act/Rules and the Building and other construction (regulation of employment and conditions of service) Act/Rules.

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Section wise checklist of provisions of BOCW Act/Rules is given hereunder for ready reference of the contractor. (This list has been prepared in chronological order with primary importance to Section of Act and secondary importance to Rules).

MEETING FOR SAFETY AFTER AWARD OF THE CONTRACTOR

Representatives of contracting agency along with safety Officer/executive shall meet the concerned EIC of the particular activity prior to start of construction activities for the purpose of discussing safety standards and requirements applicable to the work under contract. The person representing the agency should be a responsible person for all their site activities.

SAFETY MESSAGE PROPAGATION:

1	Contracting agencies shall arrange for display of safety hoardings depicting suitable safety cartoons/messages/ cautionary notices at appropriate places of project site to remind the workers to perform their duties safely. Minimum one safety message board/hoarding of appropriate size for every 10 workers
2	to be provided and maintained by the concerned agency.
3	Apart from safety hoardings, each agency should maintain a safety bulletin board at all their work locations. Such safety bulletin boards should depict the activities being planned for the day, good practices, permit details etc.
4	Safety suggestion boxes shall be kept at each contractor's office at site for obtaining safety suggestions from the workers. Best suggestions should be implemented and may be rewarded suitably to encourage the workers for safety.

COMPETENCY OF EMPLOYEES:

1	Throughout the course of the contract, persons employed by agency shall be physically fit, qualified/experienced to perform their assigned duties/ jobs.
2	Employees shall not, knowingly be permitted to work in a manner that their ability or alertness is so impaired because of fatigue, illness or any other reason, that it may expose them and or others to injury.
3	No worker, vehicle operator shall be less than 18 years of age. And the vehicle operator shall have a valid license as per requirements of Motor Vehicle Act.
4	Contractor shall comply with all applicable state/central laws and codes related to employment of operators for Hoist, Shovel, Crane, Tractor, Bull-dozer, any other howling heavy equipment/vehicle.

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1	Safety at workplace and equipment
1.0	GENERAL PROVISIONS:
1.1	Housekeeping:
a	The contractor shall be primarily responsible for maintaining Good housekeeping and safety standards in the workplace;
b	Loose materials that are not required for use shall not be placed or left behind so dangerously as to obstruct workplaces or passageways;
c	All projecting nails shall be removed or bent to prevent injury;
d	Equipment, tools and small objects shall not be left lying unattended or unsecured from where they could fall or cause a person to trip;
e	Scrap, waste or rubbish shall not be allowed to accumulate in the site as these combustibles can create serious fire hazards and affect safe working;
f	Workplaces and passageways that become slippery owing to spillage of oil or other causes shall be cleaned up or strewn with sand, ash or the like;
g	Portable equipment shall be returned after use to their designated storage place.
1.2	Means of access and egress shall consist of
a	Adequate and safe means of access and egress shall be provided in all workplaces;
b	The means of access and egress shall be maintained in a safe condition;
1.3	Lighting and ventilation
a	All practical measures shall be taken to prevent smoke, fumes etc. from obscuring any workplace or equipment at which any worker is engaged;
b	The Contractor shall provide and maintain at its own expense all lighting, fencing, and watching when and where necessary for the proper execution and the protection of the Facilities, or for the safety of the owners and occupiers of adjacent property and for the safety of the public/ workers/ employee etc.
c	Adequate and suitable artificial lighting shall be provided where natural lighting is not sufficient as per IS 3646 (Part II). The artificial lighting so provided shall not cause any incidental any danger, including that of producing glare or disturbing shadows;
d	To prevent danger to health from air contamination by dust generated during grinding, cleaning, spraying or manipulation of materials as also to provide protection against dangerous gases, fumes, vapors, mist, etc. effective arrangements shall be made for ventilation;
e	Workers shall be provided with suitable respiratory protective equipment, if it is not technically possible to have uncontaminated air. To this end, a study by a competent person shall be made to decide on the due protection. Sufficient illumination at all times for maintaining safe working conditions shall be provided where building workers are required to work or pass, and for passageways, stairways and landings such illuminations shall not be less a than 0.5 foot candles at the floor level;
f	Where natural lighting is not adequate to prevent danger, adequate and suitable lighting shall be provided as per IS: 3646 — Part II;
g	Artificial lighting shall not cause any danger due to a brightness greater than 10 foot candles per square inch, except where the angle of inclination from the eye to the source or the part pf the fitting as the case may be exceeds 200, including that of producing glare or disturbing shadows;
h	Where necessary to prevent danger to health from air contamination by dust from the grinding, cleaning, spraying, or manipulating of materials or objects, arrangements shall be made to limit the concentration of the pollutants by thorough ventilation, and dust generated due to movement of earth-moving machinery and other construction equipment, by spray of water in the area from time to time;

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i	Adequate ventilation by the circulation of fresh air shall be maintained in such places where the concentration of pollutants is likely to affect the health of the workers;
j	Special care shall be taken to ventilate the workplace where gas cutting, welding or other operations involving generation of dangerous fumes, vapors, mists, gases etc is likely;
k	Where it is technically not possible to eliminate dust or noxious or harmful fumes or gases sufficiently to prevent injury to the health of the workers, the contractor shall provide suitable respiratory equipment like dust mask or gas/fume mask or breathing apparatus or other suitable respiratory equipment.
l	Proper lighting of all construction / erection areas. Bidder shall erect adequate number of high lighting masts in main plant, offsite, office and store areas for lighting during night. DG sets of adequate capacity shall be provided for emergency backup. The street lighting along the roads shall also be prioritized along with road construction. The construction power ring main shall be planned and erected immediately after the award.
1.4	Dangerous and harmful environment:
a	When an internal combustion engine exhausts into confined space or excavation or tunnel or any other workplace where neither natural ventilation nor artificial ventilation system is adequate to keep the carbon monoxide content of the atmosphere below fifty parts per million, adequate and suitable measures shall be taken at such workplace in order to avoid exposure of building workers to health hazards;
b	No building worker shall be allowed to enter any confined space or tank or trench or excavation wherein there is given off any dust fumes or other impurities of such nature and to such extent as is likely to be injurious or offensive to the building worker or in which explosives, poisonous, noxious or gaseous material or other harmful articles have been carried or stored or in which dry ice has been used as a refrigerant, or which has been fumigated or in which there is a possibility of oxygen deficiency, unless all practical steps have been taken to remove such dust, fumes or other impurities and dangers which may be present and to prevent any further ingress thereof, from such workplace or tank or trench or excavation;
c	No worker shall be allowed to enter any such space unless a responsible person has certified it safe and fit for the entry of such building workers.
1.5	Fumes/gases due to Welding and gas-cutting operations: When welding or cutting operations are carried out in a confined space:
a	Adequate ventilation, by means of exhaust fans or forced draught, as the condition may require, shall be constantly provided; otherwise enough quantity of air shall be circulated by means of air compressors to dilute the contaminant within permissible limits;
b	Workers shall take necessary precautions to prevent unburned combustible gas or oxygen from escaping inside a tank or vessel or other confined space;
c	Welding or cutting operations on any container that has held explosives or where inflammable gases may have been generated, shall be undertaken after the container has been thoroughly cleaned by steam or other effective means; and
d	Gas-test shall be carried out ensure that the confined space is completely free from combustible gases and vapors.
1.6	Dust, gases, fumes
a	Concentration of dust, gases or fumes shall be prevented by providing suitable means to control their concentration within the permissible limit so that they may not cause injury or create health hazard to a building worker;
b	For protection against such hazardous substances, besides efficient and effective means of control, personal protective equipment like dust masks, breathing apparatus, other respiratory appliances, goggles, as the case may be, shall be provided.

1.7	Excessive noise:
a	Adequate measures shall be taken against the harmful effects of an excessive noise;
b	Use of earplugs/muffs and anti-vibration gloves shall be ensured to protect the workers from the impact of exposure to such dangers;
c	The noise level in no case shall exceed as prescribed in the concerned Rules and exposure in excess of 115 dBA over the period of a quarter of an hour cannot be permitted;
1.8	Corrosive substances:
a	All corrosive substances, including alkalis and acids, shall be stored and used by a person dealing with such substances at a building or other construction work in such a manner that it does not endanger the building worker and suitable protective equipment shall be provided by the employer to a building worker during handling or use of such substances at a building or other construction work and in case of spillage of such substances on the building worker, immediate remedial measures shall be taken;
b	While protection of the body could be ensured by use of corrosion resistant apparel/overalls, suitable goggles, gloves, apron, gum boots etc. shall be made available to all concerned personnel;
c	To deal with an accidental spillage of a corrosive substance on the body of a worker, the facility of eyewash fountain or water shower, as the case may be, shall be installed, within the easy reach of the workplace.
1.9	Eye protection:
a	Suitable personal protective equipment for the protection of eyes shall be provided and used by the building worker engaged in operations like welding, cutting, chipping, grinding or similar operations which may cause hazard to his eyes;
b	Goggles or face shield or welding screen with suitable shade of glass/filters etc shall be provided for the protection of the eyes.
1.10	Overhead protection:
a	It shall be ensured that at the building or other construction site, overhead protection is erected along the periphery of every building under construction that shall be of fifteen meters or more in height when completed;
b	Overhead protection shall not be less than two meters wide and shall be erected at a height not more than five meters above the base of the building and the outer edge of such overhead protection shall be one hundred fifty millimeters higher than the inner edge thereof or shall be erected at an angle of not more than twenty degrees to its horizontal sloping into the building;
c	It shall be also ensured that at the building and other construction work that any area exposed to risk of falling material, articles or objects is roped or cordoned off or otherwise suitably guarded from inadvertent entry of persons other than building workers at work in such area.
1.11	Lifting and carrying of excessive weight:
a	No building worker lifts by hand or carries overhead or over his back or shoulders any materials, articles, tools or appliances exceeding in weight the maximum limits as set out in the following table unless aided by any other building worker or a mechanical device;
b	No worker aided by other workers, lift by hand or carry overhead or over their back or shoulders any materials, articles, tools or other appliances exceeding in weight the sum total of the maximum limits as prescribed in the concerned Rules, unless aided by a mechanical devices:
1.12	Protections against fall of persons –
a	All scaffolds/working platforms at height of two meters or more shall be fenced;
b	All guard-rails for the fencing of floor openings, gangways, elevated workplaces shall be made of sound material, good construction and possess adequate strength and be between 1 m and 1.5 m above platform level, consist of two rails (two ropes or chains may be used if they are sufficiently taut) and supporting stanchions;

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c	Intermediate rails, ropes or chains shall be midway between the top and lower of edges of the top rail;
d	Sufficient number of stanchions or standard poles or uprights shall be maintained to ensure the required stability and resistance;
e	Guard-rails shall be free from sharp edges and be maintained in good repair;
f	Floor openings through which persons could fall, shall be guarded by covering or fencing;
g	If the means of protection is removed to allow the passage of persons or goods or other purpose, the same shall be replaced as soon as possible, while making temporary arrangements for reasonable degree of safety in the meanwhile;
h	Covers for floor opening shall be safe to walk on and if vehicles operate thereon it shall be safe for the same. This will require the contractor to have prior assessment of expected loads;
i	Cover for floor opening shall be secured by hinges, grooves, stops or other effective means against sliding, falling down or lifting out or any other inadvertent displacement;
j	Covers for any openings shall not constitute any hindrance to traffic and, as far as practicable, be flush with the floor;
k	If covers constitute as grids, the bars shall be spread not more than 5 cm apart;
l	Elevated workplaces at more than 2 m above the floor or ground shall be protected on all open sides by guardrails. It is commonly observed that fragile barricade tapes are used as a substitute of a strong and dependable fencing. This practice is prohibited. The barricade tapes can be used as markers/route guide only;
m	Elevated workplaces shall be provided with safe means of access and egress such as stairs, ramps or ladders according to suitability;
n	Persons employed at elevated workplaces or other situations at more than 2m from which they may fall, shall be protected by means of adequate safety nets, or platforms, or be secured by safety belts with the lanyard properly anchored above the head level of the user. All possible effort shall be made to have strong and dependable mechanical arrangement.
o	Persons employed at work below 1.5m from which they may fall, shall be protected by safety belts with the lanyard properly anchored above the head level of the user. All possible effort shall be made to have strong and dependable mechanical arrangement i.e. Working platform / any other suitable arrangement.
1.13	Protection against fall of objects and materials:
a	Materials and objects such as scaffolding materials, waste materials or tools shall not be thrown up or down from heights, as they are liable to cause injury;
b	If materials and other objects cannot be safely lowered from heights, adequate precautions such as the provision of fencing, lookout men or barriers shall be provided to protect any person from injury.
1.14	Protection against entry of unauthorized persons:
a	Construction zones in the site and built up areas alongside main traffic routes shall be barricaded;
b	Unauthorized persons shall not be allowed access to construction sites and visitors shall be provided with the required protective equipment and it be ensured that they use them effectively.
1.15	Head protection and other protection apparel:
	Every building worker who is required to –
a	Pass through or working within the areas where there is hazard of his being struck by falling objects or materials, shall be provided with safety helmets of the type approved and tested in accordance with the national standards;
b	Work in water or in wet concrete or in other similar work, shall be provided with suitable waterproof; Work in rain or in similar wet condition, shall be provided with waterproof coat with hat;

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c	Workers using or handling of alkalis, acid or other similar corrosive substances shall be provided with appropriate protective equipment in accordance with the approved standards;
d	Every building worker engaged in handling sharp objects or materials at a building or other constriction work, which may cause hand injury, shall be provided with suitable hand gloves in accordance with the approved standards.
1.16	Stability of structures:
a	No wall, chimney or other structure or part of a structure shall be left unsupported in such condition that it may fall, collapse or weaken due to wind pressure, vibration or due to any other reason. Entry of persons into such locations where tall structures are being built shall be regulated without a let up.
1.17	Safety of Structures and equipment and other safety concerns
a	Safety of structures like scaffoldings, platforms, gangways/walkways, towers, stairs, ladders, ramps, safety in excavation, formwork, false work, demolition work, storage, handling and use of explosives, inflammable substances and hazardous materials, gas cutting and welding, use of electricity etc.; and equipment viz. construction machinery, crushers and batching plant, boiler and other pressure vessels, transport and material handling equipment, lifting appliances, vehicles etc., shall be operated and maintained as per approved norms and —
a i)	They shall be made of sound material and of good construction, free from patent defects, provided with adequate safe guards, properly maintained, periodically inspected and strong enough to withstand safely the loads and stresses to which they may be subjected;
a ii)	They shall carry enough factor of safety bearing in mind that the possibility of their abuse, which otherwise shall be prevented by constant and adequate supervision, cannot be ruled out altogether;
a iii)	It is incumbent on the contractor to ensure that only competent and authorized persons operate the equipment or attend to electrical & mechanical systems and repair faults or breakdowns etc.
b	Working in the confined space may involve certain serious hazards. Strict adherence to the conditions of Permit-to-work issued for the purpose is required;
c	Control of energy sources shall be ensured through Log-out/Tag-out practices.
1.18	Slipping, tripping, cutting, drowning and falling hazards:
a	The contractor shall keep all passageways, platforms and other places free from accumulations of dust, debris or similar material and from other obstructions that may cause tripping;
b	Any sharp projections or protruding nails or similar projections which may cause any cutting hazard to a building workers shall be removed or otherwise made safe by taking suitable measures;
c	No contractor shall allow any building worker at construction work to use the passageway, or a scaffold, platform or any other elevated working surface which is in slippery and dangerous condition and shall ensure that water, grease, oil or other similar substances which may cause the surface slippery, be removed or sanded/saw-dusted or covered with suitable material to make it safe from slipping hazard;
d	Wherever building workers are exposed to the hazarded of falling into water, they shall be provided with rescuing arrangement from such hazard and if it is considered necessary, well equipped boat or launch manned with trained personnel shall be provided by the contractor at the site of such work;
e	Every open side or opening into or through which a building worker, vehicle or lifting appliance or other equipment's may fall at a BOCW work shall be covered or guarded suitably to prevent such fall except where free access is necessary by reasons of their nature of the work;
f	Wherever building workers are exposed to the hazards of falling from height while employed on such work they shall be provided by the employer with adequate equipment or means for saving them from such hazards, Such equipment's or means shall be in accordance with the standards as laid down;

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g	Whenever there is a possibility of falling of any martial, equipment or building worker at a construction site relating to a BOCW, adequate and suitable safety net shall be provided in accordance with the above stipulation;
1.19	INTERFERENCE WITH MOVING VEHICLES AND PEDESTRIANS The maximum driving speed on site is 15 km per hour and as per the guideline/ instruction from customer.
1.20	Dangerous and Harmful Gases / Equipment
a	The contractor shall ensure that the workers are not exposed to any harmful gases during any construction activity including excavation, tunneling, confined spaces etc.
b	The contractor should not allow any worker to go into the confined space unless it is certified by authorized representative of CSPGCL at site to be safe and fit for the entry to such work place. Proper record and work permits should be followed to carry out such works.

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2.0	SAFETY IN MATERIAL HANDLING AND WASTE DISPOSAL
2.1	GENERAL PROVISIONS:
a	All building materials stored in tiers shall be stacked, racked, blocked, interlocked or otherwise secured safely to prevent sliding, falling or collapse and in an orderly manner to avoid obstruction of any passageway at the place of work. Piles of materials shall be stored or stacked in such a manner as to ensure their stability;
b	Maximum safe load limits of floors within buildings and structures in kg/cm ² shall be conspicuously posted in all storage areas, except for floor or slab on gradient. Maximum safe load shall not be exceeded. Material or equipment shall not be stored upon any floor or platform in such quantity as to exceed its safe carrying capacity;
c	Aisles and passageways shall be kept clear to provide for the free and safe movement of material handling equipment or persons. Such areas shall be kept in good repair;
d	When a difference in road or working levels exist, means such as ramps, blocking or grading shall be used to ensure the safe movement of vehicles between two levels;
e	Material stored inside buildings under construction shall not be placed within 2 m of any hoist way or inside floor openings nor within 3.2 m of exterior wall which does not extend above the top of material stored;
f	Persons employed required to work on stored material in silos, hoppers and similar storage areas shall be equipped with lifelines and safety belts;
g	Non-compatible materials shall be segregated in storage;
h	Bagged materials shall be stacked by stepping back the layers and cross-keeping the bags at least every 10 bags high;
i	Materials shall not be stored on scaffolds or runways in excess of supplies needed for immediate operations;
j	Bricks stacks shall not be more than 2.2 m in height. When a loose brick stack reaches a height of 1.3 m it shall be tapered back 5 cm in every foot of height above the 1.25 m level;
k	When masonry blocks are stacked higher than 2 m, the stack shall be tapered back on half block per tier above the 2 m level;
l	Material or equipment shall not be stored or placed so close to any edge of a floor or platform as to endanger the safety of persons below or working in the vicinity. Where stacking, unshackling, stowing or unstoring of construction material or article, or handling in connection therewith cannot be safely carried out unaided, reasonable measures to guard against accident or dangerous occurrences shall be taken by shoring or otherwise to prevent any danger likely to be caused by such handling;
m	Stacking of material or article shall be made on firm foundation not liable to settle and such material or article and shall not overload the floor on which such stacking is made;
n	The material or articles shall not be stacked against partition or walls of a warehouse or stores unless it is known that such partition or the wall is of sufficient strength to withstand the pressure of such materials or articles;
o	The materials or articles shall not be stacked to such a height and in such a manner as would render the pile of such stack unstable and cause hazards to the building workers or the public in general;

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p	Where the building workers are on stack exceeding one point five meters in height, safe means of access to the stack shall be provided;
q	All stacking or unshackling operations shall be performed under the supervision of a responsible person for such stacking or unstacking;
r	The stacking of construction materials or articles shall not be made near the site of excavation, shaft, pit or any other such opening;
s	Stacks that may lean heavily or become unstable or collapse are barricaded shall be avoided;
t	Structural steel, poles, pipe, bar stock and other cylindrical materials, unless racked, shall be stacked and blocked so as to prevent sliding, spreading or tilting.
2.2	LUMBER:
a	Used lumber shall have all nails withdrawn before stacking;
b	Lumber shall be stacked on level and solidly supported sills;
c	Lumber piles shall not exceed 6 m in height provided that lumber is handled manually, shall not be stacked more than 5 m height;
d	Lumber shall be so stacked as to be stable and self-supporting.
2.3	STACKING OF CEMENT AND BAGS CONTAINING OTHER MATERIALS:
a	The cement or other material in bags shall be stacked in a header and stature-wise in rows alternately in not more than 10 numbers and there will be circulation of space of at least 600 mm in between two such rows;
b	While removing bags from the stack pile the stability of such stack pile shall be ensured;
c	Bags containing cement or lime shall be stored on a firm ground;
d	The materials like bricks, tiles or blocks shall also be stored on a firm ground;
e	Reinforcing steel shall be stored according to its shape, size and length and stack of reinforcing steel kept as low as possible;
f	No pipe shall be stored on rack or in stack where such pipe is likely to fall by rolling;
g	The angle of repose shall be maintained where loose materials are stacked;
h	When dust laden material is to be stored or handled, measures shall be taken to suppress the dust produced by such storing or handling and suitable personal protective equipment supplied to and used by the building workers working for such storing or handling.
2.4	DISPOSAL OF DEBRIS AND WASTE MATERIAL:
a	It shall be ensured that debris is
a-i)	Handled and disposed of by a method, which does not cause danger to the safety of a person and not allowed to accumulate so as to constitute a hazard;
a-ii)	Kept sufficiently moist to bring down the dust under control;
a-iii)	Not thrown inside or outside from any height of such building or other construction work;
b	Brought down by suitable means/chutes provided for the purpose and on completion of work, leftover building material, article or other substance or debris shall be disposed off as soon as possible to avoid any hazard to any traffic or person;

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c	Whenever materials are dropped more than 6 m to any point lying outside the exterior walls of the building an enclosed chute of wood, or equivalent material shall be used;
d	When debris is dropped through holes in the floor without the use of chutes, the area where the material is dropped shall be completely enclosed with barricades not less than 1.1 m high and not less than 1.9 m back from the edge of the opening above. Signs warning of the hazard of falling material shall be posted at each level;
e	All scrap lumber, waste material and rubbish shall be removed from the immediate work area as the work progresses;
f	Disposal of waste material or debris as per the guideline issued by CPCB in compliance of Rule 10 sub-rule 1(a) of C & D Waste Management Rules, 2016).
g	All bio-degradable material shall be disposed off in the pit for making compost. Pellets can also be made from bio-degradable material
h	All solvent wastes, oil rags and flammable liquids shall be kept in fire resistant covered containers until removed from the work site.
2.5	HANDLING GAS CYLINDERS:
a	Gas cylinders shall not be lifted on bare slings. For lifting the cylinders, cage of suitable size shall be used and all cylinders shall be horizontally positioned in it. Such cage shall have fencing in such a way that there is no possibility of fall of cylinders from this cage.
2.6	RIGGING EQUIPMENT FOR MATERIAL HANDLING:
a	Rigging equipment for material handling shall be inspected prior to use in each shift as necessary during its use to ensure that it is safe. Defective rigging equipment shall be removed from service;
b	Rigging equipment shall not be loaded in excess of its recommended safe working load, as prescribed in the Indian standards;
c	Rigging equipment, when not in use, shall be removed from the immediate work area so as not to present a hazard to persons engaged in the area;
d	Special custom designed grabs, hooks, clamps, or other lifting accessories, for such units as modular panels, prefabricated structures and similar materials, shall be marked to indicate the safe working loads shall be proof tested prior to use 125% of their rated load;
e	Welded alloy steel chain slings shall have permanently affixed-durable identification standing size, grade, rated capacity and manufacturer.
2.7	FENCING OF MOTORS ETC
a	All motors, cogwheels, chains and friction gearings, flywheels, shafting and the other dangerous and moving parts of machinery (whether or not driven by mechanical power) and steam pipes shall be securely fenced and the fencing of dangerous parts of machinery not removed while such machinery is in motion or in use;
b	No part of any machinery which is in motion and which is not securely fenced, shall be examined, lubricated, adjusted or repaired except by a person skilled and trained for such examination, lubrication, adjustment or repairs and machine parts cleaned only when such machine is stopped;
c	When a machine is stopped for servicing or repairs, adequate measures shall be taken to ensure that such machine does not restart inadvertently and not only tag-out sign is required; it is also essential that an active system of isolating the power be applied.

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2.8	PROTECTION AGAINST LIGHTNING
a	Where necessary, installations shall be protected against lightning, provided further that;
b	No bare conductors or bare current-carrying parts of equipment be permitted to be installed unless adequate precautions are taken to prevent direct or indirect contact;
c	Only flame-proof equipment and conductors shall be installed at places where explosives or inflammable substances are stored, handled or used or where explosive atmosphere exists;
d	Persons competent and authorized only shall attend to electrical breakdowns and other operational faults and give or restore power to an equipment and such persons shall be easily identifiable by their dress or special helmet worn;
e	It will constitute a standard practice to switch off portable tools while shifting from one place to another or while leaving them behind unattended;
f	The contractor shall ensure that a system is in place to always keep tools well maintained.
2.9	VEHICULAR TRAFFIC
a	Whenever any building or other construction work is being carried on, or is located in close proximity to a road or any other place where any vehicular traffic may cause danger to building workers, it shall be ensured that such building or other construction work is barricaded and suitable warning signs and lights displayed or erected to prevent such danger and if necessary, a request in writing made to the concerned authorities to control such traffic;
b	All vehicles used at construction site shall comply with the requirements of the Motor Vehicles Act, 1988 (59 of 1988) and the Rules made hereunder;
c	The driver of a vehicle of any class or description operating at a construction site shall hold a valid driving license under the Motor Vehicles Act. 1988 (59 of 1988).
2.10	USE OF SAFETY BELT OR OTHER FALL ARREST SYSTEMS:
a	Wherever any work at a height of 3 m or more is carried out, use of a suitable fall arrest system is mandatory if the workplace has already not been provided with an otherwise reliable means of protection for preventing the fall of persons from that height, provided further that:
b	Safety belt, lanyard, life lines and devices for the attachment of such life lines shall conform to the approved standards;
c	Every building worker shall be supplied with safety belt and safety life lines for his protection and such building worker shall use such belts and life lines during the performance of his work;
d	All building workers using safety belt and safety life lines shall have the knowledge of safe use and maintenance of such belts and life lines and shall be supplied with necessary instructions for its use;
e	The responsible person for supervising the use of safety belts and safety lifelines shall inspect and ensure that such safety belts and lifelines are fit for use before taking them into use.
2.11	safety net and its use
a	Every safety net shall be of adequate strength, made of sound material and suitable for use and conform to the approved standards;
b	The responsible person for maintenance of safety nets and their use shall ensure safe fixing of such safety nets and provide such safety nets with suitable and sufficient anchorage so that the purposes for which such safety net is intended for use is served;

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c	Use of multi-layer safety net to be ensured to avoid fall of material/objects.
2.12	STORAGE OF SAFETY BELTS AND NETS, ETC:
a	Proper arrangement shall be made for the safe storage of safety belts, safety lifelines and safety nets when they are not in use and are protected against mechanical damage, damages from chemicals and damages from biological agents.
2.13	SAFETY HELMETS AND SAFETY FOOTWEAR
a	The Engineer in-charge may declare whole or part of a site as the hardhat area and in such an eventuality it shall be the responsibility of the contractor to provide safety helmet of the approved quality to all personnel engaged in construction and erection work, including the visitors to the site;
b	Accordingly, wherever safety footwear is required for the safety of the personnel, the contractor shall provide the same of the approved type free of charge.

3.0	WELDING AND GAS CUTTING OPERATIONS
3.1	GAS WELDING:
3.1.1	GENERAL PROVISIONS:
a	All welders shall be provided with fire resistant protective clothing and equipment, such as fire resistant gauntlets and aprons, helmets and goggles with suitable filter lenses and its usage shall be ensured;
b	The welders shall not be allowed to wear clothing that is not free from grease, oil and other flammable material;
c	Adequate precautions shall be taken to protect persons working or passing near welding operations from dangerous sparks and radiation;
d	When welding or cutting is being done on materials containing toxic or harmful substances or liable to produce toxic or harmful fumes, adequate precautions shall be taken to protect workers from the fumes, either by
d-i)	Exhaust ventilation, or
d-ii)	Respiratory protective equipment;
d-iii)	Arrangement shall be made so that welding sparks do not fall down on the persons working below or material, which are combustible in nature and may be damaged with such sparks.
e	The oxygen pressure for welding shall always be high enough to prevent acetylene flowing back into the oxygen cylinder;
f	Acetylene shall not be used for welding at a pressure exceeding 1 atmosphere gauge;
g	Adequate precautions shall be taken to prevent:
g-i	Fire being started by sparks,
g-ii	Slag or hot metal; and
g-iii	Damage to fiber ropes from heat, sparks, slag or hot metal;
h	Precautions shall be taken to prevent flammable vapors and substances from entering the working area;
3.2	WELDING AT PLACES WITH FIRE RISKS:
a	Unless adequate precautions are taken, no welding or cutting operations shall be allowed near the place where combustible materials are stored, or near materials or plant where explosive or flammable dusts, gases or vapors are likely to be present or given off. If hot work permit system exists at the site, the same shall be followed;
b	Combustible materials and structures that cannot be removed from the vicinity of welding operations shall be shielded by asbestos or protected by other suitable means.
3.3	WELDING IN CONFINED SPACE:
	When welding or cutting operations are being carried out in a confined space;
a	Adequate ventilation, by means of exhaust fans or forced draught as the condition may require, shall be constantly provided; otherwise enough quantity of air shall be blown in by means of compressors to dilute the pollutants;

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b	No blow pipe shall be left unattended inside a tank or vessel or other confined space during meal break or other interruption of the work;
c	The worker shall take all necessary precautions to prevent unburned combustible gas or oxygen from escaping inside a tank or vessel or other confined space; and
d	When necessary to prevent danger, an attendant shall watch the welders from outside.
3.4	WELDING ON CONTAINERS FOR EXPLOSIVE OR FLAMMABLE SUBSTANCES:
a	Welding or cutting operations on containers in which they are explosives or flammable substances shall not be allowed;
a-i	Welding or cutting operations on any container that has held explosive or where flammable gases may have been generated, shall only be undertaken,
a-ii	After the container has been thoroughly cleansed by steam or other effective means; and
a-iii	Found by air tests to be completely free from combustible gases and vapors; or
a-iv	After the combustible gas in the container has been completely replaced by an inert gas or by water;
a-v	If an inert gas is used as laid down in This HSE plan, after the vessel has been filled with gas, the gas shall continue to flow slowly into it thorough out the welding or cutting operations;
a-vi	Before starting any welding operations on, or otherwise applying heat to, closed or jacketed containers or other hollow parts, such containers or parts shall be adequately vented in suitable manner.
3.5	GAS CYLINDERS
a	Gas cylinders shall be inspected, stored, handled and transported in conformity with the requirements of Gas Cylinders Rules, 1981;
b	When in use, cylinders shall be held in upright positions by straps, collars or chains;
c	Devices referred to in this HSE plan shall be such that the cylinders can be rapidly removed in an emergency;
d	Welders shall not temper with or attempt to repair safety devices and valves on gas cylinders;
e	When acetylene cylinders are coupled, flash back arrestor shall be inserted between the cylinder and the coupler block, or between the coupler block and the regulator;
f	Only acetylene cylinders or approximately equal pressure shall be coupled;
g	No gas shall be taken from a cylinder unless a pressure reducing regulator has been attached to the valve;
h	Only the right pressure reducing regulator shall be used for the gas in the cylinder;
i	Cylinder valves shall be kept free from gases, grease, oil, dusts and dirt;
j	Leaky cylinders charged with acetylene or liquefied fuel gas shall be taken into the open air at a safe distance from any open flame or sparks.
3.6	HOSE
a	Only hose especially designed for welding and cutting operations shall be used to connect an oxy- acetylene torch to gas outlet;

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b	Hose lines for oxygen and for oxy-acetylene shall be of different colors and preferably of different size;
c	Hose connections shall be sufficiently light to withstand without leakage a pressure twice the maximum delivery pressure of the pressure regulators in the system;
d	Care shall be taken that hose does not become kinked or tangled, stepped on or run-over or otherwise damaged;
e	Any length of hose in which a flashback has burned, shall be discarded;
f	No hose with more than one gas passage shall be used;
g	Only soapy water shall be used for testing hose for leaks.
3.7	TORCHES
a	When torches are being changed, the gases shall be shut off at the pressure reducing regulators and not by crimping hose;
b	Torches shall be lit with friction lighters or other safe source but not with matches.
c	Electric welding equipment:
d	Welding machines shall be controlled by a switch mounted on or near the machine framework that, when opened, immediately cuts off the power from all conductors supplying the machine;
e	Welding circuit shall be so designed as to prevent the transmission of high potential from the source of supply to the welding electrodes;
f	The maximum open circuit voltage shall be in accordance with Indian Standards;
g	Electrode conductors or cables shall not be excessive in length and shall not be longer than necessary to perform the work;
h	Return conductors shall be taken directly to work and securely connected mechanically and electrically to it or to the work bench, floor etc. and to an adjacent metallic object;
i	Cable shall be supported so as not to create dangerous obstruction;
j	Motors, generators, rectifiers and transformers in arc welding or cutting machines, and all current carrying parts, shall be protected against accidental contact with un insulated live parts;
k	Ventilating slots in transformer enclosures shall be so designed that no live part is accessible through any slot;
l	Frames of arc welding machines shall be effectively earthed;
m	In hand-operated arc welding machines, cables and cable connectors used in arc welding circuits shall be effectively insulated on the supply side;
n	The outer surface electrode holders of hand-operated arc welding machines, including the jaw so far as practicable, shall be effectively insulated;
o	Electrode holders of hand-operated arc-welding machines shall, if practicable, be provided with discs or shields to protect the operator's hands from the heat of the arcs;
p	Only heavy-duty cable with unbroken insulation shall be used;
q	Circuit connections shall be waterproof;
r	When lengths of cable have to be joined, only insulated connectors shall be used on the earth line and the electrode holder line;

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s	Connections to welding terminals shall be made at distribution boxes, socket outlets, etc. by bolted joints;
t	Welding terminals shall be adequately protected against accidental contact by enclosures, covers or other effective means;
u	Electrode holder shall
u-i	Have adequate current capacity;
u-ii	Be adequately insulated to prevent shock, short-circuiting or flashovers.
3.8	OPERATIONS
a	Arc welding and cutting operations that are carried on at places where persons other than the welders are working or passing shall be enclosed by means of suitable stationary or mobile screens;
b	Walls and screens of both permanent and temporary protective enclosures shall be provided to absorb harmful rays from the welding equipment and prevent reflection, and if necessary, be painted or otherwise treated for the purpose;
c	When arc welding is done in damp confined spaces;
c-i	Electrode holders shall be completely insulated; and
c-ii	The welding machines shall be outside the confined space;
d	Welders shall take adequate precautions
d-i	To prevent any part of their body from completing an electric circuit
d-ii	To prevent contact between any part of the body and the exposed part of the electrode, or electrode when in contact with metal; and
d-iii	To prevent wet or damaged clothing, gloves and boots from touching any live part;
e	Welding circuits shall be switched off when not in use;
f	Electrodes shall only be inserted in the holder with insulating means such as insulating gloves;
g	Electrode and return leads shall be adequately protected against damage;
h	Live parts of electrode holders shall be inaccessible when they are not in use;
i	Electric arc-welding equipment shall not be left unattended with current switched on.

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4.0	SAFETY IN THE USE OF ELECTRICITY
4.1	GENERAL PROVISIONS
a	Before commencement of any building or other construction work, adequate measures shall be taken to prevent any worker from coming into physical contact with any electrical equipment or apparatus, machines or live electrical circuit which may cause electrical hazard during the course of his employment and suitable warning signs shall be displayed and maintained at conspicuous places in Hindi and in local language understood by the majority of the building workers;
b	In workplaces where the exact location of underground electric power line is not known, the building workers using jack hammers, crow bars or other hand tools which may come in contact with a live electrical line shall be provided with approved insulated protective gloves and footwear;
c	As far as practicable, no wiring or cable, which may come in contact with water or which may be mechanically damaged or which may result in electric shock shall be left on ground or;
d	All electrical appliances and current carrying equipment used shall be made of sound material and adequately earthed;
e	All temporary electrical installations shall be provided with earth leakage circuit breakers;
f	It is required that all portable power-driven hand tools are provided with double insulation to secure a high degree of protection from electrical hazards;
g	Electrical installations shall comply with the requirements of any law for the time being in force, especially the Indian Electricity Act/Rules in particular with specific reference to the following:
g-i	All parts of installations shall be of standard construction not lower, from the safety point of view, than the national standards, as applicable. All parts of electrical installations shall be so constructed, installed and maintained so as to prevent electrical fires, explosion and shock;
g-ii	Earthing of metal work of electrical equipment, other than the parts which carry current, shall be provided and will conform to Electricity Act and IS: 3042 — 1966 (code of practice for earthing);
h	All parts of electrical installation shall be adequate size and characteristics for the work they may be called upon to do and in particular they shall:
h-i	Be of adequate mechanical strength to withstand working conditions in construction operations; and
h-ii	Be not liable to damage by water, dust or electrical, thermal or chemical action to which they are subjected to in construction operations;
i	All parts of electrical installations shall be so constructed, installed and maintained as to prevent the danger of electric shock; fire and external explosion;
j	It shall be made impossible for circuit breakers to be opened or closed inadvertently, by gravity or by mechanical impact;
k	Before operation of OCBs, oil level must be checked and the event of short, extra quantity must be filled;
l	Use of rubber gloves and rubber gum boots of tested quality where electric shock is likely to occur shall be provided, but these shall not be considered as providing adequate protection against the risk of electric shock in lieu of inbuilt safety arrangement in the system;
m	First aid boxes, instruction for restoration of persons affected by electric shock shall be made;

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n	Arrangement shall be made for sufficient number of CO ₂ /chemical powder type fire extinguishers/sand buckets etc.;
o	No electrical circuits shall ever be overloaded to the dangerous extent or beyond the rated capacity;
p	In confined areas, only 24 volt supply shall be used for every equipment, including hand-held portable tools and hand lamps;
q	All electrical appliances and outlets shall be clearly marked to indicate their purpose and voltage.
4.2	FUSES
a	Fuses shall bear markings indicating their rated current, whether they are of the fast or slow-breaking type and, as far as practicable, and their rated breaking capacity. Fuses as per need and of correct rating shall be used in the circuit;
b	Effective measures shall be taken to ensure that persons removing or inserting fuses will not be endangered, in particular by any adjacent live parts;
c	In case of blow of fuses only after finding out and correcting of the fault, new fuses shall be provided in the circuit.
4.3	SWITCHES
a	All switches shall be of enclosed type and so installed and earthed as to prevent danger in their operation;
b	Use of switches, which may connect or disconnect circuit through gravity, shall not be used.
4.4	MOTORS
a	All motors shall be equipped with a switch;
b	When a motor can be cut off from more than one place, where practicable, a stopping device shall be installed in the immediate vicinity of the motor;
c	Motors shall be so installed as to ensure that they can be adequately cooled;
d	Motors shall be effectively protected against over current;
e	Whenever the motors installed are in the open area where there is the possibility of fall of liquid corrosives or otherwise, it shall be suitably protected with covering;
f	Earthling shall be connected to all motors, generators etc. as prescribed in the Indian Electricity Rules, amended from time to time.
4.5	CONNECTIONS
a	At points where conductors are joined, branched or led into apparatus, they shall be:
a-i	Mechanically protected, and
a-ii	Properly maintained;
b	Conductors shall be joined, branched or led into an apparatus through junction boxes, bushings, glands or equivalent connecting devices;
c	Junction boxes or plug-out-socket couplings shall be used for joining cables wherever practicable;
d	When parts of conductors are joined together, or conductors are joined to one another or to an apparatus, the attachment shall be made by screwing, clamping, soldering, riveting, brazing, crimping, or equivalent means. Loose connections shall not be provided in any case;

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e	Cable joints, junction boxes and connectors shall be protected as far as practicable, against traffic, fall of ground, water and other sources of damage;
f	Whenever armored cables are joined, the junction boxes shall be bridged by a suitably conductive bond between the armoring of the cables.
4.6	TRANSPORTABLE AND PORTABLE ELECTRICAL EQUIPMENT:
a	The supply of electricity to portable apparatus shall not exceed 250v;
b	Hand-held and portable machines shall be equipped with a built-in switch to switch off power in case of emergency;
c	Hand-held electrically operated tools shall be provided with built-in switch to disconnect the circuit when the tool is not being used;
d	Portable electrical tools, unless flameproof, shall not be used in flammable or explosive atmosphere;
e	Only three-core cable shall be used for single-phase operated tools with the third core connected to earth
4.7	HAND LAMPS
a	Hand lamps shall be equipped with strong cover of glass or other transparent material;
b	Portable lamp holders shall have:
b-i	All current –carrying parts enclosed;
b-ii	Insulated handle; and
b-iii	They shall operate at 24 v;
4.8	INSPECTION, MAINTENANCE
a	All electrical equipment shall be inspected before it is taken into use to ensure that it is suitable for its purpose of use;
b	At the beginning of every shift every person using electrical equipment shall make a careful external examination of the equipment and conductors for which he is responsible, especially flexible cables;
c	Periodic inspections, testing, maintenance of all electrical equipment is to be made and record of test of transformer oil and pit earthing shall be maintained;
d	Electrical conductors and equipment shall be repaired by the electrician only as far as practicable, no work shall be done live conductors or equipment;
e	Before any work is begun on conductors or equipment that does not have to remain live;
e-i	The current shall be switched off;
e-ii	Adequate precautions shall be taken to prevent the current from being switched on again;
e-iii	The conductors or the equipment shall be tested to ascertain that they are dead;
e-iv	The conductor and equipment shall be earthed and short-circuited; and
e-v	Neighboring live parts shall be adequately protected against accidental contact;
f	After work on conductors and equipment, the current shall only be switched on again on the orders of a competent person;

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g	Electricians shall be provided with adequate tools, and person protective equipment, such as rubber gloves, mats etc.;
h	All conductors and equipment shall be considered to live unless there is certain proof to the contrary.
4.9	WORK IN THE VICINITY OF ELECTRICAL INSTALLATION
a	When work is to be done in the neighborhood of electrical conductors or installations, the contractor shall ascertain the voltage carried and the works shall not be allowed to reach to unsafe distance from them;
b	When any excavation is to be made or any bore-holed sunk, the contractor shall ascertain whether there are any underground conductors, in or in dangerous proximity to, the zone of operations;
c	No work shall be done in dangerous proximity to a conductor or an installation until it has been made dead;
d	Before work begins, work permit shall be obtained from the Engineer in-charge if live electricity lines/circuit are passing in close vicinity;
e	Before the current is restored, the contractor shall ensure that no work remain on the work site;
f	If conductor or an installation in the neighborhood of which work is to be done cannot be made dead, special precautions shall be taken and special instructions given to the workers so as to prevent danger by adequately enclosing or fencing;
g	If mobile equipment has to be employed in the neighborhood of conductors or installations that cannot be made dead, its movement shall be so controlled as to keep it as a safe distance from them.
h	Electrical Installations :- The Contractor shall not interfere or disturb electric fuses, wiring and other electrical equipment belonging to the Employer or other contractors under any circumstances, whatsoever, unless expressly permitted in writing by the authorized representative of CSPGCL at site to handle such fuses, wiring or electrical equipment.
i	Satisfy the authorized representative of BHEL/ CSPGCL at site that the appliance is in good working condition;
ii	Inform the authorized representative of BHEL/CSPGCL at site of the maximum current rating, voltage and phases of the appliances;
iii	Obtain permission of the authorized representative of BHEL/ CSPGCL at site detailing the sockets to which the appliances may be connected. The authorized representative of BHEL/ CSPGCL at site will not grant permission to connect until he is satisfied that: The appliance is in good condition and is fitted with suitable plug; having earth connection with the body. Wherever armored / metallic sheathed multi core cable is used, the same armored / sheathed should be connected to earth.
iv	No repair work shall be carried out on any live equipment. The authorized representative of BHEL/ CSPGCL at site must declare the equipment safe and a permit to work shall be issued by the Employer / contractor as the case may be to carry out any repair / maintenance work. While working on electric lines / equipment's whether live or dead, suitable type and sufficient quantity of tools will have to be provided by the contractor to electricians / workmen /Officers.
v	The contractor shall employ necessary number of qualified, full time Electricians / Electrical Supervisors to maintain his temporary electrical installation. The installations are provided with suitable ELCBs and RCCBs wherever required.

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5.0	SAFETY IN THE USE OF HAND TOOLS AND POWER-OPERATED TOOLS
5.1	GENERAL PROVISIONS
a	All hand and power tools and similar equipment, shall be maintained in safe condition.
b	When power operated tools are designed to accommodate guards, they shall be equipped with such guards, when in use;
c	Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains and other reciprocating, rotating or moving parts of the equipment shall be similarly guarded;
d	Personnel using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, mists, vapours, or gases shall be provided with the particular personal protective equipment necessary to protect them from the hazards;
e	All hand-held powered platen sanders, grinders, grinders with wheels of 5 cm or less, routers, planers, laminate trimmers, nibblers, shears, scroll saws and jigsaws with blade shanks of 0.5 cm wide or less shall be equipped with only a positive on-off control.
f	All hand-held powered drills, tappers, fastener drivers, horizontal, vertical or angle grinders with wheels greater than 5 cm in diameter, disc sanders, belt sanders, reciprocating saws, saber saws and other operating powered tools shall be equipped with a momentary contact on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.
5.2	HAND TOOLS
a	The contractor shall not issue or permit the use of unsafe hand tools;
b	Wrenches including adjustable pipe end and socket wrenches shall not be used when saws are sprung to the point that slippage occurs;
c	Impact tools such as drift pins, wedges and chisels shall be kept free of mushroomed heads;
d	The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight on the tools.
5.3	POWER OPERATED TOOLS
a	Electric power operated tools shall be either of the approved double-insulated type or shall be grounded;
b	The use of electric cords for hoisting or lowering loads shall not be permitted;
c	Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected;
d	Safety clips or retainers shall be securely installed or maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled;
e	All pneumatically riveting machine staplers and other similar equipment provided with automatic fastener feed, which operate at more than 7 kg/cm ² pressure at the tool a safety device on the muzzle to prevent the tool from ejecting the fasteners unless the muzzle is in contact with the work surface;
f	Compressed air shall not be used for cleaning purposes except when the pressure is reduced to less than 2 kg/cm ² and that too with effective chip guarding. The 2 kg/cm ² pressure requirement does not apply to concrete form, mill scale and similar cleaning purposes;

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g	The manufacturer's safe operating for hoses, pipes, valves, filters and other fittings shall not be exceeded;
h	Only personnel who has been trained in the operation of the particular tool shall be allowed to operate power-actuated tools;
i	The tool shall be tested each day before loading to see that the safety devices are in proper working condition. The method of testing shall be accordance with the manufacturer's recommended procedure;
j	Any tool found not in proper working order, or that which develops a defect during use, shall be immediately removed from service and not used until properly repaired;
k	Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any other person. Hands shall be kept clear of the open barrel end;
l	Loaded tools shall not be left unattended;
m	Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tiles, surface hardened steel, glass block, live rock, face brick or hollow tiles;
n	Driving into materials that can be easily penetrated shall be avoided unless backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying missile hazard on the other side;
o	No fastener shall be driven into a palled area caused by an unsatisfactory fastening;
p	Only non-sparking tools shall be used in an explosive or flammable atmosphere;
q	All tools shall be used with the correct shield, guard or attachment as recommended by the manufacturer.
5.4	ABRASIVE WHEELS AND TOOLS
a	All grinding machines shall be supplied with sufficient power to maintain the spindle speed at safe levels under all conditions of normal operation;
b	Grinding machines shall be equipped with suitable safety guards;
c	The maximum angular exposure of the grinding wheel periphery and sides shall not be more than 900, except that when the work requires contact with the wheel below the horizontal plane of the spindle, the angular exposure shall not exceed 1200. In either case, the exposure shall begin not more than 650 above the horizontal plane of the spindle. Safety guards shall be strong enough to withstand the bursting of the wheel;
d	Floor and bench-mounted grinders shall be work-rests, which shall be rigidly supported and readily adjustable. Such work-rests shall be kept at a distance not to exceed 5 mm from the surface of the wheel;
e	Cup type wheels used for external grinding shall be protected by either revolving cup guard or a band type guard;
f	When safety guards are required, they shall be mounted as to maintain proper alignment with the wheel and the guard and the guard and its fastening shall be adequate strength to retain the fragments of the wheel in case of accidental breakage. The maximum angular exposure of the grinding wheel periphery and sides shall not exceed 1800;
g	Portable abrasive wheel used for internal grinding shall be provided with suitable safety flanges;

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h	When safety flanges are required, they shall be used only with wheels designed to fit the flanges. Only safety flanges, of a type and design and properly assembled so as to ensure that the pieces of the wheel will be retained in case of accidental breakage, shall be used;
i	All abrasive wheels shall be closely inspected and ring tested before mounting to ensure that they are free from cracks or defects;
j	Grinding wheels shall fit freely on the spindle and shall not be forced on. The spindle nut shall be tightened only enough to hold the wheel in place;
k	All employees using abrasive wheels shall be protected by suitable eye protection equipment.
5.5	WOODWORKING TOOLS
a	All fixed power driven woodworking tools shall be provided with a disconnect switch that can either be locked or tagged in the off-position;
b	The operating speed shall be attached or otherwise permanently marked on all circular saws over 0.5 m in diameter or operating at over 3000 peripheral rpm. Any saw so marked shall not be operated at a speed other than that marked on the blade. When a marked saw is re tensioned for a different speed, the marking shall be corrected to show the new speed;
c	Automatic feeding devices shall be installed on machines wherever the nature of the work will permit. Feeder attachments shall have the feed rolls or other moving parts covered or guarded so as to protect the operator from hazardous points;
d	All portable power driven circular saws shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to the covering position.

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6.0	SAFETY IN THE USE OF LADDERS AND STAIRS
6.1	GENERAL ASPECTS OF SAFETY RELATED TO USE OF LADDERS
a	Every ladder or step-ladder used in building or other construction work shall be of good construction, made of sound material and of adequate strength for the purpose for which such ladder or step-ladder is used;
b	When a ladder is used as a means of communication, such ladder shall be lashed to a fixed structure so that while working on such ladder it does not slip;
c	A ladder or step ladder shall not stand on loose bricks or other loose packing and have a level and firm footing;
d	No ladder shall be used which has a missing or defective rungs or rungs, which depend for support solely on nails, spikes or other similar fixing.
6.2	MATERIALS FOR LADDERS
a	Shall be constructed with upright of adequate strength and are made of straight-grained wood, free from defects and having the grain of such wood running length wise;
b	Shall have rungs made of straight-grained wood free for defects and mortised or securely notched into the upright, reinforcing metal ties, if wedges shall not secure the tenors of such ladders;
c	Where it is required, in case of use of fixed ladders, sufficient foot-hold and hand-hold shall be provided for use by the building worker;
d	Every ladder shall be -
d-i	Secured so as to prevent undue swaying;
d-ii	Equally and properly supported on each of its upright;
d-iii	So used as not to cause undue sagging; and
d-iv	Placed as nearly as possible at an inclination of four in one;
e	The use of all ladders and stepladders shall conform to the approved standards;
f	Wooden ladders shall be constructed with uprights of adequate strength as well as rungs made of wood free from visible defects and having the grains of the wood in the ladders running lengthwise and rungs mortised or rebuted into the uprights;
g	Uprights and rungs of metal ladders shall have a cross-section adequate to prevent dangerous deflection, shall be equal and not less than 25 cm or more than 35 cm;
h	Rungs of metal ladders shall be kept clean so as to prevent them from becoming slippery;
i	Portable ladders shall not exceed 9 m in length;
j	Every ladder or run of ladders rising to a height exceeding 9 m shall be provided with an intermediate landing, providing further that the intervals between landings shall not exceed 9 m. The landings shall be of suitable size and protected by railings;
k	Defective ladders that cannot be satisfactorily repaired shall be tagged Not Fit For Use and destroyed;
l	Wooden ladders shall not be painted, but oiled or covered with clean varnish or other transparent preservatives;

m	Metal ladders shall be protected against corrosion by being coated with rust-proof paint or by other means unless they are made of non-corrosive metals;
n	Every ladder shall rise at least 1 m above the highest point to be reached and have one of the uprights continued to that height to serve as a hand-rail at the top;
o	Ladders shall not stand on loose bricks or other loose packing but have a level and firm footingso that they are equally supported on each upright;
p	Every ladder shall be securely fixed so that it cannot move from its top and bottom points of rest and if it cannot be secured at the top, it shall be securely fastened at the base and if fastening at the top is also impracticable, it shall have a man stationed at the foot holding the end to prevent it from slipping;
q	Where a run of two or more ladders connects different floors, the ladders shall be staggered and a protective landing with the smallest practicable opening shall be provided at each floor;
r	A ladder having only one upright or a missing or dangerously defective rung shall not be used;
s	When a ladder is placed in position, the distance between the foot of a ladder and the base of the structure against which it rests shall be about one-quarter of its length;
t	Workers using ladders shall leave at least one hand free for climbing up and down, face the ladder, avoid wearing slippery footwear and avoid carrying heavy or bulky loads;
u	A ladder shall not be placed in front of a door that opens towards it unless the door is fastened or locked or guarded;
v	A ladder shall not be placed against a window frame unless the ladder is fitted with a board at the top so that the applied load is safely distributed over the frame;
w	Metal ladders shall not be used in the vicinity of live electrical equipment;
x	Adequate means shall be provided to prevent displacement of the ladder set up in public thoroughfare or where persons, vehicles etc. may accidentally collide with it.
6.3	PORTABLE STEPLADDERS
a	The length of portable stepladders shall not exceed 6 m and their back legs shall be adequately braced;
b	Stepladders exceeding 1.5 m in length shall have two or more cross-ties;
c	The spread between the front and back legs shall be restricted by means of hinged metal flat bars or high-grade fiber or other effective means;
d	When in the open position, treads of stepladders shall be horizontal.
6.4	PORTABLE TRESTLE LADDERS
a	The height of the trestle ladders shall not exceed 5.5 m;
b	The spread between the front and back legs shall be restricted by means of hinged metal flat bars or high-grade fiber or other effective means;
c	The front and back legs shall be joined at the top by bolted steel hinges of adequate dimensions or other effective means;
d	Both legs of trestle ladders shall be equipped with sufficient number of steel crossties.

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6.5	EXTENSION LADDERS
a	The length of extension ladders shall not exceed 15 m;
b	Extension ladders shall be equipped with an effective lock and guide brackets by which the ladder can be extended, retracted or locked in any position;
c	The rungs of overlapping sections shall coincide so as to form double treads and shall be equipped with one or more extension ropes;
d	Extension ropes shall be securely anchored and run over suitable pulleys.
6.6	MECHANICAL LADDERS
a	Mechanical ladder is that ladder, which is a mechanically extendable ladder, mounted on a wheeled frame;
b	Mechanical ladder shall be equipped with guard-rails and toe-boards and a cage of heavy-gauge steel mesh;
c	If mechanical ladder has no railed platform or cage, workers using it shall be secured by suitable safety belt;
d	Mechanical ladders shall not be moved, while a person is on them, unless they have specially designed to ensure that perfect stability is maintained during movement.
6.7	FIXED LADDERS
a	Uprights of fixed ladders shall be at least 40 cm and shall be set an angle of 150 to the vertical;
b	Clearance at the back of the rungs shall be at least 15 cm and no obstruction within 75 cm of the face of the ladder;
c	There shall be at least 7.5 cm clearance between the ladder and the nearest fixed object;
d	When it is necessary for a ladder to pass closely through a hole in a platform or a floor, the edges of the hole shall be padded so as to prevent injury to the users;
e	The length of the runs of fixed ladder shall not exceed 9 m;
f	Landing platform shall be provided for each 9 m or fraction thereof;
g	As far as practicable, runs shall be staggered;
h	Runs from which a person could fall from more than 6 m shall be enclosed in a cage of heavy-gauge mesh or hoops;
i	Fixed ladders shall be firmly bolted or welded in position.
6.8	STAIRS
a	Stairs shall be of adequate strength to withstand safely the loads that they will have to carry;
b	Stairs used for the purpose of construction work shall have a clear width of at least 60 cm;
c	Stairs made of perforated material shall not have openings exceeding 1.2 cm in width;
d	No step of a stairway shall depend for its support solely on nails, spikes, screws or other similar fixing;
e	No stairway with missing or dangerously defective steps shall be used;
f	Every stairway that is at an angle of less than 300 from the vertical shall be provided with a secure handhold at the top landing place, either by extending one upright for at least 1 m or by other effective means;

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g	Movable and removable stairs shall be adequately secured in the position of use;
h	In all building structures permanent stairs shall be constructed as soon as practicable;
i	When work on a building has progressed to a height of more than 18 m above the ground and it has not been practical to construct the permanent stairs, sufficient number of stairs shall be provided to ensure safe access to the working levels.

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7.0	SAFETY IN THE USE OF LIFTING APPLIANCES & GEARS
7.1	CONSTRUCTION AND MAINTENANCE OF LIFTING APPLIANCES:
	All lifting appliances, including their parts and working gear, whether fixed or movable, and any plant or gear used in anchoring or fixing of such appliances -
a	Shall be of sound construction, sound material, and of adequate strength to serve the purpose for which these are to be used and all such appliances shall be free from patent defects, and
b	Maintained in good repair and working condition;
c	Every drum or pulley around which the rope of any lifting appliance is carried, shall be of adequate diameter and sound construction in relation to such rope;
c-i	Any rope that terminates at the winding drum of lifting appliance shall be securely attached to such drum and at least three dead turns of such rope remain on such drum in every operating position of such lifting appliance;
c-ii	The flange of a drum projects twice the rope diameter beyond the last layer of such rope and if such rope and if such projection is not available, other measures like anti-slackness guards shall be provided to prevent such rope from coming off such drum;
d	Every lifting appliance shall be provided with adequate and efficient brakes which shall be:
d-i	Capable of preventing fall of suspended load (including any test load),
d-ii	Effectively controlling such load while it is being lowered, acting without shock and shall be attached with shoes that can be easily removed for running and which shall be simple and have easily accessible means of adjustment;
e	Provided that nothing contained above shall apply to steam-winch that can be operated as safely as with brakes.
7.2	CONTROLS OF EVERY LIFTING APPLIANCE SHALL BE SO;
a	Situated that the driver of such appliance at his stand or seat has ample room for operating and has an unrestricted view of building or other construction work, as far as practicable, and that he remains clear of the load and the ropes, and that no load passes over him;
b	Positioned with due regard to ergonomic considerations for proper operation of such appliance;
c	Located that the driver of such appliance remains above the appliance and shall have upon them or adjacent to them clear markings to indicate their purpose and mode of operations;
d	Provided, where necessary, with a suitable locking device to prevent accidental movement or displacement and shall move, as far as practicable, in the direction of the resultant load movement;
e	Wherever automatic brakes are provided, they shall automatically come to the neutral position in case of power failure.
7.3	TEST AND PERIODICAL EXAMINATION
7.3.1	Test: all lifting appliances including all parts and gears thereof, whether fixed or movable, shall be tested and examined by a competent person before being taken into use for the first time or after It has undergone any alteration or repairs liable to affect its strength or stability or after erection on a site and also once at least in every five years, in the manner as specified;
7.3.2	Examination: all lifting appliances shall be thoroughly examined by a competent person at least in every twelve months and where the competent person making such examination forms

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	the opinion that the lifting appliance cannot continue to function safely, he shall forthwith give notice in writing of his opinion to the contractor.
7.4	AUTOMATIC LOAD INDICATOR
a	Cut-out shall be provided which automatically arrests the movement of the lifting parts of every crane if the load exceeds the safe working load, wherever possible;
b	Wherever the above provisions cannot be applied and if it is not possible to install an automatic safe load indicator, in that case, provision of a table showing the safe working loads at the corresponding inclinations or radii of the jib on the crane shall be considered sufficient.
7.5	INSTALLATION:
a	Fixed lifting appliances shall be installed by a competent person in a manner that Such appliances cannot be displaced by the load, vibration or other influences;
b	The operator of such appliance is not exposed to danger from loads, ropes or drums;
c	The operator can either see over the zone of operation or communicate with all loading and unloading points by signal, or other communication system;
d	Adequate clearance is provided between parts or loads of lifting appliances and between the fixed objects such as walls and posts, or electrical conductors;
e	The lifting appliances; when exposed to wind loading, are given sufficient additional strength, stability and rigidity to withstand such loading safely;
f	No structural alterations or repairs are made on any part of the lifting appliances that affect the safety of such appliances without obtaining the opinion of the competent person to this effect.
7.6	WINCHES
a	Winches shall not be used if their control levers operate with excessive friction or play;
b	Double gear winches shall not be used unless a positive means of locking the gearshift is provided;
c	There shall be no load other than the fall and the hook assembly on the winch while changing gears on a two-gear winch;
d	Adequate protection shall be provided to the winch operator against abnormal weather;
e	Temporary seats or shelters for winch operators that may pose hazard to the winch operator or any other building workers shall not be allowed to be used;
f	Control levers shall be secured in the neutral position and, whenever possible, the power shall shut off if the winch is left unattended.
7.7	IN USE OF EVERY STEAM-WINCH
a	Measures shall be taken to prevent escaping steam from obscuring any part of the construction site or other workplace or from otherwise hindering or injuring any building worker;
b	Extension control levers which tend to fall off their own weight shall be counter-balanced;
c	Winch operators shall not be permitted to use the which control extension levers except for short handles on wheel type controls and that such levers shall be of adequate strength, secure and fastened with metal connections at the fulcrum and at the permanent control lever;
d	In use of every electric winch, no building worker shall be permitted to transfer, alter or adjust electric control circuits in case of any defect in such winch;

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7.8	ELECTRIC WINCHES SHALL NOT BE USED FOR BUILDING WORK WHERE
a	The electromagnetic brake is unable to hold the load; or
b	One or more control points either hoisting or lowering are not operating properly.
7.9	BUCKETS:
a	It shall be ensured that tip-up buckets are equipped with a device that effectively prevents accidental tipping.
7.10	IDENTIFICATION AND MARKING OF SAFE WORKING LOAD:
a	Every lifting appliance and loose gear shall be clearly marked for its safe working load and identification by stamping or other suitable means;
b	Every derrick (other than derrick crane) shall be clearly marked for its safe working load when such derrick is used either in single purchase with lower block or in union purchases in all possible block positions;
c	The lowest angle to the horizontal, to which the derrick may be used, shall be legibly marked;
d	Every lifting appliance having more than one working load shall be fitted with effective means to enable the operator to determine safe working load at each point under all conditions of use;
e	Means to ascertain the safe working load for lifting gears under such conditions in which such gears may be used shall be provided to enable a worker using such gears and such means safely, which shall comprise:
e-i	Marking of the safe working load in plain figures or letters upon the sling or upon a tablet or ring of durable material attached securely thereto in case of chain slings; and
e-ii	The means specified or notices so exhibited as can be easily read by any concerned building worker stating the safe working load for the various sizes of the wire rope slings used.
7.11	LOADING OF LIFTING APPLIANCES AND LIFTING GEARS
a	No lifting appliance, lifting gear or wire rope shall be used in an unsafe way and in such a manner as to involve risk to life of building workers and they are not loaded beyond their safe working load except for testing purposes under the direction of a competent person in the manner as specified in schedule;
b	No lifting appliance and lifting gear, or any other material-handling appliance shall be used if the Inspector having jurisdiction under the Building and Other construction (regulation of employment and conditions of service) Act/Rules is not satisfied with reference to a certificate of test or examination or to an authenticated record maintained as provided under the Rules or if in his view the lifting appliance, lifting gear or any other material handling appliance is not safe for use in building or other construction work;
c	No pulley block shall be used unless the safe working load and its identification are clearly marked on such block.
7.12	OPERATOR'S CAB OR CABIN SHALL
a	Be made of fire resistant material;
b	Have a suitable seat, a foot rest and protection from vibration;
c	Afford the operator an adequate view of the area of operation;
d	Afford the necessary access to working parts in the cab;

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e	Afford the operator adequate protection against the weather;
f	Be adequately ventilated; and
g	Be provided with a suitable fire extinguisher.
7.13	OPERATION OF LIFTING APPLIANCES:
	Operator of every crane or lifting appliance shall possess adequate skill and training in the operation of the particular lifting appliances, provided further that
a	No person under eighteen years of age shall be in control of any lifting machine, scaffold winch, or give signals to the operator;
b	Precaution shall be taken by the trained operator to prevent lifting appliance from being set in motion inadvertently;
c	The operation of lifting appliances shall be governed by signals in conformity with the approved standards;
d	The operator's attention shall not be distracted while he is working;
e	No crane, hoist, winch or other lifting appliance or any part of such crane, hoist, winch or other lifting appliance shall, except for testing purposes, be loaded beyond the safe working load;
f	During the hoisting operation, effective precaution shall be taken to prevent any person from standing or passing under the load in such operation;
g	Operator shall not leave lifting appliance unattended while power is on or the load is suspended to such appliance;
h	No person shall ride on a suspended load of any lifting appliance;
i	Every part of a load in course of being hoisted or lowered shall be adequately suspended and supported to prevent danger;
j	Every receptacle used for hoisting bricks, tiles, slates or other material shall be suitably enclosed as to prevent the fall of any such material;
k	The hoisting platform shall be enclosed when loose material or loaded wheel barrows are placed directly on such platform or lowering such materials or wheel barrows;
l	No material shall be raised, lowered or slewed with any lifting appliance in such a way as to cause sudden jerks to such appliance;
m	In hoisting a barrow, any wheel of such barrow shall not use be as a means of support unless adequate steps have been taken to prevent the axle of such wheel from slipping out of its bearing;
n	Long objects like planks or girders shall be provided with tag line to prevent any possibility of danger while raising or lowering such objects;
o	During the process of landing or material, a building worker shall not be permitted to lean out into empty space for finding out the loading and unloading of such material;
p	When hoisting of load is done in an enclosed space, neither the lifting material nor the boom shall project outside the enclosed space;
q	Adequate steps shall be taken to prevent a load, in the course of being hoisted or lowered from coming into contact with any object to avoid any displacement of such load and appropriate appliances provided and used for guiding heavy loads when raising or lowering heavy loads to avoid crushing of hands of building workers during such raising or lowering of loads.

7.14	HOISTS
a	Hoist towers shall be designed according to the relevant national standards;
b	Hoist shafts shall be provided with rigid panels or other adequate fencing at the ground level on all sides of such shafts and at all other levels on all sides of the access to such shafts while the walls of hoist shafts, except at approaches, extend at least two meters above the floor or platform of access to such shafts;
c	Approaches to hoist shall be adequately lit and provided with gates that shall be guarded to maintain visibility at least of two meters height; and equipped with a device, which requires such gate to be closed before the platform of such hoist can leave the landing, and prevents the gate from being opened unless such platform is at the landing;
d	The guides of hoist platforms shall offer sufficient resistance to bending and to bucking in the case of jamming, by providing a safety catch;
e	Overhead beams and their supports are capable of holding the total maximum live and dead loads that such beams and supports will be required to carry, with a safety factor of at least five;
f	A clear space shall be provided –
f-i	Above the highest stopping place of a cage or platform to allow sufficient unobstructed travel of such cage or platform in case of over-winding and
f-ii	Below the lowest stopping place of such cage or platform;
g	Adequate covering shall be provided above the top of hoist shafts to prevent materials from falling into such shafts;
h	Outdoor hoist towers shall be erected on adequately firm foundations and securely braced, guyed and anchored;
i	A ladder way shall extend from the bottom to the top of every outdoor hoist tower in case no other ladder way exists within easy reach and such ladder way shall comply with the relevant national standards;
j	The rated capacity of a hoisting engine shall at least be one and a half times the maximum load that such engine will be required to move;
k	All gearing on a hoisting engine shall be securely enclosed;
l	Steam piping of hoisting engine shall be adequately protected against accidental contact of such piping with a building worker;
m	Electrical equipment of a hoisting engine shall be effectively earthed;
n	A hoist shall be provided with suitable devices to stop a hoisting engine as soon as the platform of such hoist reaches its highest stopping place;
o	A hoisting engine shall be protected by suitable cover against weather and falling objects;
p	A hoisting engine set up in a public thoroughfare shall be completely enclosed;
q	All exhaust steam pipes shall discharge steam in such a manner that the steam so discharged does not scald any person or obstruct the operator's view;
r	The motion of a hoist shall not be reversed without first bringing it to rest to avoid any harm from such reverse motion;

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s	A hoist not designed for the conveyance of persons shall not be set in motion from the platform of such hoist;
t	Pawls and ratchet wheels of a hoist, requiring disengagement of such pawls from such ratchet wheels, before the platform of such hoist is lowered, shall not be used;
u	A platform of a hoist shall be capable of supporting such maximum load that such platform may carry with a safety factor of at least three;
v	A platform of a hoist shall be equipped with suitable safety gear which can hold such platform with its maximum load in case its hoisting rope breaks;
w	On platform of a hoist, the wheel barrows or truck shall be efficiently blocked in safe positions;
x	A cage of a hoist or platform where the building workers are required to enter into such cage or to go on such platform at landing levels, shall be provided with a locking arrangement to prevent such cage or platform from moving during the time a worker enters or leaves such cage or platform;
y	The sides of platform of a hoist which are not used for loading or unloading, shall be provided with toe-board and enclosures of a wire mesh or any other suitable means to prevent the fall of any part of a load from such platform, further provided that
y-i	The platform of a hoist, which has any probability of falling of any part of a load from it, shall be provided with an adequate covering to prevent such fall;
y-ii	The counter weights of a hoist consisting of an assemblage of several parts shall be so constructed that such parts shall be rigidly connected together;
y-iii	The counter weights of a hoist shall run between guides;
y-iv	At every level of work the building workers shall be provided with adequate platforms for performing such work;
y-v	A legible notice in Hindi as well as in a local language shall be displayed in a conspicuous place of the platform of a hoist and that such notice shall state the maximum carrying capacity of such hoist in kilograms on the hoisting engine;
y-vi	On a hoist authorized and certified for the conveyance of the persons on the platform or in the cage and such notice shall state the maximum number of persons to be carried on such hoist at one time;
y-vii	On a hoist carrying goods and other materials such notice shall state that such hoist is not meant for carriage of persons.
7.15	FENCING AND MEANS OF ACCESS TO LIFTING APPLIANCES
a	Safe means of access shall be provided to every part of lifting appliances;
b	The operator's platform on every crane or tip driven by mechanical power shall be securely fenced and provided with safe means of access and where access to such platform is by a ladder, the sides of such ladder shall extend to a height reasonable beyond such platform or some other suitable handhold shall be provided in the platform;
c	The handling place on such platform shall be maintained free from obstruction and slipping; and
d	In case the height of such ladder exceeds six meters, the resting platforms shall be provided on such ladder at every six meters of its height and where the distance between last platform so provided and the top end of such ladder is more than two meters then on such top end.

7.16	RIGGING OF DERRICKS:
	Every derrick shall have current and relevant rigging plans and any other information necessary for the safe rigging of such derrick and its gear.
7.17	SECURING OF DERRICK FOOT:
	Appropriate measures shall be taken to prevent the foot of a derrick from being lifted out of its socket or supports.
7.18	CONSTRUCTION AND MAINTENANCE OF LIFTING GEAR
a	Every lifting gear shall be –
a-i	of good design and construction, sound material and adequate strength to perform the work for which it is used;
a-ii	free from patent defects; and
a-iii	properly maintained in good repair and working order;
b	Components of the loose gear, at the time of its use, shall be renewed if one of its dimensions at any point has decreased by ten per cent or more;
c	A chain shall be withdrawn from use when it is stretched and increased in length which exceeds five per cent of its length or when a link of such chain is deformed or is otherwise damaged or defects in the welds have appeared on it;
d	Rings, hooks, swivels and end links attached to a chain shall be of the same materials as that of such chain;
e	The voltage of electric supply to any magnetic lifting device shall not fluctuate by more than plus or minus 10%.
7.19	TEST AND PERIODICAL EXAMINATION OF LIFTING GEARS
a	A lifting gear shall be initially tested for the manufacturer by a competent person in a manner specified as per schedule annexed before taking into use or after undergoing any substantive alterations which renders it's any part liable to affect its safety and such gear after such test shall subsequently be retested for the use of its owner at least once in every five years;
b	A lifting gear in use shall thoroughly examined once at least in every twelve months by a competent person;
c	A chain in use shall be thoroughly examined at least once every month by a responsible person for its use;
d	Certificates of initial and periodical test and examinations of loose gears shall be obtained in the form annexed.
7.20	ROPES
a	No rope shall be used for building or other construction work unless -
a-i	It is of good quality and free from patent defects; and
a-ii	In the case of wire rope, it shall be tested and examined by a competent person in the manner annexed;
a-iii	Every wire rope of lifting appliance or lifting gear used for building or other construction work shall be inspected by a responsible person for such use, once at least in every three month;

b	Provided that after if any such wire is broken in such rope, the responsible person shall thereafter inspect it once at least in every month and ensure that;
c	No wire rope shall be used for building or other constructing work if in any length of eight diameters of such wires, the total number of visible broken wires exceed ten per cent of the total number of wires in such rope, or such rope shows signs of excessive wear, corrosion or other defects which in the opinion of the person who inspects it, is unfit for use;
d	Eye splices and loops of ropes for the attachment of hooks, rings and other such parts to wire rope shall be made with suitable thimble;
e	A thimble or loop splice made in any wire rope sling shall conform to the following standards, namely:
e-i	Wire rope sling shall have at least three tucks with full strand of rope and two tucks with one-half of the wires cut out of each of such strand in all cases, such strands shall be tucked against the lay of the rope;
e-ii	Protruding ends of such strands in any splice of wire rope slings shall be covered or treated so as to leave no sharp points;
e-iii	A fiber rope or a rope sling shall have at least four tucks, tail of such tuck being whipped in a suitable manner; and
e-iv	A synthetic fiber rope or rope sling shall have at least four tucks with full strands followed by further tuck with one-half filaments cut out of each of such strand and final tuck with one-half of the remaining filaments cut out from such strands. Any portion of the splices containing such tucks, with reduced number of filaments, shall be securely covered with suitable tape or other materials;
e-v	Provided further that nothing contained above shall apply where any other form of splice, which may be shown to be as efficient as the splice with above standards, shall be used.
7.21	HEAT TREATMENT OF LIFTING GEARS
a	All chains other than bridle chains attached to derricks and all rings, hooks, shackles and swivels used in hoisting or lowering of such derricks shall be effectively annealed under supervision of a competent person and at the following intervals, namely:
a-i	Such chains, rings, hoods, shackles and swivels which are not more than twelve and a half millimeter of length annealed at least once in every six months; and
a-ii	All other such chains rings hooks shackles and swivels shall be so annealed at least once in every twelve months;
b	Provided that the sl.no. (a) above shall not apply to -
b-i	Pitched chains, working on sprocket or sprocket wheels;
b-ii	Rings, hooks and swivels permanently attached to pitched chains, pulley blocks or weighing machines, and
b-iii	Hooks and swivels having ball bearings or other case hardened parts;
c	A chain or a loose gear made of high tensile steel or alloy steel shall be plainly marked with a mark indicating that it is so made;
d	No chain or loose gear made of high tensile steel or alloy steel shall be subjected to any form of heat treatment except where such treatment is necessary for the purpose of repair of such chain or loose gear and that such repair shall be made under the direction of the competent person;

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e	That the wrought iron gear, the past history of which is not traceable, shall be suspected of being heat treated at incorrect temperature shall be normalized before using it on any building or other construction work.
7.22	CERTIFICATE TO BE ISSUED AFTER ACTUAL TESTING AND EXAMINATION ETC:
	A competent person shall issue a certificate after actual testing or examination of the apparatus specified and record of such test or examination shall be maintained for inspection.
7.23	REGISTER OF PERIODICAL TEST, EXAMINATION AND CERTIFICATION THEREOF
a	A register in the form annexed shall be maintained and particulars of such test and examination of lifting appliances, lifting gears and heat treatment as required shall be entered in such register;
b	Certificate in respect of each of the following shall be obtained from a competent person:
b-i	In cases of initial and periodical test and examination of the lifting appliances such as Winches, Derricks and their accessory gears, Cranes or Hoists and their accessory gears;
b-ii	In case of test, examination and re-examination of loose gears;
b-iii	In case of test and examination of wire ropes;
b-iv	In case of heat treatment and examination of loose gears;
b-v	In case of annual thorough examination of the loose gears, except where required particulars of such exemption have been enclosed in the register referred to in Form annexed and such certificates are attached to the register referred to as above and certificates kept at such construction site in case such register and certificate relate to lifting appliances, loose gear and wire ropes and
c	Produced on demand and retained for at least five years after the date of the last entry made in such register;
d	No lifting appliance or lifting gear in respect of which an entry is required to be made in register referred to above and certificate of test and examination are required to be attached in such register in the manner as specified, shall be used for building or other construction work unless the required entries have been made in such register and certificates.
7.24	VACUUM AND MAGNETIC LIFTING GEAR
a	No vacuum lifting gear, magnetic lifting gear or any other lifting gear where the load on it is held by adhesive power, shall be used while workers are performing operations beneath such gear;
b	A magnetic lifting gear used in connection with building or other construction work shall be provided with an alternative supply of power, such as batteries, which may come into operation immediately in the event of failure of the main power supply;
c	No building worker shall work within the swinging zone of the lifting gear or load or building or other construction material suspended to such lifting gear.
7.25	KNOTTING OF CHAINS AND WIRE ROPES:
	No chain or wire rope with a knot in it shall be used in building or other construction work.
7.26	CARRYING OF PERSONS BY MEANS OF LIFTING APPLIANCES ETC.
a	No building worker shall be raised, lowered or carried by a power driven lifting appliance, except
a-i	On the drive's platform in the cage of a crane; or

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a-ii	On as hoist; or
a-iii	On an approved suspended scaffold;
b	Provided that a building worker may be raised, lowered or carried by a power driven lifting appliance:
b-i	In circumstances where the use of a hoist or of a suspended scaffold shall not reasonably be practicable, or
b-ii	On an aerial cableway or aerial ropeway, provided further that the following requirements are met:
b-iii	That the appliance referred to above can be operated from one position only and that
b-iv	Any winch used in connection with the appliance shall also comply with the requirements as laid down above.
c	The appliance referred to above shall not carry any person except:
c-i	In a chair or cage,
c-ii	In a skip or other receptacle at least three feet deep which shall be suitable for safe carriage of a person and any such chair, cage, skip or other receptacle shall be made of good construction, sound material, and adequate strength and properly maintained with suitable means to prevent any occupant therein from falling out of it and shall be free from any material or tools which may interfere with the handhold or foothold of such occupant or otherwise endanger him; and
c-iii	Those suitable measures shall be taken to prevent the chair, cage skip or other receptacle from spinning or tipping in a manner dangerous to any occupant therein.
7.27	HOISTS CARRYING PERSONS
a	No building worker shall be carried with the help of a hoist unless it is provided with a cage which:
a-i	Is 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; and
a-ii	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;
b	Every gate in the hoist way enclosure of such hoist used for carrying persons shall be fitted with efficient interlocking or other devices to secure so that such gate cannot be opened except when the cage of such gate is at the landing place and that such cage cannot be moved away from the landing place until such gate is closed;
c	In every hoist used for carrying building workers there are provided with 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.

7.28	ATTACHMENT OF LOADS
a	When a sling is used to hoist long materials, a lifting beam shall be used to space the sling legs for proper balance and when a load is suspended at two or more points with slings, the eyes of the lifting legs of such slings shall be shackled together and such shackled or eyes of the shackled slings shall be placed on the hook or the eyes of such lifting legs shall be shackled directly to the hoisting block, ball or balance beam, as the case may be;
b	Every container or receptacle used for raising or lowering stone, bricks tiles, slates or other similar objects shall be so enclosed with the hoist as to prevent the fall of such objects;
c	A loaded wheel barrows placed directly on a platform of a hoist for raising or lowering of such wheel barrows shall be so secured that such wheel barrows cannot move and such platform shall be enclosed to prevent the fall of the contents kept in such wheel barrows;
d	Landings of hoists shall be so designed and arranged that building workers on such hoist be not required to lean out into empty space for loading and unloading on any material from such hoist
7.29	TOWER CRANES
a	No person other than the operator trained and capable to work at heights shall be employed to operate tower cranes;
b	The ground on which a tower crane stands shall have adequate bearing capacity;
c	Bases for tower cranes and trucks for rail mounted tower cranes shall be firm and leveled and such cranes erected at a reasonably safe distance from excavations and operated within gradient limits as specified by the manufacturer of such cranes;
d	Tower cranes shall be sited where there is a clear space available for erection, operation and dismantling of such cranes;
e	Tower cranes shall be sited in such a way that the loads on such cranes shall not be handled over any occupied premises, public thoroughfares, railways or near power cables, other than construction works for which such cranes are used;
f	Where two or more tower cranes are sited and operated, every care shall be taken to ensure positive and proper communication between operators of such cranes to avoid any dagger or dangerous occurrences;
g	Tower cranes shall not be used for loading magnet, or demolition ball service, piling operation or other similar operations which could impose excessive load stresses on the crane structure of such cranes;
h	The instruction of the manufacturer of a tower crane and standard safe practices regarding such cranes shall be followed while operating or using such cranes.
7.30	QUALIFICATION OF OPERATOR OF LIFTING WINCHES AND OF SIGNALER ETC.
a	No person shall be employed to drive or operate a lifting appliance whether driven by mechanical power or otherwise or to give signals to driver of operator of such lifting appliance or to work as an operator of a rigger or derricks unless he is
a-i	Sufficiently competent and reliable;
a-ii	Possesses the knowledge of the inherent risks involved in the operation of lifting appliance;
a-iii	Medically examined periodically as specified and
a-iv	Is above eighteen years of age.

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8.0	SAFETY IN THE USE OF TRANSPORT, EARTHMOVING EQUIPMENT & OTHER CONSTRUCTION MACHINERY
8.1	EARTHMOVING EQUIPMENT AND VEHICLES
a	All vehicles and earthmoving equipment shall be made of good material, proper design and sound construction and be sufficiently strong for the purpose for which such equipment are properly used in accordance with standard safe operating practices;
b	Provided that the truck or trailer employed for transporting freight containers shall be of the size sufficient to carry the containers, without over hanging and provided with twist locks conforming to approved standards, at all the four corners of each of such use by an authority under the relevant law for the time being in force and is inspected by a responsible person, at least once in a month and record of such inspection shall be maintained:
c	All transport or earth moving equipment and vehicles shall be inspected at least once a week by a responsible person and in case any defect is noticed in such equipment or vehicle it shall be immediately taken out of use;
d	Power trucks and tractors shall be equipped with effective brakes, headlights and tail lamps and maintained in good repair and working order;
e	Side stanchions on power trucks and trailers for carrying heavy and long objects shall be
e-i	Of sound construction and free from defects;
e-ii	Provided with tie chains attached to the top across the loads for preventing such stanchions from spreading out; and
e-iii	Kept in position while loading and unloading;
e-iv	Safe gangways provided for to and fro movement of building workers engaged in loading and unloading of lorries, trucks, trailers and wagons;
e-v	Trucks and other equipment shall not be loaded beyond their safe capacity and carry workers engaged in loading and unloading of lorries, trucks trailers and wagons in an unsafe condition;
e-vi	Handles of trucks shall be so designed as to protect the hands of the building workers working on such trucks, or such handles provided with knuckle guards;
e-vii	No unauthorized person shall ride the transport equipment employed in such work;
e-viii	A driver of a transport equipment shall maneuver such equipment under the direction of a signaler;
e-ix	Adequate precaution such as isolating the electric supply or erecting overhead barriers of a safe height shall be taken when earth moving equipment or vehicles are required to operate in dangerous proximity to any live electric conductor;
e-x	Vehicles and earth moving equipment shall not be left on a slope with the engine of such vehicles or equipment running;
e-xi	All earth moving equipment, vehicles or other transport equipment shall be operated only by such person who are adequately trained and possess such skills as required for safe operation of such equipment, vehicle or other transport equipment.
8.2	POWER SHOVELS AND EXCAVATOR
a	A shovel or an excavator whether operated by steam or electric or by internal combustion, shall be constructed, installed, operated, tested and examined as per approved standards;

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b	Excavator equipped for use as a mobile crane shall be examined and tested in accordance with the requirements for such mobile cranes as laid down by the manufacturer; and
c	Fitted with an automatic safe working load indicator;
d	Buckets or grabs of power shovels shall be propped to restrict the movement of such buckets or grabs while being repaired or while the teeth of such buckets or grabs are being changed.
8.3	BULLDOZER
a	Operator of every such bulldozer before leaving the dozer shall take the following steps:
a-i	Apply the brakes;
a-ii	Lower the blade and sipper and
a-iii	Put the shift lever into neutral;
a-iv	Dozer left on level ground at the close of the work for which such bulldozer is used;
a-v	The blade of a bulldozer kept low when such bulldozer is moving uphill;
a-vi	The bulldozer blades not used as brakes except in an emergency.
8.4	SCRAPERS
a	A tractor and scraper shall be joined by safety line at the time of its operation;
b	The scraper bowls shall be propped while blades of such scraper are being replaced;
c	A scraper moving downhill shall not be left in gear.
8.5	MOBILE ASPHALT LAYERS & FINISHERS
a	A mixture elevator shall be located within a wooden or sheet metal enclosure with a window for observation, lubrication and maintenance;
b	Bitumen scoops shall have adequate covers;
c	When asphalt plants are working on public road, adequate traffic control shall be established on such road and the building workers working with such plant provided with reflective jackets;
d	A sufficient number of fire extinguishers shall be kept in readiness at such workplace where fire hazards may exist;
e	The materials shall be loaded on the elevator after the drying drain has warmed up of such elevator;
f	No open light shall be used for ascertaining the level of asphalt;
g	Inspection opening shall not be opened till there is a pressure in the boiler, which may cause injury to building workers.
8.6	PAVERS:
	Pavers shall be equipped with guards suitable to prevent building workers from walking under the skip of such pavers.
8.7	Road rollers: Before a road roller is used on the ground, such ground shall be examined for its bearing capacity and general safety, especially at the edges of slopes such as embankment on such grounds and shall not be moved downhill with the engine out of gear.

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8.8	GENERAL SAFETY IN RESPECT OF POWERED CONSTRUCTION MACHINERY
a	Every vehicle or earthmoving equipment shall be equipped with -
a-i	Silencers;
a-ii	Tail lights
a-iii	Power and hand brakes;
a-iv	Reversing alarm; and
a-v	Search light for forward and backward movement, which are required for safe operation of such vehicle or earthmoving equipment;
b	The cab of vehicle or earthmoving equipment shall be kept at least one meter from the adjacent face of a ground being excavated;
c	When cranes or shovel are traveling, the boom of such crane or shovel shall be in the direction of such travel and the bucket or scoop attached to such crane or shovel raised and without load except when such traveling is downhill.

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9.0	SAFETY IN THE PROVISION OF RUNWAYS AND RAMP
9.1	USE OF RUNWAYS AND RAMPS:
a	Runway or ramps shall not be less than 430 mm in width and constructed of not less than 25 mm thick planking or any other material of adequate strength to withstand the required load, supported substantially in relation to the span and braced with such runway or ramp, and design and construction of such runway or ramp shall be in accordance with the approved standards;
b	Every runway or ramp located more than 3 m above the floor or ground shall be on open sides and provided with a guardrail of adequate strength and height of not less than 1 m.
c	Use of runways and ramps by vehicles:
c-i	All runways and ramps shall be of sound construction, strength and securely braced and supported;
c-ii	Every runway or ramp for the use of transport equipment like trailers, trucks or heavier vehicles shall have a width of not less than 3.7 m and provide with timber curbs or any other material of adequate strength with not less than 200 mm by 200 mm in width placed parallel to, and secured to, the sided of such runway or ramp and such runways or ramps or ramps shall be designed in accordance with the approved standards.
9.2	SLOPE OF RAMPS:
	Every ramp shall have a slope not exceeding one in four and the total rise of a continuous ramp used by building workers carrying material or using wheelbarrows shall not exceed 3.7 m, unless broken by horizontal landing of at least 1.2 m in length.
9.3	USE OF RUNWAYS OR RAMPS BY WHEELBARROWS, ETC.
a	Every runway or ramp used for wheelbarrows and carts or hand trucks shall not be less than 1 m width and constructed of not less than 50 mm thick planking, and supported and braced suitably for such use;
b	Every runway or ramp located more than 3 m above the floor or ground shall be provided on the open sides with suitable guardrails of adequate strength.

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10	SAFETY IN HANDLING AND USE OF EXPLOSIVES
10.1	GENERAL PROVISIONS:
a	The use of explosives shall be carried out in a safe manner to avoid injury to any person and under the direct supervision of a responsible person;
b	No person other than authorized and competent one shall be allowed to handle and use explosives;
c	Before using any explosive, necessary warning and danger signals shall be erected, at conspicuous places of such use to warn the building workers and the general public of the danger involved in such use.
d	No person other than authorized and competent one shall be allowed to handle and use explosives.
e	Smoke, open lamps, other type of hot or heat producing items and sparks shall be prohibited in or near explosives magazines or while explosives are being handled, transported or used.
f	No person shall be allowed to handle or use explosives while under the influence of intoxicating liquors or dangerous drugs.
g	The explosives shall be accounted for at all times. No explosives or blasting agents shall be abandoned.
h	No fire shall be fought where the fire is in the imminent danger of contact with explosives. All employees shall be removed to a safe area and the fire area shall be guarded against intruders.
i	Employees authorized to prepare explosive charges or conduct blasting operations shall use every reasonable precaution including but not limited to visual and audible warning signals, flags, or barricades to ensure employee safety.
j	Due precautions shall be taken to prevent accidental discharge of electric blasting caps from current induced by induced voltage, lightning, adjacent power lines, dust storms, or other sources of extraneous electricity or otherwise. These precautions shall include:
k	Short-circuiting of detonators in holes, which have been primed and shunted until wired into the blasting circuit.
l	The suspension of all blasting operations and removal of persons from the blasting area during the approach and progress of an electric storm.
m	The prominent display of adequate signs, warning against the use of radio transmitters, on all roads within 1000 ft of blasting operations. Whenever adherence to the 1000 ft distance would create an operational handicap, a competent and expert person shall be consulted to evaluate the particular situation, and an alternative provided, which are adequately designed to prevent any premature firing of electric blasting of caps. A description of any such blasting shall be reduced to writing and shall be certified as meeting the purposes of this subdivision by the competent person consulted. The description shall be maintained at the construction site during the duration of the work, and shall be available for inspection.
n	Empty boxes and paper and fiber packing materials, which have previously contained high explosives, shall not be used again for any purpose, but shall be destroyed by burning at an approved location.
o	Explosives, blasting agents and blasting supplies that are obviously deteriorated or damaged shall not be used.

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p	Delivery and issue of explosives shall only be made authorized persons into authorized magazines or approved temporary storage or handling areas.
q	Blasting operations in the proximity of overhead power lines, communication lines, utility services, or other services and structures shall not be carried on until the operators and/or owners have been notified and measures for safe control have been taken. In such situations controlled blasting shall be restored to.
r	All loading and firing shall be directed and supervised by competent persons thoroughly experienced in this field.
s	Loaded boreholes shall not be left unattended after the end of the shift.
t	Suitable and sufficient means of egress to ground level shall be provided in all cases of excavations, trenches, all other places where explosives are handled above or below ground level.
u	At an appropriate time before the final blasting warnings, workers in the area shall be removed to a designated safe place.
v	An unmistakable, audible, final warning shall be sounded one minute prior to the detonation of explosives; after completion, when the person in charge has established that safe conditions prevail, an "all clear" shall be sounded.
w	To prevent persons entering any danger zone during blasting operations notices shall be given to all concerned.
x	Notices referred above shall indicate:
x-i	that explosives are in use;
x-ii	the audible warning sound and the "all clear" and state when they will be sounded; and
x-iii	the warning flags in use, including an "all clear" flag.
y	Precautions against lightning shall be provided in accordance with the Indian Electricity Act and Indian Explosives Act and Rules and regulations framed there under.
z	Package containing explosives shall not be dragged, dropped or handled roughly.
aa	Non-sparking tools shall be used to open keys.
bb	The explosives shall not be carried in the box or otherwise on any individual.
cc	Nothing shall be inserted in the open end of the blasting cap except fuses.
dd	dd. Deteriorated or damages explosives shall not be used but shall be disposed or destroyed strictly in accordance with the approved methods and in the doing so the manufacturers or the appropriate authority's instructions shall be followed.
ee	lightning shall be in accordance with Indian Electricity Act/Rules
ff	All workers engaged in or present near the blasting area must wear appropriate and approved Personal Protective Equipment (PPE) such as safety helmets, face shields or goggles, ear protection, blasting suits, gloves, and safety shoes. Strict compliance with PPE usage is mandatory to ensure safety during blasting operations.
10.2	TRANSPORTATION OF EXPLOSIVES
a	Keep safe distance and to use non-sparking tools while opening packages containing explosives;

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b	Stop the use of explosives and handling thereof while the weather conditions are not suitable for such use or handling;
c	Due precautions shall be taken to prevent accidental discharge of electric blasting caps from current induced by induced voltage, lightning, adjacent power-lines, dust storms or other sources of extraneous electricity or otherwise. These precautions shall include —
c-i	Suspension of all blasting operations and evacuation of persons;
c-ii	All warning signs shall be displayed within 200 m of blasting operations and in case putting up a sign at 200 m is impractical, the contractor shall consult the Engineer-in-charge for alternatives;
c-iii	All loading and firing shall be directed and supervised by competent persons thoroughly experienced in the field;
c-iv	To prevent persons entering any danger zone during blasting operations, notices shall be given to all concerned;
d	In addition to these provisions, all measures and precautions that are required to be observed for use, handling, storing or transportation of explosives under the Rules framed under the Explosives Act, 1884 (4 of 1884) shall be observed;
e	All the relevant statutory provisions, local laws and rules and regulations shall be complied with.
f	Where the magazine is located near the construction site and blasting operation continues daily, actual requirement of explosives shall be drawn from the magazine and transported to the site. Any leftovers shall be returned to the magazine each time after the blast. In case of work at scattered places and for a small duration, portable magazines shall be used and kept within a fence in safe place and properly guarded.
g	For carrying higher quantity (more than 5 kg of explosives) specially designed insulated containers shall be used. These containers shall be constructed of finished wood not less than 5cm thick or plastic not less than 6mm thick or pressed fiber not less than 10mm thick. There shall be no metal parts (not even nails, bolts, screws etc.) and the containers shall be provided with suitable non-conductive carrying device, such as rubber, leather or canvas handle or strap.
h	Vehicles to be used for transportation explosives shall be in good working condition and shall have a tight wooded or non-sparking metal (copper, brass and the like) floor with sides and ends high enough to prevent the explosives from falling off the vehicle. In open bodied vehicles, the explosives shall be covered with a waterproof and fiber tarpaulin.
i	Electrical wiring in vehicle shall be fully insulated so as to prevent the danger of short-circuiting and at least two fire extinguishers of carbon dioxide type shall be carried. The vehicle shall be properly marked indicating adequate warning to the public in regard to the nature of cargo.
j	No metals except approved metal truck shall be allowed to come in contact with cases of explosives, metal, flammable, or corrosive substance shall not be transported with explosives. As far as possible, transportation of any material along with explosives shall be prohibited.
k	Smoking shall be prohibited in the vehicle carrying explosives.
l	No unauthorized person shall be allowed in the vehicle, carrying explosives.
m	Loading and unloading of explosives shall be done carefully.
n	Explosives and detonators or blasting caps shall not be permitted to be transported in the same vehicle.

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o	Detonators and other explosives for blasting shall be transported to the site of work in the original containers or in securely locked separate non-metallic containers and shall not be carried loose or mixed with other materials.
10.3	STORAGE OF EXPLOSIVES AND BLASTING AGENTS
a	Explosives and related materials shall be stored in approved facilities.
b	Blasting caps, electric blasting caps, detonating primers, and primed cartridges shall not be stored in the same magazine with other explosives or blasting agents.
c	Smoking and open flames shall not be permitted within 50 feet of explosives and detonators storage magazine.
d	No Explosives or blasting agents shall be permanently stored in any underground area until the area has been developed to the point where at least two modes of exit have been provided.
e	Permanent underground storage magazine shall be at least 300 feet from any shaft or other active underground working area.
f	Permanent underground magazines containing detonators shall not be located closer than 50 feet to any magazine containing other explosives or blasting agents.
10.4	DRILLING AND LOADING
a	Before planning out the drilling operations for blasting purposes, nature of stratum and the over burden shall necessarily be examined to avoid possibilities of landslides after blasting.
b	The face or rock shall be carefully examined before drilling to determine the presence of unfired explosives. No attempt shall be made to drill at a site if un-detonated explosives are suspected. In such case the boreholes shall be thoroughly cleaned before a cartridge is inserted. Wooden tamping rods (not pointed, but cylindrical throughout) shall be used in the charging the holes. The cartridge will be on the top.
c	The borehole shall be carefully checked for length, presence of water dust, etc. with a wooden tamping pole or a measuring tape before loading.
d	Surplus explosives shall not be stacked near working areas during loading/unloading.
e	The line of detonating fuse extending into a borehole shall be cut from the spool before loading the remainder of the charge.
f	A bore shall not be loaded with explosives after springing (enlarging the hole with explosives) or upon completion of drilling without making sure it is cool and it does not contain any hot smoldering material. Temperatures in excess of 65o C are dangerous.
g	A bore near another hole loaded with explosives shall not be sprung.
h	No force shall be used for inserting cartridges or any explosives into a bore hold or pass any obstruction in a borehole.
i	No force shall be used for inserting a blasting cap or an electric blasting cap into explosive. The cap shall be inserted into a hole made with a pickers designed for the purpose. A hitch of the electric blasting cap leading wire shall be made on the primer cartridge so as to prevent pulling out the electric blasting cap from the explosive charge. In case of fuse, the fuse shall be tied to the explosive cartridge so that the blasting cap is not pulled out. Care shall be taken so that the blasting cap is not pulled out. Care shall be taken so that the electric blasting cap, leading wire or the length of the fuse does not get damaged during loading of the charge.
j	No attempt shall be made to slit, drop, deform or abuse the primer.

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k	Blasting caps or electric blasting caps shall not be connected to detonating fuse except by methods recommended by the manufacturers of caps.
l	Explosive cartridge shall not be cut, nor explosive removed from the cartridge for use.
m	Metallic devices of any kind shall not be used in tamping. Wooden tamping tools with not exposed metal parts except non-sparking metal connectors for jointed poled shall be used. Violent tamping shall be avoided. Primer shall not be tamped.
n	Care shall be taken to confine the explosives in the bore hold with sand, earth clay or other suitable combustible stemming material.
o	Kinking or injuring of fuse or electric blasting cap wires shall be avoided when tamping.
10.5	ELECTRICAL SHOT-FIRING CIRCUIT
a	In deciding the sizes of wires, fuses, circuits, blasting switches, etc., instructions issued by the manufacturers of these articles shall be followed, if they do not contradict with Indian Explosives Act or framed under it.
b	No person shall attempt to uncoil the wires and open out the short-circuited bare leading wires of the electric blasting cap during approach of dust storm or near any source of large charge of static electricity or near a radio transmitter. The manufacturer of the cap or the Inspectorate of Explosives shall be consulted regarding the distance from the transmitter beyond which electric short firing shall be conducted.
c	Firing circuit shall be kept completely insulated from the ground of the other conductors, such as wires, rails, pipes or other paths or stray current.
d	There shall not be any electric live wires or cables of any kind near electric blasting caps or other explosives except at the time and for the purpose of firing the blast.
e	All electric blasting caps shall be tested singly and also when connected in a circuit in series using only an approved type of circuit continuity tester or ohmmeter.
f	No attempt shall be made to use in the same circuit either electrical blasting caps made by more than one manufacturer or electric blasting caps of different design or function even if made by the same manufacturers unless such use is approved by the manufacturers.
g	No attempt shall be made to fire a circuit of electric blasting caps with less than the minimum current specified by the manufacturer of that electric blasting cap.
h	Care shall be taken to ensure that all wire ends to be connected are bright and clean.
i	The electric cap wires or leading wires shall be kept short circuited until ready to fire.
j	When energy for blasting is taken from power circuits the voltage shall not exceed 220v. The wiring controlling arrangements shall conform to the following:
k	The blasting switch shall be strictly according to the specifications, externally operated double-throw switch, which when locked in the open position will short circuit and ground the leading wires. The switch shall be installed at the location where the firing is to be controlled.
l	A 'safety' switch of the same type as the blasting switch shall be installed between the blasting switch and the firing circuit and lead lines, at a distance not to exceed 180cm from the blasting switch.
m	Both the safety switch and the blasting switch shall be locked in the open position immediately after the shot and before any person is permitted to return to the blasting area. Key to the switches shall remain in the possession of the blaster at all times.

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n	Rubber covered or other adequately insulated copper wires in good condition shall be used for firing lines and shall have solid cores of appropriate gauge. Sufficient firing line shall be provided to permit the blaster to be located at a safe distance from the blast. Single conductor lead lines shall be used.
o	Blasting operations in the proximity of overhead power lines, communication lines, utility lines, or other structures shall not be carried on until the operator or the owner, or both of such lines as been notified and precautionary measures deemed necessary, have been taken.
p	All holes loaded on a shift shall be fired on the same shift.
q	As far as possible, blasting shall be carried out using suitable exploder with 25 per cent excess capacity. Electric power from the mains shall be used only when it is absolutely necessary.
10.6	SHOT-FIRING WITH SAFETY FUSE
a	The fuse shall be carefully handled to avoid damaging the covering. In very cold weather the fuse shall be slightly warmed before using so as to avoid cracking the waterproofing.
b	Short fuse shall not be used. The length of a fuse shall not be less than 120cm. The rate of burning of the fuse shall be known and it would be necessary to make sure that it will take sufficient time in burning so as to enable all persons to reach a place of safety. The burning rate of the fuse shall not be more than 60 cm/min.
c	The fuse shall not be cut until the operation to insert the fuse into a blasting cap is ready. The fuse shall be cut off about 2.5 to 5 cm to ensure a dry end. It shall be cut squarely across with a clean and sharp blade. The fuse shall be seated lightly against the cap charge and care shall be taken to avoid twisting after it has been placed in position.
d	Blasting caps shall not be crimped by any means except by a cap crimper designed for the purpose. It shall be necessary to make sure that the cap is squarely crimped to the face.
e	The fuse shall be lighted with a fuse lighter designed for the purpose. If a match is used, the fuse shall be slit at the end and the match head held in then slit against the power core and then the match head rubbed against an abrasive surface to light the fuse.
f	The fuse shall not be lighted until sufficient stemming has been placed over the explosives to prevent sparks of live match heads from coming into contact with the explosives.
g	The explosives shall not be held in hands when lighting the fuse.
10.7	UNDERGROUND WORK
a	Only permissible explosives and in the manner as specified by the appropriate authority shall be used.
b	Excessive quantities of explosives shall not be taken underground at any time. Black blasting powder or pellet powder shall not be used with any other explosive in the same borehole.
10.8	BEFORE AND AFTER FIRING
a	Before firing, sufficient warning shall be given to enable the people working in the area to get off the danger zone. The danger zone shall be suitable cordoned off and flag men posted at important points.
b	No loose materials, such as tools, drilling implements etc. Shall be left on the rock surfaces to be blasted.
c	Blasting in the open shall be carried out during the fixed hours every day or on fixed days in the week. This information shall be amply publicized and the following precautions observed:

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d	On the project sites, where blasting operations are carried out, daily blasting hours shall be clearly printed on the sign-boards on all the roads approaching that area.
d-i	Road closing barriers should be provided to close the traffic on these roads, at least 400 meters away when the firing is to take place.
d-ii	The beginning of the firing shall follow loud sirens and similarly loud sirens shall succeed the completion of the firing.
e	The shot-firer shall not be allowed to return to the blasting site after firing, until at least 5 min have elapsed. In case of electric shot firing, the shot holes shall be examined after firing and in case of misfire no person shall be allowed to approach the blasting site for at least 5 min. In case of shot firing with safety fuse, utmost care shall be taken to count the number to ensure that all the shots have fired and in the event of misfire, no person shall be allowed to approach the blasting site for at least 30 min. In any case, a careful inspection for the remaining un-detonated explosive shall be made after firing the shots. All misfired shot holes shall be cross-marked. No other person than those duly authorized shall approach the holes until one of the following operations has been performed in respect of each of the misfired holes:
f	If the misfire is due to a faulty cable or faulty electrical connection the defect shall be remedied and the shot fired.
g	The stemming shall be floated out by use of water or air jet from hose until the hole has been opened to within 60 cm of the charge, whereupon water will be siphoned or pumped out, then a fresh new charge placed and duly detonated. Or
g-i	A careful search shall be made of unexploded material in the debris of the charge.
g-ii	If a shift charge is unavoidable, the person in-charge of one shift before leaving the work shall inform the person relieving him for the next shift of any cases misfired and shall point out their position duly cross marked and also state clearly what action has to be taken in the matter.
Note:	The rules are made considering statutory provisions and other National/International standards. However, if any statutory provision overruling these laws is made, the statutory provisions shall overrule the BHEL / 2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL HSE Plan.

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11	SAFETY IN EXCAVATION & TUNNELING WORK
	SAFETY IN EXCAVATION
11.1	GENERAL PROVISIONS
a	Before undertaking any activity, the soil shall be tested and in case of availability of any explosive gas, necessary arrangements must be made to remove/dilute such gases and in case they are found to be toxic or poisonous, the workplace must be purged and continuous ventilation maintaining the contamination below the permissible level ensured;
b	The position of underground installations such as sewers, water pipes and electrical cables shall be verified and in case of their existence, they must be isolated;
c	If they cannot be isolated or removed or shutdown, they shall be fenced, hung up or otherwise protected. On every part likely to be visited by persons or where transport vehicles ply, the area shall be suitably fenced, guarded or barricaded to prevent fall of persons, vehicles or livestock into the excavated area;
d	Warning signs shall be erected and the in the night hours the area shall be illuminated to warn pedestrians and vehicular traffic;
e	Arrangements shall be made to prevent external vibrations due to rail/road traffic;
f	Blasting shall be carried out in accordance with the norms applicable in this regard. Special care shall be taken to control the impact of vibrations/tremor caused by blasting to protect excavations from cave-ins;
g	Arrangements shall be made to save other buildings/structures in the affected zone or in the vicinity of the area of excavation, from collapse;
11.2	SHORING AND TIMBERING
a	Site of excavations, where workers are exposed to danger from moving ground, shall be made safe by maintaining due slope not exceeding the angle of repose of different types of soil or otherwise by shoring, portable shields or other effective means;
b	All trenches in the soil, other than rock or hard compact soil more than 1.5 m deep into which men enter, shall be securely shored and timbered under the supervision of a competent person and only the trained workers shall be allowed to substantially alter or dismantle the shoring or timbering;
c	All struts, braces and walls in excavation shall be adequately secured so as to prevent their accidental displacement;
d	In all excavations in soft or fissured rock or hard soil exceeding 2 m in depth, except those which are sloped to within 1.5 m of the bottom into which men enter, shall be securely shored and timbered;
e	Where the sides of the excavations are sloped as outlined above, but not within the 1.5 m of the bottom, vertical sides shall be shored and the shoring shall extend at least 30 cm above the vertical sides. When open spaced sheathing is used, a toe-board shall be provided to prevent material rolling down the slope and falling into the excavated.
11.3	SHEATHING
a	The sheathing should be placed against the side of the trench so that length of each piece of sheathing is vertical. It should be held securely in place against the wales by ensuring that sheathing is kept firmly pressed against the wall of the trench. Where the trench excavated is loose, sandy or soft soil or soil which has been previously excavated or soil which is under

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	hydrostatic pressure, each piece of sheathing shall be driven into the bottom of the trench so as to firmly hold it in place;
b	Where two or more pieces of sheathing are used one above another, the sheathing shall be so arranged that the lower pieces of sheathing shall overlap the lowest wales supporting the piece of sheathing next above it. These pieces of sheathing shall be firmly driven into the soil and securely supported by wales and struts, as the trench is made deeper.
11.4	WALES
a	The wales shall be parallel to the bottom or the proposed bottom of the trench. Each wale shall be supported on cleats spiked to the sheathing or by posts set on the wales next below it and in the case of the lowest wale on the bottom of the trench itself. Where necessary, wedges may be provided between a wall and the sheathing it supports so that roughly uniformity is given to all individual pieces of sheathing.
11.5	STRUTS
a	Struts shall be horizontal and at right angles to the wales or sheathing supported thereby. Struts shall be cut to the proper length required to fit in tightly between the wales. Where necessary, the struts shall be held securely in place by wedges, driven between the struts and the wales;
b	Struts shall be placed on cleats spiked or bolted to the posts supporting the Wales.
11.6	LOOSE SITE MATERIALS:
	No loose material shall be kept very close to the excavation creating possibility of its fall into the excavated area. A safe distance of at least 1 m shall be maintained.
11.7	PLANT & MACHINERY:
	Movement of vehicles and heavy equipment shall be kept at a distance least equal to the depth of the excavation or at least 6 m for excavation deeper than 6 m and the workers shall be provided with proper tools.
11.8	MEANS OF ACCESS
a	For trenches deeper than 1.5 m, safe means of access and egress shall be provided at intervals of every 15 m. Where it is not possible to provide safe means of access and egress as above, ladders shall extend from the bottom of the trench to at least 90 cm above the ground;
b	Walkways, runways and sidewalks shall be kept clear of excavated materials or other obstructions and no side walls shall be undermined-undercut unless it is capable of carrying a minimum live load of 125 lbs. per square feet;
c	If planks are used for raising walkways, runways or sidewalks, they should be parallel to the length of the walk and fastened together against displacement;
d	Lone worker shall not be allowed to work in the excavated area.
11.9	INSPECTIONS:
	A competent person shall make inspections every day and necessary measures shall be taken to safeguard against possible cave-ins or slide or collapse of the excavations.
11.10	NOTIFICATION OF INTENTION TO CARRY OUT EXCAVATION AND TUNNELING WORK

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a	Within thirty days, prior to the commencement of such excavation or tunneling work, the contractor shall inform in writing the detailed layout plans, method of construction and schedule of such excavation or tunneling work to the Engineer in-charge of 2X660 MW SUPER CRITICAL TPP, HTPS, KORBA WEST OF CSPGCL;
b	In case compressed air is used in such excavation or tunneling work or any work incidental to or required for such excavation or tunneling work, the technical details and drawings of all man-locks and medical-locks together with names and addresses of all construction medical officers duly qualified and so appointed by such contractor for the purpose of such excavation or tunneling work shall be sent to the Engineer in-charge.
11.11	PROJECT ENGINEER
a	The contractor undertaking any excavation or tunneling work shall appoint a Project Engineer for safe operation of such projects;
b	Such Project Engineer shall exercise overall control of the operations and the activities at such project and be responsible for carrying out the activities safely.
11.12	RESPONSIBLE PERSON
a	The contractor undertaking excavation or tunneling work at construction site of a building or other construction work shall appoint a responsible person for safe operation of such excavation or tunneling work;
b	The name and addresses of such responsible persons shall be forwarded to the Engineer in-charge;
c	Duties and responsibilities of the responsible person referred to above person shall include
c-i	To carry out smoothly such excavation or tunneling work;
c-ii	To inspect and rectify any hazardous situation relating to such excavation or tunneling work;
c-iii	To take remedial measures to avoid any unsafe practice or conditions relating to such excavation or tunneling work.
11.13	WARNING SIGNS AND NOTICES
a	Suitable warning signs or notices, required for the safety of building workers carrying out the work of an excavation or tunneling, shall be displayed or erected at conspicuous places in Hindi and in language understood by the majority of such building workers at such excavation or tunneling work;
b	Such warning signs and notices with regard to compressed air working shall include:
b-i	The danger involved in such compressed air work;
b-ii	Fire and explosion hazards;
b-iii	The emergency procedures for rescue from such danger or hazards.
11.14	REGISTER OF EMPLOYMENT
a	The contractor shall ensure that at a construction site of a building or other construction work where an excavation or tunneling work is being carried on, a register of employment of building workers carrying out such excavation or tunneling work is maintained and produced on demand;
b	Periods of work of such excavation or tunneling work shall be maintained in a register on day-to-day basis and such register shall be produced on demand

11.15	ILLUMINATION
a	All contractors carrying out excavation or tunneling work at a construction site of a building or other construction work shall provide for emergency generators on such construction site to ensure adequate illumination at all work places where such excavation or tunneling work is being carried out;
b	In case of power failure, all workplaces where excavation or tunneling works are carried out shall be adequately illuminated
11.16	PNEUMATIC TOOLS:
	Supply lines to pneumatic tools used within a tunnel are fitted with water trap or safety chain or safety wire, as the case may be.
11.17	STABILITY OF STRUCTURE DURING GENERAL EXCAVATION & TUNNELING:
	The contractor shall ensure that where there is any doubt as to the stability of any structure adjoining the workplace or other areas to be excavated or where tunneling work is to be carried out
a	The Project Engineer shall arrange for measures like underpinning, sheet piling, shoring, bracing or other similar means to support such structure and to prevent injury to any building worker working adjacent to such structure or damage to property or equipment adjacent to such structure;
b	Where any building worker engaged in excavation is exposed to hazard of falling or sliding material or article from any bank or side of such excavation which is more than 1.5 m above his footing, such worker shall be protected by adequate piling and bracing against such bank or side;
c	The excavation and its vicinity shall be checked by a responsible person after every rain, storm or other occurrences carrying hazards and in case a hazard is noticed at such checking, adequate protection against slides and cave-in to prevent such hazard shall be provided;
d	Temporary sheet piling installed for the construction of a retaining wall after excavation shall not be removed, except on the advice of the responsible person after an inspection carried out by such responsible person;
e	Where banks of an excavation are undercut, adequate shoring shall be provided to support the material or article overhanging such bank;
f	Excavated material shall not be stored at least 0.5 m from the edge of an open excavation or trench and the banks of such excavation or trench shall be stripped of loose rocks and other materials which may slide, roll or fall upon a building worker working below such bank;
g	Adequate and suitable warning signs shall be put-up at conspicuous places at the excavation work to avoid any person falling into the excavations or trenches;
h	The responsible person shall ensure at the excavation that no building worker is permitted to work where such building worker may be struck or endangered by the excavation machinery or material or article used in such excavation.
11.18	SAFE ACCESS AND EGRESS:
	Ladders, staircases or ramps are provided, as the case may be, for safe access to and egress from excavation where the depth of such excavation exceeds one point 1.5 m and such ladders, staircases or ramps comply with the relevant national standards.
11.19	TRENCHES
a	A trench or excavation shall be protected against falling of a person by suitable measures if the depth of such trench or excavation exceeds 1.5 m and such protection shall be an

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	improved protection in accordance with the design and drawing of a Professional Engineer, where such depth exceeds 4 m;
b	Where the depth of a trench requires two lengths of sheet piling, one above the other, the lower piling shall be set inside the bottom strings or wales of the upper piling and such sheet piling shall be driven down and braced as the excavation continues;
c	All metal sheet piles used in excavation or a trench shall be welded end-to-end and secured by other similar means.
11.20	POSITIONING AND USE OF MACHINERY:
	Any machinery used in excavation and tunneling work shall be positioned and operated in such a way that such machinery will not endanger the operator of such machinery or any other person in the vicinity.
11.21	BREATHING APPARATUS:
	Suitable breathing apparatus shall be provided to a building worker while working in compressed air environment for his use at excavation or tunneling work and such breathing apparatus shall be maintained in good working condition at all times.
11.22	SAFETY MEASURES FOR TUNNELING OPERATIONS
a	Where there is a danger of falling or sliding of material from the roof face or wall of a tunnel, adequate measures such as shoring, supporting by means of rock bolts, segments or steel sets shall be taken for the safety of building workers;
b	The excavated areas shall be made safe by use of suitably designed and installed steel sets, rock bolts or similar other safe means;
c	The responsible person shall examine and inspect the workplaces in a tunnel before the commencement of work in such tunnel and at regular intervals thereafter to ensure safety of the building workers in such tunnel;
d	The portal areas of a tunnel with loose soil or rock, likely to cause injury to a person shall be adequately protected with supports.
11.23	SURROUNDINGS OF A SHAFT
a	Surroundings of a shaft used in excavation or tunnel work shall be protected from being washed away by construction of sufficient height;
b	Where a building worker is required to enter a shaft at an excavation or tunneling work, safe means of access shall be provided for such entry;
c	Every shaft at excavation or tunneling work shall be provided with a steel casing, concrete piping, timber shoring or other materials of adequate strength for the safety of building workers working in such shaft;
d	Such casing and bracing shall be provided to shafts at an excavation or tunneling work according to the appropriate design for such casing and bracing;
e	A reinforced concrete raft and beam shall be provided around the opening of a shaft at an excavation or tunneling work if the ground surrounding such opening is unstable or unsafe.
11.24	LIFT FOR SHAFT:
	Lift shall be provided for transport of building workers and materials or articles at an excavation or tunneling work required to descend more than 50 m in a shaft.

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11.25	MEANS OF COMMUNICATION
a	Reliable and effective means of communication such as telephone or walkie-talkie shall be provided and maintained in working order for arranging better and effective communication at an excavation or tunneling work at the following locations, namely:
a-i	Working chamber of an excavation;
a-ii	Intervals of hundred meters along the tunnel;
a-iii	Working chamber side of a man lock near the door of such man lock;
a-iv	Interior or each chamber of a man lock;
a-v	Location conspicuous lock attendant's situation;
a-vi	A compressor plant;
a-vii	A Medical Centre;
a-viii	Outside the portal or the top of a shaft;
a-ix	Such number of bells and whistles shall be made available at all times at the locations as are necessary for the safety of persons at such locations.
11.26	SIGNALS:
	The standard audio or video signals shall be used in excavation or tunneling work and conspicuously located or displayed near entrance to the workplace and in such other locations as may be necessary to bring such signals to notice of all building workers employed in such excavation or tunneling work.
11.27	CLEARANCES
a	The minimum lateral clearances of 0.5 m shall be maintained between any part of a vehicle and any fixture or any equipment used in an excavation or tunneling work after allowing the throw or swing of such fixture or equipment;
b	The overhead clearance for a locomotive drive at excavation or tunneling work shall not be less than 1.20 m above the seat of such driver and not less than 2 m above the platform where such driver stands or of any other dimension in accordance with the approved standard.
11.28	SHELTERS:
	The adequate number of shelters for the safeguard of the building workers are provided where, in the course of working, they are liable to be struck by a moving vehicle or other material handling equipment in a tunnel.
11.29	USE OF INTERNAL COMBUSTION ENGINE:
	No internal combustion engine shall be used underground in excavation or tunneling work unless such engine is so constructed that the air entering the engine gets cleared before entry and the engine emits no fumes or sparks.
11.30	INFLAMMABLE OILS:
	Inflammable oils with the flash point below the working temperature that is likely to be encountered in a tunnel shall not be used in excavation or tunneling work.
11.31	COUPLING AND HOSES:

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	All high-pressure Hydraulic hoses and couplings shall be adequately protected against any possible damage in excavation or tunneling work.
11.32	HOSE INSTALLATION:
	All Hydraulic lines and plants working at a temperature exceeding 750 c shall be protected by adequate insulation or otherwise against accidental human contact in excavation or tunneling work.
11.33	FIRE RESISTANT HOSES:
	No fire Hydraulic hoses other than fire resistant Hydraulic hoses are used when Hydraulically activated machinery and equipment are employed in tunnels.
11.34	FLAMEPROOF EQUIPMENT:
	Only flameproof equipment of appropriate type as per approved standards shall be used where there is a danger of flammable or explosive atmosphere being prevalent inside the tunnel.
11.35	STORING OF OIL AND FUEL UNDERGROUND:
	All oils, greases or fuels stored underground in excavation or tunneling work shall be kept in tightly sealed containers and in fire resistant areas at safe distances away from explosive and other flammable chemical and appropriate flameproof installation shall be used in such storage areas.
11.36	USE OF GASES UNDERGROUND
a	Petrol or liquefied petroleum gas or any other flammable substances shall not be used or stored inside the tunnel except with the prior approval of the Project Engineer;
b	After the use of the petroleum or liquefied petroleum gas, or highly inflammable substances, all remaining petroleum or liquefied petroleum gas or highly inflammable substances shall be removed immediately from such tunnel;
c	No oxy-acetylene gas shall be used in a compressed air environment in excavation or tunneling work.
11.37	WATER FOR FIRE FIGHTING
a	Adequate number of water outlets shall be provided on excavation or tunneling work and readily made accessible throughout the tunnel for firefighting purposes and such water outlets shall be maintained for effective fire lighting;
b	All air locks shall be equipped with firefighting facilities at excavation or tunneling work;
c	An audible fire alarm shall be provided to warn the building workers whenever a fire breaks out on an excavation or tunneling work;
d	Adequate number and types of fire extinguishers, in accordance with relevant national standards, shall be provided and made readily available to fight any outbreak of fire at an excavation or tunneling work;
e	Fire extinguishers with vaporizing liquids and high pressure carbon dioxide shall not be used in tunnels or other confined spaces;
f	The instructions regarding steps to be followed to fight outbreak of fire, at an excavation or tunneling work, written in Hindi or local language understood by the majority of the building workers employed on such excavation or tunneling work, shall be displayed at conspicuous and vulnerable places of such excavation or tunneling work.

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11.38	FLOODING
a	Water tight bulkhead doors shall be installed at the entrance of a tunnel to prevent flooding during a tunneling work where more than one tunnel is driven from a shaft;
b	All necessary measures shall be taken to ensure that no building worker is trapped in any isolated section of a tunnel when any bulkhead door of such tunnel is closed;
c	Where there is likelihood of flooding or water rushing into a tunnel during a tunneling work, arrangements shall be made for immediate starting of water pumps to take out water of such flooding or water rushing and for giving alert signals to the building workers and other persons to keep them away from danger.
d	Airtight steel curtains shall be provided in areas liable to flooding at tunneling work and in case of descending tunnels, such curtains shall be provided in the top half of such tunnels to ensure the retention of pockets of air for rescue purpose.
11.39	REST SHELTERS
a	Where building workers employed in a compressed air environment in a tunneling work are required to remain at the work site for one hour or more after de-compression from pressure exceeding one bar, adequate and suitable facilities shall be provided for such building workers to rest;
b	Every man-lock, medical-lock and any other facility inside these locks in a tunneling work shall be maintained in a clean state and in good repairs;
c	A first aid room shall be provided and readily available at a construction site for a tunneling work;
d	Each man-lock attendant at the station shall be provided with a first aid box.
11.40	PERMISSIBLE LIMIT OF EXPOSURE OF CHEMICALS
a	The working environment in a tunnel or a shaft in which building workers are employed shall not contain any of the hazardous substances in concentrations beyond the permissible limits;
b	The responsible person referred to shall conduct necessary test before the commencement of a tunneling work for the day and at suitable intervals as fixed by the Engineer in-charge, to ensure that the permissible limits of exposure are not exceeded and a record of such test shall be maintained and made available for inspection.
11.41	VENTILATION:
	All working areas in a free air tunnel shall be provided with the approved ventilation system and the fresh air supplied in such tunnel shall not be less than 6 m ³ per minute for each building worker employed underground in such tunnel and the free air-flow movement inside such tunnel not less than 9 m ³ per minute.
11.42	AIR SUPPLY INTAKE POINT:
	The air intake points for all air compression shall be located at places where such intake air does not get contaminated with dust, fumes, vapor and exhaust gases or other contaminants.
11.43	EMERGENCY GENERATORS
	Every compressed air system in a tunnel shall be provided with emergency power supply system for maintaining continued supply of compressed air in such compressed air system, which shall be capable of operating air compressor and ancillary systems of such compressed air system;

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	The emergency power supply system shall be maintained and made readily available at all times.
11.44	AIR MAINS:
	Every air-main supplying air to the working chamber, man-lock or medical-lock used at an excavation or tunneling work shall be protected against accidental damage and where it is not practicable to provide such protection, a stand-by air-main shall be provided.
11.45	BULKHEAD AND AIR LOCKS
a	A bulk head or air tight diaphragms retaining compressed air, when used within a tunnel or a shaft, shall be constructed to withstand the maximum pressure at 1.25 the maximum working pressure of such bulk head or diaphragm and such bulk head or diaphragm shall be tested before its each use by a responsible person to ensure that such bulk head or diaphragm is in proper working order;
b	Such responsible person shall keep the record of each test and such record shall be produced for inspection.
c	The bulk head or diaphragm shall be made of sound material of adequate strength, which shall be able to withstand the maximum pressure on which they are subjected to at any time of their use;
d	A bulkhead anchorage and air lick shall be tested at its work place at an excavation or tunneling work immediately after their installation at such place.
11.46	DIAPHRAGM:
	All diaphragms, which are in the form of horizontal decks across a shaft used at excavation or tunneling work, shall be securely anchored
11.47	PORTABLE ELECTRICAL HAND TOOLS:
	All portable electrical hand tools and inspection lamps used underground or in a confined space shall be operated at a voltage not exceeding 24 V.
11.48	CIRCUIT BREAKER
a	Adequate numbers of differential ground fault circuit breakers shall be installed for every electrical distribution system and its sub-systems used at an excavation or tunneling;
b	Work and the sensitivity of each of circuit breaker shall be adjusted in accordance with the requirement set out in accordance with the approved standards;
c	No semi-enclosed fuse unit shall be used in underground place.
11.49	TRANSFORMER:
	The contractor shall ensure no transformer is used in any section of a tunnel under compressed air unless such transformer is of the dry type and conforms to the approved standards.
11.50	LIVE WIRES:
	There shall be no exposed live wire in working areas at an excavation or tunneling work which are accessible to building workers other than those authorized to work on such live lines.
11.51	WELDING SETS:
	All welding sets used in a tunnel shall be of adequate capacity and of suitable type, duly approved.

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11.52	QUALITY AND QUANTITY
a	Every working chamber at an excavation or tunneling work where compressed air is used, the supply of such air shall be maintained at not less than 0.3 m ³ per minute per person working therein;
b	A reserve supply of compressed air shall be made available at all times for man-locks and medical locks used at a tunneling work;
c	The air supplied in a compressed air environment at a tunneling work shall be, as far as practicable, free from contaminants, namely, dust, fumes and other toxic substances.
11.53	WORKING TEMPERATURE:
	The temperature in any working chamber at an excavation or tunneling work where building workers are employed shall not exceed 290 c and the arrangement shall be maintained for keeping records in which the temperatures measured by dry bulb and wet bulb inside such working chamber once in every hour and for producing such records for inspection on demand.
11.54	MAN-LOCKS AND WORKING IN COMPRESSED AIR ENVIRONMENT
a	Man-locks used at a tunneling work shall be of adequate strength, made of sound material and designed to withstand any pressure, internal or external, to which it may be subjected in the normal use or in an emergency;
b	Doors of man-locks at an excavation or tunneling work shall be made of steel and used at a tunneling work for keeping the work airtight and devices shall be provided for sealing the doors when such locks are under pressure. The anchorage of a man-lock used at tunneling work shall have adequate strength to withstand the pressure exerted by air on the man-lock. There shall be adequate room available for the workers for working in the man-locks;
c	Where work is carried out in any compressed air tunnel, a Man-lock in accordance with the approved standards shall be used;
d	Where a man-lock is used, safety Instructions in Hindi and in local language understood by majority of building workers employed there, shall be displayed at conspicuous places;
e	Except in an emergency, compression and de-compression operations shall be carried out in a man-lock and in an emergency any material-lock may be used;
f	A record of compression and de-compression shall be kept in writing and produced for inspection on demand;
g	Material lock shall be used with the permission of the Engineer in-charge where it is impracticable to install both the man-lock and the material-lock at;
h	The man-lock at tunneling work shall not be used for any purpose
i	other than compression or de-compression of building workers;
j	No de-canting of building workers at tunneling work shall be carried
k	out without prior approval of the Engineer in-charge except in an emergency;
l	In case a building worker collapses or is taken ill during his de-compression in a man-lock, the lock attendant of such man-lock shall raise the pressure to a level equal to the maximum pressure which that building worker was exposed to in the working chamber prior to such de-compression and such lock attendant shall immediately report the matter relating to such collapse to the medical lock attendant and medical officer on duty;

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m	A building worker who had previously received training with a trained building worker to work in a compressed air environment at tunneling work shall be employed to work independently in such a compressed air environment;
n	A building worker who had undergone three de-compressions from a pressure exceeding one bar in a period of eight hours at tunneling work shall not be allowed to enter a compressed air environment except for the purpose of carrying out rescue work;
o	A building worker employed in a compressed air environment for a period of eight hours in a day at tunneling work shall not be employed again in such environment unless he has spent not less than twelve consecutive hours of rest at atmospheric pressure;
p	No building worker shall be engaged in a compressed air environment at a pressure, which exceeds three bars at a tunneling work unless prior permission, in writing, has been obtained from the Engineer in-charge;
q	No building worker shall be employed in a compressed air environment for more than fourteen consecutive days in a month;
r	A register of employment of all building workers in compressed air environment shall be maintained;
s	An identification badge shall be supplied to a building worker employed in compressed air environment;
t	The badge of a building worker shall contain particulars of his name, location of the medical-lock allotted to him for work, the telephone number of the Construction Medical Officer concerned for his treatment and the instructions in case of his illness of unknown and doubtful causes;
u	Record of all identification badges supplied to building shall be kept in a register;
v	Every building worker whose name appears in the register shall wear the badge supplied to him at all times during his duty hours;
w	Suitable warning signs shall be displayed in the compressed air for the prohibition of the following, namely:
w-i	Use of alcoholic drinks;
w-ii	Use and carrying of lighters, matches or other sources of ignition;
w-iii	Smoking; and
w-iv	No entry to person who has consumed alcoholic drink
11.55	SAFETY INSTRUCTION:
	All building workers employed in compressed air environment at tunneling work shall follow the instructions issued for their safety in the course of such employment.
11.56	MEDICAL-LOCK
a	A suitably constructed medical lock shall be maintained at tunneling work where building workers are employed in a working chamber at a pressure exceeding one bar;
b	Where more than one hundred building workers are employed in a compressed air working environment exceeding one bar at tunneling work, one medical-lock is provided for every one hundred building workers or part thereof and such medical lock shall be situated as near as possible to the main-lock used at such tunneling work.

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12	SAFETY IN PILING WORK
12.1	GENERAL PROVISIONS
a	All pile driving equipment shall be of good design and sound construction, taking into account the ergonomic principles and properly maintained;
b	A pile driver shall be firmly supported on a heavy timber sill, concrete bed or other secured foundation;
c	In case a pile driver is required to be erected in dangerous proximity to an electrical conductor, all necessary precautions shall be taken to ensure safety;
d	The hoses of steam and air hammer shall be securely lashed to such hammer so as to prevent them from whipping in case of connection or break;
e	Adequate precaution shall be taken to prevent the pile driver from over turning and hammer from missing the pile;
f	A responsible person for inspecting pile-driving equipment shall inspect such equipment before taking it into use and takes all appropriate measures as required for the safety of building workers before commencing piling work by such equipment;
g	Where there is any question of stability of a structure for its adjoining areas to be piled, such structure shall be supported, where necessary, by underpinning, sheet piling, shoring, and bracing or by other means to ensure safety and stability of such structure and to prevent injury to any person.
12.2	PROTECTION OF OPERATOR:
	The operator of every pile driving equipment shall be protected from falling objects, steam, cinders or water by substantially covering or otherwise or by other means.
12.3	INSTRUCTION TO AND SUPERVISION OF BUILDING WORKERS WORKING ON PILE-DRIVING EQUIPMENT:
	Every building worker working on a pile driving equipment shall be given instructions regarding safe work procedure to be followed in piling operation and shall be supervised by a responsible person throughout such work.
12.4	ENTRY OF UNAUTHORIZED PERSON:
	The contractor shall ensure at a construction site of a buildings or other construction work that all piling areas where pile-driving equipment is in use are effectively cordoned off to prevent entry of unauthorized persons.
12.5	INSPECTION AND MAINTENANCE OF PILE DRIVING EQUIPMENT
a	Pile-driving equipment shall not be taken into use until it has been inspected by a responsible person and found to be safe for such use;
b	A responsible person for such inspection at suitable intervals to ensure safety to the building worker working on such equipment shall inspect pile driving equipment in use;
c	All pile lines and pulley blocks shall be inspected by a responsible person before the beginning of each shift of piling operations.
12.6	OPERATION OF PILE-DRIVING EQUIPMENT
a	Only experienced and trained building worker shall operate pile driving so as to avoid any probable danger from such operation;

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b	Pile-driving operations shall be governed generally prevalent and accepted signals so as to prevent any probable danger from such operations;
c	Every building worker employed in pile driving operation or in the vicinity of such pile driving operation shall wear ear protection and safety helmet or hardhat and safety shoes;
d	Piles shall be prepared at a distance, at least equal to twice the length of the longest pile, from the place of pile-driving operations;
e	When a pile driver is not in use, the hammer of such pile driver shall be blocked at the bottom of the heads of such pile driver.
12.7	WORKING PLATFORM ON PILING FRAMES:
	Where a structural tower supports the lead of a pile driver, leads at which it is necessary for the building workers to work and such platforms except on the hammer of such pile driver or lead sides of such platform and where such platforms cannot be provided with such railing and toe boards, a safety belt shall be provided to each such building worker.
12.8	PILE TESTING
a	The testing of pile shall be conducted under the supervision of a responsible person for such testing;
b	All practicable measures like displaying of warning notices, barricading the area and other similar measures shall be taken to protect the area where the pile testing is carried out;
c	Entry to a pile testing area shall be prohibited to general public to ensure safety.
12.9	PILING, SHORING AND BRACING
a	Planks used for sheet piling in excavation or tunneling work shall be of sound material with adequate strength;
b	Shores and braces used in excavation or tunneling work shall be of adequate dimensions and so placed as to be effective for their intended purposes;
c	Earth supported shores or braces used in excavation or tunneling work shall bear against a footing of sufficient area and stability to prevent the shifting of such shores or braces.

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13	SAFETY IN THE ERECTION, USE AND DISMANTLING OF SCAFFOLDS
13.1	SCAFFOLD CONSTRUCTION
a	Every scaffold and every component thereof shall be of adequate construction, made of sound material and free from defects and safe for the purposes for which it is intended for use;
b	In case bamboo is used for scaffolding, such bamboo shall be of suitable quality, good condition, free from protruding knots and stripped off to avoid any injury to building workers during handling such bamboo;
c	All metal scaffolds used in building or other construction work shall conform to the approved standards;
13.2	SUPERVISION BY A RESPONSIBLE PERSON: No scaffold shall be erected, added, altered or dismantled except under the supervision of a responsible person.
13.3	Maintenance
a	The scaffold used in building or other construction work shall be maintained in good repairs and the measures taken against its accidental displacement or any other hazard;
b	No scaffold or part thereof shall be partly dismantled and allowed to remain in such a condition unless —
b-i	The stability or safety of the remaining portion of such scaffold has been ensured by a responsible person for the safety of such scaffolds;
b-ii	In case the remaining part of such scaffold cannot be used by the building workers, necessary warning notice written in Hindi and in a language understood by the majority of the building workers that such scaffold is unfit for use, shall be displayed at the place where such scaffold is erected.
13.4	STANDARDS, LEDGERS, PUTLOGS
a	Standards of a scaffold shall be plumb, where practicable, fixed sufficiently close together to secure the stability of such scaffold having regard to all the possible working situations and conditions for the intended use of such scaffold, spaced, as close as practicable, to ensure safety and stability of such scaffold;
b	Adequate measures are taken to, prevent displacement of a standard of a scaffold either by providing sole plate or a base plate, as necessary;
c	Ledgers of metal scaffold are placed at vertical intervals with due regard to safety and stability of such scaffold;
d	Bamboo ledgers are kept as nearly as possible and are placed and fastened to the standards of a scaffold with due regard to the stability of such scaffold.
13.5	WORKING PLATFORM
a	Working platform shall be provided around the face or edge of a building adjoining at every upper most permanent floor of such building under construction and at any level where construction work of such building is carried out;
b	A platform shall be designed to suit the number of building workers to be employed on each bay of a scaffold work on such platform and the materials or articles and tools to be carried with them in such bay;

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c	The safe working load and the number of building workers to be employed in each bay of a scaffold shall be displayed for the information of all the building workers employed at such construction site.
13.6	BOARD, PLANK AND DECKING
a	Board, plank and decking used in the construction of a working platform shall be of uniform size and strength and shall be capable of supporting the load and number of building workers keeping in view the safety of such building workers;
b	Metal decking, which forms part of a working platform, shall be provided with non-skid surface;
c	No board or plank which forms the working platform shall be projected beyond its end support unless it is effectively prevented from tripping or lifting and board, plank or decking shall be fastened and secured;
d	At any one time, not more than two working platforms per bay, shall be used to support building workers or materials or articles at such bay;
e	Adequate measures shall be taken to prevent injury which may be caused by falling material and objects by using safety nets or other suitable means;
f	Concrete, other debris or materials shall not be allowed to accumulate at any platform on a scaffold;
g	Where a work is to be done at the end of a wall, working platform at such workplace shall be faced or, wherever practicable, at least 0.6 m beyond the end of such wall.
13.7	REPAIR OF DAMAGED SCAFFOLD
a	No building worker shall be permitted to work on a scaffold that has been damaged or weakened unless adequate safety measures have been taken to ensure the safety of such building worker;
b	Necessary warning signs shall be displayed at such places where repairs of scaffold are undertaken.
13.8	OPENING
a	There shall be no opening in any working platform except for allowing access to such working platform;
b	Wherever opening on a platform is unavoidable, necessary measures for protection against falling of objects or building workers from such platform shall be taken by providing suitable safety nets, belts or any other similar means;
c	Access from one working platform to another platform on a scaffold, if required, shall be provided with suitable and safe ladder for the use of building workers working on such platforms;
d	Every opening or shaft in the floor shall be provided with suitable means to protect the fall of a person or material by providing suitable fencing or railing of height not less than 900 mm.
13.9	GUARDRAILS: Every side of a working platform from which a person is liable to fall shall be provided with suitable and safe guardrails and toe board of adequate strength to prevent fall of any building worker, material or tools from such platform.
13.10	SCAFFOLD USED BY BUILDING WORKERS OF DIFFERENT EMPLOYERS
a	Where a scaffold or a part of a scaffold is used, which has previously been used by another employer for his building workers, such scaffold or part thereof shall be used only after its inspection and examination by a responsible person for ensuring that such scaffold or part thereof is safe and fit for such use;

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b	If any rectification, alteration or modification in a scaffold or part thereof, needed to suit its use, shall be made in consultation with the responsible person.
13.11	PROTECTION AGAINST ELECTRIC POWER LINE:
	The contractor shall ensure that all necessary and practical measures for protection are taken to prevent any building worker, working on a scaffold, from coming into contact with the electric wires or dangerous equipment.
13.12	SCREENING NET AND WIRE NETS:
	Where a scaffold is erected in an area where the construction activities may pose hazards to pedestrians or vehicular traffic nearby from the falling of objects, wire nets or screening nets shall be used to envelope such scaffold.
13.13	TOWER SCAFFOLD
a	The height of every tower scaffold used in building or other construction work shall not be more than eight times the lesser to the base dimension of such scaffold;
b	A tower scaffold shall be lashed to a building or a fixed structure before being used by the building workers;
c	Any tower scaffold which can be moved or catered shall be –
c-i	Constructed with due regard to the stability and, if necessary, adequately weighted at the base;
c-ii	Used only on plain and even surface; and
c-iii	Has casters provided with positive locking devices to hold such scaffold in position;
d	No building worker shall remain on board scaffold or leave behind tools and material when it is being shifted from one position to another position.
13.14	GEAR FOR SUSPENSION OF SCAFFOLD
a	Chains, ropes or lifting gears used for suspension of a scaffold shall be of adequate strength, made of sound material and suitable for the purpose of their use and maintained in good repairs;
b	Chains, wires, ropes or metal tubes used for the suspension of a scaffold shall be:
b-i	Properly and securely fastened to every anchorage point and to the scaffold ledgers of other main supporting members used for the support of such scaffold; and
b-ii	So positioned as to ensure stability of the scaffold.
13.15	TRESTLE SCAFFOLD AND CANTILEVER SCAFFOLD
a	No trestle scaffold shall be constructed with more than three tiers or if its working platform is more than 4.5 m above the ground or floor or other surface upon which such scaffold is erected;
b	Trestle scaffold shall be designed by professional engineer and shall have the approval of the Engineer in-charge before being taken into use.
c	No trestle scaffold shall be erected on a suspended scaffold;
d	No cantilever or jib scaffold shall be used unless it is adequately supported, fixed and anchored on opposite side of its support and have out triggers of adequate length and, where necessary sufficiently, supported and braced to ensure safety and stability of such scaffold;
e	No working platform resting on bearers let into a wall at one end and without other support shall be used unless such bearers are of adequate strength, braced through the wall and securely fastened on the other side.

13.16	SCAFFOLD SUPPORTED BY BUILDING
a	No part of a building shall be used as support or part of a scaffold unless such part of the building is made of sufficient strength and made of sound material to afford safe support;
b	Overhanging eaves gutters shall not be used for supporting scaffold;
c	Suspended scaffold shall be made of in accordance with the approved standards before being used by the building workers.
13.17	USE OF WINCHES AND CLIMBERS FOR SUSPENDED SCAFFOLD
a	No scaffold shall be raised or lowered by winches or climbers unless such scaffold is made of sound material, adequate strength and has been tested and certified safe for use of winches or climber by a competent person before being taken into use;
b	All suspended scaffolds counter-balanced by counter weights shall be of approved types before being taken into use for building or other construction work;
c	The working platform of a suspended scaffold shall be securely fastened to the building or structure as to be safe and to prevent such platform from swing;
d	The safe working load that a suspended scaffold can carry, shall be displayed where such scaffold is being used
13.18	SAFETY DEVICES FOR SUSPENDED SCAFFOLD
a	Every suspended scaffold, raised or lowered by the winches or climbers, shall be provided at each of its suspension point with a safety rope with automatic safety device mounted on each of such rope so that such safety rope with such automatic safety device support the platform of such
b	scaffold in the event of failure of the primary suspension wire ropes, winches, climbers or any part of the mechanism used for raising or lowering such suspended scaffold;
b-i	Provided that the sl.no. (a) shall not apply -
	Where the platform of such scaffold is supported at two independent suspension wire rope at or near each end of such platform so that in the event of failure of one of such suspension wire rope, the other wire rope is capable of sustaining the weights of such platform and its load and prevent it from tilting; or
b-ii	Where a system is incorporated which operates automatically to support the platform of such scaffold and its load in the event of failure of the primary suspension wire rope of such scaffold.

14.0	SAFETY IN THE ERECTION OF STRUCTURAL FRAME & FORMWORK
14.1	GENERAL PROVISION
a	The trained building worker under the direct supervision of a person, responsible for structural frame and formwork, shall be employed for erection of such structural frame or formwork, dismantling of building and structure and performance of and engineering work formwork, false work and shoring work;
b	Adequate measures shall be taken to guard against hazards arising from any temporary state of weakness or unsuitability of a structure.
14.2	FORMWORK, FALSE WORK AND SHORING
a	Formwork and false work shall be so designed, constructed and maintained that such formwork and false work are able to support the load that may be imposed on them;
b	Such formwork shall be so erected that working platform, means of access, bracings, means of handling and stabilizing could easily be fixed with such formwork.
14.3	ERECTION OR DISMANTLING OF STEEL AND PREFABRICATED
a	Erection or dismantling of any pre-fabricated structure shall be made safe against danger by using appropriate means such as ladders, gangways or fixed platforms, buckets, boatswains chair or other appropriate means suspended from lifting appliances, safety harness, life lines, catch nets or catch platforms, power-operated mobile working platforms etc.;
b	The work of erection or dismantling of buildings or structures or formwork or false work or shoring or any other civil engineering work shall be carried out by trained building workers under the supervision of a person responsible for such work;
c	Steel or prefabricated structures shall be so designed and made that such structures can be safely transported or erected; and weight of each unit of such structures shall be clearly marked on such unit;
d	The design of each such part shall maintain stability of each part of the structures referred to in clauses above when erected, and to prevent danger, the design shall explicitly take into -
d-i	The relevant conditions and methods of attachment in the operations of stripping, transport, storing and temporary support during erection of such parts;
d-ii	Safeguards, such as provision of railings with working platforms, and for mounting such railings and platforms easily on the structural steel or prefabricated parts;
e	The hooks and softer devices built in or provided on the structural steel or prefabricate parts that are required for lifting and transporting such parts shall be so shaped, dimensioned and positioned to withstand the stresses to which such hooks or other devices are subjected;
f	Prefabricated parts made of concrete shall not stripped or erected before such concrete has set and hardened sufficiently to the extent provided for in the plans, and such parts are examined by the responsible person for any sign of damage before their use;
g	Store-places shall be so constructed that –
g-i	There shall be no risk of structural steel of prefabricated parts falling or overturning;
g-ii	Storage conditions shall generally ensure stability and avoid damage having regard to the method of storage and atmospheric conditions; and
g-iii	Racks shall be set on firm ground and designed so that units cannot move accidentally in such store-places;

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h	Structural steel or pre-fabricated parts shall not be subjected to stresses prejudicial to their stability while they are stored or transported or raised or set down;
i	Tongs, clamps and other appliances for lifting structural steel and prefabricated part shall be:
i-i	In such shape and dimensions as to ensure a secure grip without damaging and marked with the maximum permissible load in the most unfavorable lifting conditions; and
i-ii	Structural steel or pre-fabricated parts shall be lifted by such methods and appliances that prevent them from spinning accidentally;
j	Structural steel or pre-fabricated parts shall be provided with railings and working platforms before raising such parts to prevent any danger of falling of building workers, materials or articles at the time of any work with such parts;
k	All reasonably practical measures shall be taken to avoid injury to building workers, building structure or equipment while structural steel or pre-fabricated parts are handled or stored or transported or raised or lowered;
l	Structures shall not be worked on during violent storms or high winds or any other such hazardous situation;
m	The risk of falling to which building workers, moving on high or sloping girders, may be exposed is limited by all means of adequate collective protection or by the use of a safety harness which shall be well secured to a sufficiently strong supports;
n	Structural steel parts, which are to be erected at a great height, shall, as far as practicable, be assembled on the ground;
o	When structural steel or pre-fabricated parts are being erected, a sufficiently extended area underneath the workplace shall be barricaded or guarded;
p	Steel trusses, which are being erected, shall be adequately shored, braced or guyed until they are permanently secured in position;
q	Structural members shall not be forced into place by the hoisting machine while any building worker is in such a position that he is likely to be injured by such operation.
14.4	FORMWORK
a	All formwork shall be properly designed keeping in view the safety of building workers, buildings or structures;
b	A responsible person for structural frame and formwork shall –
b-i	Inspect and examine the material, timber, structural steel and scaffolding for its strength and suitability before being taken into use;
b-ii	Lay-down procedures to cover all stages of such structural frame and formwork;
b-iii	Supervise such structural frame and formwork;
b-iv	Take all necessary steps or measure to correct any situation with a view to prevent accident or dangerous occurrence during performances of such structural frame and formwork.
14.5	DE-SHORING
a	When shoring is removed, sufficient props shall be left in place of such shoring to prevent any possible hazard; and
b	De-shoring shall be adequately braced and tied together with support to prevent any hazard.

15.0	SAFETY IN CONCRETE WORK
15.1	GENERAL PROVISIONS REGARDING USE OF CONCRETE
a	All construction with the use of concrete or reinforced concrete shall be based on plans including specification of steel and concrete and other material to be used in such construction
a-i	Giving technical details regarding methods for safe placing and handing of such materials and indicating the type, quality and arrangement of each part of a structure of such construction; and
a-ii	Explaining the sequence of steps to be taken for completion of such construction;
b	Formwork and shores used for concrete work shall be structurally safe and properly braced or tied together so as to maintain position and shape of formwork or shores;
c	Formwork structure used shall have sufficient catwalks and other secure access for inspection of such structure if such structure is in two or more tiers;
d	No machinery or any object should fall below by using wire nets, screen nets etc.
15.2	PREPARATION AND POURING OF CONCRETE AND ERECTION OF CONCRETE STRUCTURE
a	A building worker handling cement or concrete shall –
a-i	Wear close-fitting clothing, gloves, helmet or hardhat, safety goggles, proper footwear and respirator or mask to protect himself from danger in such handling;
a-ii	Keep as much of his body covered as is required to protect himself from danger in such handling;
a-iii	Take all necessary precautions to keep cement and concrete away from his skin in such handling;
b	Lime pits shall be fenced or enclosed and filled and emptied by such devices, which do not require workers to go into the pit;
c	Moving parts of the elevators, hoists screens bunkers, chutes, grouting equipment used for concrete work and of other equipment used for storing, transport and other handling ingredients of concrete shall be securely fenced to avoid contact of building workers with such moving parts;
d	Screw conveyors used for cement, lime and other dusty materials shall be completely enclosed.
15.3	BUCKETS
a	Concrete buckets used with cranes or aerial cableways shall be free from projections from which accumulations of concrete could fall;
b	Movements of concrete buckets shall be governed by signals necessary to avoid any danger by such movements.
15.4	PIPES AND PUMPS
a	A scaffolding carrying a pipe for pumped concrete shall be strong enough to support such pipe at a time when such pipe is filled with concrete or water or any other liquid and carry the combined load of the all the building workers who may be on such scaffold at such time, safely;
b	Every pipe for carrying pumped concrete shall be –
b-i	Securely anchored at its end point and at each curve on it;

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b-ii	Provided near the top of such pipe with an air release valve;
b-iii	Securely attached to a pump nozzle by a bolted collar or other adequate means;
c	The operation of concrete pumps shall be governed by standard signals;
d	Building workers employed around a concrete pump shall wear safety goggles;
15.5	MIXING AND POURING OF CONCRETE
a	The concrete mixture shall not contain any material, which may unduly affect the setting of such concrete, weaken such concrete or corrode steel used with such concrete;
b	When dry ingredients of concrete are being mixed in confined spaces such as silos –
b-i	The dust shall be exhausted at the time of such mixing and
b-ii	In case the dust the dust cannot be exhausted, as specified, the workers shall wear respirators at the time of such mixing;
c	When concrete is being tipped from buckets, building workers shall be kept out of the range of any kickbacks of such buckets;
d	Loads shall not be dumped or placed on settling concrete.
15.6	CONCRETE PANELS AND SLABS
a	All parts of a concrete panel or concrete slab shall be hoisted uniformly;
b	Concrete panels shall be adequately braced in their final positions and such bracings shall remain in such positions until such panels are adequately supported by other parts of the construction for which such panels are used;
c	Temporary bracings of concrete panels shall be securely fastened to prevent any part of such panels from falling when such panels are being moved.
15.7	STRESSED AND TENSIONED ELEMENTS
a	Building workers shall not stand directly over jacking equipment while stressing of concrete girders and beams is being done;
b	A pre – stressed concrete unit shall not be handled except at points on such unit and by the devices specified for such work by the manufacture of such devices;
c	During transport, pre-stressed concrete girders or concrete beams shall be kept upright by bracing or other effective means;
d	Anchor fittings for pre-tensioned strands of pre-stressed concrete girders of concrete beams are kept in a safe condition in accordance with the instruction of manufacturer of such anchor fittings;
e	Building workers shall not stand behind jacks or in line with tensioning elements and jacking equipment during tensioning operations of pre-stressed concrete girders or concrete beams;
f	Building workers do not cut wires of pre – stressed concrete girders or concrete beams under tension before such concrete used of such girder or beams is sufficiently hardened.
15.8	VIBRATORS
a	A building worker, who is in good physical condition, shall operate vibrators used in concreting work;
b	All practical measures shall be taken to reduce the amount of vibration transmitted to the operators working in concreting work and

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c	When electric vibrators are used in concreting work
c-i	Such vibrators shall be earthed;
c-ii	The leads of such vibrators shall be heavily insulated; and
c-iii	The current shall be switched off when such vibrators are not in use.
15.9	INSPECTION AND SUPERVISION
a	A person responsible for a concreting work shall supervise the erection of the formwork, shores, braces and other supports used for such concreting work, make a thorough inspection of every formwork to ensure that such formwork is safe, regularly inspect the formwork, shores, braces, re-shores and other supports during the placing of concrete, keep all records of inspections referred to above at the workplace relating to such inspection and produce them for inspection upon the demand.
b	Any unsafe condition, which is discovered during the inspections, shall be remedied immediately.
15.10	BEAMS, FLOORS AND ROOFS
a	Horizontal and diagonal bracings shall be provided in both longitudinal and transverse direction as may be necessary to provide structural stability to formwork used in concreting work and shores used in such concreting work shall be properly seated on top and bottom and secured in their places;
b	Where shores used in concreting work rest upon the ground, base plates shall be provided for keeping such shores firm and in level;
c	Where the floor to ceiling height of a concreting work exceeds 9 m or where the formwork deck used in such concreting work is supported by shores constructed in two or more tiers, or where the dead, live and impact loads on the formwork used in such concreting work exceed 700 kilogram per m ² , the structure of such formwork shall be designed by a professional engineer in the relevant field and the specifications and drawings of such formwork kept at such construction site and produced on demand.
d	Where a professional engineer designs the structure of the formwork used in concreting work, such engineer shall be responsible for the supervision of construction and the stability of such structure.
15.11	STRIPPING
a	Stripping of formwork used in concreting work shall not commence until the concrete on such formwork is fully set, examined and certified to this effect by the responsible person and record of such examination and certification is maintained;
b	Stripped forms in concreting work shall be removed or stock piled promptly after stripping from all areas in which building workers are required to work or pass;
c	Protruding nail, wire ties and other formwork accessories not required for subsequent concreting work shall be pulled, cut or otherwise made safe.
15.12	RE-SHORING
a	Re-shoring used in concreting work shall be provided to a slab or beam for its safe support after its stripping or where such slab or beam is subjected to superimposed loads due to construction above such slab or beam;
b	The provisions applicable to shoring in a concreting work shall also be applicable to reshoring in such work or pass.

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16.0	SAFETY IN CONSTRUCTION, REPAIR & MAINTENANCE OF STEEP ROOFS
16.1	WORK ON STEEP ROOFS:
	All practicable measures shall be provided to protect the building workers against sliding when carrying outwork on steep roofs.
16.2	CONSTRUCTION AND INSTALLATION OF ROOFING BRACKETS
a	Roofing brackets shall be constructed to fit the pitch of steep roof and such brackets shall be used to provide level working platform;
b	Roofing bracket shall be secured in its place by nailing pointed metal projections attached to the underside of such bracket and securely driven into a steep roof on which it is used or secured by a rope passed over the ridgepole and tie of such roof.
16.3	CRAWLING BOARDS
a	All crawling boards used for work on steep roofs shall be of adequate strength, made of sound material and of the type approved for the purpose of their use;
b	Crawling boards shall be kept in good repairs and inspected by a responsible person before being taken into use;
c	Crawling boards shall be secured to a steep roof on which it is used by ridge hooks or other effective means;
d	A firmly fastened lifeline of adequate strength shall be strung beside each crawling board throughout its length while using such crawling boards.

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17.0	SAFETY IN CATCHES PLATFORMS, HOARDINGS & CHUTES
17.1	CATCH PLATFORM
a	Catch platform shall not be used for storage of material or as a working platform;
b	Catch platform shall at least be of 2 m wide and inclined so that the position of outer edge of such platform is 1500 mm higher than the inner edge;
c	The open end of catch platform shall be properly fenced to the height not less than 1 m.
17.2	HOARDINGS:
	Hoardings shall be constructed when the Registering Authority / Assistant Labour Commissioner considers it necessary for protection of building workers and directs such employer to construct such hoardings.
17.3	CHUTES, ITS CONSTRUCTION AND USE
a	Wooden or metal chutes which are at an angle of more than 45° to the horizontal and used for the removal of materials shall be closed on all sides except at their openings used for receiving or discharging of materials or articles;
b	All openings of chutes except their top openings shall be closed when not in use;
c	Every chute –
c-i	Shall be constructed of sound material, adequate strength and suitable for the purpose it is intended for use;
c-ii	Exceeding 12 m in height shall be constructed in accordance with the design and drawings of professional engineer for such;
c-iii	A suitable warning notice shall be displayed at conspicuous locations, written in Hindi and in a local language, at the discharge end of every chute;
c-iv	Shall be cleared when debris has accumulated to a height, which can pose danger to building worker, but such clearance shall be done in no case less frequently than once a day.

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18.0	SAFETY IN WORK ON OR ADJACENT TO WATER
18.1	TRANSPORT OF WORKERS BY WATER
a	When any building worker has to proceed to or from any workplace by water for purposes of carrying on a building or other construction work, proper measures shall be taken to provide for his safe transportation and vessels used for such purpose shall be in charge of a responsible person, properly equipped for safe navigation and maintained in good condition;
b	Maximum number of persons which can be safely carried in a vessel shall be marked plainly and conspicuously on such vessel and such number shall not be exceeded during use of such vessel for carrying persons;
c	Adequate protecting shall be provided to the building workers in such vessel from inclement weather;
d	Such vessel shall be manned by adequate and experienced crew;
e	In case the bulwarks of such vessel are lower than 60 cm from the level of the deck of such vessel, the open edge of such bulwarks shall be fitted with suitable fencing to a height of at least 1 m above such deck and the post and stanchions and similar parts used in such fencing shall not be spaced more than 2 m;
f	The number of life buoys on deck of such vessel shall at least be equal to the number of crew members of such vessel and shall not be less than two;
g	All life buoys on deck of such vessel shall be kept in good state of maintenance and so placed that if such vessel sinks then they will remain afloat and one of such buoys shall be within the immediate reach of the Steersman of such vessel and another is situated after part of such vessel; and
h	The position of the steersman of the vessel shall be such that he has a reasonably free view of all sides.
18.2	PREVENTION FROM DROWNING
a	Where, on or adjacent to the workplace of any contraction site, there is water into which a building worker employed for work on such site, in the course of his employment, may fall and has the risk of drowning, suitable rescue equipment shall be provided and kept in an efficient state of ready use and measures shall be taken to arrange for the prompt rescue of such building worker from the danger of drowning and where there is a special risk of such fall from the edge of adjacent land or from a structure adjacent to or above the water, or from floating stage on such water, secure fencing shall be provided near the edge of such land, structure or floating stage, as the case may be, to prevent such fall, and such fencing may be removed or allowed to remain unerected for the time and to the extent necessary for the access of building workers to such work or the movement of material for such work;
b	For handling rescue equipment, at least two persons knowing diving should be available at such sites.

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19.0	SAFETY IN COFFERDAMS & CAISSONS
19.1	EVERY COFFERDAM AND CAISSON SHALL BE
a	Of good construction, sound material and of adequate strength, provided with adequate means for workers to reach safely at the top of such cofferdam or caisson in the event of an in rush of water and safe means of access to every place where workers shall be employed;
b	Work relating to construction, positioning, modification, dismantling of cofferdams or caissons shall be carried out under the supervision of a responsible person and inspected by the responsible person at the specified intervals;
c	A worker shall be allowed to work in a cofferdam or caisson after such cofferdam or caisson has been inspected and found safe by responsible person within such preceding period as approved and a record of such inspection maintained.
19.2	WORK IN COMPRESSED AIR IN A COFFERDAM OR CAISSON SHALL BE
a	Carried out in accordance with the procedure laid down;
b	Carried out by such building workers who have completed eighteen years of age and are medically examined and found fit for the work;
c	Carried out under the supervision of a responsible person;
d	If the work in cofferdam or caisson is carried out in shifts, a record of the time spent by each worker in each such shift for carrying out the work shall be maintained in a register with particulars or time taken for the compression of such building worker, if any;
e	At every work site or project in a cofferdam or caisson, where workers are employed to work in compressed air environment, a construction medical officer assisted by a nurse or trained first aid attendant, shall be available at all times and there shall be one standby reserve compressor to meet the emergency.
19.3	PRESSURE PLANT AND EQUIPMENT
a	Pressure plant and equipment for which it is used shall be –
a-i	Properly maintained in good repairs and working condition and fitted with a suitable safety valve or other effective device to provide maximum safe discharge pressure from being exceeded at any time; a suitable pressure gauge with a dial range not less than 1.5 time and not exceeding twice the maximum working pressure, easily visible and designed to show at all times, the internal pressure in kilogram per square centimeter and marked with the maximum safe working pressure, a suitable stop valve or valves by which the pressure plant or the system of the pressure plant may be isolated from the source supply of pressure or otherwise;
a-ii	Every pressure plant or equipment shall be thoroughly examined by the competent person, externally, once in every period of six months; internally, once in every period of twelve months; and by Hydraulic test, once in a period of four years.

20	SAFETY IN DEMOLITION WORK
20.1	PREPARATION
a	All glass or similar material or article in exterior openings shall be removed before commencing any demolition work and all water, steam, electric, gas and other similar supply lines put off and suitably capped and the concerned department of the appropriate authority informed and permission obtained wherever required before commencing;
b	Wherever it is necessary to maintain water, gas or electric line or power during such demolition, such line shall be so located or protected with substantial coverings so as to protect it from damage and to afford safety to the building workers and the general public.
20.2	PROTECTION OF ADJACENT STRUCTURES
20.2.1	Examination of walls etc. of adjacent structures –
a	During demolition process, the contractor shall examine the walls of all structures adjacent to the structure to be demolished to determine the thickness, method of support to such adjacent structures and;
b	In case, such employer has reason to believe that any of such adjacent structure is unsafe or may become unsafe during such demolition process, he shall not perform demolition activity unless stability to such unsafe adjacent structure from collapsing has been taken. All roads and open spaces adjacent to the site of demolition work shall be closed or suitably protected by bracketing.
20.3	DEMOLITION OF WALLS, PARTITIONS, ETC.
a	Any demolition of walls or partitions shall be proceeded in a systematic manner as per the standard safe operating practices approved and all work above each tier of any floor beams shall be completed before the safety of the supports of such beam is impaired;
b	Masonry shall be neither loosened nor permitted to fall in such masses or volume or weight as to endanger the structural stability of any floor or structural supports;
c	No wall chimney or other structure or part of a structure shall be left unguarded in such a condition that it may fall, collapse or weaken due to wind pressure or vibration;
d	In the case of demolition of exterior walls by hand, safe footing shall be provided for the workers employed in, such walls or partitions, which are to be demolished by hand shall be not left standing more than one store high above the uppermost floor on which persons are working.
20.4	METHOD OF OPERATION: The contractor shall ensure that debris, bricks and other materials or articles are removed by means of chutes, buckets or hoists and through openings in the floors.
20.5	ACCESS TO FLOOR
a	Safe access to and egress from every building shall be provided at all times in the course of demolition by means of entrances hallways, stairways or ladder runs which shall be so protected as to safeguard the workers using such means from falling material or articles;
b	Demolition of structural steel etc. shall be demolished column by column and tier by tier and every structural member, which is being demolished, shall not be under any stress, and such structural member shall be suitably lashed to prevent it from any uncontrolled swinging, dropping or falling or falling;

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c	Large structural members shall not be thrown or dropped from the building, but carefully lowered by adopting suitable safe method;
d	Where a lifting appliance like a derrick is used for demolition, the floor on which such lifting appliance rests shall be completely planked over or supported and such floor shall be of adequate strength to sustain bearing load for such lifting appliance and its operation.
20.6	STORAGE OF MATERIAL OR ARTICLE
a	No materials or articles shall be not stored or kept on platform, floor or stairways of a building being demolished, provided that this clause shall not apply to the floor of a building when such floor is of such strength as to support safely the load to be superimposed by storing such material or articles;
b	No access to any stairway or passageway shall be affected or blocked by storing any material or article;
c	Suitable barricades shall be provided so as to prevent materials or articles from sliding or rebounding into any space used by the workers.
20.7	FLOOR OPENINGS:
	Every opening used for the removal of debris from every floor which is not closed to access, except the top or working floor, shall be provided with an enclosure from such floor to its ceiling, or such opening is so barricaded that no building worker shall access to within a horizontal distance of 6.0 m from such opening through which debris is being dropped.
20.8	INSPECTION:
	A person responsible for demolition work shall make continuous inspections during demolition process so as to detect any hazard resulting from weakened or deteriorated floors or walls or loosened materials or articles, and that no building worker shall be permitted to work where such hazard exist unless remedial measures like shoring or bracing shall be taken to prevent such hazards.
20.9	WARNING SIGNS, BARRICADES, ETC.
a	Barricades and warning sign shall be erected along every side throughout the length and breadth of a building or other construction work to be demolished to prevent unauthorized persons from entering into the during demolition operations;
b	During the demolition of an exterior masonry wall or a roof from a point more than 12 m above the adjoining ground level of such wall or roof, if persons below such wall or roof are exposed to falling objects, suitable and safe catch platform shall be provided and maintained at a level not more than 6 m below the working level except where an exterior built-up scaffold is provided for safe and adequate protection of such persons;
c	Suitable and standard warning signs shall be displayed or erected at conspicuous places or position at the workplace;
20.10	MECHANICAL METHOD OF DEMOLITION
a	The following requirements shall be fulfilled in case the mechanical method of demolition like use of swinging weight, clamshell bucket, power shovel, bulldozer or other similar mechanical methods are used for the purpose of demolition namely —
a-i	The building or structure or structure or remaining portion thereof shall be not more than 12 m in height;

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a-ii	Where a swinging weight is used for demolition, a zone of such demolition having a radius of at least 1.5 times the height of the structure of portion thereof being demolished shall be maintained around the points of impact of such swinging weight;
a-iii	Where a clamshell bucket is being used for demolition, a zone of demolition shall be maintained within eight meters of the line of travel of such bucket;
a-iv	Where other mechanical methods are being used to affect total or partial collapse of a building or other construction work, there shall be maintained, in the area into which the affected portion of such building or other construction work may fall, a zone of demolition at least 1.5 times the height of such affected portion thereof; and
a-v	No person other than building workers or other persons essential to the operation of demolition work shall be permitted to enter a zone of demolition, which shall be provided with substantial barricades.

21.0	FIRE EXTINGUISHERS & OTHER APPLIANCES OF FIRE FIGHTING																																		
21.1	FIRE EXTINGUISHERS & OTHER MEANS OF PREVENTION AND PROTECTION																																		
a	Every contractor shall have a fire protection and prevention plan developed and implemented keeping in view the following:																																		
a-i	The specific work practices requiring fire control measures;																																		
a-ii	Response measures to be taken in case of fire;																																		
a-iii	Equipment required;																																		
a-iv	Personnel requirements and responsibilities;																																		
a-v	Schedules of daily and weekly inspection;																																		
a-vi	Open flames and fires are prohibited in all underground construction;																																		
a-vii	Readily visible signs to be posted in the fire prone/inflammable/explosive areas prohibiting smoking use of open flames and other hot work.																																		
a-viii	A system of Permit-to-Work.																																		
b	For the protection of the workers from the outbreak of fire, the contractor shall Provide, maintain and regularly inspect the Fire extinguishing equipment, which shall be sufficiently provided to extinguish any probable fire; <table><tr><td colspan="4">Suitability of portable fire extinguishers</td></tr><tr><td rowspan="2">Class of fire</td><td colspan="3">Type of extinguisher</td></tr><tr><td>Water</td><td>DCP</td><td>CO2</td></tr><tr><td>A</td><td>Yes</td><td>Yes</td><td>Yes</td></tr><tr><td>B</td><td>No</td><td>Yes</td><td>Yes</td></tr><tr><td>C</td><td>No</td><td>Yes</td><td>Yes</td></tr><tr><td>D</td><td>No</td><td>Yes</td><td>Yes</td></tr><tr><td>Electrical</td><td>No</td><td>Yes</td><td>Yes</td></tr></table>				Suitability of portable fire extinguishers				Class of fire	Type of extinguisher			Water	DCP	CO2	A	Yes	Yes	Yes	B	No	Yes	Yes	C	No	Yes	Yes	D	No	Yes	Yes	Electrical	No	Yes	Yes
Suitability of portable fire extinguishers																																			
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B	No	Yes	Yes																																
C	No	Yes	Yes																																
D	No	Yes	Yes																																
Electrical	No	Yes	Yes																																
c	Ensure availability of an adequate supply of water at ample pressure;																																		
d	Make available																																		
d-i	Adequate number of trained persons required to operate the fire extinguishing equipment;																																		
d-ii	Properly maintain Fire extinguishing equipment and inspect them at regular intervals of not less than once in a year by the responsible person and a record of such inspections maintained;																																		
e	Portable fire extinguishers provided in the operator's cabin of earthmoving machinery, material handling systems, construction equipment etc. shall be regularly inspected, maintained and replenished/refilled;																																		
f	The operators and the helpers of such equipment shall be trained in the methods operating the equipment and fighting the fire effectively;																																		

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g	All combustion engine power equipment shall be so located that the exhausts are well away from combustible material;
h	No smoking shall be allowed at or in the vicinity of site operation/ while working at site, which constitute fire hazards and shall be conspicuously posted with or open flame signs;
i	In the flammable environment as described in IS: 9570, the electrical fittings and equipment shall be of flame proof type conforming to IS: 2206 & IS: 2148;
j	Arrangements shall be made to contain sparks generated during welding, cutting or other operations and spark shall not be allowed to fall down on combustible material kept below; All means of exit shall be kept free of obstruction at all times;
k	Appropriate type of fire extinguishers according to IS: 5698 shall be kept in fully charged condition at the places which have potential risk of fire;
l	The contractor shall educate his or his sub-contractors' men working in the vicinity of fire risk, on how to operate these equipment and know in particular circumstances which type of extinguishers is to be used;
m	The contractor shall take full responsibility for the upkeep and replenishment/refilling of the fixed and portable fire extinguishers.

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ANNEXURE - A TO ANNEXURE - I

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ANNEXURE – A
As per/ Part of Clause 8.8.5
Medical Centre & Ambulance

A. Medical Centre

1. Paramedical staff

1.a	When < 500 workers, 1 Trained Male Nurse (round the clock deployment)
1.b	When ≥ 500 workers* *= In case the number of workers is envisaged to exceed 500, a medical practitioner is to be engaged.
1.b.i	Registered Medical Practitioner (Qualified MBBS) to be deployed for at least 8 hours in a day, 5 days per week
1.b.ii	2 Trained Male Nurses (round the clock deployment)
2.	All articles as per Schedule IV of BOCW Central Rules, 1998 to be made available in the Medical Centre (given under for convenience)
3.	Basic Facilities/ Requirements to be provided as per location eg. Refrigerator, Air Conditioner, Anti Venom Serums etc.
4.	Tie-ups with specialty hospitals to be ensured for referring serious patients

SCHEDULE IV (BOCW CENTRAL RULES, 1998) ARTICLES FOR AMBULANCE ROOM [SEE RULE 226 (C)]

i.	A glazed sink with hot and cold water always available.
ii.	A table with a smooth top at least 180 cm x 105 cm.
iii.	Means for sterilizing instruments.
iv.	A couch.
v.	Two stretchers.
vi.	Two buckets or containers with close fitting lids.
vii.	Two rubber hot water bags
viii.	A kettle and spirit stove or other suitable means of boiling water.
ix.	Twelve plain wooden splints 900 cm x 100 cm x 6 cm.
x.	Twelve plain wooden splints 350 cm x 75 cm x 6 cm.
xi.	Six plain wooden splints 250 cm x 50 cm x 12 cm.
xii.	Six woolen blankets.
xiii.	Three pairs of artery forceps.
xiv.	One bottle of spiritus annemia aremations (120 ml).
xv.	Smelling salt (60 gm).
xvi.	Two medium size sponges.
xvii.	Six hand towels.
xviii.	Four kidney trays.
xix.	Four cakes of toilet, preferably antiseptic soap.
xx.	Two glass tumblers and tow wine glasses.
xxi.	Two clinical thermometers.
xxii.	Two tea spoons.
xxiii.	Two graduated (120 ml) measuring glasses.
xxiv.	Two minimum measuring glasses.
xxv.	One wash bottle (1000 cc) for washing eyes.
xxvi.	one bottle (one liter) carbolic lotion 1 to 20.
xxvii.	Three chairs.
xxviii.	One screen.
xxix.	One electric hand torch
xxx.	Four first aid boxes or cupboards stocked to the standards prescribed
xxxi.	An adequate supply of tetanus toxide.
xxxii.	Injections—morphine, pethidine, atropine, adrenaline, coramine, (6 each).
xxxiii.	Cramine liquid (60 ml).
xxxiv.	Tablets—antihistaminic antispasmodic (25 each).
xxxv.	Syringes with needles—2 cc, 5 cc, 10 cc and 500 cc.
xxxvi.	Three surgical scissors.

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xxxvii.	Two needle holders, big and small.
xxxviii.	Suturing needles and materials.
xxxix.	Three dissecting forceps
xl.	Three dressing forceps
xli.	Three scalpels.
xlii.	One stethoscope and a B. P. apparatus.
xliii.	Rubber bandage—pressure bandage.
xliv.	Oxygen cylinder with necessary attachments.
xlv.	Atropine eye ointments.
xlvi.	I. V. Fluids and sets 10 nos.
xlvi.	Suitable, foot operated, covered, refuse containers.
xlvi.	Adequate number of sterilized, paired, latex hand gloves.

B. Ambulance

1.	When number of workers is <1000: If the distance to a major hospital capable of handling critical injuries expected at Site is ≤ 50 KM from Site, then 1 BLS (Basic Life Support)/ Type B Ambulance otherwise ALS* (Advanced Life Support)/ Type D Ambulance
2.	In case no. of worker more than 1000, then additional 1 nos BLS Ambulance shall be deployed by BHEL under clause no 8.8.5.
3.	If no. of workers increases to >2000 workers another (one) additional BLS Ambulance to be deployed by BHEL under clause no. 8.8.5.
4.	Minimum Articles as per Schedule V of BOCW Central Rules to be ensured in each Ambulance. (given under for convenience)
5	Note :-
*	Final call to be taken at Site in consultation with all the contractors

SCHEDULE V (BOCW CENTRAL RULES, 1998) CONTENTS OF AMBULANCE VAN OR CARRIAGE [SEE RULE 227]

The Ambulance Van shall have equipment prescribed as under:

a)	General—a portable stretcher with folding and adjusting devices with the Head of the stretcher capable of being tilted upward. Fixed suction unit with equipment. Fixed oxygen supply with equipment. Pillow with case, sheets, blankets, towels, emergency bag, bed pan, urinal glass.
b)	Safety Equipment—Flares with life of three thousand minutes, floor lights, flash lights, fire extinguishers (dry power type), insulated gantlets.
c)	Emergency Care Equipment—
i.	Resuscitation—Portable suction unit, portable oxygen unit, bag valve mask, hand operated artificial ventilation unit, airways, mouth, gag tracheostomy adapters, short spine board, I.V. FLUIDS with administration unit, B. P. manometer cuff stethoscope.
ii	Immobilization—Long and short padded boards, wire ladder splints, triangular bandage—long and short spine boards.
iii.	Dressing—Gauze pads—100 mx 100 mm universal dressing 250 x 1000 mm, roll of aluminum foils—soft roller bandages 150 mm x 5 mm yards adhesive tape in 75 mm roll safety pins, bandage sheets, burn sheets.
iv.	Poisoning—Syrup of Ipecac, activated charcoal pre packeted dose, snake bite kit, drinking water.
v.	Emergency Medicines—As per requirement (under the advice of construction Medical Officer).

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ANNEXURE – B

HSE DISPLAYS

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A. Types of Displays					
1. Based on Content					
S.No	Type				
1	HSE Hazards & Precautions Height Work, Housekeeping, Fire Safety, PPEs, Hot Work, Lifting & Rigging Activity, Site-specific Hazards – eg. for Refineries, Nuclear plants etc.; COVID Precautions; Environment Protection etc.				
2	Other Displays, Signage etc. HSE Policy, ISO Certificate, Safety Statistics, Assembly Area Location/ Route, Emergency Contact Numbers, Site Safety Rules & Regulations, Speed Limit, Work in Progress, Lock- Out Tag-Out (LOTO) Boards etc.				
2. Based on Mounting					
[Type 1]		[Type 2]		[Type 3]	
Flex Sign Boards of Wooden Frame – directly mounted on Structures (walls, stairs, railings etc.)		Flex Sign Boards with Wooden Frame – mounted on metallic/ wooden legs – preferably double-sided		Colored weather-proof Paintings on Walls (after due concurrence of BHEL/ Customer – Type 1 in case of no concurrence/ space)	
B. General Requirements:					
a.	Displays should be weather-proof as per installation location, i.e. rain-proof, wind-proof and sun- proof.				
b.	Installation location and size to ensure visibility for the intended viewers (workers and moving personnel)				
c.	Displays to have at least 50% graphical elements preferably (as applicable). Language should be understandable by majority of the workers				
d.	Displays to be relevant to the hazards in the area				
e.	Proper installation to ensure boards don't obstruct activities and should not be prone to fall so as to pose danger				
f.	In case of multiple elevations (eg. Boiler, Power-house etc.), each elevation to have displays for applicable hazards including Height-Work, Housekeeping				
g.	For temporary work locations, posters/ boards may be erected and shifted after task is over				
h.	Minimum size of displays should be A1 unless otherwise specified				
i.	In case of damage, displays shall be reviewed and repaired/ replaced				
j.	In areas where night work is envisaged, fluorescent displays shall be installed and these should comprise of at least 20-30% of total displays				
k.	Total Number of displays to be not less than 1 per 10 workers and are to be dynamically updated based on number of workers				
C	Area-wise Displays- Below is list of Area-wise displays that are to be installed at Sites (Numbers, locations maybe adjusted for specific requirements)				
SN	Area	Suggested Subjects	Minimum Size	Minimum Quantity	Locations
1	Walls/ Foundations/ Cement Structures etc. belonging to the package area	Safety Hazards Prevention and other HSE Awareness content	[Type 3]	As per BHEL assessment from time to time	

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2	Site Interior Roads belonging to the package area	At least every 20 meters: 1. Speed Limit Indication, Safe Driving board 2. Boards for hazard awareness	1.As needed [Type 2] 2. A1 or equivalent each [Type 2]	As indicated	Sides of Roads; Height to ensure good visibility
3	Specific Package Areas	A. Common At entry to respective Package/ Work Area, each contractor to put up daily updated board with following for each shift: 1. Scope of work and start date 2. Emergency Contact Numbers 3. Emergency Assembly Location, Escape Plan 4. Locations and supervisors of various gangs in the area, 5. Current Work Permit Details 6. Safety Supervisor Location assignments - Names, Mobile Nos., Assigned Locations 7. Details (Name, Contact No. etc.) of Package In-charge - Contractor & BHEL 8. Details (Name, Contact No. etc.) of Safety In-charge - Contractor & BHEL 9. LTI Free Man-days & details of last LTI also to be indicated In addition, Area-Specific Displays as indicated in Table 1	A0 [Type 2]	1 per Package Area	Entry/ Ground Level

Table 1 (Area/ Package-wise HSE Display Plan - As applicable)

Prepared By (Subcontractor)

S. No.	Area	Suggested Minimum No. of Displays & Types	Type	Numbers Installed
1	Boiler	3 per working elevation	[Type 1]	
2	Powerhouse	5 per elevation	[Type 1]	
3	ESP	5 Per Pass	[Type 1]	
4	Buildings	5 per elevation	[Type 1]	

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5	Cooling Tower (NDCT/ IDCT/ ACC)	20 per Structure	[Type 1]	
6	Chimney	20 per Structure	[Type 1]	
7	Fabrication Yard	10 per Yard	[Type 2]	
8	Batching Plant	5 per Plant	[Type 1]	
9	Material Storage Yard - Open	20 per Yard	[Type 2]	
10	Material Storage Shed - Semi-Closed/ Closed	10 per Shed	[Type 1]	
11	Electrical Booths	2 per booth + Line diagram, Emergency contact details	[Type 1]	
12	Medical Centre	2 per Centre	[Type 1]	
13	Rest Shed	2 per Shed	[Type 1]	
14	Canteen	2 per Canteen	[Type 1]	
15	Drinking Water Area	1 Per Outlet	[Type 1]	
16	Washing Water Area	1 Per Outlet	[Type 1]	
17	Training Centre	10 per room	[Type 1/2]	
18	Assembly Area	5	[Type 1/2]	
19	Stairs	1 per landing elevation	[Type 1]	
20	Cylinder Storage Area	5 + Signage: Type of Gas, Empty, Filled etc.	[Type 1/2]	
21	Labour Colony	Electrical Safety with Distribution Plan/ Line Diagram – 1 , COVID Precautions Posters - 5 Safety Awareness Posters - 10 Hygiene awareness posters - 2	[Type 1]	
22	Others	As per requirement	[Type 1/2]	

Date:

Sign (Contractor)

Sign (BHEL)

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ANNEXURE – C

HSE TOOLS/ EQUIPMENT/ DEVICES

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HSE Tools/ Equipment/ Devices

Following equipment conforming to relevant IS/ISO/BS Codes/ Standards in indicated quantities shall be ensured by subcontractor. This list is tentative, not exhaustive. Quantity and date/ period of deployment shall be as per site requirement.

A. HSE Tools/ Equipment/ Devices

SN	Item Name
1	Lifelines
2	Retractable Fall Arrestors
3	Safety Nets (10m X 5m) fire proof double mesh
4	Sky Climbers
5	Fire Blanket
6	Honey Bee Removal Suit & Kit
7	Scaffolding Pipes
8	Flashback Arrestors
9	Barricading Tape
10	Binoculars
11	Walkie-Talkies
12	LOTO kit
13	24-Volt light
14	Sand Buckets
15	Hard barricading Pipes
16	Standby Fire kits
17	Hand-held Megaphone
18	Small Public Address System
19	Foldable Stretcher
20	Height Rescue Kit (Non-Motorized)
	(Others:)

B. Test & Measurement Devices

SN	Name of Device
1	ELCB Tester
2	Multi meter (Light cables)
3	Earth Resistance Meter
4	Lux Meter
5	Sound Meter
6	Anemometer
7	Breath Analyzer (Alcohol)
8	Multi-gas dozi-meter/ detector
9	Gas leakage detector / alarm
10	Gas monitor (confined space)
11	Radiation meter & Badges
12	Blood Pressure Monitor
13	Fire detectors
14	Handheld signaling light
	(Others:)

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ANNEXURE – D

REST SHED

Rest Shed	
1.	Determining the Number, Sizes and Locations of Rest Shelters
i.	Numbers:
The number of rest shelters shall be determined based on maximum number of workers at any one time (across all shifts). Formula is: Wmax = Maximum number of workers at any time in the Site Space per worker = 1.1 sq meter Total space required, Tspace = Wmax X 1.1 Based on total space requirement calculated above, the number of rest sheds can be decided according to availability of locations and concentration of workers - so as to ensure the required space.	
ii.	Locations:
The rest sheds should be so located so as to minimize the distance to be travelled by the workers from their locations of work considering all the practical constraints	
iii.	Other: The Rest shelter should be fenced so that it cannot be used as parking area.
2.	Design & Construction of Rest Sheds
a.	Permanent/ Long duration Rest Sheds
i.	For locations where, permanent rest sheds can be constructed without possibility of removal for relatively long period of time, a semi-closed shed can be constructed covered with tin roof and supported with well-grouted beams. The floor of the shed to be preferably cemented/ solidified.
ii.	Adequate structural requirements suitable to the local weather (wind/ rain etc.) to be ensured.
iii.	The design of the rest shed to be approved by Civil Engineering Department of BHEL Site before commencing work
b.	Temporary/ Movable/ Portable Rest Sheds
i.	For locations where, permanent rest sheds cannot be constructed either due to non-availability of permanent location or other reasons, temporary rest shed shall be constructed.
ii.	Temporary rest sheds shall comprise of Tent arrangement carried out by professional agencies
3.	Amenities in Rest Sheds
a.	Essential Amenities
Following amenities shall be essentially ensured in a rest shed:	
i.	Hygienic environment with regular cleaning and housekeeping (with records)
ii.	Adequate illumination
iii.	Adequate ventilation/ heating as per weather conditions
iv.	Clean Drinking water source
v.	Hand Washing area
vi.	Toilets & Urinals
vii.	Benches/ mats for sitting/ lying
viii.	Any other essential requirement deemed necessary by the Site
ix.	Dust bins of sufficient quantity/ size that are vacated each day/ as per requirement
b.	Additional/ Optional Amenities
Following amenities are optional but are recommended to enhance the level of satisfaction of workforce:	
i.	Hot/ Cold drinks (Tea, Coffee, Glucose etc.) as per requirement
ii.	Snacks
iii.	Fans/ Coolers/ Heating arrangements as per requirement and weather conditions
iv.	A nice, welcoming interior design, music etc.
v.	Water cooler
4.	Health & Safety Requirements of Rest Sheds
Use of asbestos in construction is banned and shall not be used.	
In addition, following essential Safety features shall be ensured in Rest sheds:	
i.	Availability of Fire extinguishers (preferably CO2 type)
ii.	Display of Safety Posters
iii.	Pest/ reptile protection
iv.	Mosquito prevention measures
5.	Note: Any suitable closed spaces/ newly constructed buildings etc. available at project may also be used for the purpose of rest shed with due concurrence of BHEL

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ANNEXURE – E
LABOUR COLONY

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Labour Colony	
1	These Guidelines suggest minimum requirements. However, additional requirements based on feasibility and circumstances, while adhering to directions of GOI/District Administration / Local Authority guidelines to be considered
2	Norms for social distancing, training/ awareness, face masks, disinfection, sanitization, gate entry, quarantine, medical, action in case of suspect cases of COVID and other communicable diseases etc. to be followed as per Govt. and BHEL guidelines issued from time to time
3	Labour colony to be developed as close to the Site as possible to avoid lengthy commute
4	A "Suggestion Register" shall be made available at the labour colony for residents. The feedback shall be reviewed on weekly basis and acted upon by concerned Contractor. Same shall be reviewed periodically by authorized BHEL Site Official.
5	Canteens, Latrines & Urinals, Washing Facilities, Creches, Residential Accommodation and other infrastructure/ facilities: Numbers/ Quantities and Features of these facilities shall be in line with the following as applicable:
a.	BOCW Act & State Rules
b.	The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act & State Rules
c.	Factories Act & State Rules
d.	Other Relevant Acts & Rules
6.	Cleanliness & Hygiene/ Housekeeping :
a.	Regular cleaning of the labour colony to be ensured.
b.	Daily cleaning of Sanitary facilities.
c.	Proper drainage system to prevent water-logging
d.	Regular fogging to prevent spread of mosquitoes
e.	Prevention of foul smell through necessary interventions
f.	Dust suppression as per requirement
g.	Cutting of Grass at regular intervals and other necessary measures to prevent pests & reptiles h. Stray animals to be banned from labour colony.
h.	Outside every common facility, eg. Toilet, washroom, food hall/ canteen etc., provision of washbasin with flowing water and soap (preferably liquid soap) to be ensured
7.	Power Supply Layout:
	Electrical supply Layout of Labour Colony shall have the provision of Safety devices like MCBs, ELCBs etc. and to be clearly displayed
8.	Washing & Drinking Water Availability
a.	Adequate water to be provided in line with : " Estimation of Water Requirements for Drinking and Domestic Use (Source: National Building Code 2016,BIS)"
b.	Drinking water tank to be cleaned every week and sticker for the same pasted on the tank
c.	Drinking water source should be tested as per IS 10500
9.	Waste Disposal:
	Separate bins for dry, wet and biomedical waste to be installed. These bins to be evacuated regularly
10	Training & Awareness/ Displays
a.	HSE Awareness Displays: Posters/ banners/ boards to be displayed in labour colony. Subjects of displays shall be precautions for applicable hazards at work site.
b.	b. Emergency Contact Numbers including that of Doctor, Hospital, Labour Colony Supervisor, HSE Officials to be displayed prominently
11.	Doctor Visits: Regular and need-based visits by Doctors to be ensured through tie-ups etc.
12	Inspection & Review: Regular inspection of labour accommodation to be carried out by the Contractor as per prescribed format. Last inspection date, inspector and next due date to be prominently indicated near main gate
13	Provision of a Fair Price shop in the premises to be ensured as per requirement
14	Adequate arrangements to be ensured in case of children/ families

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ANNEXURE – F
TOILETS

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Toilets

Toilets (Latrines and urinals shall be ensured at Site and Labour Colony in accordance with the Inter-State Migrant Workmen Act, 1979 as given below:

LATRINES	URINALS
1. Latrines shall be provided in every establishment on the following scale, namely: - a. Where females are employed, there shall be at least one latrine for every 25 females; b. Where males are employed, there shall be at least one latrine for every 25 males: Provided that where the number of males or females exceed 190, it shall be sufficient if there is one latrine for 25 males or females, as the case maybe, up to the first 100, and one for every 30 thereafter 2. Every latrine shall be under cover and so partitioned off as to secure privacy, and shall have a proper door and fastenings.	1. There shall be at least one urinal for male workers up to fifty and one for female up to fifty employed at a time: Provided that where the number of male or female workmen, as the case may be, exceeds 500 it shall be sufficient if there is one urinal for every fifty females up to the first 500 and one for every 100 or part thereof thereafter. 2. The urinals shall be designed and located so as to ensure privacy.

Important:

- Where workers of both sexes are employed there shall be displayed outside each block of latrine and urinal a notice in the language understood by the majority of the workers 'For Men Only', or For Women Only', as the case maybe.
- The notice shall also bear the figure of a man or a woman, as the case may be.
- The latrines and urinals shall be conveniently situated and accessible to workers at all times at the establishment.
- The latrines and urinals shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times.
- Latrines and urinals other than those connected with a flush sewage system shall comply with the requirements of the public health authorities.
- Water shall be provided by the means of tap or otherwise so as to be conveniently accessible in or near the latrines and urinals.
- At Site, on ground, Modular Bio-toilets as per industry standard specifications and regular professional cleaning shall be ensured. The toilets should be sufficient in number and easily accessible to workers from every work area
- At Site, in various elevations, suitable urinals with proper drainage to be ensured at each elevation in line with IS 2064 (1993). Same to be cleaned regularly

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ANNEXURE – G
HSE COMPLIANCE DOCUMENT

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HSE COMPLIANCE DOCUMENT

Bill Ref no:	Date:
NAME OF THE AGENCY:	Work-Area/Package:

Sl. No.	Description	Remarks
1	<u>HOUSE KEEPING :</u>	
1.1	All working areas at site (specific to the agency) are free from garbage's, scraps & any other undesired non-plant materials. There is no encroachment in safe passage of man, material & T&P to carry out activities safely	
1.2	All the plant materials under the custody of the agency are stacked & stored properly.	
2	<u>GENERAL ILLUMINATION :</u>	
2.1	ALL the working areas at site & office of the agency including passages are having proper & sufficient illumination.	
3	<u>STATUTORY & REGULATORY REQUIREMENT :</u>	
3.1	Sufficient water for drinking & other purposes and sanitation in work area and labour colony are available.	
3.2	Periodical Medical check-up of workers & staff done regularly & report submitted to BHEL	
3.3	Regular EYE testing is done for Crane operators/Welders and data's are available with agency	
3.4	All the T&P, Cranes etc used by the agency are having proper T.Cs & Fitness certificate available from competent authority.	
4	<u>SAFETY COMPLIANCE:</u>	
4.1	Number of Tool box meetings between Safety officers, erection staff & workers of the agency held in this month with location mentioned	
4.2	All precautions & Safety measures including PPE compliances are taken before working at HEIGHT	
4.3	Permit for working at Height is taken & complied accordingly	
4.4	ELCB is used in Construction Power Supply source by the agency & Proper Distribution board and electrical cabling has been used by the agency and regularly checked by electrician & safety officer of the agency	
4.5	Unsafe areas barricaded properly & unsafe opening closed properly	
4.6	Proper Platforms & Hand-rails used In areas earmarked earlier	



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4.7	Proper safety signage's, Slogans & Emergency contact phone numbers including FIRE contact nos. are made available by the agency in locations mentioned	
5	Whether any penalty imposed by BHEL towards non-compliance of above points.	

VENDOR'S SIGNATURE	
Erection Engineer	
HSE Officer	
Site-in-Charge	

BHEL'S SIGNATURE	
Erection Engineer	
HSE Officer	
Package-in-Charge	

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ANNEXURE – H

ACTIVITY - SPECIFIC SAFETY PRECAUTIONS / CONTROLS

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1.	WORK AT HEIGHT:
a.	All work at height above 2 meter above ground level without complete platforms, handrails and other related fall protection shall require a work permit in the prescribed form. This shall require approval by the competent authority. The HSE officer of sub-contractors shall follow the checklist religiously by physically verifying the condition of the work area before recommending for approval.
b.	Prior to the start of work at elevation, the HSE Officer involved with the work must meet the work supervisor to review the scope of work, and must review all the possible fall hazards and effective safety responses. The evaluation / analysis must be documented and kept on file and onsite by the HSE Officer.
c.	Whenever a fall hazard or other exposure exists for working at heights more than 2.0m/6ft, the nature and scope of work will be evaluated for conditions and environmental factors before selecting the appropriate fall protection system (active, passive or a combination of measures, as appropriate).
d.	All Engineering and Administrative Controls including barricading, safe platform, Safety Nets etc. shall be made available at work location. Under no circumstances, there shall be total reliance on PPEs only
e.	SAFETY NETS
i.	Contractor shall maintain sufficient stock of Safety Nets for deployment
ii.	Safety Nets as per IS: 11057:1984 should be used extensively for prevention / arrest men and materials falling from height.
iii.	The safety nets shall be fire resistant, duly tested and shall be of ISI marked.
iv.	Safety Nets shall be deployed below all platforms where height work is envisaged. Duration of work, delay shall be no excuses for non-installation of Safety Net
f.	Reaching beyond barricaded area without lifeline support, moving with support of bracings, walking on beams without support, jumping from one level to another, throwing objects and taking shortcut must be discouraged.
g.	Monkey Ladder shall be fitted with cages. Rope ladder should be discouraged.
h.	For chimney or structure painting, both hanging platform and men should be anchored separately to a firm structure along with separate fall arrestor.
i.	The procedures for the safety response to identified fall hazards developed and rescue plans must be reviewed with all individuals exposed to the hazards.
j.	The HSE Officer must establish an inspection process of fall protection systems. Some equipment requires documented inspections by its manufacture on a regular schedule. Such equipment must have evidence of the inspection and re-certification process on it. This information must be reviewed before the equipment is actually used. Individuals must visually inspect the fall protection equipment before each use. Failure to complete this inspection process could result in serious injury or death.
k.	Immediately remove from service any fall protection equipment that is identified as defective, damaged, or has been subjected to an impact. Damaged fall protective equipment must be destroyed to prevent re- use and not be discarded into trash containers, as the worn or damaged equipment could be unintentionally re-used.
l.	Aerial lifting devices, excluding scissor lifts require the use of full body harnesses and lanyards in any elevated position.
m.	Where Height related works are applicable then rescue team (consist of 5- 10 person) shall be identified and trained for potential rescue.

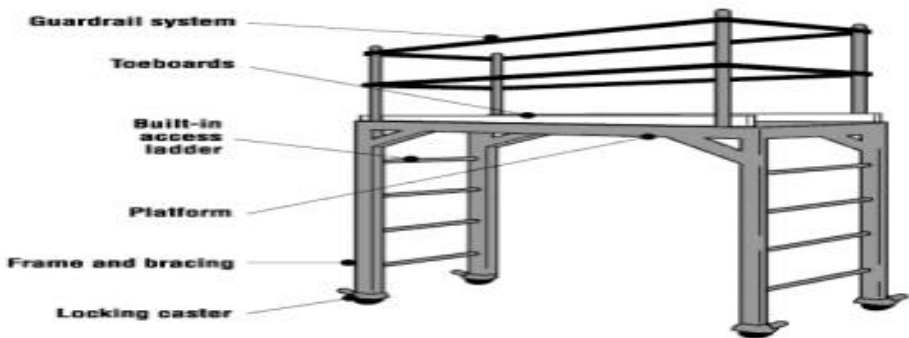
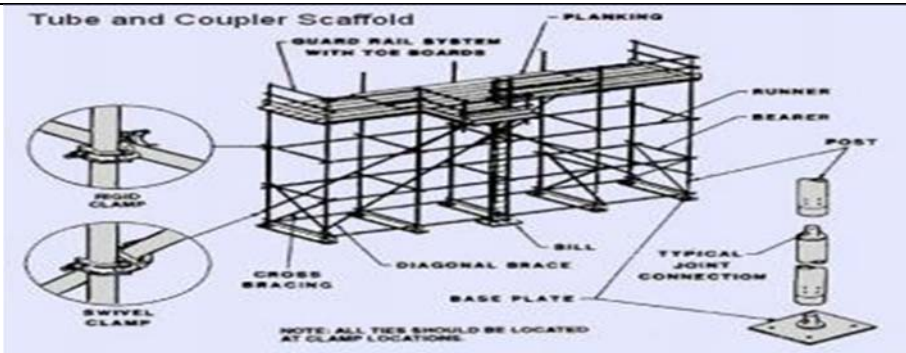
1.1	Personnel fall protection system must include:
a.	Safety Harness
	All height workers must use Full Body Safety harness with double lanyards with shock absorber (only). The primary lanyard is never unhooked until the secondary lanyard is secure. The design of the working platform should be such that under no circumstances, worker should have both lanyards unhooked while at height.
b.	Lanyard
i.	The type of work and the environment conditions determine lanyard and lifeline selection. If welding, chemical cleaning that may damage lanyards, connectors or lifelines, sandblasting, etc., either protect the components or use more appropriate type of system.
ii.	Lanyards and lifelines must incorporate, or be used with, an appropriate deceleration (shock absorbing) device. Deceleration devices include rope grabs, rip-stitch lanyards, specially woven lanyards, tearing, or deforming lanyards, automatic self-retracting lifelines and lanyards which dissipate or limit the energy imposed on the employee during fall arrest.
iii.	Once in use, the system's effectiveness is to be monitored. In some cases, a program for cleaning and maintaining the system may be necessary. Lanyard and lifelines must use locking snap hooks only and under no circumstances must two lanyard snap hooks be connected.
c.	Lifeline
	All lifelines in general are to be made of min 12mm dia. steel rope (plastic coated) and tied to columns with 3 clamps at each end. Wherever columns are not available to tie the lifelines, the vertical posts as per the design below are to be provided after carrying out drop load test initially. A load of 240kg to be dropped off the mid-point of lifeline in this test.
1.2	Working Platform
	Working platforms, gangways and stairways shall be so constructed that they do not sag unduly or unequally and if the height of the platform gangways provided is more than 3.6 m aboveground level or floor level, they shall be closely boarded and shall have adequate width, which shall not be less than 750 mm and be suitably fenced.
a.	Precautions against the fall of Materials, Persons and Collapse of Structures:
1.3	Scaffolding
	All scaffolds shall be conformant to the relevant standards including IS 3696 and IS 4014 as applicable. A sketch of the scaffolds proposed to be used shall be prepared and approval of the BHEL Engineer obtained prior to construction / use. Only cup lock type scaffoldings will be allowed in site. Where cup lock type scaffolding arrangement is not feasible by the virtue of the location, in that case only pipe and clamp type scaffolding will be allowed.
a.	The scaffolding work must be carried out by a competent person, who shall train the scaffold users on safety aspects
b.	All scaffolds shall be erected / dismantled by scaffolding crew under direct supervision of competent scaffolding supervisors.
c.	All scaffolds shall be capable of supporting 4 times maximum intended load and erected on sound, rigid footing, capable of carrying the maximum intended load without settling or displacement. Bamboo scaffolding is not permitted for use onsite.
d.	Each employee on the scaffold shall use an approved safety harness attached to an independent lifeline. The lifeline is to be securely attached to substantial members of the structure (not the scaffold itself) or to securely rigged lines, which shall safely suspend a worker in event of a fall.
e.	Guardrails and toe boards shall be installed on all open sides and ends of platforms more than (2) meters aboveground or floor
f.	Scaffold planks must be at least 5 cm x 25 cm (2" x 10") full thickness lumber scaffold grade or better.

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g.	Scaffold planks shall not span distances greater than 2.5 meters (8 feet).
h.	Scaffold planks shall extend over end supports not less than 6 inches nor more than 12 inches and be secured to the scaffold. Scaffolding and accessories with defective parts shall be immediately repaired or replaced.
i.	All scaffolding must be a minimum of two planks wide. No one may work from a single plank.
j.	Scaffold planks must be inspected before use. Planks that have been damaged must be removed from the site.
k.	Access ladders must be provided for each scaffold. Climbing the end frames is prohibited unless the design incorporates an approved ladder.
l.	Adequate mudsills or other rigid footing capable of withstanding the maximum intended load must be provided.
m.	Scaffolds more the 6 meters (20 feet) in height must be tied to the building or structure at intervals which do not exceed 4 meters (13 feet) vertically and 6 meters (20 feet) horizontally.
n.	Do not overload scaffolds. Material should be brought up as needed. Scaffolding must not be loaded in excess of its rated capacity.
o.	Barrels, boxes, kegs, blocks or similar unstable object must never be used as work platforms or to support scaffold.
p.	Where persons must work under or pass under a scaffold then a 18 gauge wire mesh screen must be installed between the toe board and guard rail.
q.	Employees exposed to overhead hazards while working on a scaffold will be protected by 5 cm (2") thick planks.
r.	Wooden/bamboo ladders shall not be allowed at any cost. Ladder's rungs shall be fitted /welded properly. Before every use the rungs should be checked for safe use.
s.	Wooden scaffolds shall not be used in areas where fire / fire products are expected
t.	Ropes made of jute / Plastic and other fire prone material shall not be used to tie up scaffolding components together
u.	The platform should have permanent handrail and mid rail with Toe board without fail.
v.	All platforms are to be tightly planked for the full width of the scaffold, except as may be necessary for entrance openings. Platforms shall be secured in place.
w.	On suspension scaffolds designed for a working load of 500 pounds, no more than two workers are permitted to work on the scaffold simultaneously. On suspension scaffolds with a working load of 750 pounds, no more than three workers are permitted on the scaffold simultaneously.
x.	Requirements for different types of Scaffolds:
A.	Suspended Scaffold
i.	Suspended scaffolds are platforms suspended by ropes, or other non-rigid means, from an overhead structure.
ii.	Requirements for use are to be preapproved by HSE Head, under a specific Permit to Work.
B.	Rolling Scaffolds
i.	The height of rolling scaffolds shall not exceed three times the minimum base dimension
ii.	The minimum base dimension of rolling scaffold will be 1.25 meters (4 feet).
iii.	Adequate help must be provided when moving a rolling scaffold.

iv.	Secure or remove all loose materials, equipment and tools before moving a rolling scaffold.
v.	No one is permitted to ride a rolling scaffold when it is being moved. Castor brakes must be locked-on when the scaffold is not being moved.
	
	Rolling Scaffold
	
	Tube & Coupler Scaffold
1.4	Ladder Safety
A sketch of the ladders proposed to be used shall be prepared and approval of the BHEL Engineer obtained prior to construction / use	
a.	Safe Use of Ladders:
i.	Fall protection is required when working on a ladder above 2 meters and when climbing above nearby guardrails.
ii.	Ladders must be inspected prior to use and by a competent person quarterly, with documentation.
iii.	Use portable ladders for height up to 4 M only
iv.	Provide fixed ladders for height above 4 M
v.	Place the ladder at an angle of 75 degrees (approx.) from the horizontal (1:4) vi. Extend ladder at least 1 M above the top landing
vi.	Secure top and bottom of the ladder firmly to prevent displacement- anti skid lining at the bottom
vii.	Ensure that the width of the ladder is not less than 300 mm and distance between rungs is not more than 300 mm
viii.	Provide landings of minimum size 600 x 600 mm at intervals not more than 6 M for fixed ladders. Check the ladders daily for any defects

ix.	Ensure that the areas around base and top of the ladder are clear. Getting on and off the ladder is more hazardous than using it. Use a mudsill if the ladder is to rest on soft, loose or rough soil
x.	Do not use ladders of conducting material near power lines, and only use ladders near power line or other energize system with exposed parts if they are confirmed locked-out and de-energized.
xi.	Stand no higher than the fourth rung from the top for carrying out any job standing on a ladder.
xii.	Never reach out from a ladder to perform work where your belt buckle protrudes past the ladder rung.
xiii.	Always face the ladder while climbing up or down
xiv.	Maintain three-point contact while climbing up or down a ladder i.e. two hands and one foot or two feet and one hand on the ladder at all the times.
xv.	Avoid climbing up or down a ladder while carrying anything in hands. Lift tools, equipment and materials with a rope.
xvi.	Work from portable and extension ladders near guardrail where fall expose exists over the guardrail regardless of height, and above 2.0 Mtrs. heights from the working/walking surface will require the use of personal fall arrest equipment
2.	EXCAVATION & CIVIL WORKS

All safety precautions shall be taken for foundation and other excavation marks as per IS-3764.

2.1	Excavation
a.	The following safety measures are to be ensured before and during excavation:
b.	All Excavation activities more than with depth of 1.22 meter or more shall require and Excavation Work Permit
c.	Electrical cables and service lines to be identified using cable detector/locator device before carrying out the excavation work
d.	Hard Barricading is provided at excavated pits. It should be made of scaffolding pipe and clamp with reflective nets.
e.	All Excavated area of depth 3mtr or more is to be hard barricaded with pipe.

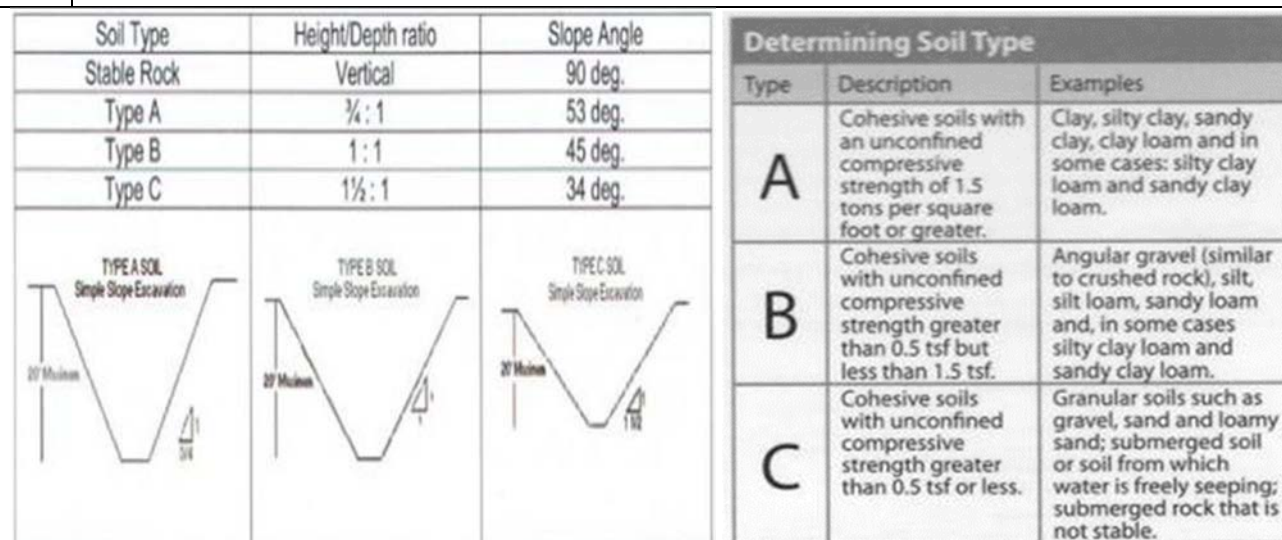


Fig. Excavation Reference

2.2 Piling

Ensure the following precautionary measures before starting piling works:

- a. Inspection of piling equipment by responsible person for its condition before initiating piling operation.
- b. Checklist and OCP for piling to be prepared using manufacturer's instructions and used
- c. Testing and its certification wire rope, slings, D-shackles, chain pulley blocks using in the process of piling work by competent person
- d. Adequate support and secured foundation of the piling equipment to avoid toppling e. Hoses should be lashed and adequately secured
- e. Proper work platform is to be provided on piling frame
- f. Safe work procedures and close supervision to prevent unsafe acts of operators/any unsafe conditions that may arise
- g. Only experienced and trained operators are engaged for the piling operation
- h. Provision of Personal Protective Equipment (PPE) like safety shoes/gumshoes/safety helmet/safety belt etc. and its use by their workmen.
- i. Special care and precautions If work is near electrical live cables/ electrical equipment
- j. Cordoning of work area to prevent unauthorized entry
- k. Guarding of revolving parts
- l. Specific measures to prevent overturning of pile driver/missing of hammer/ hammer movement out of range

2.3 Batching Plant Operation

Following Safety considerations for batching plant are to be ensured:

1. Modern type batching plant should be used in which all the moving parts are protected and emergency and safety features are incorporated.
2. Safety audit to also focus on Batching plant.
3. The site shall impose penalty on the agency who has violated the safety norms as per contract.

2.4 Mobile Plant

- Mobile plant includes tractors, trailers, dumpers, excavators, bulldozers, road rollers etc. for earthmoving purpose and concrete mixers, concrete transit mixtures, concrete pumps etc for concreting purpose. Due to the very nature of their function and movement in difficult terrains, congested areas, working in tandem with manual work and other operations the danger is inherent.
- Automatic reverse camera with reverse horn connected with reverse gear is compulsory for all moving machineries.

Following Safety measures to be ensured for Mobile Plant:

- a. Where movement around site is involved, routes should be planned, obstruction free and well maintained
- b. Observe specified speed limits

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c.	Operating personnel should be aware of associated risks and its preventive measures
d.	Only experienced, trained and authorized persons with valid license (wherever applicable) should operate the mobile equipment/vehicles
e.	Provide and use Warning lights and reverse horn for cautioning the people around
f.	Operation should be on level and stable ground with adequate working clearance
g.	Loading of out riggers/stabilizers should be well within safe ground bearing capacity
h.	No person should be on equipment or vehicle during loading and unloading of material
i.	Operators should be protected by warning barriers or switching off power when working in close proximity of overhead power lines
j.	The equipment /vehicles should be well maintained and provided with effective brake system and other safety devices (wherever require)
k.	Rotating parts of equipment should be adequately guarded
l.	Provide necessary personal protective appliances and ensure its use by the operating personnel Ensure effective measures at source to control harmful emissions, dust, fumes contaminating atmosphere and cause health hazards to the operators and people in the vicinity
m.	No overloading/over stressing of vehicles/plant is allowed
n.	Hoses, pipes, receivers, gauges and valves involved in carrying out hydraulic fluid/ compressed air should be checked for leaks and tested prior to operation.
o.	Adequate safe clearance for swing and movement is to be judged during operation of Concrete mixer p. Setting of machines on firm and level ground with wheel locked to prevent movement of machine
p.	Proper instructions and Special precautions are to be ensured to prevent entry into the danger zone of projectile of bucket while dropping bucket
q.	Operator leaving work spot should ensure that the equipment/vehicle is kept in neutral position and place on firm and level ground.
r.	The hand brake should be kept in position and block road wheels as additional safety measure
s.	Blades/buckets should be kept low while moving
t.	The dozer blades should not be used as brakes except in emergency
u.	The ground should be examined for its bearing capacity and general safety especially when operating road roller at the edges of slopes, embankments.
v.	The roller should not be moved downhill with the engine out of gear
w.	If operating near excavations the following precautionary measures are to be ensured
x.	Barricading, edge protection to prevent fall of persons/vehicles overrunning while reversing etc
y.	Suitable support system and adequate allowance to avoid the danger of side collapsing
z.	Experienced signaler /attendant should be always accompanied with operator/driver for proper direction /signal and also to caution others in the working Zone during operation of mobile plant
2.5	Concrete Vibrators
a.	Revolving parts/belt drives should be adequately guarded and Vibrating unit shall be completely enclosed and have suitable overload relays and effectively earthed
b.	Ensure sufficient length of cable to the Vibrator.
c.	Ensure electric starters and other accessories are firmly fixed adequately supported
d.	Ensure locking of needle load while inserting needle into the vibrator
e.	Ensure periodical lubrication and maintenance
2.6	Concrete Mixers
a.	Setting of machines on firm and level ground with wheel locked to prevent movement of machine
b.	Proper instructions and Special precautions are to be ensured to prevent entry into the danger zone of projectile of bucket while dropping bucket

3.	WELDING & GAS CUTTING SAFETY (HOT WORK)
a.	All Hot Work shall require a Hot Work Permit
b.	Inbuilt Voltage Reduction Device (VRD) equipped arc welding machine will only be allowed for work.
c.	There shall be flash-back arrestors conforming to IS-11006 at both cylinder and burner ends. Damaged tube and regulators must be immediately replaced.
d.	Appropriate fire-fighting equipment is to be available in close proximity of any welding and gas cutting operations at all times suitable for the type of Fire.
e.	Drums, tanks, and similar containers that have contained flammable or toxic material shall not be welded, cut, or heated until they have been made safe by water filling, thorough cleansing or similar accepted practices. The container shall also be ventilated during the welding, cutting, or heating process.
f.	Splatter / Slag Collector:

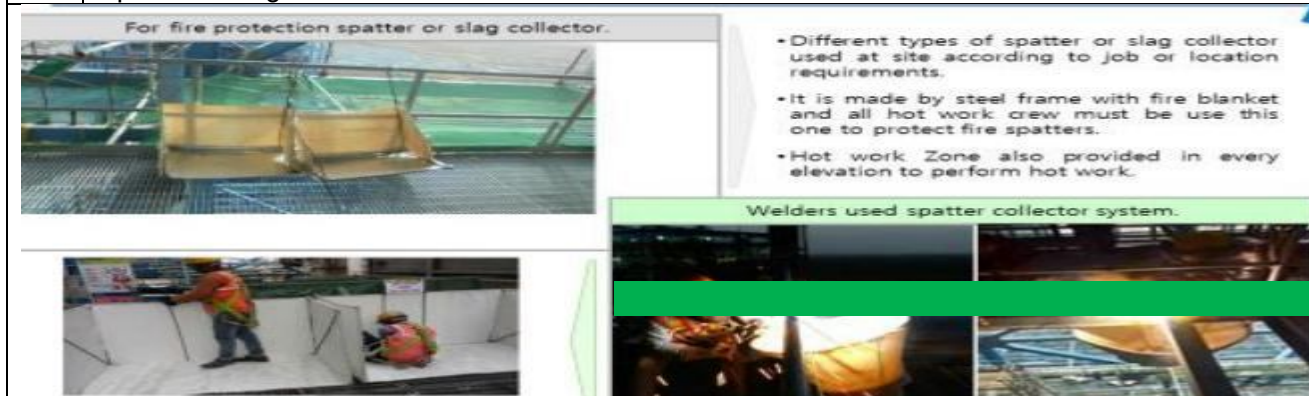


Fig. 4.1 Splatter / Slag Collector

While carrying out job at height, the sparks or molten slag shall be prevented from falling down by putting a fire-resistant (non-asbestos) sheet or patter/ slag collector or even MS Sheet. The passage of falling sparks or molten slag shall be barricaded till ground floor and any cable/ tubes/ any other objects interfering in the passages hall either be removed or covered with Fire-resistant sheet or MS Sheet.

g.	COMPRESSED GAS
i.	All cylinder valves shall be closed when any work is finished and when any Cylinders are empty or being moved. Valve protection caps shall be placed and secured properly before gas cylinders are transported, moved or stored.
ii.	Compressed gas cylinders shall be secured in an upright position with chain or appropriate means during storage & use. However, a trolley shall be used for transportation.
iii.	Compressed gas cylinders shall always be secured from tipping or falling, whether in use, in storage or in transit. The cylinders shall always be secured upright, except during times when actually being hoisted or carried.
iv.	When cylinders are transported by powered vehicle they shall be secured in a vertical position.
v.	Regulators shall be removed when cylinders are not in use or are in transit, unless the cylinder is firmly secured on a special carrier designed for this purpose.
vi.	Gas cylinders are not allowed to be used in man-basket when occupied.
vii.	Cylinders containing oxygen or fuel gasses shall not be taken into confined spaces.
viii.	Oxygen cylinders shall be stored a minimum of 6 meters from fuel gas cylinders or shall have an approved firewall between them.
ix.	All cylinders shall be kept at a safe distance from welding or cutting operations or shielded from arc/ sparks / slag.
x.	All cylinders shall be placed where they cannot become part of the electrical circuit.
xi.	Oxygen and acetylene shall not be stored together. Oxygen must be separated from acetylene (or ANY fuel gas) or combustible material by at least 20ft or a barrier with a 30-minute fire resistance rating.

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xii.	All Cylinders should be stored upright in a designated area with labels for the type of gas. All applicable precautions to be ensured during storage
xiii.	Oxygen and fuel gas regulators, hoses and associated equipment shall not be altered and shall be in proper working order while in use.
xiv.	Compressed air can be extremely dangerous if allowed to penetrate the skin. As such, the use of compressed air to clean off yourself or other workers shall be strictly prohibited.
xv.	All gas cylinders shall be stored in upright position. Suitable trolley shall be used for cylinder movement, the design of which shall be submitted to BHEL Engineer for approval.
xvi.	No of cylinders shall not exceed the specified quantity as per OCP
xvii.	Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be intentionally dragged, struck or permitted to strike each other violently.
xviii.	All cylinder should be kept only in cylinder trolley.
xix.	Cylinder shall be transported in upright vertical position by suitable mean.
4.	LIFTING & RIGGING SAFETY
a.	All Heavy / Complex Lifting operations as defined in Clause 6.13 (Under Clause 6) shall require a Lifting Work Permit. A written rigging procedure and plan must be prepared for all individual heavy/ complex lifting operations
b.	All the cranes and lifting tools & tackles shall be inspected on daily / weekly basis as well as monthly by expert as per applicable formats.
c.	In addition, inspection / certification as mandated by law shall be carried out wherein these shall be tested and certificates of fitness shall be obtained from 3rd party State Govt. approved competent agency before deploying at site and later periodically. BHEL shall be given advance intimation of any such inspections
d.	The last date of Third-Party Inspection and the next Due date shall be conspicuously displayed on all cranes. A copy of certificate shall be pasted on operator's cabin of all the lifting equipment.
e.	Specifically designed heavy steel plates lifting clamps shall be used for lifting heavy metal sheets. Manmade lifting clamp chapa shall not be used for lifting/shifting of plates.
f.	Mobile phone should be banned for crane operator and lifting operation. Only walkie talkie shall be allowed in rigging/Lifting purpose.
g.	Lifts/Movements between 5 Tons and 20 Tons:
i.	Shall include a rigging plan, detailing schematic representation of the handling/lifting operations that must be included on the Method Statement.
ii.	When performing similar lifts of identical items, only one rigging plan need be prepared, provided each of the lifts can be performed in accordance with the rigging plan.
h.	Lifts/Movements Less Than 5 Tons:
	An equipment rigging plan is not required for lifts less than 5 tons, safety measures are covered in the JSA. This could change as per BHEL requirement
i.	Personnel Lifts (Man-Basket / Jhoola):
The design of personnel man basket shall be submitted to BHEL Engineer for approval before use. Relevant permit (Height work & others as applicable) shall be completed prior to lifting any people, along with a rigging plan.	
i.	A separate Lifeline / fall arrestor anchored to a fixed structure outside of Jhoola shall be provided for the workers inside the basket. All occupants of the basket shall have Safety Harnesses equipped with rope grabs, which are to be hooked to the vertical lifeline.
ii.	Man-basket shall be used where access through ladders or scaffolding is not feasible.
iii.	Man-baskets shall be designed and engineered by a manufacturer (job made man-baskets are not allowed, unless designed and tested by a certified engineer), and built robust with MS Angles and flats or plates or channels only.
iv.	Guard rails top and mid, must be in place and screened-in to avoid material from falling out of basket. The factor of safety shall be 200%.
v.	It shall have a door with double latches and shall open inside. Anchor points shall be identified within the man-basket.

k.	Crane operators must follow the following: i. Pass an annual Operator's Physical examination ii. Carry a valid training certification card at all time while operating issued by the Govt. or other

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	recognized institute.
I.	Rules for Safe Rigging
i.	Use loops, thimbles and corner pads to prevent damage to slings when used around corners or on cutting edges.
ii.	Never allow wire rope to lie on the ground for any length of time or on rusty steel or near solvents, chemicals or corrosive substances.
iii.	Slings must not be pulled from between or under loads with load resting on the sling
iv.	Keep all rope away from flame cutting or welding operations.
v.	Never use rope as sling material.
vi.	Never wrap a wire rope completely around a hook.
vii.	Do not bend wire rope near any attached fitting
viii.	The sling must be selected to suite the most heavily loaded leg rather than the total weight when using multi-legged sling to lift loads in which one end is heavier than the other.
ix.	When using 3 and 4-legged sling configurations, any two legs must be capable of supporting the entire load.
x.	Where possible, wire rope choker hitches must include a shackle with the eye around the shackle pin to prevent breaking wires of the choke. The choker hitch must be "snugged down" prior to lifting, not after tension is applied.
xi.	Unless authorized by the hook manufacturer when more than two rope eyes are placed over a hook, install a shackle, pin resting in the hook, and place the rope eyes in the bowl of the shackle
xii.	Properly rig all loads to prevent dislodgment of any part.
xiii.	Use guide ropes or tag lines to prevent the rotation or uncontrolled motion of the load when necessary.
xiv.	Loads must be safely landed and properly blocked before being unhooked and unslung. Tag lines must not be used in situations that jeopardize the safety of the lift.
xv.	Lifting beams must be plainly marked with their weight and designed working load and must only be used in the manner for which they were designed.
xvi.	The hoist rope or chain must never be wrapped around the load. The load must be attached to the hook by slings or other rigging devices that are adequate for the load being lifted
xvii.	Multiple part lines must not be twisted around each other
xviii.	The hook must be brought over the Centre of gravity of load before the lift is started
xix.	If there has been a lack of rope condition, determine that the rope is properly seated on the drum and in the sheaves prior to lifting.
xx.	Keep hands away from pinch points as the slack is being taken up.
xxi.	Leather gloves are recommended when handling wire rope.
xxii.	Avoid impact loading caused by sudden jerking when lifting or lowering. Lift the load gradually until the slack is eliminated.
xxiii.	Never ride on a load that is suspended.
xxiv.	Avoid allowing the load to be carried over the heads of any personnel.
xxv.	Never work under a suspended load until the load has been adequately supported from the floor and all conditions have been approved by the supervisor in charge of the operation.
xxvi.	Never leave a load suspended unless emergency evacuation is required.
xxvii.	Never make temporary repairs to sling.
xxviii.	The capacity of a sling is determined by its angle, construction, type of hitch and size.
xxix.	Never lift loads with one leg of a multi-leg sling until the unused legs are made secure.
xxx.	Never point load a hook unless it is especially designed and rated for such use.
xxxi.	Make certain that the load is broken free before lifting and that all legs are taking the load.
xxxii.	When using two or more slings on a load make certain all slings are made from the same materials.
xxxiii.	Lower the loads on to adequate blocking to prevent damage to the slings.
xxxiv.	Materials and equipment being hoisted must be loaded and secured to prevent any movement which could create a hazard in transit.

xxxv.	The weight of the hook, load block and any material handling devices must be included when determining crane capacity.
xxxvi.	Calculated weights cannot exceed load chart without written approval.
xxxvii.	Personnel must be completely clear of loads being picked up or set down by crane. Tag lines will be used to control the loads. Loads must not be touched by hand while placing/ moving.
m.	Slings
The following are rules for safe use of synthetic slings:	
i.	Synthetic slings must be marked to show the rated capacity for each type of hitch and type of web material.
ii.	Nylon web slings must not be used where fumes, vapors, sprays or mists or liquids of acids or phenolic are present. Web slings with aluminum fittings must apply in this category.
iii.	Synthetic web slings must be removed from service and destroyed if any of the following conditions are present:
a.	Acid or caustic burns
b.	Melting or charring of any part of the sling surface
c.	Snags, punctures, tears or cuts
d.	Broken stitches
e.	Distortion of fittings
f.	Synthetic web slings of polyester or nylon must not be used at or come in contact with temperatures in excess of 82°C
g.	Polypropylene web slings must not be used at or come in contact with temperatures in excess of 93°C
h.	Insulated hooks must be tested yearly to ensure insulation integrity to at least manufacturer's specifications.
n.	Wire Rope Slings must be removed from service and destroyed if any of the following conditions are present:
i.	In (10) randomly distributed wires broken in one (1) rope lay, or five (5) broken wires in one (1) strand in one (1) rope lay.
ii.	Wear or scraping of one-third the original diameter of outside wires.
iii.	Kinking, crushing, bird caging or any other damage resulting in distortion of the wire rope structure such as:
iv.	Evidence of heat damage.
v.	End attachments that are cracked, deformed worn.
vi.	Corrosion of the rope or end attachments.
o.	Metal mesh slings must be immediately removed from service if any of the following conditions are present:
i.	A broken weld or broken brazed joint along the sling edge.
ii.	Reduction in wire diameter of 25 percent due to abrasion or 15 percent due to corrosion.
iii.	Lack of flexibility due to distortion or corrosion.
p.	Requirements of Plate Clamps:
i.	The rated load of the plate clamp must be marked on the main structure.
ii.	Care must be taken to make certain the load is correctly distributed for the plate clamp being used.
iii.	Do not allow load or plate clamp to come into contact with any obstruction.
iv.	The plate clamp must not be used for side pulls or sliding the load.
v.	When lifting stainless steel or special alloys, ensure plate clamp is designed for use on the specific metal.
q.	Signaling Practices:

- The "slinger" is responsible for attaching and detaching the load to and from the crane. He shall:
 - have received appropriate training on general safe lifting operations;
 - be capable of selecting lifting gears suitable for the loads;
 - liaise with the operator and direct the movement of the crane safely.
- The "signaller" is responsible for relaying the signal from the slinger to the crane operator. He shall:
 - have received appropriate training on general safe lifting operations;
 - be able to direct the movement of the crane and loads.

Suggested hand signals



Note: During the lifting operation, either the slinger or signaller shall communicate with the operator. Other communication methods (e.g., wireless walkie-talkies, telephones, etc.) may also be used.

Fig. Recommended Signaling Practices

5. DEMOLITION WORK

Before any demolition work is commenced and also during the process of the work the following shall be ensured, besides using the Work Permit:

6. T&PS GENERAL

- Tagging and punching in all lifting tool is compulsory with SWL, sr. no. and due date.
- All T&Ps shall be inspected by authorized Third Party agency as per applicable frequency. BHEL shall be kept informed of any such scheduled inspection
- All T&Ps shall be internally inspected in each quarter and color coded.

7. ELECTRICAL SAFETY

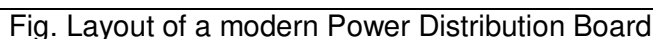
- Only electricians licensed by appropriate statutory authority shall be employed by the subcontractor to carry out all types of electrical works. The contractor shall maintain adequate number of qualified electricians to maintain his temporary electrical installations.
- No PDB or any other distribution board shall be more than 03 (three) years of purchase. Only modern PDB with industrial sockets as shown in layout below to be allowed to use at site.
- Power supply to all equipment at site to be routed through MCBs of appropriate rating. A 'Power Supply Distribution Plan' shall be prepared and submitted to BHEL Engineer for approval
- All power supplies through cables shall be underground or overhead with height > 3mtrs.
- All power distribution boxes shall be locked and the key controlled by site management of concerned subcontractor.
- All individual equipment & tools at site shall be powered through Earth Leakage Circuit Breakers of 30 mA sensitivity.

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g.	These MCBs and ELCBs shall be regularly tested and documented in BHEL format.
h.	All fuses and fuse wires shall be of standard size and rating.
i.	All electrical appliances used in the work shall be in good working condition and shall be properly double earthed other than armor earthing.
j.	All extension boards shall have separate switches for all sockets / connections.
k.	All portable electric tools used by the subcontractor shall have safe plugging system (industrial top & socket) to source of power and be appropriately earthed.
l.	Providing adequate no. of 24 V sources and ensure that no hand lamps are operating at voltage level above 24 Volts especially in confined spaces like inside water boxes, turbine casings, condensers etc.
m.	Electrical appliance shall have proper earthing and for appliances equal to & more than 415V shall have two separate earthing (as per IS-3043-1987)
n.	Portable Electric Lights
i.	Portable electric lights used in wet or potentially wet locations must be either low voltage type (24 volts or less) or protected by a GFI (ground fault interrupter).
ii.	They must be visually checked before each use and periodically while in use to assure their original integrity is maintained.
iii.	Cords with cuts, breaks, deep abrasions, etc. shall be taken out of service immediately.
iv.	Repairs to extension cords shall only be performed by qualified/ licensed electricians.
v.	Must not be allowed to lie in wet or potentially wet areas.
o.	Underground Cables:
i.	Every electric line or cable of unknown origin that is discovered or exposed during a digging, drilling, probing, or similar operation is to be considered as energized and life threatening.
ii.	The senior company employee on the site will ensure that all necessary safety precautions are taken in order to isolate the line from all workers and the public.
iii.	Such precautions may include halting the operation if appropriate.
iv.	The senior company employee on the site is to then contact the proper authorities to have the line identified and either confirmed to be abandoned and/or made safe for continuing the work.
v.	Any and all underground lines that are discovered or become severed must be considered energized on both sides, and be treated accordingly.
p.	Details of earth resource and their test date to be given to BHEL safety officer as per the prescribed formats of BHEL
q.	The subcontractor shall use only properly insulated and armored cables and conform to the requirement of Indian Electricity Act and Rules for all wiring, electrical applications at site.
r.	BHEL reserves the right to replace any unsafe electrical installations, wiring, cabling etc. at the risk & cost of the subcontractor.
s.	No maintenance work shall be carried out on live equipment
t.	Adequate precautions shall be taken to prevent danger for electrical equipment. No materials on any of the sites of work shall be so stacked or placed as to cause danger or inconvenience to any person or the public
u.	The subcontractor shall carefully follow the safety requirement of BHEL/ the purchaser with the regard to voltages used in critical areas.
v.	Wiring and Branch Circuits Must be protected by a proper amperage over-current device such as a HRC fuse or circuit breaker. Such installations must be located so as to prevent physical damage to the wire conductors & panels.
w.	The sub-contractor shall supply modern power distribution board of different combination (1-phase & 3- phase). All the distribution of power should be through modern PDB. Equipment drawing is mentioned below.



x.	General Electrical Safety
i.	In general, equipment or machinery being moved or transported must maintain minimum clearances of 25 ft. to all power lines.
ii.	TAG IN/ TAG OUT must be in force in Switch Room and all Distribution Boxes for live power line. The authorized person's name and contact no shall be displayed
iii.	Ensure "double insulated" three - core cables and three pin connectors are used and are properly ground "all insulated" types, all electrical tools and appliances must be manufactured for industrial use.
iv.	All connections shall be electrically and mechanically sound and properly insulated. Taped joints are not permitted. Connections to socket outlets must be made with proper plugs (industrial top and socket).
v.	Splices in electrical cords are not permitted. Repairs must be made at the socket connection and retain the same mechanical and dielectric condition of the original connection.
vi.	Damaged or defective electric tools, equipment and extension cords, etc. must not be used and shall be tagged out of service, removed from the work area and taken back to stores.
vii.	Only licensed electricians are authorized to repair and work on electrical equipment. Tampering with electric tools or equipment by others could result in termination.
viii.	Temporary electric cabling should be elevated 2.2 meters above the floor/ground or covered for protection. It must be kept clear of walkways and other locations where it may be exposed to damage or create a tripping hazard.
ix.	Energized wiring injunction boxes, circuit breaker panels and similar places must be covered and locked at all times.
x.	Areas with live high voltage wires or terminals must be barricaded against entry and warning signs posted Danger - High Voltage and Authorized Personnel Only.
xi.	Personnel should never work on energized equipment, de-energizing (lockout/tag out) the equipment is always the first requirement.
xii.	The lockout and tag out procedure will be used when testing or working on, or around, energized installation.
xiii.	Working around energized equipment should never be done alone. A second electrician must always be available for assistance.
xiv.	If lockout/tag out of the work is infeasible (must be demonstrated), work on energized electrical circuits must be approved by the Site In-charge. All safety precautions necessary must be taken, PPE use must be evaluated per the exposure and used, i.e high/low voltage gloves, insulated shoes, overcoats/aprons, face shields, and other protective equipment like insulated

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	tools, blankets, mats, etc. must be used.
xv.	The welding machines earth leads shall be properly fixed without loose contacts. The earth cable only has to be used. No steel members shall be used as earth leads.
xvi.	Electrical crews must be qualified for the equipment and tools they work on, including being trained in Cardio-Pulmonary Resuscitation (CPR) methods and First Aid for rendering help in the event of electric shock.
y.	Qualified Persons for Electrical Works (One who is trained and wiremen licensed to Govt. of Respective State and familiar with the construction, operation and safety hazards of the equipment upon which they are permitted to work.)
i.	Qualified persons are intended to be only those who are well acquainted/experienced with and thoroughly conversant in the electric equipment and electrical hazards involved with work being performed.
ii.	Only qualified persons may be permitted to work on or near exposed energized parts. Such persons are required to have been trained in three specific areas:
iii.	Qualified persons must be capable of working safely on energized circuits;
iv.	Must be familiar with the proper use of special precautionary techniques and procedures bases on equipment and exposure; and
v.	Must be familiar with required personal protective equipment, insulating and shielding materials, and insulated tools.
vi.	Qualified persons are expected to be able to evaluate unknown situations and adjust their activities in such a way that only safe work practices are used. Such behavior is the responsibility of the qualified person.
vii.	It is possible and likely for an individual to be 'qualified' with regard to certain equipment in the work place, and unqualified on other equipment they must know their limitation and stop work if not qualified on what equipment they were to work on.
viii.	An employee who is undergoing on-the-job training, who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training, and who is under the direct supervision of a qualified person is considered to be a qualified person for the performance of those duties. The process must be documented as proof.
z.	Mandatory PPEs of electrical work on LV & HV
i.	HV arc flash suit with protective hood (for protection of face and head) as specified for hazard risk category-4 in NFPA-70E or similar IS specification for working on HT switchgear (for all voltage >690 V) to the concerned licensed electrician or competent person
ii.	LV arc flash jacket/FR as specified for hazard risk category-4 in NFPA-70E or similar IS specification having ATPV rating of 8.5 to 9 cal/cm ² for working on LV (>260V and ≤690V) to the concerned licensed electrician or competent person.
  	
iii.	The LV arc flash jacket as shown above shall be worn continuously while working on LV (>260V and ≤690V). The color specification of LV arc flash jacket should be blue.
iv.	Electrical hand gloves should have following specification: Flame resistance, arc flash and cut protection of voltage rating (>260V and ≤690V).
v.	Electrical safety overshoe of relevant IS make for foot protection of licensed electrician or competent person while working in HV & LV line or equipment.

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8.	PAINTING:
a.	Requirements provide a detailed procedure to be implemented by all concerned employees and sub- contractors involved in painting activities.
b.	Significant Environmental Hazards:
i.	Chemical hazard due to inhalation of lead fumes (lead containing paint)
ii.	Chemical hazard due to inhalation of VOC's from painting operations
iii.	VOC's from painting and coating operation
iv.	Disposal of paints and coats drums
c.	Control Procedure for Painting:
i.	Chemical products used in painting and coating operation shall have proper MSDS sheet in place. Whenever any doubt arises with respect to handling and safety point of view it should be accessed to all concerned.
ii.	Toxic substances and hazards relate the toxic chemicals shall be identified.
iii.	Proper PPE shall be used including plastic gloves appropriate overall etc.,
iv.	Arrangement for cleaning of spillage shall be ensured
d.	Only trained workers shall be allowed and proper training should be imparted to the works.
e.	Exposure limits of the toxic substances shall be checked before starting the work and nobody shall be allowed to carry the work beyond the permissible limit.
f.	Ventilation or exhaust facility shall be provided at place where painting and coating operations are carried out.
g.	Overalls shall be supplied by the contractors/subcontractors to the workmen and adequate facilities shall be provided to enable the painters to wash at the cessation of work.
h.	Smoking, open flames or sources of ignition shall not be allowed in places where paints and other flammable substances are stored.
i.	A caution board in national /regional language "smoking strictly prohibited" shall be displayed in the vicinity.
j.	Suitable fire extinguishers/sand buckets shall be kept available at places where flammable paints are stored, handled or used.
k.	In case of indoor painting or painting in confined spaces, exhaust ventilating shall be provided. If adequate ventilation is not provided a proper respirator shall be provided and used by persons who are trained and fit tested.
l.	The VOC's from painting and coating operations shall not exceed the permissible level of CPCB/SPCB norms. The paints and coats must be selected as per the guidelines.
m.	Workers shall thoroughly wash their hands and feet before leaving the work.

9 "HAZARDOUS ENERGY" CONTROL PROCEDURE/ LOCKOUT/TAGOUT (LOTO)

Hazardous Energy Control Procedures, known as "Lockout/Tag out (LOTO)" refers to specific practices and procedures to safeguard employees from the unexpected energization or startup of machinery and equipment, or the release of hazardous energy during service or maintenance activities. Contractors must develop and submit a written LOTO program This requires that a designated qualified individual turns off and disconnects the machinery or equipment from its energy source(s) before performing service or maintenance and that the authorized employee(s) either lock and tag the energy- isolating device(s) to prevent the release of hazardous energy and test the machine or equipment to verify that the energy has been isolated effectively.

a. Minimum Requirements: The following are minimum requirements that must be included in the Contractor's LOTO program:

i.	Inspection of equipment by a trained individual who is thoroughly familiar with the equipment operation and associated hazards.
ii.	Identification and labeling of lockout devices. Purchase of locks, tags, and blocks Development of a standard written operating procedure, permitted through a controlling authority that is followed by all workers.

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b. General Requirements- The following steps must be taken to protect workers that install or service equipment and systems: Follow the hazardous energy procedures and statutory regulations. Follow the manufacturer's service/repair instructions. Identify and label all sources of hazardous energy. Before beginning work, accomplish the following:

- i. De-energize all sources of hazardous energy:
- ii. Disconnect or shutdown engines or motors
- iii. De-energize electrical circuits.
- iv. Block fluid (gas or liquid) flow in hydraulic or pneumatic systems.
- v. Block or secure machine parts against motion.
- vi. Block or dissipate stored energy.
- vii. Discharge capacitors.
- viii. Release or block springs that are under compression or tension.
- ix. Vent fluids from pressure vessels, tanks, or accumulators—but never vent toxic, flammable, or explosive substances directly into the atmosphere

c. Lockout and tag out all forms of hazardous energy including electrical breaker panels, control valves, etc. Make sure that only one key exists for each of your assigned locks and that access to the key is controlled. Verify by test and/or observation that all energy sources are de-energized.

d. After completion of the work, accomplish the following:

- i. Inspect repair work before removing the lock and activating the equipment.
- ii. Make sure that only the worker that installed the lock removes his/her assigned lock.
- iii. Make sure that all workers are clear of danger points before re-energizing the system.

e. LOTO Procedure

PURPOSE AND SUMMARY

This procedure provides the requirements and responsibilities of Hazardous Energy Control and the process for Lockout / Tag out (LOTO) of energy isolating devices (valves, circuit breakers, disconnect, etc.). Its use shall ensure that machinery, equipment, or systems are isolated from all potentially hazardous energy to prevent unexpected energization, startup, or release of stored energy which may cause personnel injury or property damage.

This procedure applies to all BHEL personnel and subcontractors working on the WBPDC (1X660MW) STAGE- III projects where equipment must be taken out of service for the performance of work activities such as installation, maintenance, repair, construction, or equipment removal. The procedure may also be used to isolate equipment of which the energization or operation may present danger to personnel or property.

Lockout / tag out are not required for electrical equipment that can be unplugged from the source and the person performing the work has control of the plug.

This procedure shall be applied to prevent injury or damage caused by the unexpected release of active or stored energy. Hazardous energy sources could be in the form of the following:

- Electrical
- Hydraulic
- Chemical
- Thermal
- Mechanical
- Pneumatic

Preplanning of work activities includes the identification of all potential hazardous energy sources so that they may be properly controlled and isolated, locked, and tagged out. Prior to initiating work activities on or around locked out / tagged out equipment, the equipment must be tested and tried by or in the presence of the person(s) performing the work activities.

RESPONSIBILITIES

- The Engineers in Charge is responsible for implementing and enforcing this procedure and approving lockouts /tag outs that impact the operation of the project.
- The Engineer in Charges responsible for authorizing Lockout /Tag out Requests.
- The Lockout / Tag out Coordinator is responsible for maintaining the Lockout / Tag out Log. Each shift should have a designated Lockout / Tag out Coordinator.

- The Isolator is responsible for determining the proper isolation devices and device positions required to isolate all potential energy sources so that the work stated on the Lockout /Tag out Request Permit maybe safely performed. The Isolator must be familiar with the equipment and energy type(s) that require isolation. For this reason, in some cases the Isolator may be more than one person (i.e. Engineer, System Operator and/or Electrician). The Isolator shall position the specified device points, and apply locks and tags, and sign the tags and the LOTO Permit isolation point blocks.

- The Safety Manager is responsible for conducting an annual audit that is documented to ensure all procedures and requirements are current and being followed as written.

DEFINITIONS

Affected Employee: -

An employee whose job requires him/her to operate or use machinery or equipment on which servicing or maintenance is being performed under a lockout/tag out procedure or whose job requires him/her to work in an area in which servicing or maintenance is being performed under a lockout/tag out procedure

Authorized Employee: - An employee who implements a lockout/tag out procedure on machinery, equipment, or systems in order that servicing or maintenance may be performed. Often an authorized employee and an affected employee may be the same person.

Danger "Do Not Operate" Tag

A tag used to identify energy isolation devices and specify the required position of the device. The tag should be affixed to the isolation device such that it is in plain view of anyone attempting to operate the device. The tags shall be sequentially numbered and shall specify the lockout/ tag out request number. The tag shall also state the purpose, and the expected duration of the lockout /tag out

Isolation Device

A device that is designed and intended to prevent the passage of energy. These devices, usually located at the energy source, are typically valves, circuit breakers, etc. Isolation devices should have a means of being locked in position

Lockout Device

A device that uses a positive physical means such as a lock, either key or combination type to maintain an energy isolation device in the safe position and prevent the in inadvertent energization of machinery, equipment, or systems. Device locks should serve no other purpose other than hazardous energy control isolation

Lockout Tag out Request Permit

A pre-numbered form used to request that machinery, equipment or systems be taken out of service. A Lockout/ Tagout Request Permit may be initiated by anyone requiring energy isolation for work activities or for taking faulty equipment out of service

Lockout / Tag out Request Log

A record of all Lockout /Tag out Request Permits shall be maintained by the Lockout /Tag out Coordinator.

PROCEDURE

1. REQUESTING A LOCKOUT / TAGOUT PERMIT

When machinery, equipment, or systems are partially or completely taken out of service for work activities or equipment protection, a lockout / tag out shall be requested. The requester shall be familiar with scope of work required and shall provide a brief description of the work on the Lockout / Tag out Request Permit. The requester shall also provide the proposed start time and estimated duration of lockout / tag out. If familiar with the machinery, equipment, or system to be taken out of service, the requester may identify the devices that are required to be isolated. The LOTO Request Permit shall be forwarded to the Authorized Lockout / Tag out Coordinator for reviewed and signature, along with Permit to Work number to be entered on the LOTO Request Permit.

a. The Lockout / Tag out Coordinator shall record the necessary information on the Lockout / Tag out Request Log and forward the request to the Engineer in Charge for approval.

b. The Safety Manager or Engineer in Charge shall review the Lockout / Tag out Request Permit for impact on project operations. Project operations could be impacted by the equipment being taken out of service or by the required isolation to take the equipment out of service. If project operations are impacted by the Lockout / Tag out, the request shall be forwarded to the Engineer in Charge for approval.

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c.	The Engineer in Charge shall provide the lockout / tag out isolation points necessary to perform the task stated on the request. The device identification, device location, device position, and locking mechanism shall be entered into the appropriate blocks on the Lockout / Tag out Request Permit.
d.	The Engineer in Charge indicates approval of the Lockout / Tag out Request Permit by signing in the appropriate space on the request. If the Lockout / Tag out Request Permit is rejected, the Engineer in Charge shall return it to the requestor, via the Lockout / Tag out Coordinator with a written explanation of the rejection.
e.	Once approved, the Lockout / Tag out Request Permit shall be forwarded to the Lockout / Tag out Coordinator to assign tags and locks.
f.	The log shall show current status of all Lockout / Tag out Request Permits from submittal to approval, through lifting of locks and tags to final closeout. The log shall be maintained by the Lockout / Tag out Coordinator in their office.

2. PLACEMENT OF LOCKS AND TAGS

a.	The tags shall be filled out to match the information on the LOTO Request Permit. Appropriate locks for the types of isolation devices specified shall be collected and placed with the tags and the Lockout / Tag out Request Permit.
b.	The isolator(s) shall take the device locks, tags, and the Lockout / Tag out Request Permit to position the specified isolation devices, sign and hang the tags, and place the locks. If the isolator does not agree with or understand the Lockout / Tag out Request Permit, or has a problem performing the isolation, the problem should be brought to the attention of the Safety Representative or Area Supervisor immediately and the lockout / tag out should be postponed until the situation is resolved.
c.	Once the Isolator has placed all "locks" on isolation points, they will "test" and "try" the machinery, equipment, or system to ensure all hazardous energy has been completely removed and the isolation is one totally accomplished, and has initialed and signed the Lockout / Tag out Request Permit indicating all isolation points have been confirmed. Examples of "lock", "test" and "try": • by checking that all locks on the LOTO Request Permit have been applied and are in the specified position open/closed, on/off, etc.; metering test of electrical circuits, opening of drain valves, checking pressure gauges or indicators; and try by pushing start buttons and on/off switches, etc. • Testing shall be performed by person(s) knowledgeable of the energy source(s) being isolated (e.g., an electrician should meter electrical circuits).
d.	A copy of the completed Lockout / Tag out Request Permit shall remain with the Work Package and used as part of the daily Pre-Job Briefings

3. WORKING UNDER A LOCKOUT / TAGOUT REQUEST

a.	Prior to starting the work activity, the person(s) performing the work shall review the Lockout / Tag out Request Permit and place the necessary tags and personal locks on the identified isolation devices. Personal locks may be placed only on devices that have already been locked and tagged in accordance with the Lockout / Tag out Request Permit. • All personal locks shall be accompanied by a tag that is signed and dated by the worker(s) and specifies the work activity being performed. • Personal locks should be of a different color than device locks for ready identification.
b.	Verification of the effectiveness of the isolation by the Isolator shall be performed for Worker's working under the lockout / tag out, by demonstrating the checks on "lock", "test" and "try",
c.	When the work activity is finished, personal locks and tags shall be removed and the Safety Representative shall be notified that the Lockout / Tag-out is no longer required. If work under a lockout / tag out is to be delayed or interrupted for a period in excess of 24 hours, personal locks shall be removed until the work restarts. Personal locks shall be removed prior to the worker(s) leaving the project at the end of shift unless the key(s) are maintained at the project.

4. REMOVAL OF LOCKS AND TAGS

a.	When the lockout / tag out is no longer required, the Safety Representative or Area Supervisor shall obtain the Lockout / Tag-out Request Permit from the work package for LOTO removal. Prior to removing locks or tags that may allow equipment to be energized, a check shall be made to

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	verify that the equipment is free to safely operate (i.e., will not cause damage or injury). The locks and tags shall be removed and returned to the Lockout / Tag-out Coordinator. Isolation devices maybe re positioned at the discretion of the Engineer in Charge according to operational requirements. The Isolator shall complete the Lockout / Tag-out Request Permit indicating each lock and tag has been removed and the Safety Representative or Area Supervisor forward to the Lockout / Tag-out Coordinator.
b.	The Lockout / Tag-out Coordinator shall discard the tags and maintain the completed Lockout / Tag-out Request Permit for future reference.
c.	In the event that an employee leaves the job site without removing the personal lock Itag, the following measures shall be taken and documented. The measures listed below area minimum set of guidelines and under all circumstances, refer to the site-specific safe work plan for detailed procedures: • Attempt calling / contacting the employee to return to the site for removal. • In the event an employee cannot be contacted, the Site Manager and Safety Manager shall sign an Emergency Lockout/Tag-out Removal Form, which has been completed by the Area Supervisor. • Employee shall be notified upon returning to the site, prior to beginning any work.

5. INTERRUPTION OF A LOCKOUT / TAGOUT

Operational Emergency

The Engineer in Charge / Safety Manager /Area Supervisor may deem it necessary to temporarily remove the locks and tags from isolation devices, prior to the end of the work activity. The standard procedure for removal of locks and tags shall be followed. Extreme caution shall be taken by the Isolator removing the locks and tags to prevent personnel injury.

Testing

When the performance of a work activity requires the functional testing of a machine, component, or system, the locks and tags may be temporarily removed in accordance with the tag removal, to perform the test. As a result of the testing, if it is determined that the equipment needs further work, the locks and tags shall be positioned back on to the device. If it is not necessary to replace all the locks and tags, then the unnecessary locks and tags may be returned to the Lockout / Tag-out Coordinator. The Engineer in Charge shall initial the Lockout / Tag out Request Permit in the removal block to indicate that these locks and tags have been removed. When testing has been satisfactorily completed, the locks and tags shall be removed.

ISOLATION DEVICES

- In most industrial applications, there are isolation devices that were not designed to accommodate a locking device. In these instances, an acceptable alternative that physically obstructs or prevents the use of the isolation device shall be found. Chains shall be placed on valves or electrical panels. Wires shall be determinate, pulled back, taped, and secured.
- If an isolation device does not accept a lock, a tag only is acceptable; however, all possible precautions shall be undertaken to provide a level of safety for the workers. The tag shall be readily visible to anyone attempting to operate the device.
- If more than one Lockout / Tag-out Request Permit requires that a single isolation device be locked and tagged, a lock and tag for each request shall be placed. Each lock in itself prevents the inadvertent operation of the device.

GROUP / COMPLEX LOCKOUT

In a multiple lockout / tag out procedure, each person working on the machinery or equipment must place a lock or tag on the energy isolating device. If the energy isolating device will not accept multiple locks or tags, a hasp (a multiple lockout device, may be used. The locks or tags must be placed in such away that energy cannot be restored to the machinery or equipment until every lock or tag is removed. As each employee involved no longer needs to maintain lockout / tag out protection that employee removes his - her lock and/or tag. The employee attaching the lock or tag is the only person authorized to remove the lock or tag.

6. TRAINING

The training must include recognition of hazardous energy source, type and magnitude of energy available, methods and means necessary for energy isolation and control. Each authorized employee shall receive

adequate training. The training should address that all affected employees are instructed in the purpose and use of the energy control procedure. There should be training provisions included for any other employee whose work operations are or may be in an area where energy control procedures may be utilized. The employee training should also address when tag out systems are used including the limitations of a tag (tags are warning devices and do not provide physical restraint). The training should also include that a tag is not to be removed without authorization. The tag is never to be ignored or defeated in any way. Retraining is required when there is a change in job assignments, in machines, a change in the energy control procedures, or a new hazard is introduced. All training and I or retraining must be documented with employee's name and dates of training.

7. PROGRAM REVIEW

The lockout / tag out program must be reviewed at least annually. The review must ensure that procedures are being followed and that they are effective. A documented review of the inspection must include the date, the equipment, employees involved & the inspector. The inspector must be someone other than those actually using the lockout / tag out in progress.

ATTACHMENTS

#1. Danger (DO NOT OPERATE) Tags



#2. Device & Personal Locks and Multi Lock Hasp:



#3. Lockout / Tag out Request Permit

	LOCKOUT ITAGOUT REQUEST PERMIT		LOTO Request Permit No.:	
			Work Permit No.:	
Equip. Out of Service:	LOTO Date Required by: / /	Estimated Duration:	LOTO Requested Date:	
Scope of Work:			LOTO Authorization Signed by:	
			Date:	

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					LOTO Removal Authorization Signed by:			
					Date: _____ Time: _____			
Tag No.	Device to be Tagged / Locked I.D. No.	Device Location	Device Position OPEN / CLOSE D -	Lock No.	Tag/ Lock Placed by Print/Sign		Tag / Lock Removed by Print/Sign	
					- Date/Time		- Date/Time	
Comments Instructions:					Attachment 3.Lockout / Tag out Request Permit:			

#4. Lockout / Tag out Request Log

LOTO Permit No.	Request or Name	Equipment & Location	Est. Work Completed Date	Approval Date	LOTO Placed Date	LOTO Removed Date	Comments

10. RISK ASSESSMENT

Risk and Hazard Analysis

In order to produce an overall Project EHS Plan, a project must be assessed for its risks. There are two components to the risk and hazard analysis. The procedure used to examine and plan for the identified risks and hazards is called a General Hazard and Risk Assessment.

JSA/HIRA review

Prior to commence the following activities Method statement and JSA/HIRA to be prepared by the concern engineer in coordination with EHS officer and submit to the client for review and approval. After getting approval the work will be started under PTW after clearance. For HIRA and criteria for the defining the high, medium & low risk the relevant BHEL HSE Procedure for HIRA shall be referred. In case any deviations required in the approved method statement the concerned engineer/supervisor has to prepare additional HIRA/JSA to cover the new activities and associated risk. Following activities to be covered,

- Deep excavation (more than 5 feet)
- Significant concrete pouring (like heavy foundation, TG deck, Slab casting etc.)
- Confined entry
- Blasting
- Working on electrical/ energized equipment's
- Steel erection more than 5-Ton weight
- Working at height prior to completion of stairs/ladders/hand railing etc.

Hazard Analysis Document

• For high risk and dangerous work identified, the Applicant shall complete and submit a Hazard Analysis Document together with the PTW request. It will be a JSA (Job Safety Analysis) or Preliminary Hazard Analysis Checklist. And it shall be reviewed and approved by respective Construction and HSE Representatives.

• Issues such as work interface, coordination, drawings, toolbox meetings and work type/duration shall be detailed and included with supporting documentation for the Applicant's request for PTW.

• If applicable, Hazard Analysis Document shall be used as the foundation for development of Safe Work Method Statement. Each hazard identified shall be addressed in the Safe Work Method Statement and be submitted as part of the Applicant's submitter package.

Evaluation of Sub-contractor Risk Assessments includes

- Experience and expertise in performing similar type work.
- Duration of work performed
- Location of the work to be performed.
- Nature of the work to be performed.
- Potential for exposure to work site hazards.
- Potential for a subcontractor performing the work to expose themselves, other persons or employees, to hazards.

Review of Subcontractor specific issues

Preventive and protective measures must be introduced according to the following order of priority

- Eliminating the hazard by removing the activity from the work process. Examples include substitution with less hazardous chemicals, using different manufacturing processes, etc.
- Controlling the hazard at its source through use of engineering controls. Examples include local exhaust ventilation, isolation rooms, machine guarding, acoustic insulating, etc.
- Minimizing the hazard through design of safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration, etc.
- Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE.

11. PREVENTION OF COVID-19 (COVID-19 HERE TO BE READ AS COVID-19 AND OTHER PANDEMICS/ COMMUNICABLE DISEASES) AT PROJECT SITE & LABOUR COLONY:

Resumption of Construction Activities after Lock Down and Prevention of Coronavirus Infection during Site Operations and OCP 61A: Prevention of COVID-19 Infection in Labour Colony will be strictly followed.

A. Preventive measures at project site:

- BHEL and Agencies shall nominate COVID Marshalls, who will be responsible for monitoring the COVID prevention measures and apprising management on the same.
- Mandatory health check-up for every worker/ official joining the site required as per nature of their work.
- All activities to be carried out using least amount of paperwork and physical proximity as far as possible.
- HSE Observer App to be used to monitor HSE Activities and follow up with agencies for closure of non-conformities.

a. Strict Control at the Gate/ Banning Entry to Anyone Not Wearing Masks

- i. Security personnel at the gate may erect a barricade preferably approx. 10 meters from the gate and only allow personnel who are wearing proper masks inside.

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ii.	Public address system may be used to warn any non-compliant visitors
iii.	Near entry gate, round markers at minimum 1-meter distance to be ensured so that distancing is ensured
iv..	A hand-wash or hand sanitizer facility is preferable at the gate to allow entry after hand wash or hand sensitization. These are also to be provided at key locations to enable hand wash / hand sensitization before starting work, before eating, etc
v.	Gutkha, Paan, tobacco etc. to be banned from the site. Spitting to be strictly prohibited.
b. Screening at Gate with Contactless Thermometer & Action on Suspected Cases	
i.	Security Personnel at the Gate to screen each person entering the premises using anon-contact infrared thermometer, which is duly serial numbered and calibrated.
ii.	In case any site worker/ official is found to have fever more than 99 Degrees Fahrenheit or found coughing/ sneezing, he/she may be advised rest till recovery and entry to be permitted after obtaining clearance from medical officer/assistance/attendants.
• Parcel to be collected from gate by concerned person preferably with provision of Special Box • Any construction material received at site, unless properly sanitized, to be kept undisturbed for at least 3 days and to be used only after that period. • During Toolbox Talks, minimum 1-meter distance between any two workers to be ensured	
c. During site execution activities:	
For all site execution activities, social distancing is to be maintained. In case this is not possible due to nature of work, specialty of work, etc., ensure sensitization of the labour/staff involved and use of appropriate PPEs, especially mandatory facemask. In any case, close working to be allowed only in special circumstances and ensuring these activities are preferably time staggered to the extent possible	
d. In office premises:	
i.	Sharing of items like pens, water bottles etc. in office premises to be avoided
ii.	Doors preferably to be in open condition to avoid contact
iii.	All common touch points to be frequently disinfected in a day.
e. Regular disinfection of all Areas, Equipment and facilities	
i.	A dedicated disinfectant gang to be identified for the task by each agency. The disinfectant gang to be provided full bodysuits for the task.
ii.	All areas (including office premises, site areas, chairs, tables, furniture etc.), tools & equipment to preferably be disinfected by dedicated gang every day before resumption of work.
iii.	Common touch points like handrails, lift buttons, door/window knobs or handles, vehicle door handles, taps, conference room & dining hall tables/chairs, common sofas/chairs, visitor sofa/chairs, files & folders, etc. to preferably be disinfected regularly at frequent intervals every day.
iv.	Pool vehicles, to be disinfected after every use. Social distancing to be maintained inside the common pool vehicles as per Govt./ statutory body guidelines.
f. Disinfecting the operator/driver touch points of Vehicles/cranes, T&Ps etc.	
Disinfection to also be carried out for all Cranes, Vehicles, Equipment, consoles, T&Ps etc. which come into contact with operating personnel.	
g. Posters on COVID-19	
Sufficient Posters on COVID-19 to be ensured across the site in languages understood by most workers.	
h. Brief guidelines for handwashing areas below:	
i.	Soap to be provided at each washbasin and replenished regularly.
ii.	Washing with soap for at least 20 seconds is recommended.
iii.	As a general guideline, for every 100 workers, 1 wash-basin may be provided at site areas.
iv.	Close queue to be avoided near wash-basins and 1-meter distance to be maintained. Round markers at 1-meter distance can be ensured as guidance
Composition of Disinfectant:	
i.	Readily available 1% hypochlorite solution or 4%
ii.	Liquid chlorine-1% solution
iii.	Surgical spirit-95% alcohol content

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iv.	Hand sanitizer should have: Isopropyl alcohol-75%, Glycerol-1.45%, Hydrogen Peroxide-0.125%
B. Prevention of COVID-19 Infection in Labour Colony:	
- Spacing of minimum 2 meters between living areas of workers inside a room maybe maintained. Preferably, the living area of each worker may be partitioned using sheet of cloth, plastic etc. - Rooms to be properly ventilated as far as possible - Sanitation to be given prime importance and personal hygiene to be promoted - Face masks shall be worn by everyone inside the colony premises - Spitting of Pan. Gutkha etc. inside the colony and urinating etc. outside the toilets to be strictly avoided - Regular visits by Doctors to the labour colony can be arranged on non-working day for check-up of all workers	
• Identification of "COVID Wardens" (CWs) by each agency for maintaining the following:	
i.	Keeping an eye on the health of workers and report any suspected cases of fever, coughing etc. to the management
ii.	Keeping an eye on the social distancing measures in the labour colony and report any non-conformances to the management.
iii.	Educate the workers about social distancing and COVID prevention measures.
• Training/ Awareness regarding COVID-19 to be provided to workers regularly.	
• Workers to be instructed to maintain social distancing of minimum 1 mat all time	
• Posters on COVID-19:	
Sufficient Posters on COVID-19 to be ensured across the labour colony in languages understood by most workers.	
• All workers to be instructed to inform any suspected cases of illness (individual or others) to an emergency contact number of CW, the emergency contact numbers and CW contact numbers to be displayed at prominent locations	
• Inspection & Review	
i.	Daily Inspection by concerned COVID Wardens and reporting to Agency
ii.	Regular inspection by Agency & BHEL

12. NOISE MITIGATION

High noise is harmful to the human health and it can cause impairment if exposed for long duration at regular intervals, and also cause disruption in nearby communities.

- Noise monitoring shall be carried out in all construction locations periodically.
- Use of silent DG is allowed at site during construction.
- Low noise generation equipment's to be preferred.
- Work areas where noise levels exceed the 85db shall be posted as hearing protection required.
- Use of PPEs / ear plug/ear muff for personnel entering into high noise area.
- Activities generation High noise will be planned in day shift.

Noise Level Chart

Parameter	Night Noise level dBA	Daytime Noise Level dBA
At 1-meter from each piece of equipment	85	85
At Property boundary	70	70

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ANNEXURE – I

VERTIGO TEST

Vertigo Test

Vertigo Test Procedure/ Guidelines

This document specifies minimum requirements for vertigo test. These may be supplemented by any additional requirements deemed fit by the medical examiner/ HSE department)

Fear of height may be physiological or psychological. Therefore, to rule out any possibility of physiological factor, detailed medical check-up of workers is carried out before vertigo test. Medical check-up of workers includes the following:

history of past illnesses (like epilepsy, drug allergy, diabetics/ hypertension, unconsciousness etc.), general physical examination (like height, weight, BMI, build and nourishment etc.), measurement of pulse rate, Blood Pressure, respiratory rate.

After this check-up, those who are found suitable for height work by examining doctor, are allowed to undergo vertigo test.

During this health check-up, psychology of workers is also studied. If any worker finds it extremely difficult/ frightening to climb the monkey ladder & walk on the beam, during/after performing vertigo test or even before performing, then he is treated as disqualified.

As per standard, during vertigo test, worker is allowed to climb on a foundation through monkey ladder, walk on a beam, then steps down at the other end of beam, through monkey ladder. Height of the beam should be at least six feet from ground level. All necessary safety precautions are taken during this test. Worker has to wear full body harness with double lanyard. A horizontal lifeline is run parallel to the beam and worker has to put his lanyards into the lifeline. Additionally, a safety net is also put below the beam for rescue of the victim in case of a fall from beam.

Following activities are suggested to be carried out during testing:

1. Walking Bench Training:

- a. Person should walk over the channel. He should maintain balance & walk without much problem.
- b. If the person has problem to balance himself on repeated chances, he may be having flatfoot or some other problem. So, he may not be fit for height work.

2. Rope Climb Training:

Person should be able to climb the rope up to the top channel for ensuring that in case of fall, a person hanging on the safety harness, will be able to safely climb back to the platform within minimum time period before the safety harness starts breaking down under the load.

3. Height Work Training:

Person should walk freely on the middle channel while holding the top channel with the help of safety harness.

4. Ladder for Vertical fall arrestor Training: Vertical fall arrestor rope is fixed from top to bottom of the ladder. It will ensure:

- Usage of vertical fall arrestor.
- Usage of two lanyards of a safety harness.
- Ensure 3-point contact on the ladder while climb.

5. Chair for work at height Training:

- Climb through vertical ladder with two lanyard ropes.
 - Hooking of two lanyard ropes to lifeline. With this safe arrangement, he can walk to chair.
 - Sits in the chair safely, comes out & walks back to the vertical ladder & comes down from vertical ladder.
- After completion of vertigo test, blood pressure of worker is again measured. If it is not within acceptable limits for any worker, concerned worker is denied height pass.

Only those who pass the above training are to be considered as fit for height work.

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ANNEXURE - 1 TO ANNEXURE - 10

ANNEXURE - 1

List of Safety Equipment's & safety Personal Protective Equipment's, the list of minimum suggestive Safety Equipment's & Safety Personal Protective Equipment's to be deployed necessarily by the Contractor is furnished below. However, the actual deployment at site shall not be limited to these and additional equipment's if required shall be mobilized by the contractor. Safety Gadgets, Equipment and Measurement Devices to be ensured in total throughout the duration of the project.

Sl. No.	Minimum Suggested List of Safety Equipment's and Safety Personal Protective Equipment's	Minimum Quantity
1	Safety Net (Conforming IS 11057:1984) Safety Net (Net Size: 10m x 5m, Mesh Size: 25 mm, Mesh Rope: 2mm double cord, Border/Tie Cord: 12mm diameter polypropylene rope (tested as per IS: 5175). Two meters length shall be provided at all four corners.	240 Nos.
2	Fall Arrestor 'Rope grab fall arrestor' & anchorage line. Anchorage Line: 14mm- 16 mm diameter, three strand twisted Polyamide rope. Rope Grab fall arrestor: Openable & Guided type Fall Arrestor (on flexible line) conforming EN 353-2 & works on 14-16 mm diameter polyamide rope. material: Nickel Chrome plated Steel Connector: Karbiner conforming to EN 362 (Minimum Strength 22 KN), material: Steel	200 nos. of Rope Grab Fall arrestor' and Karbiner each. 90 nos. anchorage line, 30 meter long each, 30 nos. anchorage line, 40 meter long each
3	Horizontal life line Stainless Steel Wire rope of 8mm diameter. Minimum six nos. of steel U-bolt clips are required for clamping each wire rope to a rigid support (03 nos. of U-bolt clips at each end).	40 nos. of wire rope, each 40 meter long 90 nos. of wire rope, each 25 meter long.
4	Ladders on column The minimum design live load on metallic ladder shall be a single concentrated load of 100 kilo grams. All rungs shall have a minimum diameter of 1.90 centimeters, and minimum clear length of rungs shall be 40.6 centimeters. The distance between rungs shall not exceed 30.5 centimeters. Each ladder shall have maximum height of 9.0 meter. The ladder shall have proper fastenings for attaching it to a column using positive means such as bolt, weld or other type of fasteners.	cumulative length of ladders is 1200 meters
5	Safety PPEs (Industrial Safety helmet & Industrial Safety Shoes) Industrial Safety Helmet (IS:2925-1984 marked). Industrial Safety/Electrical Shoes (IS:15298-2002 marked). Full body Safety Harness (conforming IS:3521)	1575 nos. 1575 nos. 395 nos.
Note	a. Above mention quantity is for whole project as per customer contract, however separate annexure/ document will be issued to each contractor at the time of execution of work by Safety officer BHEL with approval of construction manager/ GM/ PD. PPEs Quantity annexure/ document issued by BHEL site will be final and agency must fulfill the same during exaction of work.	

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- b. Other materials like cables, sling, gloves, goggles, safety belts, safety helmets, heating oven, pre-heating / post weld heat treatment arrangement, material for making platform and platform support etc. shall be mobilized as per requirement.
- c. Other equipment though required for the timely completion of the job but not listed above shall be deployed by the contractor, as per the job requirements and as directed by the HSE Engineer/ BHEL Official.
- d. The contractor shall make suitable provisions for repairs and maintenance of the equipment mobilized and always keep them in good working conditions, as the repair facilities for such equipment are not available at the project site.

ANNEXURE - 1 Cont.

List of Safety Equipment's & safety Personal Protective Equipment's mention in this table are, the list of minimum suggestive Safety Equipment's & Safety Personal Protective Equipment's. However, all the Safety Equipment's & Safety Personal Protective Equipment's to be deployed necessarily by the Contractor wherever required or as per instruction from BHEL HSE officer/ construction manager.

The actual deployment at site shall not be limited to these and additional equipment's if required shall be mobilized by the contractor. Safety Gadgets, Equipment and Measurement Devices to be ensured in total throughout the duration of the project.

Safety Gadgets & Equipment			
	Name	Quantity	Unit
1	Lifelines-steel wire rope min 8mm insulated (Length-100mtr)		
2	Retractable fall arrestors		
3	Safety nets (10m X 5m) or (10mX10m) or (15m X 15 m) etc.		
4	Sky climbers		
5	Fire blanket (5mX 5m)		
6	Honey Bee Removal Suit & Kit		
7	Flashback arrestors		
8	Barricading Tape (100mX 100 nos)		
9	Binoculars		
10	Walkie-Talkies		
11	LOTO kit		
12	24-Volt light		
13	Sand Buckets		
14	Hard barricading		
15	ELCB for welding machine & winches		
16	Fire extinguishers		
17	First aid box covering medicines as per BOCW		
18	Temporary platform material (grating)		
19	Small size u clamps to tie life lines		
20	Vertical lifeline (16mm polyamide rope with fire resistant)		
21	Rescue harness		
22	Mini fogging machine		
23	Gas Welding Igniter		
24	Toe boards (height-150mm)		
25	Portable Aluminum ladder (Length- 3mtrX400mm)		
26	Eye/ Hand wash station		
27	Whistle		
28	Sintex plastic water tank-1000L		

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29	Earth pits each electrical per panel & connected load		
30	Electrical shed covered for keeping welding machine and electrical panels		
31	Earth flat (Aluminum) (50mmX 400 m) for earthing		
32	Gas cylinder trolley for gas cutting sets.		
33	Sheds for segregating filled and unfilled gas cylinders		
34	100 W LED & its fixture/cable		
35	250 W LED & its fixture/cable		
36	Painting safety kit		
37	Double lanyard full body harness with shock absorber		
38	Multi-purpose Ladder		
39	Urinal provision		
40	As per requirement		
41	Tool carrying bags		
42	Bigger sized Bins for floor for scrap collection		
43	Ladder clamps for beam type of columns		
44	Ladder clamps for box type of columns (with stoppers where inclined or vertical boxes)		
45	Helmet torches		
46	Torches with good capacity		
47	Mobile Tower ladder with platform provision for hopper cavity 350x350		
48	Laser Distance meter		
49	Man Cage for standard wt and with standard wire ropes		
50	Temporary Ladders 3 meters		
51	Exhaust fans		
	Measurement Instruments (All measuring instrument must be calibrated)		
	Name	Quantity	Unit
1	ELCB/RCCB Tester		
2	Multi meter (Light cables)		
3	Electric Tester (to checked low voltage up to 415 V)		
4	Earth Resistance Meter		
5	Lux Meter		
6	Anemometer		
7	Breath Analyzer (Alcohol)		
8	Multi-gas dozi-meter		
9	Gas leakage detector / alarm		
10	Gas monitor (confined space)		
11	Radiation meter & Badges		
12	Blood Pressure Monitor		
13	Fire detectors		
14	Sound level meter		
15	SCBA (Self-contained breathing apparatus)		
16	Siren		
17	Public address system		
18	Emergency lamp – (rechargeable)		
19	Oxygen Meter (while working in confined space etc)		

ANNEXURE - 2

Details & Contents of First Aid Box as per Contract Labour (Regulation & Abolition Act), Central Rules, 1971

(1)	The first aid box shall be distinctively marked with a Red Cross on a white background and shall contain the following items, namely
(A)	For establishments in which the number of contract labour employed does not exceed fifty, each first aid box shall contain the following equipment
(i)	6 small sterilized dressings
(ii)	3 medium size sterilized dressings
(iii)	3 large size sterilized dressings
(iv)	6 pieces of sterilized eye pads in separate sealed packets.
(v)	6 roller bandages 10 cm wide.
(vi)	6 roller bandages 5 cm wide.
(vii)	One tourniquet
(viii)	A supply of suitable splints
(ix)	Three packets of safety pins.
(x)	Kidney tray.
(xi)	3 large sterilized burn dressings.
(xii)	1 (30ml) bottle containing a two percent alcoholic solution of iodine
(xiii)	1 (30 ml) bottle containing Sal volatile having the dose and mode of administration indicated on the label
(xiv)	1 snake bite lancet
(xv)	1 (30gms) bottle of potassium permanganate crystals.
(xvi)	1 pair scissors
(xvii)	1 copy of the First aid leaflet issued by the Director General, Factory Advice Service and Labour Institutes, Government of India.
(xviii)	A bottle containing 100 tablets (each of 5 grains) of aspirin
(xix)	Ointment for burns
(xx)	A bottle of suitable surgical anti-septic solution

(B)	For establishment in which the number of contract labour exceeds 50 nos (fifty) each first aid box shall contain the following equipment:
(i)	12 small sterilized dressings
(ii)	6 medium size sterilized dressings
(iii)	6 large size sterilized dressings.
(iv)	6 large size sterilized burn dressings
(v)	6 (15 grams) packets sterilized cotton wool
(vi)	12 pieces of sterilized eye pads in separate sealed packets.
(vii)	12 roller bandages 10 cm wide.
(viii)	12 roller bandages 5 cm wide.
(ix)	One tourniquet.
(x)	A supply of suitable splints.
(xi)	Three packets of safety pins.
(xii)	Kidney tray.
(xiii)	Sufficient number of eye washes bottles filled with distilled water or suitable liquid clearly indicated by a distinctive sign which shall be visible at all times.
(xiv)	4 per cent Xylocaine eye drops, and boric acid eye drops and soda by carbonate eye drops.
(xv)	1 (60ml) bottle containing a two percent alcoholic solution of iodine
(xvi)	One (two hundred ml) bottle of mercurochrome (2 per cent) solution in water.

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(xvii)	1 (120ml) bottle containing Sal volatile having the dose and mode of administration indicated on the label.
(xviii)	1 roll of adhesive plaster (6 cmX1 meter)
(xix)	2 rolls of adhesive plaster (2 cmX1 meter)
(xx)	A snake bite lancet.
(xxi)	1 (30 grams) bottle of potassium permanganate crystals.
(xxii)	1 pair scissors
(xxiii)	1 copy of the First aid leaflet issued by the Director-General, Factory Advice service and labour Institutes, Government of India.
(xxiv)	a bottle containing 100 tablets (each of 5 grains) of aspirin
(xxv)	Ointment for burns
(xxvi)	A bottle of a suitable surgical anti septic solution.
(2)	Adequate arrangement shall be made for immediate recoupment of the equipment when necessary.

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ANNEXURE - 3

List of HSE Procedures

S No	Procedure No.	Procedure Name
1	HSEP:01	HSE Procedure for Register of OHS Hazards & Risks
2	HSEP:02	HSE Procedure for Register of Environmental Aspects & Impacts
3	HSEP:03	HSE Procedure for Register of Regulations
4	HSEP:04	HSE Procedure for Training & Awareness
5	HSEP:05	HSE Procedure for Control of Documents
6	HSEP:06	HSE Procedure for Emergency Preparedness & Response
7	HSEP:07	HSE Procedure for HSE Performance Measurement, Monitoring & Review
8	HSEP:08	HSE Procedure for Incident Investigation, Reporting & Corrective Action
9	HSEP:09	HSE Procedure for Non-conformity Handling & Corrective Action
10	HSEP:10	HSE Procedure for Control of Records
11	HSEP:11	HSE Procedure for Internal Audit
12	HSEP:12	HSE Procedure for Permit to Work
13	HSEP:15	HSE Procedure for Operational Control

ANNEXURE - 4

Sl. No	Type of Fire Risk (Class of Fire)	Extinguishing Medium & Relevant INDIAN STANDARD	Scale of Equipment (Minimum recommended)
1.	CLASS 'A' Fires involving ordinary combustible materials like wood, paper, textiles, rubber etc. (Ordinary hazard or low fire load)	WATER Soda acid type, water type (gas pressure) and water type (constant air pressure) IS: 934 -1976; IS: 940 - 1976; IS: 6234 -1971	For every 600 square meter floor area or part, one 9-litre capacity. Minimum 4 numbers per floor or room; should not be required to travel more than 15 meter to reach any extinguisher.
2.	CLASS 'A' (Extra hazard & high fire load)	-do	-do – (Also, consult local fire authority).
3.	CLASS 'A' (Special hazards)	-do	-do – Extra provision For every 100 square meter floor area or part, one 4.5 Kg. CO ₂ ; minimum 2 numbers per room; should not be required to travel more than 10 meter to reach any extinguisher.
4.	CLASS 'B' (Fires in flammable liquids like oils, solvents, petroleum, products, varnishes, paints, etc. where blanketing effect is essential) (Storage and handling in small quantities)	FOAM / CARBON DIOXIDE / DRY CHEMICAL POWDER IS: 933 -1976; IS: 2878 1976; IS: 2171 1976; IS: 4308 - 1982	For every 50 square meter floor area or part, 2 numbers 9 -liters foam or 5 kg dry powder; should not be required to travel more than 10 m in the area of storage to reach any extinguisher.
5.	CLASS 'B' (Bulk storage other than in tank form))	-do -	-do- (but minimum 3 numbers per room)
6.	CLASS 'C' (Fires involving gaseous substances under pressure where it is necessary to dilute the burning gas at a very fast rate with an inert gas or powder) (storage and handling of gas cylinders)	CARBON DIOXIDE / DRY CHEM. POWDER. The best way to extinguish such fire is by stopping the flow of fuel gas to the fire. Container is kept cool with water spray. IS: 2878 - 1976; IS: 2171 -1976; IS: 4308 -1982	For every 100 square meter floor area or part; 2 numbers, 10 kg powder extinguisher or 6 kg CO ₂ ; minimum 3 nos. per room; should not be required to travel more than 10 meter to reach any extinguisher.

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7.	CLASS'D' Fires involving metals like magnesium, aluminum, zinc, potassium etc. where the burning metal is reactive to water and which require special extinguishing media or technique	SPECIAL DAY POWDER IS: 2171 -1976 IS: 4861 - 1968	For every 50 square meter floor area or part, 2 nos. 5 kg special dry powder; minimum 3 nos. per room; should not be required to travel more than 10 meter to reach any extinguisher.
8.	MIXED OCCUPANCY (electrical); Generators; Transformers; etc.	CARBON DIOXIDE DRY POWDER, IS: 2878 1976; IS: 2171 -1976	For every 100 square meter floor area or part one 10 kg CO2. Minimum 2 numbers for every location should not be required to travel more than 10 meter to reach an extinguisher.

Note: Due to peculiarities of the power plant construction sites, there would be locations in the construction areas of Boiler, Turbine, Generator, Transformer, etc. where different types of fire risk (classes of fire) may co-exist. Special care shall be taken while selecting and installing portable fire extinguishers for such locations so that all types of fire risk that may co-exist, are adequately covered. Similar special care shall be taken for storage areas.

Note :- Following Must be Ensure at all Construction Activity:-

1. All Electrical welding booths shall be equipped with appropriate Fire extinguisher.
2. Appropriate Fire Extinguishers shall be made within easy reach of all welding operations.
3. Fire extinguishers shall be regularly tested and last checked date to be indicated on each. Master list shall be prepared with location and details.
4. Providing appropriate fire-fighting equipment at designated workplace and nominate a fire officer/warden adequately trained for his job.
5. Subcontractor shall provide enough fire protecting equipment of the types and numbers at his office, stores, temporary structure in Labour colony etc. Such fire protection equipment shall be easy and kept open at all times.
6. The fire extinguishers shall be properly refilled and kept ready which should be certified at periodic intervals. The date of changing should be marked on the Cylinders.
7. All other fire safety measures as laid down in the "codes for fire safety at construction site" issued by safety coordinator of BHEL shall be followed.
8. Non-compliance of the above requirement under fire protection shall in no way relieve the subcontractor of any of his responsibility and liabilities to fire incident occurring either to his materials or equipment or those of other.
9. Emergency contacts nos. must be displayed at prominent locations.
10. Tarpaulin being inflammable should not be used (instead, only non-inflamable covering materials shall be used) as protective cover while preheating, welding, stress relieving etc. at site.

ANNEXURE - 5

HSE Requirements for Adverse Weather & Climate Conditions, Epidemics/ Pandemics

1. Summer

- a** The Working Time and Lunch Hour will be as per instruction of Statutory Authorities (no work between 11am to 3:30pm). However, in case temp comes down due to rain/cloudy weather work will continue as per normal routine.
- b** During long lunch break, worker will be allowed to go back home for rest. Those who will like to stay back will avail at the facility of rest shed or other designed area.
- c** They will be allowed to take small break during work as per their need.
- d** Water sprinkling will be done on roads to reduce **dust** concentration.
- e** Workers will be provided with adequate cold drinking water and Butter milk/Lemon water etc.
- f** Adequate ORS stock will be made available at the work location in the First aid Box available at construction activity location for use as needed and at Medical Centre for emergency need.
- g** Fire prevention shall be on high alert, with removal of dry grass and bushes, etc, inside and outside the surrounding work areas. No smoking, and control of open flame/sparks shall be maintained and monitored.
- h** Worker will be informed about the Do's and Don'ts to be followed during summer in the Pre Job Brief.

1.1 Dos & Don'ts

- a** Drink plenty of cool water and other non-alcoholic fluid and keep body well Hydrated.
- b** Eat salt in food to replenish loss of salt through sweating.
- c** Avoid over physical exercise.
- d** Have adequate sleep at night.
- e** Eat light and less spicy food
- f** Avoid eating food which was cooked long time ago.
- g** Nobody should use small water bodies such as pits, running rain water through crevices etc. for drinking and cleaning purpose as it may be unhygienic.

1.2 Emergency Handling

In case of emergency due to heat disorder:

- a** Rescue the victim from workplace and place under shed.
- b** If to be rescued from height, use stoke basket or rescue kit.
- c** Inform Ambulance immediately.
- d** If nearby any air conditioned room/shed is available, place him inside the room/shed.
- e** Administer First aid by trained First aider for Heat Disorder
- f** If conscious, give him ORS solution to drink.
- g** If required send the victim hospital immediately.

2. Monsoon

This is the procedure to be followed during monsoon period in the entire project with respect:

- a** To give clear guidance as to other action that must be implemented
- b** To inform employees what to do in an Emergency Scenario
- c** To establish an emergency response and communication procedure
- d** Ensure that all height work platforms are barricaded and avoid any highly hazardous height work.
- e** Height work.
- f** Ensure that all personnel have good quality and intact safety shoes
- g** Stop all dangerous height work during rain
- h** Explain Do's and Don'ts to workers during Tool Box Meetings
- i** Ensure that there are no weak structures, boards etc. that can fall during high winds
- j** Do not permit anyone to ride up or comedown scaffolds framework during heavy wind or rain.
- k** Provide "anchor" of adequate strength to scaffolds and other high-rise structures.

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l	All rest sheds and GI sheds will be anchored into the round and wall and roof panels will be secured with J hook to prevent shed from blowing over or parts/pieces becoming airborne. Proper earthing per IS standard is also to be installed.
m	Do not go alone nor permit anyone to stay at tower-tops, roof-tops, high structures or on electrical poles during the course of stormy weather or heavy rain.
n	Electrical:
o	All electrical connections / loads have to be routed through ELCB / RCCB (residual current circuit breaker) whose rating should be 30mA.
p	RCCB operational checks need to be done DAILY / WEEKLY during monsoon season.
q	All electrical distribution board shall be properly covered at top and sides to protect from rainwater. Extension boards shall be protected from rainwater.
r	Ensure proper "earthing" for each and every electrical appliance.
s	Double earthing need to be provided for 3-phase power supply and for voltage more than 220V.
2.1 During monsoon the following will be implemented:	
a	Do not allow any loose material (e.g. GI sheet, Ply board, empty cement bag, aluminum foil, foam sheets etc.) on roof sheds or top of structures.
b	Avoid joints on power cables which need to be laid over-head or under-ground, better not to have any joint at all. In case joints become essential, such cables must be housed rigidly

	and insulation must be provided as per approved standard. The joint shall be suitable for outdoor use.
c	Maintain smooth flow on open drains. i.e. no obstruction or blockade shall be made on storm water drains. If required, make temporary drains.
d	Arrange back-filling of excavated pits on war-footing basis.
e	Arrange bringing down booms of all cranes, Hydraulic machines during stormy weather (wind speed 40-50 kmph)
f	Confirm that all gantry cranes are effectively choked to prevent rolling and toppling.
g	Do not forget to deep ready a dew battery operated lights at site-offices during rainy season.
h	Do not go alone nor permit anyone to stay at tower-tops, roof-tops, high structures or on electrical poles during the course of stormy weather or heavy rain.
i	Avoid using wet damp clothes.
j	Barricade excavated zone filled with water.
k	Engage diesel operated water pump to dewater work area. For electrically operated water pump, the starter shall be protected from rain water. All rotating parts shall be guarded. Ensure availability of sufficient water pumps.
l	Spread sand/dry soil over slippery area.
m	Avoid movement of vehicles as minimum as possible.
n	Avoid self-medication – consult doctors/physicians if feeling sneezy or cold.
o	All electrical connections / loads have to be routed through ELCB/RCCB (residual current circuit breaker) whose rating should be 30mA. ELCB/RCCB operational checks need to be done monthly during monsoon season.
p	Provide lightening arrestors at the top of Boiler, Chimney, Cooling tower (NDCT) etc. and rest sheds which are not covered by existing lightening arrestor of other installation.
q	All electrical distribution board shall be properly covered at top and sides to protect from rain water. Extension boards shall be protected from rain water.
r	Do not permit any one to ride up or come down scaffolds frame work during heavy wind or rain.
s	Provide "anchor" of adequate strength to scaffolds and other high-rise structures.

t All rest sheds and GI sheds will be anchored into the round and wall and roof panels will be secured with J hook to prevent shed from blowing over or parts/pieces becoming airborne. Proper earthing per IS standard is also to be installed.

u Ensure proper "earthing" for each and every electrical appliance.

2.2 Health and hygiene

Monsoon reduces the immunity of our body and makes us vulnerable to many diseases which are commonly associated with this season. It is time for us to keep our body challenging against disease by boosting our immunity and taking safety measures against these diseases.

The diseases associated with monsoon are Malaria, Jaundice, Gastrointestinal infections, like typhoid, cholera etc. apart from these viral infections like cold and cough also make their presence felt. Majority of above said diseases are on account of:

A Puddle of water formed due to rain become breeding grounds for mosquitoes which spread disease like, malaria and dengue fever. As a precautionary measure against mosquito-bite disease one can use mosquito net around the end which is better choice to mosquito repellent like mats and coils.

B Pollution of drinking water during monsoon is very common. It is very necessary to drink clean and pure water when water-borne monsoon diseases like diarrhea and gastro-intestinal infections threaten us.

C Walking in dirty water during rainy season leads of numerous fungal infection which affect toes and nails. Diabetic patients have to take a special care about their feet. Keeping feet always dry and clean is very necessary. Avoid walking in dirty water. Keep shoes socks and raincoats dry and clean.

2.3 Workmen will be made aware of following Do's and Don'ts:

a Do not sleep in daytime.

b Avoid over physical exertion.

c During lightning and thunder storm, do not take shelter under tree. Take shelter inside rest shed or store room.

d No bare conductors or bare current-carrying parts of equipment be permitted to be installed unless adequate precautions are taken to prevent direct or indirect contact.

e Only flame-proof equipment and conductors shall be installed at places where explosives or inflammable substances are stored, handled or used or where explosive atmosphere exists.

f Persons competent and authorized only shall attend to electrical breakdowns and other operational faults and give or restore power to an equipment and such persons shall be easily identifiable by their dress or special helmet worn.

g It will constitute a standard practice to switch off portable tools while shifting from one place to another or while leaving them behind unattended;

h The contractor shall ensure that a system is in place to always keep tools well maintained.

i Wash vegetables with clean water and steam them well to kill germs.

j Avoid eating un-cooked foods and salads should be washed properly before consumption.

k Drink plenty of water and keep body well Hydrated.

l Always keep the surrounding area dry and clean. Don't allow to get water accumulated around.

m Keep body warm as viruses attack immediately when body temperature goes down.

n Do not enter air conditioned room with wet hair and damp cloths.

o Dry your feet and webs with soft dry cloth whenever they are wet.

p Eat light and less spicy food.

q Avoid eating food which was cooked long time ago.

r Eat salt in food to replenish loss of salt through sweating.

3	Emergency Weather Conditions
	Cyclone/Severe thunder storm
	In the event of Cyclone/Severe thunder storm, alert will be issued by BHEL site manager based on notification received by Govt. authorities/Metrological departments or Customer.
i.	The actions required during cyclone/rough weather:
a	Check and advise contractors to cleanup work area. Pick up all loose and unused material of respective supervisor's area.
b	Tie to secure all gas cylinders to avoid displacement and unsafe conditions which could be due to wind pressure.
c	Secure portable electricity generating sets and other equipment, pumps, hoses etc.
d	Make preparation for removal of water logging.
e	Take review of work activity and make preparation for removal of equipment and material from vulnerable areas.
f	Isolate/turn off all electrical power from the main panel/switches. Secure and anchor panels properly.
g	Recheck anchorage/tie of all temporary structures/sheds, tall objects, cranes, rigs, scaffolds etc. to avoid toppling due to wind force.
h	Cranes boom shall be secured, either locked or lowered the booms as reasonably and practicably possible and rigs to safe position for the safety point of view.
i	Group up all trash barrels, wooden pallets, forms; wooden decks etc. and anchor properly.
j	Welding machines, air compressors and such equipment are to be grouped together and secured to the stable objects. Welding leads, electrical cables, hoses are to be rolled up and secured properly.
k	Set on site vehicles on high ground in the site area with brakes set firmly.
l	Anchor all tanks, vessels, gas cylinders that may be moved by high wind and water.
m	Evacuate job site.
ii	Personnel Evacuation:
a	Personnel Evacuation will be required if predicted wind speed and storm surge heights are beyond acceptable limits as per the instructions from Govt. Authorities/ Metrological departments or Customer.
b	Once the warning is received for personnel evacuation, an emergency response team shall be formed. The team will work with local authorities and other agencies formed/deployed to evacuate and transport all personnel involved in the project to the cyclone shelter.
c	Cyclone may be followed by the calm "EYE", be aware of it. If the wind suddenly drops, don't assume the cyclone is over. Violent wind may resume from the opposite side direction. Wait for the official "All clear Signal".
d	After the cyclone, do not go outside until officially communicated about safe situation outside. Use recommended routes for returning. Do not panic or rush while returning
e	Checking of gas leaks and wellbeing of electrical appliances is essential before leaving the site.
f	Follow local communications for official warning and advice. The construction Manager shall also obtain updates from customer/metrological departments and communicate to the personnel on project site.
D	Preparedness for Other Adverse Climates and Weather Conditions
	Preventive steps for ensuring health and safety of workers in all possible adverse weather and climatic conditions to be ensured as per requirement
E	Preparedness for Epidemics & Pandemics
	All necessary precautions and actions as per guidelines of Govt, authorities and regulatory bodies and BHEL procedures, shall be ensured so as to ensure health, safety and prevention of infection during any epidemic/ pandemic/ medical emergency.

ANNEXURE - 6

Indicative List of Indian Standard Codes for Safety

S No	CODE NAME	TITLE
PERSONAL PROTECTIVE EQUIPMENT		
(1)	IS : 818-1968 (Reaffirmed 2003)	Code of Practice for safety and health requirements in Electric and Gas Welding and Cutting operations.
(2)	IS: 1179-1967 (Reaffirmed 2003)	Specification for Equipment for Eye & Face protection during welding.
(3)	IS : 1989 (Part 2):1986 (Reaffirmed 1997) IS: 5557-1969	Specification for Leather Safety Boots & Shoes Industrial & Safety Rubber Knee Boot
(4)	IS: 4770 : 1991 (Reaffirmed 2006)	Rubber Gloves – Electricals purposes-Specification
(5)	IS:8519 – 1977 (Reaffirmed 1983)	Guide for Selection of Industrial Safety Equipment for Body Protection.
(6)	IS:8520 – 1977 (Reaffirmed 2002)	Guide for Selection of Industrial Safety Equipment for Eye, Face and Ear Protection.
(7)	IS: 8807-1978	Code of practice for maintenance and care of industrialsafety equipment eye and face protection
(8)	IS: 1224-1985	Safety shoes
(9)	IS: 8940-1978	Code of practice for maintenance and care of industrial safety equipment eye and face protection
(10)	IS: 8990-1978	Code of practice for maintenance and care of industrial safety clothing
(11)	IS: 10667-1983	Guide for selection of industrial safety for protection of foot and leg
(12)	IS: 816-1969	Code of practice for safety and health requirements in electric and gas welding and cutting operations
(13)	IS: 7194-1994	Assessment of noise exposure during work for hearing conservation purposes
(14)	IS: 2925 – 1984 (Reaffirmed 2010)	Specification for Industrial Safety Helmets
(15)	IS: 3521 : 1999 (Reaffirmed 2002)	Industrial Safety Belts & Harnesses-Specification
(16)	IS: 14166:1994 (Reaffirmed 2002)	Respiratory Protective Devices-Full Face Masks Specification
(17)	IS: 14746 : 1999 (Reaffirmed 2003)	Respiratory Protective Devices-Half Masks and Quarter Masks - Specification
CIVIL ENGINEERING OR CONSTRUCTION WORK		
(18)	IS: 2750- 1967(Part II)	Steel scaffolds
(19)	IS: 875-1987	Structural safety of building: loading standards
(20)	IS: 4014-1967	Code of practice for steel tubular scaffolding
(21)	IS: 3646(Part II) – 1966(Reaffirmed 2003)	Code of Practice for Interior Illumination
(22)	IS:3696 (Part I) – 1987 (Reaffirmed 2002)	Safety Code for Scaffolds and Ladders
(23)	IS: 4138-1977	Safety code for working in compressed air

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(24)	IS: 7293-1974	Safety code for working with construction machinery
(25)	IS: 9944-1992	Recommendations on safe working load for natural and man-made rope slings
(26)	IS: 3696(Part 2) : 1991 (Reaffirmed 2002)	Scaffolds and Ladders-Code of Safety
(27)	IS:3786 – 1983 (Reaffirmed 2002)	Method for Computation of Frequency and Severity Rates for Industrial Injuries and Classification of Industrial Incidents
(28)	IS: 4912 : 1978 (Reaffirmed 2002)	Safety Requirements for Floor and Wall Openings, Railings and Toe Boards
(29)	IS: 5983 – 1980 (Reaffirmed 2002)	Specification for Eye-Protectors
(30)	IS:6519 – 1971 (Reaffirmed 1997)	Code of Practice for Selection, Care and Repair of Safety Footwear
(31)	IS:9167:1979	Specification for Ear-Protectors
(32)	IS:6994(Part I)-1973 (Re affirmed 1996)	Specification for Industrial Safety Gloves Leather and Cotton Gloves
(33)	IS 11006 : 2011	Flash Back(Flame Arrestor) Specification
(34)	IS:9473:2002	Respiratory Protective Devices-Filtering Half Masks to protect Against Particles-Specification.
(35)	IS: 9944:1992 (Reaffirmed 2003)	Natural and Man-made Fiber Rope Slings- Recommendations On Safe working loads.
(36)	IS:11057 – 1884 (Reaffirmed 2001)	Specification for Industrial Safety Nets
(37)	IS: 12254:1993 (Reaffirmed 2002)	Polyvinyl Chloride (PVC) Industrial Boots-Specification
(38)	BS:1129	Portable timber ladders, steps, Trestles & lightweight staging
(39)	BS:1139	Metal scaffolds
(40)	BS:5973	Code of practice for access & working scaffolds
(41)	BS:5974	Code of practice for temporary installed scaffolds and access equipment
(42)	BS:5975	Code of practice for false work
FIRE PROTECTION		
(43)	IS: 2193-1992	Code of practice for selection, installation and maintenance of portable first aid fire extinguishers
(44)	IS: 5896	Code of practice for selection, operation and maintenance of fire-fighting appliances
(45)	IS: 8433-1984	Code of practice for dissolved acetylene cylinders
(46)	IS : 15397 :2003 (Reaffirmed 2008)	Portable Extinguisher Mechanical Foam Type(Stored Pressure)-Specification
ELECTRICAL		
(47)	IS: 3043-1987	Code of practice for earthing
(48)	IS: 5424-1969	Rubber mats for electrical purposes
(49)	IS: 3646 (Part II)	Artificial lightings
(50)	IS: 2148 & IS: 2206	Flame proof electrical fittings Machinery
MACHINERY		
(51)	IS:13367(Part 1):1992 (Reaffirmed 20030)	Safe Use of Cranes-Code of Practice
(52)	IS: 1860-1980	Code of practice for installation, operation and maintenance of electric passenger and goods lifts
(53)	IS: 1991-1987	Safety requirements for the use, care and protection of abrasive grinding wheels

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(54)	IS: 5903-1970	Safety devices for gas cylinders
(55)	IS: 8216-1976	Guide for inspection of lift wire ropes
(56)	IS: 8964-978	Recommendations for safety conditions for woodworking machines
(57)	IS: 9474-1980	Principles of mechanical guarding of machinery
(58)	IS: 11461- 1985	Code of practice for compressors safety
(59)	IS: 19311:2002	Guidelines for Quality and/or Environmental Management Systems Auditing
(60)	IS: 13367-1992	Code of practice for safe use of cranes
(61)	IS:1641	Code of practice for fire safety of buildings – General principles of fire grading and classification.
(62)	IS:1642	Code of practice for fire safety of buildings - Details of construction.
(63)	IS:4081	IS:4081 Safety code for blasting and related drilling operations.
(64)	IS:4130	Demolition of buildings - code of safety.
(65)	IS:5121	Safety code for piling and other deep foundations.
(66)	IS:5916	Safety code for construction involving use of hot bituminous materials
(67)	IS:7205	Safety code for erection of structural steel work.
(68)	IS:7969 (Indian Explosives Act 1940)	Safety code for handling and storage of building materials. (As updated)
(69)	IS:11769	Guidelines for safe use of products containing asbestos

CODES & STANDARDS

In addition to the codes and standards specifically mentioned in the relevant technical specifications for the equipment / plant / system, all equipment parts, systems and works covered under this specification shall comply with all currently applicable statutory regulations and safety codes of the Republic of India as well as of the locality where they will be installed, including the following:

A	Indian Electricity Act
B	Indian Electricity Rules
C	Indian Explosives Act
D	Indian Factories Act and State Factories Act
E	Indian Boiler Regulations (IBR)
F	Regulations of the Central Pollution Control Board, India
G	Regulations of the Ministry of Environment & Forest (MoEF), Government of India
H	Pollution Control Regulations of Department of Environment, Government of India
I	State Pollution Control Board.
J	Rules for Electrical installation by Tariff Advisory Committee (TAC).
K	Building and other construction workers (Regulation of Employment and Conditions of services) Act, 1996
L	Building and other construction workers (Regulation of Employment and Conditions of services) Central Rules, 1998
M	Explosive Rules, 1983
N	Petroleum Act, 1984

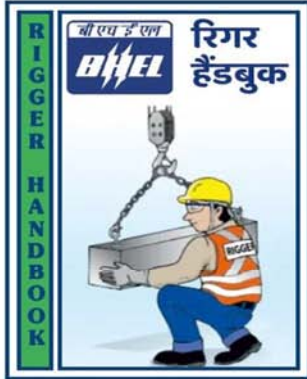
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O	Petroleum Rules, 1976
P	Gas Cylinder Rules, 1981
Q	Static and Mobile Pressure Vessels (Unified) Rules, 1981
R	Workmen's Compensation Act, 1923
S	Workmen's Compensation Rules, 1924
T	Any other statutory codes / standards / regulations, as may be applicable.
U	Employer's Safety Rules for Construction and Erection
V	Employer's Safety Policy
W	CERC (Indian Electricity Grid Code) Regulations, 2023
X	CEA (Flexible Operation of Coal Based Thermal Power Generating Units) Regulations, 2023
Y	Any other statutory codes / standards / regulations, as may be applicable.

ANNEXURE - 7



एक रिगर क्या है?

- भारो को लाने गिराने के चयन या निरीक्षण सहित, किसी भार को सुरक्षित रूप से उठाने के लिए तकनीकों का उपयोग करने वाले व्यक्तियों को रिगर कहते हैं।

एक योग्य रिगर को पता होना चाहिए कि कैसे...

- विभिन्न प्रकार की रस्सियों, स्लिंम्स, जंजीरों और सहायक उपकरणों का उपयोग करें।
- उठाने के लिए उपयोग की जाने वाली किसी भी रस्सी, स्लिंग या चैन के सुरक्षित कार्य भार (एसडब्ल्यूएल) की गणना करें।
- भार उठाने के लिए भार का आकलन करें।
- उपयुक्त सुरक्षित स्लिंगिंग तकनीकों का चयन करें और उनका उपयोग करें।
- विभिन्न भारों और आकारों के सुरक्षित रूप से स्लिंग लोड का चयन करें।
- जब लोड (सामान), ऑपरेटर की दृष्टि से बाहर होता है तो केन या होइस्ट ऑपरेटर को लोड की गति में निर्दिष्ट करें।
- भार को निर्दिष्ट करने के लिए हार्प और सीटी से संकेत दें।
- संभलते जाने वाले कुछ भारों का भार-वितरण डॉकिट पर मुद्रित किया जा सकता है या किस प्रकार से भार पर अंकित किया जा सकता है।

फ्लैट वेबिंग और राउंड सिंथेटिक स्लिंम्स (Flat webbing and round synthetic slings)

फ्लैट वेबिंग और राउंड सिंथेटिक स्लिंम्स को SWL के साथ लेबल किया जाता है। अगर लेबल गायब है तो भार न उठाएं। मून्याकन और पुनः लेबलिंग के लिए निर्माता को स्लिंग लोटाएँ। सिंथेटिक स्लिंम्स रंग कोडित होते हैं।

लोड या डिस्चार्ज टॉक पर अंकित भार से सवधान रहें। उदाहरण के लिए हमारी तकनी, गैली होने पर 50 प्रतिशत भारी हो सकती है। फरसूरी में, जब बड़े टुकड़े को एक लोड से उठाया जाता है, तो रेल द्वारा निर्मित स्यूजन (Suction) कवन में काफी वृद्धि कर सकता है। पाइप और टेक अक्सर तरल पदार्थ, कीचड़ या अन्य सामग्री द्वारा भराए जाते हैं।

स्लिंग के विभिन्न प्रकार

प्रत्यक्ष direct लोड स्लिंग

2 पैर की स्लिंग

चोकर हिल गोलाकार भार

चोकर हिल (वर्ग) भार

सामान्य नियम (Thumb Rule)

स्लिंग का रोक वर्किंग लोड (एसडब्ल्यूएल) अधिकतम भार है जिस स्लिंग सामग्री के एसडब्ल्यूएल, रीविंग व्यवस्था और स्लिंग टर्मिनेशन की विधि पर विचार करने के बाद उठाया जा सकता है।

अ) सबीला इस्पात तार रस्सी (FSWR) स्लिंग के लिए
SWL नीचे दिये गये सूत्र द्वारा दिया जाता है:-
सूत्र: $SWL (kg) = D^2 (mm) \times 8$
 $D (mm) = \sqrt{SWL (kg) / 8}$
जहाँ, SWL = सुरक्षित कार्य भार और D = रस्सी व्यास

ब) श्रृंखला (Chain) का SWL ग्रेड (G) द्वारा नीचे दिये गये सूत्र द्वारा दिया जाता है:-
सूत्र: $SWL (किलो) = D^3 (मिमी) \times 0.4$
जहाँ (i.e.), ग्रेड (G) 80 श्रृंखला, 0.4 का उपयोग करें।

WORKING LOAD LIMIT (WLL) IN TONNES UNDER GENERAL CONDITIONS OF USE

Chain Size (mm)	Grade	Slings at 2, 3 or 4 Leg Slings			
		Straight Sling	Adjustable Sling	Reeved Sling	Bucket Sling
6	80	1.1	1.1	0.8	1.5
8	80	2.0	2.0	1.5	2.6
10	80	3.2	3.2	2.4	4.1
13	80	5.3	5.3	4.0	6.9
16	80	8.0	8.0	6.0	10.4
20	80	12.5	12.5	9.4	16.3
22	80	15.0	15.0	11.3	19.5
26	80	21.2	21.2	15.9	27.6
32	80	31.5	31.5	23.6	41.0
6	100	1.4	1.4	0.8	1.8
8	100	2.5	2.5	1.4	3.3
10	100	4.0	4.0	2.3	5.2
13	100	6.7	6.7	3.8	8.7
16	100	10.0	10.0	5.0	13.0
20	100	16.0	16.0	9.0	20.8
22	100	19.0	19.0	10.7	24.7
26	100	26.5	26.5	14.9	34.5
32	100	40.0	40.0	22.5	52.0
6	120	3.0	3.0	2.3	3.9
10	120	5.0	5.0	4.0	6.5
13	120	8.0	8.0	6.3	10.2

*On adjustable slings, some grab shortening hooks may denote the WLL by 25%. Advice should be sought from the mfg. नीचे - ऊपर दिखे गये सभी प्रकार के अंगूठे हैं और यह सामान्य परिस्थितियों में अंगूठे हैं।

चित्र :- उपयोग की सामान्य परिस्थितियों में टन (1000 किलो) में कार्य भार सीमा

सिंगल स्लिंग

प्रत्यक्ष भार

आयताकार भार

गोलाकार भार

बास्केट हिल - सिंगल स्लिंग वटिकल लेग्स - पैरों के बीच के कोण को शामिल करें

गोलाकार भार

आयताकार भार

गोलाकार भार

गोलाकार भार

अंतहीन स्लिंग

बास्केट हिल गोलाकार भार

प्रत्यक्ष भार

वायर रोप स्लिंग चोकर हिल के साथ

चोकर हिल कोन न्यूनीकरण चार्ट

चोकर हिल (कोन)	सीमित कारक
120-180	1.00
105-120	0.82
90-105	0.71
60-90	0.58
0-60	0.50

रिगर के हाथों के संकेत

क्रेन की गतिविधियों को निर्दिष्ट करने के लिए एक रिगर को क्रेन ड्राइवरों को सफ़्त भौतिक संकेत देना चाहिए। रिगर सफ़्त रूप से कोले और क्रेन के उस हिस्से का नाम बताएँ जिसे पहले से जाना है - फिर चलने / घूमने की दिशा।

MOTION	HAND SIGNAL	WHISTLE, BELL OR BUZZER SIGNAL
Holding raise	[Diagram]	2 short **
Luffing boom up	[Diagram]	3 short ***
Swinging right	[Diagram]	1 long, 2 short --**
Hoisting (W): Wadding Revolving Extend	[Diagram]	1 long, 3 short ---**
Travel and traverse	[Diagram]	Not applicable

MOTION	HAND SIGNAL	WHISTLE, BELL OR BUZZER SIGNAL
Holding lower	[Diagram]	1 long
Luffing boom down	[Diagram]	4 short ----
Swinging left	[Diagram]	1 long, 1 short -*
Hoisting (W): Retracting Boom retract	[Diagram]	1 long, 4 short ----**
Stop	[Diagram]	1 short *

क्या करें और क्या न करें



ANNEXURE 9

HSE INSPECTION FORM ATS

**POWER SECTOR****Inspection of First Aid Box**

FORMAT NO: HSEP:14-F01

REV NO.: 01

PAGE NO. 01 OF 1

Name of Site	
Name of Sub-Contractor	
Inspected by	
Date & Time of Inspection	

Number of employees on the site: - _____ Number of Workers on the site: - _____

S. No.	Item	No. Available	Remarks
1	No. of small sterilized dressings		
2	No of medium sized sterilized dressings		
3	No of large sized sterilized dressings.		
4	No. of large sized sterilized burn dressings		
5	No of (15 grams) packets sterilized cotton wool		
6	No of pieces of sterilized eye pads in separate sealed packets.		
7	No of roller bandages 10 cm wide.		
8	No of roller bandages 5 cm wide.		
9	Whether tourniquet available		
10	Whether supply of suitable splints available.		
11	No of packets of safety pins.		
12	Whether kidney tray available		
13	Whether sufficient number of eye wash bottles, filled with distilled water or suitable liquid, clearly indicated by a distinctive sign which shall be visible at all times, available.		
14	Whether 4%-xylocaine eye drops, and boric acid eye drops and soda bicarbonate eye drops available.		
15	Whether (60ml) bottle containing a two percent alcoholic solution of iodine available		
16	Whether (two hundred ml) bottle of mercurochrome (2 per cent) solution in water available.		
17	Whether 120ml bottle containing Sal volatile having the dose and mode of administration indicated on the label,		
18	Whether roll of adhesive plaster (6 cm X 1 meter) available		
19	No of rolls of adhesive plaster (2 cmX1meter)		
20	Whether snake bite lancet available.		
21	Whether (30 grams) bottle of potassium permanganate crystals available.		
22	Whether a pair scissors available		
23	Whether copy of the First-Aid leaflet issued by the Director-General, Factory Advice service and labor Institutes, Government of India available.		
24	Whether bottle containing 100 tablets(each of 5 grains) of aspirin available		
25	Whether Ointment for burns available		
26	Whether bottle of a suitable surgical anti-septic solution available		
27	Whether List of Contents pasted on First Aid Box along with respective expiry dates		

Signature of Inspecting Official

Signature of Contractor Site I/ C

Date:

Date:

**POWER SECTOR**

Health Check-Up

FORMAT NO: HSEP:14-F02

REV NO.: 01

PAGE NO. 01 OF 2

Name of Site	
Name of Sub-Contractor	
Name of Employee	
Age	

History Of Past Illness	H/O Epilepsy:
	H/O Drug Allergy:
	H/O Diabetics/ Hypertension:
	H/O Unconsciousness:
Personal History	

EXAMINATION	OBSERVATION

General Physical Examination

Height		
Weight		
BMI		
Built And nourishment		
Pallor		
Temperature		
Chest Expansion	Inspiration	Expansion
Lymph Node Enlargement		
Upper Limbs Strength & Function		
Lower Limbs Strength & function		
Spine Adequately flexible for the job concerned (Yes/ No)		
Mental alertness and stability with good eye, hand and foot co-ordination.		

Ear, Nose, Throat

Ear / Hearing	
Nose	
Throat	
<u>Vision</u>	
Left Eye	Right Eye

EXAMINATION	OBSERVATION

Cardiovascular System Examination

Inspection		
Palpation	Pulse	BP
Auscultation (Heart Sounds)		

**POWER SECTOR**

Health Check-Up

FORMAT NO: HSEP:14-F02
REV NO.: 01
PAGE NO. 02 OF 2**Respiratory System**

Inspection	Respiratory Rate	
Palpation:		
Percussion		
Auscultation (Breath Sounds)		

Examination of Abdomen

Inspection	
Palpation	
Auscultation (Bowel Sounds)	
Any Other	

Clinical Impression

Signature of the Examining doctor

Date:

**POWER SECTOR****HSE Induction Training**

FORMAT NO: HSEP:14-F03

REV NO.: 01

PAGE NO. 01 OF 1

Name of Site	
Name of Sub-Contractor	
Date	
Name of Training Coordinator	

Sl. No.	Name	Designation	Organization	Signature

Signature of Training Coordinator

Date:



POWER SECTOR

Toolbox Talk

FORMAT NO: HSEP:14-F04

REV NO.: 00

PAGE NO. 01 OF 01

Name of Site	
Sub-Contractors Name	
Date	

Topic	Name of person delivered Tool Box Talk	No. of Participants attended	Remarks

Signature of Site I/ C of Contractor

Date:

**POWER SECTOR****Monthly Site HSE Report**

FORMAT NO: HSEP:14-F05

REV NO.: 01

Page 01 of 4

Name of Contractor:**Report Month & Date:****A. Accidents/ Incidents Details: -**

a	Lost time in Accidents	No. of incidents	Man Hours Lost	No. of People Involved	No. of persons reported to Govt.		
	For the Month						
	Cumulative						
b	Minor Injuries						
	For the Month						
	Cumulative						
c	Fires	No. of Near-Misses	No. of First- Aid cases	No. of persons injured	No. of equipment damaged	No. of Fire reported Outside	
	For the Month						
	Cumulative						
d	Other mishaps not covered in a, b, c.	No. of Near-Misses	No. of First- Aid cases	No. of persons injured	No. of equipment damaged	Total near misses and First-Aid	
	For the Month						
	Cumulative						

B. Data for Man-hours worked:

Details	Value	Remarks if any
No. of people		
Man Hours worked		
O.T. Hours		
Total Man Hours		
Grand Total of man hours worked during the month(A+B)		
Cumulative man-hours(from _____ to _____): (Since commencing of operations)		

C. Status of Deployment of Work force, Safety Officers/ Supervisors & Construction Medical Officer(s) & Electricians:

Description	Names	Qualification & Experience
Safety Officers		
Safety Supervisors		
First aider staff detail		
Electricians		
Scaffolding Inspectors		
T&P Inspectors		

Signature of Contractor Site In-charge

Signature of Contractor HSE Officer

**POWER SECTOR****Monthly Site HSE Report**

FORMAT NO: HSEP:14-F05

REV NO.: 01

Page 02 of 4

D. Lifting Tools, Tackles, Equipment and Pressure Vessels:

Item	Nos. Deployed	Nos. Tested by competent person	Serial Number and Test validity (one per line)
Winches			
Chain Blocks			
Wire Rope Slings			
Man Cages			
D-Shackles			
Air Compressors			
Crawler Cranes			
Mobile Cranes			
Hydra Cranes			
Others			

E. Reverse Horns in Construction Vehicles:

Item	Serial numbers, last testing dates and status of reverse horns (OK/ No OK) – one per line
Transit Mixers	
Hydra Cranes	
Dumpers/ Trippers	
Backhoes	
Other Vehicles	

F. ELCBs:

Serial numbers, locations, last testing dates, status (OK/ Not OK) – one per line

G. Electrical Earthing:

Serial numbers, locations and locations of electrical earth points – one per line

H. Fire Extinguishers:

Name & designation of person responsible for maintenance of Extinguishers at different locations : (Individual Contractor's Safety Officers).

FIRE EXTINGUISHERS AT ERECTION SITE:

Type	Serial numbers, sizes, Locations, last testing dates and status (OK/ Not OK) (one per line)
FOAM TYPE	
SODA TYPE	
DRY TYPE (DCP)	
CO2 TYPE	

Signature of Contractor Site In-charge

Signature of Contractor HSE Officer

**POWER SECTOR****Monthly Site HSE Report**

FORMAT NO: HSEP:14-F05

REV NO.: 01

Page 03 of 4

FIRE EXTINGUISHERS AT SITE OFFICES & STORES:

Type	Serial numbers, sizes, Locations, last testing dates and status (OK/ Not OK) (one per line)
FOAM TYPE	
SODA TYPE	
DRY TYPE (DCP)	
CO2 TYPE	

I. Implementation of checklist, Work Permits:

Item	Numbers During the Month	Major Deviations

Note:- Please attach photocopies of all filled Checklists & Work permits for that month.

J. Personal Protective Equipment Issued (Extend table for each Contractor):

Item	Issued this Month	Nos. Issued up to the Month	Percentage of usage at Site (as per physical verification)
Name of Contractor:			
Safety Helmet			
Safety Shoes			
Full Body Harness			
Fall Arrestor			
Safety Nets			
Other PPEs.			

K. Safety Observations by Contractor Executives- Observations package wise:

No. of Observations received in the month	No of points complied	Cumulative no. of non-complied points

L. Training programs on safety during the month:**1. Refresher/ On the Job Trainings Conducted: -**

Topic	Date Of Programme	No. Of Participants	Level Of Participants

2. Tool-Box talks/ Pep-talks on Safety:

Date	Tool Box Talk - No of Participants	Topic	Remarks

Signature of Contractor Site In-charge

Signature of Contractor HSE Officer

**POWER SECTOR****Monthly Site HSE Report**

FORMAT NO: HSEP:14-F05

REV NO.: 01

Page 04 of 4

3. Induction Trainings:

Date	Safety Induction No. of Participants	Topic	Remarks

M. Progress of Management Programmes at Site

SL	Description Of MPs	Annual Plan	Achievement In This Month	Cumulative Achievement
A. Environment Improvement Programme				
1	Plantation of Trees			
2	Installation of Scrap Bins			
3	Chemical Storage & Handling System			
B. Improvement of Working Environment				
4	Increasing LTI free days			
5	Air Quality Monitoring			
6	Water Quality Monitoring			
7	Illumination level Monitoring			

N. HR Information:

Designation	Total No. Inducted	Total no. of Induction Balance	Total no. of Gate Pass Issued	Total no. of Gate Pass Balance	Total no. of Gate Pass Cancelled	Medical Check-up Completed	Medical Check-up Balance

O. Rewards on Account of Good Safety Performance

Serial Number	Reward Issued to	Details of Reward Issued (Amount etc.)	Brief Reason

Note: Photos of Reward Functions to be attached

P. Other Safety initiatives / Safety Activities conducted (with photos, if any):

Signature of Contractor Site In-charge

Signature of Contractor HSE Officer

Date:

Date:

**POWER SECTOR****Personal Protective Equipment**

FORMAT NO: **HSEP:14-F06**
REV NO.: 00
PAGE NO. 01 OF 01

Name of Site	
Name of Sub-Contractor	
Date & Time of Inspection	

Item	Issued this Month	Nos. Issued up to the Month	Percentage of usage at site
Safety Helmet			
Safety Shoes			
Full Body Harness			
Fall Arrestor			
Safety Nets			
Other PPEs.			

Signature of Inspecting Official:

Date:

Signature of Site I/ Cof Contractor:

Date:

**POWER SECTOR****Inspection Of T&Ps**

FORMAT NO: HSEP:14-F07

REV NO.: 00

PAGE NO. 01 OF 1

Name of Site	
Name of Sub-Contractor	
Date & Time of Inspection	

Sl.No.	Description	Remarks
1.0	Name of equipment	
2.0	Basic Information of equipment	
2.1	Specification	
2.2	Sr. No. of equipment	
2.3	Make	
2.4	Year of manufacture	
3.0	Major repairs / overhauls(Furnish details of work carried out)	Date(s) of major repair/overhaul
3.1		
3.2		
3.3	Repairs carried out at site	
4.0	Any performance test conducted	Yes/ No
5.0	Document Submitted	Yes/ No
6.0	Manufacturer's test / guarantee certificate	Available/ Not available
7.0	Performance test	Done/ Not Done
8.0	Acceptance Norms	
9.0	Committee Observations	
10.0	Date of next review (if accepted)	
Signature-Contractor HSE Officer		Signature-Contractor Site In-charge

**POWER SECTOR****Status Of T&Ps**FORMAT NO: **HSEP:14-F08**

REV NO.: 01

PAGE NO. 01 OF 1

Name of Site	
Name of Sub-Contractor	
Date & Time of Inspection	

Item	Nos. Deployed	Identification Numbers (1 on each line)	Whether Tested by competent person	Validity of Test Certificates	Whether internal testing using Color Coding or similar system done
Winches					
Chain Blocks					
Wire Rope Slings					
Man Cages					
D-Shackles					
Air Compressors					
Crawler Cranes					
Mobile Cranes					
Hydra Cranes					
Others					

Signature of Inspecting Official

Date

Signature of Site I/ Cof Contractor

Date

**POWER SECTOR****Inspection Of Cranes**

FORMAT NO: HSEP:14-F09A

REV NO.: 00

PAGE NO. 01 OF 01

Name of Site	
Name of Sub-Contractor	
Inspected by	
Date & Time of Inspection	

Crane Reg. No (Make/ Model)

Name of Driver/ Operator

Sl.no.	Description	Observation	Measures
1	Valid Driving license		
2	Hook & Hook Latch		
3	Over Hoist limit switch		
4	Boom limit switch		
5	Boom Angle Indicator		
6	Boom limit cutoff switch		
7	Condition of Boom		
8	Condition of ropes		
9	Number of load lines		
10	Size and condition of the slings		
11	Stability of the cranes		
12	Soil Condition		
13	Swing Break And Lock		
14	Proper Break And Lock		
15	Hoist Break And Lock		
16	Boom Break And Lock		
17	Main Clutch		
18	Leakage in Hydraulic Cylinders		
19	Out riggers fully extendable		
20	Tyre pressure		
21	Condition of Battery And Lamps		
22	Guards of moving and rotating parts		
23	Load chart provided		
24	Number and position of pedant ropes		
25	Reverse Horn		
26	Load Test Details		
27	Operator's fitness		
28	Pollution under control certificate		
29	Fire extinguisher of appropriate type.		
30	Training of the operator		

Signature of Site I/ C of Contractor:

Date:

**POWER SECTOR****Inspection Of Winches**FORMAT NO: HSEP:14-F09B
REV NO.: 00
PAGE NO. 01 OF 1

Name of Site	
Name of Sub-Contractor	
Inspected by	
Date & Time of Inspection	

Winch Reg. No. (Make/ Model) _____

Name of Operator _____

S.N o.	Description	YES	NO	NA	Remarks
1	Has the copy of Third Party Inspection certificate been provided in winch machine shed?				
2	Is winch machine operator experienced enough to operate the winch machine?				
3	Is the winch machine operated by someone other than the winch machine operator?				
4	Is there guard provided in all moving parts like wheel and motor's shaft?				
5	Will it protect against unforeseen operational contingencies?				
6	Are brakes, clutch and locking arrangement working properly?				
7	Has it been ensured that the guard does not constitute a hazard by itself?				
8	Are the cranks and the connecting rods protected by guardrails?				
9	Is there provision for fully covered shed with wooden plank roof?				
10	Is wire rope free from any kind of damage or wear and tear?				
11	Is split pin provided for the protection of clutch and brake locking arrangement?				
12	Is pulley inspected by competent person and certified before use?				
13	Is pulley free from any wear and tear visually?				
14	Is winch rope barricaded with clipsheet for the protection of rope and person?				
15	Is the wire rope lubricated by cardium oil?				
16	Is there any friction in wire rope which may damage the wire rope rather than the rolling parts?				
17	Is there any oil leakage in the hydraulic system of the winch machine?				
18	Has it been ensured that the guard will not cause discomfort or inconvenience to operator?				
Total NO				Total NA	% Compliance

Signature of Inspecting Official:

Date:

Signature of Site I/ Cof Contractor:

Date:

**POWER SECTOR****Inspection of Height Working**

FORMAT NO: HSEP:14-F10

REV NO.: 01

PAGE NO. 01 OF 2

Name of Site	
Name of Sub-Contractor	
Area/ Location	
Inspected by	
Date & Time of Inspection	

Sl. No.	Descriptions	Observation (OK/ Not OK)	Remarks
A. Working Platforms			
1	Adequate illumination has been ensured.		
2	Work area inspected prior to the start of the work.		
3	Is the work area barricaded to prevent fall and platforms are of adequate strength (bamboo, jute / plastic ropes not to be used).		
4	The temporary work platforms & structures for height work including those used in Boiler structures, water walls, ESP, Powerhouse are fully barricaded with railings (as per IS 3696)		
5	Fabricated makeshift arrangements are checked for quality and type of material welding, anchoring etc.		
6	Are floor gaps, permanently covered and barricaded		
7	Area below the work place barricaded, particularly below hot work.		
8	All work platforms ensured to be of adequate strength and ergonomically suitable.		
9	Work at more than one elevation at the same segment is restricted.		
10	In case work platform is hanging/ non-rigid, lifeline connected to independent & rigid structure		
11.	Scaffolds are certified by certified scaffolding inspector and provided with green tag		
B. PPE And Safety Devices			
1	Use of safety helmet, safety belts ensured for all workers		
2	Anchoring points provided at all places of work.		
3	Common lifeline provided wherever linear movement at height is required.		
4	Lifeline is installed on rigid & independent structure		
5	Safety nets are use wherever required.		
6	Proper fall arrest system is deployed at critical workplaces.		
7	Crawler boards/ Safety system for works on fragile roof are used.		
8	Minimum three lines of fall protection eg. Safe platform, Safety nets and double lanyard Safety harness with lifelines provided		
C. Training, Awareness/ Medical			
1	All the workers have been explained safe work method?		
2	All height workers have undergone vertigo test and height specific training		
3	Workers provided with bags / box to carry bolts, nuts and hand tools		
4	Arrangement for fastening hand tools made.		
5	An established communication system has been established and explained to the workers.		

**POWER SECTOR****Inspection of Height Working**

FORMAT NO: HSEP:14-F10

REV NO.: 01

PAGE NO. 02 OF 2

D. Access/ Egress

1	Walkways provided with handrail, mid-rail and toe guard?		
2	All checkered plates, gratings properly welded/ bolted?		
3	Are ladders inspected and they are in good condition?		
4	Are ladders spliced?		
5	Are ladders properly secured to prevent slipping, sliding or falling?		
6	Do side rails extend 36" above top landing?		
7	Are built up ladders constructed of sound materials?		
8	Are rugs and cleats not over 12" on center?		
9	Metal ladders not used around electrical hazards.		
10	Proper maintenance and storage.		
11	Ladders placed at right slope.		
12	Ladders / staircases welded/ bolted properly.		
13	Any obstruction in the stairs.		
14	Are landing provided with handrails, knee rails, toe-boards etc.?		
15	Whether ramp is provided with proper slope.		
16	Proper hand rails / guards provided in ramps.		

E. Housekeeping

1	Walkways, aisles & all overhead workplaces cleared of loose material.		
2	Flammable materials, if any, are cleared.		
3	All the de shuttering materials are removed after de-shuttering is done.		
4	Platforms and walkways free from oil/ grease or other slippery material.		
5	Collected scrap are brought down or lowered down and not dropped from height.		

F. Other Observations

Signature of Inspecting Official

Date:

Signature of Site I/ C of Contractor:

Date:

**POWER SECTOR****Inspection of Welding and Gas Cutting**

FORMAT NO: HSEP:14-F11

REV NO.: 00

PAGE NO. 01 OF 1

Name of Site	
Name of Sub-Contractor	
Area/ Location	
Inspected by	
Date & Time of Inspection	

Electric Welding				
S No	Description	Yes	No	Remarks
1	Is electric connection given through 30 mA ELCB/ RCCB to welding m/c?			
2	Is electric cable fitted properly in junction box on m/c?			
3	Is electrical cable free from joints?			
4	Are the joints attached firmly & insulated with tape?			
5	Is double earthing given to body of m/c?			
6	Is the physical condition of the m/c good?			
7	Is ON/OFF switch connected to the m/c working and in good condition?			
8	Are indication lamps on m/c working?			
9	Is the electrode holder in good condition?			
10	Are the cables of the welding m/c lugged & tight properly?			
11	Are return lead connected properly (Rod, Angle, Channels not to be used)			
	Total No of NO			
	Total No of YES			
	% Compliance			

Gas Welding & Cutting				
S No	Description	Yes	No	Remarks
1	Are Cylinders kept on trolleys?			
2	Physical condition of Gas cylinders good?			
3	Is there Oil/ Grease on valve of the cylinder?			
4	Are pressure regulators and gauges in good condition?			
5	Condition of hose pipe OK?			
6	Are hose pipe clamped with hose clip?			
7	Is flash back arrestor & NRV fitted on both torch & cylinder ends			
8	Is nozzle of the torch cleaned?			
9	Are cylinders protected from falling weld splatters?			
10	Are Fire blankets used to prevent weld splatters falling on the ground?			
	Total Number of NO			
	Total No of YES			
	% Compliance			

Signature of Inspecting Official

Date:

Signature of Site I/ C of Contractor:

Date:

**POWER SECTOR****Inspection Of Electrical Installation**

FORMAT NO: HSEP:14-F12

REV NO.: 00

PAGE NO. 01 OF 1

Name of Site	
Name of Sub-Contractor	
Area/ Location	
Inspected by	
Date & Time of Inspection	

SNo	Description	Yes/ No	Remarks
A	Cables		
1	Whether the condition of cable is checked?		
2	Are cables received from other sites checked for insulation resistance before putting them into use?		
3	Are all main cables taken either underground / overhead?		
4	Are welding cables routed properly above the ground?		
5	Are welding and electrical cables overlapping?		
6	Is any improper joining of cables/wires prevailing at site?		
B	DBs/ SDBs		
1.	Is earth conductor continued up to DB / SDB?		
2.	Whether DBs and extension boards are protected from rain / water?		
3.	Is there any overloading of DBs / SDBs?		
4.	Are correct / proper fuses & CBs provided at mainboards and sub-boards?		
5.	Is energized wiring in junction boxes, CB panels & similar places covered all times?		
C	ELCB		
1.	Whether the connections are routed through ELCB/ RCCB?		
2.	Is ELCB sensitivity maintained at 30 mA?		
3.	Are the ELCB numbered and tested periodically & test results recorded in a logbook countersigned by a competent person?		
D	Grounding		
1.	Is natural earthing ensured at the source of power (main DB at Generator or Transformer)?		
2.	Whether the continuity and tightness of the earth conductor are checked?		
3.	Mention the gauge of the earth conductor used at the site.		
4.	Mention the value of Earth Resistance.		
E	Electrically operated Machines or Accessories		
1.	Whether the plug top is provided everywhere.		
2.	Are all metal parts of electrical equipment and light fittings / accessories grounded?		
3.	Is there any shed or cover for welding machines?		
4.	Are halogen lamps fixed at proper places?		
5.	Are portable power tools maintained as per norms?		
6.	Any other observations:		

Signature of Inspecting Official

Date:

Signature of Site I/ C of Contractor:

Date:



POWER SECTOR
Inspection of Elevator

FORMAT NO: HSEP:14-F13
REV NO.: 00
PAGE NO. 01 OF 1

Name of Site	
Name of Sub-Contractor	
Area/ Location	
Inspected by	
Date & Time of Inspection	

Sr. No.	Description	Remarks
1.0	Name of equipment	
2.0	Basic Information of equipment	
2.1	Specification	
2.2	Sr. No. of equipment	
2.3	Make	
2.4	Year of manufacture	
3.0	Major repairs/overhauls(Furnish details of work carried out)	Date(s) of major repair/overhaul
3.1		
3.2		
3.3	Repairs carried out at site	
4.0	Any performance test conducted	Yes/ No
5.0	Document Submitted	Yes/ No
6.0	Manufacturer's test / guarantee certificate	Available/ Not available
7.0	Performance test	Done/ Not Done
8.0	Acceptance Norms	
9.0	Committee Observations	
10.0	Date of next review (if accepted)	

Signature of Inspecting Official

Date:

Signature of Site I/ C of Contractor:

Date:

**POWER SECTOR****Inspection of Excavation**

FORMAT NO: HSEP:14-F13E

REV NO.: 00

PAGE NO. 01 OF 1

Name of Site	
Name of Sub-Contractor	
Area/ Location	
Inspected by	
Date & Time of Inspection	

Sl.no	Description	Yes	No	Remarks
1	Precautions taken for Underground Electrical Cable			
2	Precautions taken for Under / Above ground sewer/ Drinking Water Line			
3	Precautions taken for Underground Telecommunication Line			
4	Precautions taken for Underground Product/Utility Line			
5	Precautions taken for Underground Fire Water Line			
6	Shoring / Shuttering / Sheet piling done to prevent collapse of excavation walls. Strength of Excavation wall ensured at all times			
7	Slope Cutting / Angle Maintained			
8	Hard Barricading & Edge Protection provided			
9	Separate Safe Access for Man and Vehicle			
10	Lighting arrangement			
11	Banksman Provided			
12	Required basic PPEs provided			
13	Excavated soil / Construction Material / equipment kept away from the edge.			
14	First aid in attendance.			
15	Other:			
	Total No of YES			

Signature of Inspecting Official

Date:

Signature of Site I/ C of Contractor:

Date:

**POWER SECTOR****HSE Penalty Format**

FORMAT NO:
HSEP:14-F14
REV NO.: 01
PAGE NO. 01 OF 1

- 1) Nonconformities of safety rules and safety appliances will be viewed seriously and BHEL has right to impose penalty/ fines on the contractor/ subcontractor for every instance of violation noticed.
- 2) As per contractual provision HSE penalties shall be imposed on contractor/ subcontractor for noncompliance on HSE requirements as per following format.
- 3) Following are the applicable penalties for various safety violations: -

Sub: MEMO for Penalty for non-compliances in Safety

- 4) Following lapse (tick marked) was observed and penalty (in Rs.) is imposed as stated at the bottom of this memo. It is requested that such occurrences be please avoided in future.

Sl. No.	Nature of Non - Compliance	Penalty (in INR)	Remarks
A. System Violations			
1	Working without valid Work Permit/ HIRA/ Method Statement / JSA	2000	Per case
2	Controls as per Work Permit/ HIRA/MS/JSA not ensured	2000	Per case
3	Reported Safety Violations Not Closed within Stipulated Time	1000-10000	Per case
4	Absence of required Subcontractor Officials (Site Head, HS Head) in Safety Reviews/Meetings	5000	Per case
5	Not providing required PPEs (Safety Harness, Lifeline, Safety Net, Fall arrestor, Safety Helmet, Gloves, Shoes etc.) for the work by subcontractor	2000	Per case
B. Competency/ Training/ Induction Violations			
1	Incompetent personnel deployed for specialized jobs like height work, hot work, rigging, vehicle operation etc. (without valid license/ certificate etc.)	3000	Per case
2	Work without induction training & medical check	2000	Per case
3	Height Work without Vertigo Test and height work training	2000	Per case
C. PPE Violations - Height Work			
1	Not wearing/ hooking Double Lanyard Safety Harness while working at height (> 1.2 meters) or not anchoring to lifeline at unguarded or open area while working at height.	1000	Per case
2	Not Providing Lifeline for height work	3000	
3	Unsafe platforms - without Top, Mid Rails and Toe-Guards for Height Work	3000	
4	Not providing secondary means of fall protection for height work (Safety Nets, Retractable Fall Arrestors etc.)	3000	Per case
D. PPE Violations - General			
1	Not wearing safety helmet	1000	Per case



POWER SECTOR

HSE Penalty Format

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2	Wearing of helmets without chinstraps	1000	Per case
3	Not Wearing safety shoes	500	Per case
4	Not wearing gloves	500	Per case
5	Not using grinding goggles/ face shield during grinding/ cutting	2000	Per case

E. Electrical Safety Violations

1	Broken/ exposed wires/ cables	2000	Per case per day
2	Electrical plug not used for connection/ hand machines	1000	Per case per day
3	Not using proper ELCBs for electrical equipment	2000	Per case per day
4	Improper earthing of welding & Other electrical machines (Lack of double earthing, improper/ untested earth pit etc.)	2000	Per case per day
5	Not using 24 V supply for lighting in confined spaces	2000	Per case
6	Cables haphazard/ blocking way/ not organized properly	1000	Per case per day

F. Lifting & Rigging Violations

1	Using Sling/ Chain Pulley Block and other Small T&Ps without proper, traceable Tag and Test Certificate	2000	Per T&P per day
2	Using damaged slings or not slinging properly	2000	Per T&P per day
3	Use of lifting equipment without having valid Test certificate	5000	Per equipment per seven days
4	Lifting hooks used without latches	2000	Per hook per day
5	Not effectively barricading area below lifting activity	5000	Per case
6	Using untrained/ unqualified rigger	5000	Per case

G. Housekeeping

1	Non-removal of scrap from platforms	5000	Per Event Per location per 7 days
2	Not conducting scheduled housekeeping drives	5000	Per drive

H. Hot Work Safety Violations

1	Gas cutting without flashback arrestor at both ends	5000	Per machine per incidence
2	Gas cutting at height without fire blanket	2000	Per event
3	Not keeping gas cylinders vertically	2000	Per event
4	Lifting cylinders without cage or rolling of cylinders	2000	Per incidence
5	Leakage in gas cylinder	2000	Per incidence

I. Vehicle Safety/ Operation

1	Not having valid driving license for the type of vehicle/ T&P	2000	Per driver per incidence
2	Two-wheeler entry in construction area	2000	Per vehicle

**POWER SECTOR****HSE Penalty Format**FORMAT NO:
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3	Using Hydra for material movement at site in unsafe manner	2000	Per case
4	Using Two Hydra in Tandem for material movement without proper precautions as per OCP	2000	Per case
5	Vehicles, Hydras, Cranes, Dumpers and Earth Movers not having automatic back horns linked to gear	2000	Per equipment per day
6	Not providing proper hard barricades around excavations/ unpermitted areas	5000	Per location per day
7	Not using guide rope while transporting material using Hydra or Cranes	2000	Per event
8	Over speeding	5000	Per case
9	Using Conventional Hydra crane	50000	Per day /crane
J. Accidents/ Incidents/ Near Misses			
1	Non-reporting of Near Miss/ Incident	20000	Per case
2	Major Accident - Worker unable to resume work with in 48 hrs	20000	Per incident
3	Major Accident - Major injury or accident causing 25% or more permanent disablement to workmen or employees in that three-month period. Permanent disablement shall have the same meaning as indicated in The Workmen's Compensation Act' 1923 or IS 3786.	400000	Per incident
4	Fatal Accident	1000000	Per incident
K. Miscellaneous			
1	Not providing the facility (drinking water, rest shed, labor colony etc. as per the specifications/ requirement)	5000	Per month per violation
2	Not nominating the required number of workers for training as per plan	5000	Per incidence
3	Lack of proper arrangement for disposal of sewage/ waste water/ effluents etc.	10000	Per incidence

Details (if any) related to non- compliance (Name of persons, Nature of deficiency, etc.)
Penalty imposed:

1. Rate as per above chart _____

2. No. of Persons/ machine/ event/ labor _____ Total Penalty = 1. X 2. = _____

Witnessed by:

(Sub- Contractor representative)

(BHEL representative) Signature

Signature _____

Name _____

Distribution:

- 1 Copy: to Sub- Contractor Site In-charge,
- 1 Copy to Site Construction Manager (BHEL)
- 1 Copy to Site Finance

**POWER SECTOR****HSE Penalty Format**

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Note:- HSE Penalty :-

Sl. No.	Description for HSE penalty
1	In case the amount of penalty imposed by BHEL's Client/ customer on BHEL for Safety violation/ incident due to or in the area of the subcontractor is more than those indicated above, same shall be imposed back-to-back on the contractor/ subcontractor. However, in case such an amount is less than the specified above, penalty amount indicated above shall be imposed on the subcontractor.
2	For same violation only one penalty (higher of the two mentioned below) shall be applicable a. Penalty imposed by BHEL's Customer over BHEL. b. Penalty as indicated in current document.
3	For repeated violation for the same equipment/ location, the penalty would be double of the previous penalty. Date of "Repeated Violation" will be counted from subsequent days.
4	For repeated fatal incident in the same Unit incremental penalty shall be imposed by BHEL.
5	Penalty amount not limited to above mention table, in case customer penalties more than above mention penalty or any other penalty imposed by customer, then same penalty will be deducted from Contractor RA Bill.
6	Any others non-conformity noticed not listed above will also be fined as deemed fit by BHEL the decision of BHEL engineer is final on the above.
7	If principal customer/statutory and regulatory bodies impose some penalty on HSE due to the non-compliance of the subcontractor the same shall be passed on to them.
8	The penalty amount shall be recovered by BHEL Finance department from subcontractors from the RA/Final bill.

	POWER SECTOR- HQ	FORMAT NO: HSEP:14-F15
	Incident Report To be submitted within 24 hours of time of incident (Immediate information through message to be sent)	REV NO.: 00 PAGE NO. 01 OF 01

Type of incident: Fatal/Major/ Minor/Fire/Property Damage/Near-miss

1	NAME OF SITE		3	ACTIVITY AREA	
2	SCOPE OF WORK		4	NAME OF CONTRACTOR	
			5	NAME & DESIGNATION OF BHEL ACTIVITY I/C	
6	DATE & TIME OF ACCIDENT		7	DATE RESUMED	
8	NO. OF WORK-DAYS LOST BY VICTIM (If duty not resumed, give estimated figure)				
9	NO. OF MANHOURS LOST BY OTHERS				
10	PERSONAL DETAILS OF INJURED AND / OR DETAILS OF MATERIALS / EQUIPMENT / PROPERTY DAMAGED				
NAME			NAME OF MATERIAL / EQUIPMENT / PROPERTY		
PERIOD OF EMPLOYMENT					
AGE	YRS	SEX	MALE/ FEMALE	ESTIMATED COST	ACTUAL COST
MARITAL STATUS		SINGLE / MARRIED			
OCCUPATION		NATURE OF DAMAGE			
PART OF BODY INJURED					
NATURE OF INJURY					
AGENCY (OBJECT / EQUIPMENT / SUBSTANCE) MOST RESPONSIBLE FOR CAUSING ACCIDENT / INJURY / DAMAGE					
12	PERSON (NAME & DESIGNATION) WITH MOST CONTROL OVER AGENCY (OBJECT / EQUIPMENT / SUBSTANCE) CAUSING ACCIDENT INJURY / DAMAGE				
13	DESCRIBE CLEARLY HOW THE ACCIDENT OCCURRED (USE ADDITIONAL SHEET, IF REQUIRED)				
ANALYSIS					
14	WHAT ACTS AND / OR CONDITIONS CONTRIBUTED MOST DIRECTLY TO THIS ACCIDENT				
15	WHAT ARE THE BASIC REASON FOR THE EXISTENCE OF THESE ACTS AND / OR CONDITION?				
16	WHAT CORRECTIVE ACTIONS HAVE BEEN TAKEN TO PREVENT ACCIDENT RECURRENCE?				
	DATE :		SIGNATURE OF SITE HSE COORDINATOR		
17	COMMENTS OF HEAD / SOX				
	DATE:		SIGNATURE OF HEAD/SOX		

**POWER SECTOR****Format for Inspection of Labor Colony**

FORMAT NO: HSEP:14-F16

REV NO.: 00

PAGE NO. 01 OF 1

Name of Site	
Name of Sub-Contractor	
Area/ Location	
Inspected by	
Date & Time of Inspection	

S. No	Particulars	No	Yes	Comments
1	Sufficient living space ensured for each occupant with Kitchen area			
2	Area cleanliness ensured through regular cleaning			
3	Toilet facility sufficient for all occupants available, in order with adequate lighting, cleaned regularly and in hygienic condition			
4	Washing facilities available with adequate water supply			
5	Availability of sufficient drinking water in protected tanks with weekly tank cleaning and source tested annually as per IS10500 ensured			
6	Adequate drainage to remove waste and rain water, no flooding			
7	"Unsafe for Drinking" posted near accessible non-potable water and sources; posted in language of occupants or universal symbol			
8	Prevention of mosquitoes, flies, and rodents in immediate housing area through insecticide sprays if required			
9	Electricity provided& electrical connections safety ensured			
10	Fans, Coolers / Quilts, Heaters provided as required to cater to weather conditions along with adequate electricity supply			
11	Houses Walls and roof tight and solid; floors rigid and durable, with smooth, cleanable finish in good repair			
12	Availability of nominal rate ration / common use items shop within / nearby the colony			
13	Emergency medical plan developed: (A) Potential injuries determined (B) Local EMS response determined (C) Qualified first-aid person on site, if required			
14	Emergency plans posted where employees gather			
15	Transportation to nearest suitable facility			

Any other checks:

Remarks:**Name & Sign. Of
Contractor HSE Officer**

**POWER SECTOR**

Format for Maintaining Records of E-waste Handled / Generated

FORMAT NO: HSEP:14-F17

REV NO.: 00

PAGE NO. 01 OF 1

(Generated Quantity in Metric Tons (MT) per year)

Site		
Contractor		
Date		
Types & Quantity of e-waste handled/generated**	Category	Quantity
	Item Description	
Types & Quantity of e-waste stored	Category	Quantity
	Item Description	
Types & Quantity of e-waste sent to collection center authorized by producer/dismantler/recycler/refurbisher or authorized dismantler/ recycler or refurbisher **	Category	Quantity
	Item Description	
Types & Quantity of e-waste transported*	Category	Quantity
	Item Description	
Name, address and contact details of the destination		
Types & Quantity of e-waste refurbished*	Category	Quantity
	Item Description	
Name, address and contact details of the destination of refurbished materials		
Types & Quantity of e-waste dismantled*	Category	Quantity
	Item Description	
Name, address and contact details of the destination		
Types & Quantity of e-waste recycled*	Category	Quantity
	Item Description	
Types & Quantity of materials recovered	Quantity	
Name, address and contact details of the destination		
Types & Quantity of e-waste sent to recyclers by dismantlers	Category	Quantity
	Item Description	
Name, address and contact details of the destination		
Types and Quantity of other waste sent to respective recyclers by dismantlers/ recyclers of e-waste	Category	Quantity
	Item Description	
Name, address and contact details of the destination		
Types and Quantity of e-waste treated & disposed	Category	Quantity
	Item Description	
Name, address and contact details of the destination		

Signature of Contractor Site In-charge:

Date



POWER SECTOR

Format for Maintaining Records of Hazardous Waste at the Facility

FORMAT NO: HSEP:14-F18

REV NO.: 00

PAGE NO. 01 OF 1

1. Name of Site:
2. Name of the Contractor:
3. Date:
4. Description of hazardous waste:

Physical form with description	Chemical form	Total volume and weight (in kg.)

5. Description of storage and treatment of hazardous waste:

Date	Method of storage of hazardous wastes	Date	Method of treatment of hazardous wastes

6. Details of transportation of hazardous waste:

Name & address of consignee of package	Mode of packing/ of the waste for transportation	Mode of transportation to site of disposal	Date of transportation

7. Details of disposal of hazardous waste:

Date of disposal	Concentration of hazardous material in the final waste form	Site of disposal (identify the location on the relevant layout drawing for reference)	Method of disposal	Persons involved in disposal

8. Data of environmental surveillance:

Date of measurement	Analysis of ground water			Analysis of soil samples			Analysis of air sampling			Analysis of any other samples (give details)
	Location of sampling	Depth of sampling	Data	Location of sampling	Depth of sampling	Data	Location of sampling	Data		

9. Details of the hazardous wastes reused and recycled:

Date	Total quantity of hazardous waste generated	Details of hazardous waste minimization activity	Material received	Final quantity of waste generated	Net reduction in waste generation quantity and percentage

Signature of Contractor Site In-charge:

Date:

**POWER SECTOR****Inspection of Illumination**

FORMAT NO: HSEP:14-F19

REV NO.: 00

PAGE NO. 01 OF

Name of Site	
Name of Sub-Contractor	
Area/ Location	
Inspected by	
Date & Time of Inspection	

S. No	Date/ Time	Area	Reqd Lux Value	Actual Lux Value	HSE Agency Sign	HSE BHEL Sign	Remarks
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

Signature of Inspecting Official

Date:

Signature of Site I/ C of Contractor:

Date:



POWER SECTOR

Format for Monthly HSE Planning & Review

FORMAT NO: HSEP:14-F30
REV NO.: 00
PAGE NO. 01 OF 3

Note: This is a template and can be modified in consultation with BHEL

Name of the Site		Name of the Contractor	
Scope of Work		Date	
PART- A: PLAN OF HSE ACTIVITIES FOR THE MONTH OF.....		PART-B: REVIEW ON	
SN.	Description of HSE Activity & Formats	Plan & Targets for the month	Review
1	Availability of First Aid Box at Required Places and Inspection thereof as per Format : F01	Areas 1.	
2	Health check-up as per Format : F02	Health check-up for Nos 1. New inductees 2. Drivers & Operators 3. Workers in following high risk areas: a. ...	
3	Induction training of newly joined workers as per Format : F03	Minimum No. of workers:	
4	Toolbox talks (TBT) conducted before start of work as per Format : F04	Locations of TBTs & No. of workers 1. ...	
5	PPE usage and issue as per Format : F06		
6	Inspection of T&Ps as per Format : F07	List of T&Ps to be inspected 1.	
7	Identification & Inspection Status of T&Ps as per Format : F08		
8	Inspection of Cranes & Winches as per Format : F09 (A & B)	List of Cranes & Winches & Nos. 1. ...	
9	Inspection of Height Working as per Format : F10	Areas: 1. ...	
10	Inspection of Welding & Gas Cutting operations as per Format : F11	Areas: 1. ...	
11	Inspection of Electrical Installations as per Format : F12	Locations: 1. ...	
12	Inspection of Elevators (as applicable) as per Format : F13	Locations: 1. ...	
13	Inspection of Excavation as per Format : F13E	Locations: 1. ...	



POWER SECTOR

Format for Monthly HSE Planning & Review

FORMAT NO: HSEP:14-F30

REV NO.: 00

PAGE NO. 02 OF 3

SN.	Description of HSE Activity & Formats	Plan & Targets for the month	Review
14	Job Safety Analysis	Activities: 1. ...	
15	Regular Job Specific Training (Re-training) for workers involved in hazardous activities	Topics/ Hazards & No. of workers 1. ...	
16	Mass housekeeping (HK) drive in work areas	Areas 1. ...	
17	Vertigo Test of Height workers	Minimum No. of workers:	
18	Deployment of qualified HSE Officers as per contract	Location(s) & Nos. 1. ...	
19	Deployment of qualified HSE Stewards as per contract	Location(s) & Nos. 1. ...	
20	Deployment of Safety tools & Equipment (Safety Nets, Lifelines, Fall arrestors, Man-cages, flashback arrestors, scaffolding etc.)	Tool/ Equipment & Location 1. ...	
21	Safety Walks by site in charge of agency (4 -Weekly once)	Dates:	
22	Safety walks by departmental head (8-Weekly twice)	Dates:	
23	Availability/ deployment of Safety posters/ placards/ signage at strategic locations	Locations: Nos. 1. ...	
24	Provision of clean drinking water sources for workers	Locations: Nos. 1. ...	
25	Provision of toilets for workers (separate for male & female workers)	Locations: Nos. 1. ...	
26	Rest sheds for workers during lunchtime, rain, dust storm etc.	Locations: Nos. 1. ...	
27	Availability of following in Labor colony	1. Clean drinking water 2. Toilets 3. Cleanliness & Hygiene 4. Grass cutting, 5. Fogging 6. Electrical Inspection ...	

**POWER SECTOR****Format for Monthly HSE Planning & Review**

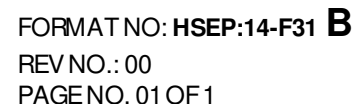
FORMAT NO: HSEP:14-F30

REV NO.: 00

PAGE NO. 03 OF 3

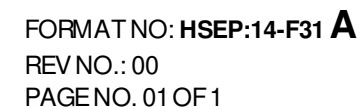
SN.	Description of HSE Activity & Formats	Plan & Targets for the month	Review
28	Availability of dust/ waste bins at various locations	Locations: 1. ...	
29	Availability of First Aider in each shift	Details of first aider	
30	Emergency vehicle/ Ambulance as required (Centrally arrange by BHEL) in each shift	1.	
31	Deployment/ Availability of tested Fire Extinguishers	Locations & Nos. 1. ...	
32	Tree plantation	Locations & Nos. 1. ...	
33	Waste disposal & Scrap Bins	Locations 1. ...	
34	Illumination checks	Locations 1. ...	
35	Safety award function: 1. Display of good practices Award presentation	Minimum 1 per month	
36	Submission of Daily Reports as per Format No.F31A	Daily Reports (Night & Day Shifts)	

PLAN		REVIEW	
Agency Name:	BHEL Name:	Agency Name:	BHEL Name:
Sign:	Sign:	Sign:	Sign:
Date:	Date:	Date:	Date:



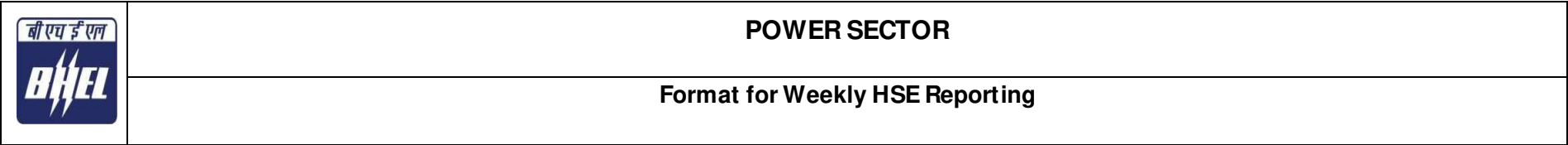
Format No.
HSEP13:F31B
Rev. 00

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Note: Following format to be submitted (preferably) in excel/ soft copy by Contractor daily at the end of each shift. Any photographs/ records to be attached

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	POWER SECTOR
	Format for Weekly HSE Reporting

	POWER SECTOR
	Format for Weekly HSE Reporting



	Weekly HSE Report (BHEL)
	Health, Safety & Environment
	Power Sector Headquarters

	Weekly HSE Report (BHEL)
	Health, Safety & Environment
	Power Sector Headquarters

	Weekly HSE Report (BHEL)
	Health, Safety & Environment
	Power Sector Headquarters

Day		Month		Year	

Day		Month		Year	

Day		Month		Year	

Project		Agency	

Project		Agency	

Important: 1. N-Night Shift 2. Photographs of inspection of height work, hazardous activities, T&Ps, Toolbox Talks, Training, Reward Function, Housekeeping/ Plantation drives etc. to be attached 3. Report to be compiled daily at day end and submitted to BHEL-PSWR Nagpur HQ 4. Report to be compiled daily at day end and submitted to BHEL-PSWR Nagpur HQ 5. Format to be preferably used in soft copy only and submitted by e-mail

Important: 1. N-Night Shift 2. Photographs of inspection of height work, hazardous activities, T&Ps, Toolbox Talks, Training, Reward Function, Housekeeping/ Plantation drives etc. to be attached 4. Report to be compiled daily at day end and submitted to BHEL-PSWR Nagpur HQ 5. Format to be preferably used in soft copy only and submitted by e-mail

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POWER SECTOR- HQ

FORMAT NO: HSEP:14-F3

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Checklist for Evaluation of HSE Performance

SL	Parameter for Measurement	M/O	Wt	Supporting Documents
1a	Induction training for new workers conducted through audio-visual medium & documented?	M	1	Induction Training Records
1b	Tool box talk conducted regularly as per plan, and documented?	M	1	Toolbox Talk Records
1c	Contractor in charge and safety in charge attended safety meetings?	M	2	Minutes of Meeting
1d	Whether observations in safety meetings are compiled before next meeting?	M	2	-do-
1e	Preparation and submission of Monthly HSE report within stipulated time	M	1	Report submission date
1f	Preparation and submission of Incident/near-miss report and RCA Report (as applicable) within stipulated time	M	1	Incident/ Near Miss Records
1g	Carrying out Inspections and submission of Inspection reports within stipulated time	M	1	Inspection Records
1h	Regular Job Specific Training ensured for High Risk Workers (through audio-visual medium) as per plan	M	1	Training & Attendance Records
2a	Whether the contractor is registered under BOCW	M	2	BOCW Registration Certificate
2b	Availability of Qualified safety officer (1 for every 500 labor)	M	2	Safety Officer qualification & experience records
2c	Availability of Qualified safety supervisor (1 for every 100 labor)	M	2	Safety Officer qualification & experience records
2d	All the workers are provided and using safety helmets and safety shoes/gum boots	M	2	PPE Issue Records, Inspection/ non-conformity records
2e	Housekeeping done on regular basis and scrap removal at site	M	1	Housekeeping records, Inspection/ non-conformity records
2f	Usage of Goggles/Face shields and Hand gloves for gas cutter and grinders		1	PPE Issue Records, Inspection/ non-conformity records
2g	Wall openings & floor openings are guarded?		1	Inspection/ non-conformity records
2h	Adequate illumination provided in all working area?		1	Inspection/ non-conformity records
2i	Safety posters, sign boards and emergency contact numbers in all prominent location are displayed?		1	Inspection/ non-conformity records
2j	Availability of automatic reverse horns, Main horn, hook latches for Vehicles, mobile cranes, Hydraulic Mobile Cranes		1	Inspection/ non-conformity records
2k	Ban of carrying mobile phones to work place is implemented for workers		1	Inspection/ non-conformity records
2l	Availability of Tags & Inspection Certificates for Cranes of all capacities		1	Master T&P List with internal & external test details
2l.2	Availability of Tags & Inspection Certificates for Winches of all capacities		1	Master T&P List with internal & external test details
2l.3	Availability of Tags & Inspection Certificates, color coding for Chain pulley blocks		1	Master T&P List with internal & external test details
2l.4	Availability of Tags & Inspection Certificates for Vehicles - Trailers, Dozers, Dumpers, Excavators. Mixers etc.		1	Master T&P List with internal & external test details
2l.5	Availability of Tags & Inspection Certificates for Welding machines, grinders, Drilling machines, etc.		1	Master T&P List with internal & external test

				details
21.6	Availability of Tags & Inspection Certificates, colour coding for Wire rope slings etc.		1	Master T&P List with internal & external test details
21.7	Availability of Tags & Inspection Certificates for Batching plants		1	Master T&P List with internal & external test details
2m.1	Use of Lifting Permit as per requirement		1	Permit Records
2m.2	Use of Height Permit as per requirement		1	Permit Records
2m.3	Use of Hot Work Permit as per requirement		1	Permit Records
2m.4	Use of Excavation permit as per requirement		1	Permit Records
2m.5	Use of Confined space work permit as per requirement		1	Permit Records
2m.6	Use of Grating removal and safety net removal permit as per requirement		1	Permit Records
2m.7	Use of Lockout-Tag out permit as per requirement		1	Permit Records
2m.8	Use of Radiography permit as per requirement		1	Permit Records
2m.9	Use of Night/ Holiday Work Permit as per requirement		1	Permit Records
2m.10	Use of Any other Applicable Permit as per requirement		1	Permit Records
3a	Material safety data sheet(MSDS) available for all chemicals and displayed in usage and storage area?		1	Inspection/ non-conformity records
3b	Spillages of oil/concrete and other chemical is controlled and cleaned by proper method in case of spill?		1	Inspection/ non-conformity records
3c	Availability of adequate number of urinals in workplace and in elevations and maintained	M	1	
3d	Availability of rest rooms for workers at site	M	1	
3e	Availability of Drinking water facility at work spot		1	
3f	Hygienic Labor colony is provided for workers.		1	
4a	Is heavy/complex critical lifting permit obtained for heavy, complex materials before handling/erection activity?		1	Work Permit records
4b	Whether area below lifting activities barricaded		1	Inspection/ non-conformity records
4c	Availability of experienced rigging foreman		1	Experience details of rigging foreman
4d	Is agency is following proper storage and handling procedure as per manufacturer standard for all hazardous material?		1	Procedure for storage & handling
4e	Are oxygen and acetylene cylinders are transported to work place from storage area in trolleys		1	
5a	Whether all deep excavation has been protected by barrier		1	Inspection/ non-conformity records
5b	Sloping/benching & shoring provided for excavation as per requirement?		1	-do-
5c	Proper access and egress provided for excavations?		1	-do-
5d	Blasting is done in controlled manner?		2	-do-
6a	Whether Electrical booth is equipped with Co ₂ fire extinguishers and fire buckets filled with sand?		2	Inspection/ non-conformity records
6b	Availability of Illumination lamp in electric booth?		1	-do-
6c	whether Caution Boards have been displayed?		1	-do-
6d	Usage of Metal Plug top for all hand power tools?		1	-do-
6e	Usage of Insulated welding cables.		1	-do-
6f	Electrical Booth/Distribution Board to be covered by proper Canopy.		1	-do-
6g	Availability of functional & individual 30ma ELCB / RCCB and MCB for protection and conducting periodical check-up?		1	-do-
6h	Double earthing for panel boards and all machinery & proper earth pit with regular inspection available?		1	-do-
6i	Whether Electrician is qualified and experienced		1	Qualification & Experience records of electrician
6j	Availability and usage of Rubber hand gloves by electrician?		1	Inspection/ non-conformity records
7a	Whether Scaffolding pipes made with steel or aluminum, are being used and checked periodically by experienced/ certified scaffolder?		2	Inspection/ non-conformity records

7b	8mm Stainless Steel wire rope with plastic cladding is provided for life line (Vertical / Horizontal) during height work?		2	-do-
7c	Availability of emergency lighting in case of power failure		1	-do-
7d	Whether all the openings are covered with Safety Nets made of fire proof Nylon?		1	-do-
7e	Whether MS pipe rails around staircases & platforms in usage are provided with top, middle rails and toe guard?		1	-do-
7f	Whether Ladder with vertical life line / Fall arrestor is available to climb?		1	-do-
7g	Whether all workers deployed for working at height have been issued height pass after undergoing vertigo test?		1	Height Pass records
7h	Whether all workers deployed for height work / climbing ladder are provided and using Double lanyard safety belt?		1	PPE Issue records, inspection/ non-conformity reports
7i	Is all hand tools/Small material used by height workers is tied firmly to prevent fall?		1	-do-
8a	Flash back arrestors for all gas cutting sets is available on Torch side and cylinder side		1	Inspection/ non-conformity records
8b	Oxygen/Acetylene/LPG cylinders not in use have caps in place and stored separately?		1	-do-
8c	Availability of Face screen, Hand gloves, and Apron, for welders		1	-do-
8d	Protection from falling hot molten metal during metal cutting / welding at height by providing GI sheet below the cutting area especially in fire prone areas		1	-do-
9a	Pre-employment medical check-up done for all workers and submitted?		1	Medical check records
9b	Availability of first aid center & first aider at work place	M	2	Attendance records
9c	Ambulance facility as required - 24 hours (Centrally arranged by BHEL)	M	2	-do-
9d	Is First aid trained personnel's are available and their names are displayed at site?	M	1	-do-
9e	Availability of Emergency vehicle at site		1	
9f	Periodical medical check-up is conducted for all the workers and submitted?		1	Medical check records
9g	Availability of sufficient number of first aid box as per standard list and maintaining record		1	Inspection records
10a	Availability of Fire extinguishers, buckets at all vulnerable points		2	Fire extinguisher records
10b	Periodic fire mock drill conducted?		1	Fire, Mock drill records
10c	Are all flammable materials are stored separately?		1	
10d	Periodic grass cutting is done in material storage area?		1	
10e	Availability of 24V DC lighting in confined space work area		1	
10f	Availability of exhaust fan in confined space work area		1	

Note:

- **M: Mandatory; O: Optional.** Points other than mandatory can be excluded with appropriate justification (scope etc.) by BHEL
- Additionally: 30 Marks for each Fatal Accident and 10 mark for each major accident shall be deducted.

ANNEXURE 10

WORK PERMITS



HSEP:12-F01

GENERAL WORK PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	Job Specific Permit Required :		
	Height Work ☐ Hot Work ☐		
	Confined Space Work ☐ Excavation Work ☐		
	Radiation Work ☐ Heavy / Complex / Critical Lifting Activity ☐		
	Night Work / Holiday Work ☐ Loading / Unloading ☐		
	Grating / Safety Net / Safety Facility Removal ☐ Lockout / Tag out Request ☐		
	Beam/Truss/Duct/ Structure fit-up & Alignment ☐ Drilling & Blasting ☐		
	Other Permit required. PI specify :		
2.	All Tools & Plants are TPI tested and inspected		
3.	Proper access available for workplace		
4.	All workmen to be engaged are having Gate Pass and attended Induction Training		
5.	All workmen are provided basic PPEs		
6.	All Drivers and Operators are authorized and having required valid licenses.		
7.	Proper control measures are established against possible hazards		
8.	Proper housekeeping is done and Emergency response system established.		
9.	Availability of licensed electrician ensured		
10.	Electrical equipment's to be used are in good condition (Give Details)		
11.	Specific PPEs for the Activity (List Attached):		
	Dust Mask/ other respiratory equipment required. List details:		
	Welding and/or Grinding Shield required.		
	Gloves: Leather () / PVC () / Welding ()		
	Other PPE, List (attached):		
12.	Procedure Required :		
	OCP No. Ref :		

The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.

A. Permit Requester/ Receiver (Agency):

Site Engineer:
Signature:
Name: _____ Designation: _____

Site HSE Officer:
Signature:
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature:
Name: _____ Designation: _____

(* Permit valid for 7 days only)

Original: Permittee

2nd Copy: Agency Deptt. HOS3rd Copy: BHEL Site HSE

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.	
Reason for Closure: Job complete	Permit Validity Over
Agency	
Site Engineer	Site HSE Officer
Signature:	Signature:
Name:	Name:
BHEL	
Verified as above and Permit is Closed	
In case job not complete, New Permit No. Issued:	
Site HSE Officer*	Site Engineer*
Signature:	Signature:
Name:	Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-F02

HEIGHT WORK PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	All workers on job are competent and medically fit (No Height Phobia) for working at height		
2.	Horizontal life lines are provided to cater to design specification of 2300 kg per person and are installed on a rigid & independent structure		
3.	Safety harness with life line support/ fall arrester are checked and available in working condition		
4.	Scaffolding soundness inspected is available for use with valid tag		
5.	Work platform is not made of bamboo or weak material. Barricading is available with Top, Mid Rails and Toe Guard.		
6.	Working platform is clean without any unwanted material. Floor openings are covered.		
7.	Access and exit to workplace are safe, marked and without obstruction.		
8.	Adequate lighting provided (for dark hours) as per applicable lux standards (Refer HSEP:13)		
9.	Safety nets are provided below working area as secondary line of fall protection		
10.	Area below the working platform has been cleared of all activity		
11.	Ladders have been secured, inspected and provided as per BHEL standard/contract.		
12.	Safety shoes (non-slip), Helmet with chin strip available with employees		
13.	Visible Signboards provided on working platforms in workers' understandable language		
14.	All lifting / tightening tools, hand tools/equipment checked and in good condition		
15.	ELCB provided for Electrical connections individually. Electrical cable, welding Hose/Compressed air hose properly secured and laid down without obstruction. Earth resistance is OK.		
16.	Crane / Winch / Hydra operator and Rigger is qualified and experienced		
17.	Emergency response team & Medical Facilities available.		
18.	Work hazards are identified, controlled and communicated to the worker in daily Safety Pep talk.		
19.	Minimum two levels of fall protection have been ensured		
20.	Method Statements/ Job Safety Analyses attached:		
21.	Other:		
22.	List of Other Permits Required for the Activity (Attached):		
23.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

*The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.***A. Permit Requester/ Receiver (Agency):**

Site Engineer:
Signature:
Name: _____ Designation: _____

Site HSE Officer:
Signature:
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature:
Name: _____ Designation: _____

(* Permit valid for 7 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HOS3rd Copy: BHEL Site HSE

All parameters from S.No. 1 to 23 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.	
Reason for Closure: Job complete 	Permit Validity Over 
Agency	
Site Engineer	Site HSE Officer
Signature:	Signature:
Name:	Name:
BHEL	
Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:	
Site HSE Officer*	Site Engineer*
Signature:	Signature:
Name:	Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-F03

BURNING/ WELDING/ HOT WORK PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	Welding area ensured safe and free from all hazards (explosives etc.) with barricading and safe inlet / exit		
2.	Proper ventilation and /or lighting provided (in case of dark hours).		
3.	Welding platform ensured safe and strong. Not built of bamboo or similar material		
4.	For enclosed / confined spaces, the integrity of the structure and supports are ensured, Gas Testing done		
5.	Gas hoses, Welding machine input/output cables, welding holder and weld return clamp (Holder) are in good condition, routed and insulated as required		
6.	Emergency STOP buttons are in working condition. Welder /Helper knows how to operate it.		
7.	Welder & Fitter trained to connect ground/work return clamps (Holder) to work place prior to energization of welding machine.		
8.	Gas cylinders are stacked vertically and not below the welding / cutting area. Regulator key is available with cylinder. Gas cylinders covered with shields to prevent falling splinters.		
9.	Pressure gauges/Flash back arrestor (at both ends) provided and in working condition.		
10.	Personal Protective equipment Minimum applicable: safety helmet, safety goggles, welding helmet, safety shoes, leather gloves, long sleeve and nose mask -provided		
11.	In case of pits, water removed from the pit and wood/rubber insulation provided.		
12.	Safety signboards / cautions are in place.		
13.	Adequate and Suitable nos. of firefighting extinguisher provided. Sufficient water for firefighting available.		
14.	Nearby combustible material removed. Housekeeping done.		
15.	Emergency response team & Medical Facilities available.		
16.	Work hazards are identified, controlled and communicated to the worker.		
17.	Method Statements/ Job Safety Analyses attached:		
18.	Other:		
19.	List of Other Permits Required for the Activity (Attached):		
20.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.

A. Permit Requester/ Receiver (Agency):

Site Engineer:	
Signature: _____	
Name: _____	Designation: _____

Site HSE Officer:	
Signature: _____	
Name: _____	Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:	
Signature: _____	
Name: _____	Designation: _____

Site HSE Officer/ Authorized Representative:	
Signature: _____	
Name: _____	Designation: _____

C. Package-in-charge (BHEL):	
Signature: _____	
Name: _____	Designation: _____

(* Permit valid for 7 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HDS3rd Copy: BHEL Site HSE

All parameters from S.No. 1 to 20 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.	
Reason for Closure: Job complete 	Permit Validity Over 
Agency	
Site Engineer	Site HSE Officer
Signature:	Signature:
Name:	Name:
BHEL	
Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:	
Site HSE Officer*	Site Engineer*
Signature:	Signature:
Name:	Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-F04

CONFINED AREA WORK PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	Has the equipment been Isolated from Power/Steam/Air?		
2.	Has the equipment been Isolated from liquid or gasses?		
3.	Has the equipment been de-pressurized &/or drained?		
4.	Has the equipment been Blanked/blinded or disconnected?		
5.	Has the equipment been water flushed &/or steamed?		
6.	Whether man ways open and ventilated?		
7.	Whether constant Inert gas flow arranged?		
8.	Whether mechanically ventilated and adequately cooled?		
9.	Whether 24 V lighting provided inside the confined space?		
10.	Whether Radiation sources removed?		
11.	Whether training on confined space provided to the group?		
12.	Whether required PPEs used?		
13.	Whether Dust/Gas/Air Line mask used?		
14.	Whether attendant with SCBA/Air mask available?		
15.	Whether grounded air Exhaust/Blower/ AC provided?		
16.	Whether Personal Gas alarm provided?		
17.	Whether communication Equipment Provided?		
18.	Whether rescue equipment/team available?		
19.	Whether firefighting arrangement done		
20.	Emergency response team & Medical Facilities available.		
21.	Work hazards are identified, controlled and communicated to the worker.		
22.	Method Statements/ Job Safety Analyses attached:		
23.	Other:		
24.	List of Other Permits Required for the Activity (Attached):		
25.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.

A. Permit Requester/ Receiver (Agency):

Site Engineer:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer:
Signature: _____
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature: _____
Name: _____ Designation: _____

(* Permit valid for 7 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HOS3rd Copy: BHEL Site HSE

All parameters from S.No. 1 to 25 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.

Reason for Closure: Job complete  Permit Validity Over 

Agency

Site Engineer	Site HSE Officer
Signature:	Signature:
Name:	Name:

BHEL

Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:

Site HSE Officer*	Site Engineer*
Signature:	Signature:
Name:	Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-F05

EXCAVATION WORK PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	Precautions taken for Underground Electrical Cable		
2.	Precautions taken for Under / Above ground sewer/Drinking Water Line		
3.	Precautions taken for Underground Telecommunication Line		
4.	Precautions taken for Underground Product/Utility Line		
5.	Precautions taken for Underground Fire Water Line		
6.	Shoring / Shuttering / Sheet piling done to prevent collapse of excavation walls. Strength of Excavation wall ensured at all times		
7.	Hard Barricading & Edge Protection provided		
8.	Separate Safe Access for Man and Vehicle		
9.	Lighting arrangement		
10.	Banks Man Provided		
11.	Required basic PPEs provided		
12.	Slope Cutting/Benching Maintained		
13.	Excavated soil / Construction Material / equipment kept away from the edge.		
14.	Emergency response team & Medical Facilities available.		
15.	Work hazards are identified, controlled and communicated to the worker.		
16.	Method Statements/ Job Safety Analyses attached:		
17.	Other:		
18.	List of Other Permits Required for the Activity (Attached):		
19.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.

A. Permit Requester/ Receiver (Agency):

Site Engineer:
Signature:
Name: _____ Designation: _____

Site HSE Officer:
Signature:
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature:
Name: _____ Designation: _____

(* Permit valid for 7 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HOS3rd Copy: BHEL Site HSE

All parameters from S.No. 1 to 19 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.	
Reason for Closure: Job complete 	Permit Validity Over 
Agency	
Site Engineer	Site HSE Officer
Signature:	Signature:
Name:	Name:
BHEL	
Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:	
Site HSE Officer*	Site Engineer*
Signature:	Signature:
Name:	Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-F06

RADIATION WORK PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	All the persons at the site informed/removed from the area.		
2.	Area around the source of radiation cordoned off with the rope/chord.		
3.	Radiation warning symbol/boards displayed around radiography work on rope/chord.		
4.	Radiographer worn radiation badges during testing and is within safe limits.		
5.	Radiography camera and carrying case box having radiation symbol.		
6.	Radiation Survey Meter is in working condition, calibrated & within validity period.		
7.	Radiographer has valid certificate from BARC.		
8.	Blinking light provided on road during radiography (in dark hours).		
9.	Proper required Illumination provided		
10.	Safe access and working platform provided to conduct RT work		
11.	All the persons involved in Radiography work are aware of the hazard of radiation		
12.	Emergency response team & Medical Facilities available.		
13.	Work hazards are identified, controlled and communicated to the worker in daily Safety Pep talk.		
14.	Method Statements/ Job Safety Analyses attached:		
15.	Other:		
16.	List of Other Permits Required for the Activity (Attached):		
17.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

*The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.***A. Permit Requester/ Receiver (Agency):**

Site Engineer:
Signature:
Name: _____ Designation: _____

Site HSE Officer:
Signature:
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature:
Name: _____ Designation: _____

(* Permit valid for 7 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HDS3rd Copy: BHEL Site HSE

All parameters from S.No. 1 to 17 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.

Reason for Closure: Job complete

Permit Validity Over

Agency

Site Engineer

Site HSE Officer

Signature:

Signature:

Name:

Name:

BHEL

Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:

Site HSE Officer*

Site Engineer*

Signature:

Signature:

Name:

Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-F07

LIFTING ACTIVITY PERMITType (Refer Pg 2) (Tick Applicable): Critical ☐ Non-Critical ☐

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____ Maximum Lifted Weight (T) _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	Crane used for lifting activity TPI tested, certified and approved for rated lifting. SWL indicator(s) in working condition.		
2.	All lifting tackles, gears/appliances (chain pulley blocks, wire rope slings etc.) are tested and certified for lifting works with valid Serial numbers traceable to certificates.		
3.	Chain Pulley Blocks are exclusively used for alignment, not loading		
4.	Crane operator is trained and competent for lifting operation and experienced rigger is available.		
5.	Lifting sling/ belt is protected against sharp edge of the jobs to be lifted.		
6.	Lifting hook is properly latched to prevent material falling over		
7.	Access and exit marked and without obstruction.		
8.	In case of lifting multiple materials at once, same are tied up with strong rope / material		
9.	Area below lifting activity barricaded to prevent movement		
10.	Minimum 2 guidelines have been provided for balancing and guiding jobs to be lifted.		
11.	Periphery area of crane booms as well as lifting job is barricaded and unauthorized/no-entry sign board posted.		
12.	Rigger and signal man are trained and competent for lifting work.		
13.	No lifting activity to be carried out during lightening, heavy wind/rain.		
14.	If scaffolding to be used during lift, scaffolding with valid tag available for use.		
15.	Emergency response team & Medical Facilities available.		
16.	Work hazards are identified, controlled and communicated to the worker.		
17.	Critical Lift Assessment and Plan (as Annexure) attached for Critical Lift.		
18.	Walkie-Talkie is ensured for communication especially in case of long distance or absence of direct line of sight		
19.	Method Statements/ Job Safety Analyses/ Lifting Plan attached:		
20.	Other:		
21.	List of Other Permits Required for the Activity (Attached):		
22.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

*The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.***A. Permit Requester/ Receiver (Agency):**

Site Engineer:
Signature:
Name: _____ Designation: _____

Site HSE Officer:
Signature:
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature:
Name: _____ Designation: _____

(* Permit valid for 14 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HDS3rd Copy: BHEL Site HSE

All parameters from S.No. 1 to 22 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.	
Reason for Closure: Job complete	Permit Validity Over
Agency	
Site Engineer	Site HSE Officer
Signature:	Signature:
Name:	Name:
BHEL	
Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:	
Site HSE Officer*	Site Engineer*
Signature:	Signature:
Name:	Name:

(* or authorized representative duly concurred by Region HSE)

A Lift shall be considered Critical Lift and Require Critical Lift Plan in any of the Following Cases

- Lifting more than safe working load of the Lifting equipment
- Tandem Lifting using multiple cranes
- Total load exceeding 75% of capacity of crane
- Lift of unusual difficulty or geometry
- Rigging or Lift over operating units
- Any other lift as decided by site HSE / Erection
- Transfer of load from one arrangement to another (eg. From Winch to Chain Pulley Blocks)
- Complex Lifting operation involving:
 - multiple machines / materials
 - complicated routing of slings
 - Lifting of high value items (as decided by Site HSE / PS-Region)
- Any other lift as decided by site HSE / Erection



Critical Lift Assessment & Plan

Format No.:
HSEP12:CLF

Annexure of Lifting Activity Work Permit Number:

Page 1 of 2

This form shall be completed prior to performing Critical Lifts

Answer the following questions and complete the required sections of the Lift Assessment & Plan.

If the answer is "yes", follow the instructions. If the answer is "no", continue to the next question.

		Y	N	Section A	Lift Details
1) Will personnel be hoisted? If "yes", complete sections A, B, D.				Type of Lift (Tick one):	Critical ☐ Personnel ☐
2) Will more than one crane be used? If "yes", complete sections A, B, C.				Project / Company Name	
3) Will the lift be more than 3 Meter from the ground and exceed 75% of the cranes/ T&Ps capacity? If "yes", complete sections A, B, C.				Lift Location	
				Pre-lift Meeting Date	
				Lift Date	
				Rigging Supervisor	
4) Will the lift meet any of the conditions listed as stated in the Note on Pg 2 of this document? If "yes", complete sections A, B, C.				Rigger Signature	
				Operator Signature	
				Signal Person Signature	

Section B

Lift Plan

1) **Numbers of T&Ps Used:** Cranes..... Winches..... Chain Pulley Blocks..... Other (Mention).....

2) **Sketch the plan and include the following** (Draw for all applicable configurations; Use additional pages if necessary)

- Weight and location of center of gravity of load & other necessary dimensions
- Rigging Setup & positions of T&Ps used with labels of their Serial Numbers

3) **Mention the Following (Attach additional papers if required):**

- Lifting Steps including load transfer from one arrangement to another & any obstructions to be avoided
- List ratings of the rigging T&Ps used to include number of sling legs, angle of the slings from horizontal, etc.
- Attach TPI Certificates and Internal Inspection records of T&Ps used
- List of Riggers, Foremen, Operators used in the activity

Agency Supervisor/Engineer [Signature with Date]:



Critical Lift Assessment & Plan

Format No.:
HSEPI2:CLF
Page 2 of 2

Annexure of Lifting Activity Work Permit Number:

Section C		Critical Lift Authorization (For all used cranes; Use additional pages (if necessary):			
Crane Manufacturer		Crane Model #		Crane Serial/Unit #	
Total Boom Length					
Maximum Radius	Swing Direction and Degrees	Boom Angle Pick Set	Lift Elevation	Jib or Boom Ext.? Y N Length:	
(A) Crane Component Weights:		(B) Rated Crane Capacity	Electrical Hazards?	Y N	
Jib/Boom Extension:			Explain:		
Aux. Boom Head:		(C) Load Weight	Overhead Hazards?	Y N	
Block/Headache Ball:			Explain:		
Cable:		(D) Total Lift Weight(A+C)	Underground Hazards?	Y N	
Rigging:			Explain:		
Allowance for Unknown:		% of Crane Capacity(D÷B)	Soil Conditions		
Total Deductions:					
Critical Lift Coordinator Sign & Date		Authorized Contactor Manager Sign & Date			
Section D		Personnel Lift Authorization (For all used cranes; Use additional pages if necessary):			
Crane Manufacturer		Crane Model #		Crane Serial/Unit #	
Operator					
Platform ID#		Maximum Radius		Number of Occupants	
Personnel Lift Supervisor					
Platform Rating		(A) Crane Rated Load at Max Radius		(C) Weight of Tools & Occupants	
(B) Platform Weight					
(D) Maximum Allowable Lift (50% of A)		Total Lift Weight(B+C)			
Platform Type (tick one)					
pinned on suspended				*must be less than D	
*Answering "no" to any of the following questions prohibits the lift from being performed.					
1) Does the crane have documentation of the current yearly inspection?				Y N	
2) Is the personnel platform designed by an engineer and is the maximum load capacity documented?				Y N	
3) Is the crane equipped with a positive lock means between the platform and crane?				Y N	
4) Does the weather meet all acceptable conditions? (wind speed <=40 kmph and no rain or approaching thunderstorms)				Y N	
The following apply only to suspended personnel platforms.					
5) Does the personnel platform have documentation of current yearly inspection?				Y N	
6) Has a load test of 125% of the capacity of the personnel platform and crane been performed?				Y N	
7) Is the guardrail (minimum from mid-rail to floor) screened to prevent material/tools from falling out?				Y N	
8) Is the crane equipped with a working anti-two-block device?				Y N	
		Name		Signature	
		Date			
Agency Site Engineer					
Agency Site HSE Officer					
BHEL Site Engineer					
BHEL Site HSE Officer					

Note: A Lift shall be considered Critical Lift and Require Critical Lift Plan in any of the Following Cases

- Lifting more than safe working load of the Lifting equipment
- Tandem Lifting using multiple cranes
- Total load exceeding 75% of capacity of crane
- Lift of unusual difficulty or geometry
- Rigging or Lift over operating units
- Transfer of load from one arrangement to another (eg. From Winch to Chain Pulley Blocks)

- **Complex Lifting operation involving:**
 - many machines / materials
 - complicated routing of slings
 - Lifting of high value items (as defined by Site HSE / PS-Region)
- Any other lift as decided by site HSE / Erection



METHOD STATEMENT & JOB SAFETY ANALYSIS FORMAT

Region: Site: JSA No.

HSEP01:JSA

Rev. 00

Sep 21, 2024

Agency					
Activity Title					
Team Members					
Exact Location of Work					
Reference Erection Drawing No. (if any)					

JOB SAFETY ANALYSIS (JSA)					
S. No.	Job Plan Steps; Attach sketch/ drawing if required	Hazards	Control Measures	Residual Risk (High/ Medium/ Low)	Person responsible for control measure
Additional Precautions/ Control Measures (if any)					

It is certified that all possible steps and hazards in the activity are covered above, which will be carried out by competent personnel under strict supervision and following all contractual and regulatory requirements. All necessary equipment, tools & tackles, safety devices shall be ensured.								
(Name)	Submitted by Agency Execution		Reviewed by Agency HSE		Reviewed by BHEL Execution		Reviewed & Approved by BHEL HSE	
(Sign)								
(Date)								



HSEP:12-F08

NIGHT WORK PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	No heavy complex work is being carried out involving heavy, moving machinery etc. during night work		
2.	Proper illumination (lux value) as per prescribed standards has been provided		
3.	All required safety precautions / Permits / PPEs have been taken		
4.	Work area certified safe (with barricading, w/o hazards, proper access / ingress).		
5.	Workers are trained for the task		
6.	Adequate supervision is in order during the course of work		
7.	Emergency response team & Medical Facilities available.		
8.	Work hazards are identified, controlled and communicated to the worker.		
9.	Method Statements/ Job Safety Analyses attached:		
10.	Other:		
11.	List of Other Permits Required for the Activity (Attached):		
12.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.

A. Permit Requester/ Receiver (Agency):

Site Engineer:
Signature:
Name: _____ Designation: _____

Site HSE Officer:
Signature:
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

C. Package-in-charge (BHEL):
Signature:
Name: _____ Designation: _____

(* Permit valid for 7 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HDS3rd Copy: BHEL Site HSE

All parameters from S.No. 1 to 12 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.

Reason for Closure: Job complete

Permit Validity Over

Agency

Site Engineer

Site HSE Officer

Signature:

Signature:

Name:

Name:

BHEL

Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:

Site HSE Officer*

Site Engineer*

Signature:

Signature:

Name:

Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-F09

MATERIAL LOADING/UNLOADING/SHIFTING PERMITType (Refer Pg 2) (Tick Applicable): Critical ☐ Non-Critical ☐

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	Sufficient Area has been provided for material unloading		
2.	Loaded material carefully inspected and proper plan is made for unloading to avoid toppling/ falling		
3.	Loading / Unloading Cranes, T&Ps are in order with valid TPI certificate.		
4.	Ground is Level		
5.	Crane operator is authorized and experienced Rigger is available on the spot		
6.	Latches are available on Crane Hooks & Slings are tested and have valid Tag		
7.	Sufficient personnel with stabilizing ropes are available during shift		
8.	Speed of vehicle is Low while movement		
9.	Communication methodology between different gangs is in place. Communication gear (walkie-talkie sets etc.) provided where required		
10.	Walkie-Talkie is ensured for communication especially in case of long distance or absence of direct line of sight		
11.	Adequate supervision is in order on the spot		
12.	Area barricaded for every possible movement of crane.		
13.	Emergency response team & Medical Facilities are available during activity.		
14.	Workers involved are properly trained and sensitized to the dangers		
15.	Work hazards are identified, controlled and communicated to the worker in Toolbox Talk before start of activity.		
16.	List of skilled & unskilled workers along with Supervisor involved in the Activity (Attached)		
17.	Critical Lift assessment and Plan (Annexure) attached for Critical Loading/ Unloading/ Shifting		
18.	Method Statements/ Job Safety Analyses specific to the hazards in this particular activity enclosed:		
19.	Other:		
20.	Any Other Permits Required for the Activity (Attached):		

*The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.***A. Permit Requester/ Receiver (Agency):**

Site Engineer:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer:
Signature: _____
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature: _____
Name: _____ Designation: _____

(* Permit valid for 7 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HDS3rd Copy: BHEL Site HSE

All parameters from S.No. 1 to 16 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				Remarks
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.	
Reason for Closure: Job complete	Permit Validity Over
Agency	
Site Engineer	Site HSE Officer
Signature:	Signature:
Name:	Name:
BHEL	
Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:	
Site HSE Officer*	Site Engineer*
Signature:	Signature:
Name:	Name:

(* or authorized representative duly concurred by Region HSE)

A Loading/ Unloading/ Shifting shall be considered Critical and Require Critical Lift Plan in any of the Following Cases

- Lifting more than safe working load of the Lifting equipment
- Tandem Lifting using multiple cranes
- Total load exceeding 75% of capacity of crane
- Lift of unusual difficulty or geometry
- Lifting involving transfer of load from Winch to Chain Pulley blocks
- Rigging or Lift over operating units
- Transfer of load from one arrangement to another (eg. From Winch to Chain Pulley Blocks)
- **Complex Lifting operation involving:**
 - many machines / materials
 - complicated routing of slings
 - Lifting of high value items (as defined by Site HSE / PS-Region)
- Any other lift as decided by site HSE / Erection



Critical Lift Assessment & Plan

Format No.:
HSEP12:CLF

Annexure of Lifting Activity Work Permit Number:

Page 1 of 2

This form shall be completed prior to performing Critical Lifts

Answer the following questions and complete the required sections of the Lift Assessment & Plan.

If the answer is "yes", follow the instructions. If the answer is "no", continue to the next question.

		Y	N	Section A	Lift Details
1) Will personnel be hoisted? If "yes", complete sections A, B, D.				Type of Lift (Tick one):	Critical ☐ Personnel ☐
2) Will more than one crane be used? If "yes", complete sections A, B, C.				Project / Company Name	
3) Will the lift be more than 3 Meter from the ground and exceed 75% of the cranes/ T&Ps capacity? If "yes", complete sections A, B, C.				Lift Location	
				Pre-lift Meeting Date	
				Lift Date	
				Rigging Supervisor	
4) Will the lift meet any of the conditions listed as stated in the Note on Pg 2 of this document? If "yes", complete sections A, B, C.				Rigger Signature	
				Operator Signature	
				Signal Person Signature	

Section B

Lift Plan

1) **Numbers of T&Ps Used:** Cranes..... Winches..... Chain Pulley Blocks..... Other (Mention).....

2) **Sketch the plan and include the following** (Draw for all applicable configurations; Use additional pages if necessary)

- Weight and location of center of gravity of load & other necessary dimensions
- Rigging Setup & positions of T&Ps used with labels of their Serial Numbers

3) **Mention the Following (Attach additional papers if required):**

- Lifting Steps including load transfer from one arrangement to another & any obstructions to be avoided
- List ratings of the rigging T&Ps used to include number of sling legs, angle of the slings from horizontal, etc.
- Attach TPI Certificates and Internal Inspection records of T&Ps used
- List of Riggers, Foremen, Operators used in the activity

Agency Supervisor/Engineer [Signature with Date]:



Critical Lift Assessment & Plan

Format No.:
HSEPI2:CLF
Page 2 of 2

Annexure of Lifting Activity Work Permit Number:

Section C		Critical Lift Authorization (For all used cranes; Use additional pages (if necessary):			
Crane Manufacturer		Crane Model #		Crane Serial/Unit #	
Crane Model #		Crane Serial/Unit #		Total Boom Length	
Maximum Radius	Swing Direction and Degrees	Boom Angle Pick Set	Lift Elevation	Jib or Boom Ext.? Y N Length:	
(A) Crane Component Weights:		(B) Rated Crane Capacity	Electrical Hazards?	Y N	
Jib/Boom Extension:		(C) Load Weight	Explain:		
Aux. Boom Head:			Overhead Hazards?	Y N	
Block/Headache Ball:			Explain:		
Cable:		(D) Total Lift Weight(A+C)	Underground Hazards?	Y N	
Rigging:			Explain:		
Allowance for Unknown:		% of Crane Capacity(D÷B)	Soil Conditions		
Total Deductions:					
Critical Lift Coordinator Sign & Date		Authorized Contactor Manager Sign & Date			
Section D		Personnel Lift Authorization (For all used cranes; Use additional pages if necessary):			
Crane Manufacturer		Crane Model #		Crane Serial/Unit #	
Crane Model #		Crane Serial/Unit #		Operator	
Platform ID#		Maximum Radius		Number of Occupants	
Platform Rating		(A) Crane Rated Load at Max Radius		(C) Weight of Tools & Occupants	
(B) Platform Weight		(D) Maximum Allowable Lift (50% of A)		Total Lift Weight(B+C)	
Platform Type (tick one)					
pinned on suspended				*must be less than D	
*Answering "no" to any of the following questions prohibits the lift from being performed.					
1) Does the crane have documentation of the current yearly inspection?				Y N	
2) Is the personnel platform designed by an engineer and is the maximum load capacity documented?				Y N	
3) Is the crane equipped with a positive lock means between the platform and crane?				Y N	
4) Does the weather meet all acceptable conditions? (wind speed <=40 kmph and no rain or approaching thunderstorms)				Y N	
The following apply only to suspended personnel platforms.					
5) Does the personnel platform have documentation of current yearly inspection?				Y N	
6) Has a load test of 125% of the capacity of the personnel platform and crane been performed?				Y N	
7) Is the guardrail (minimum from mid-rail to floor) screened to prevent material/tools from falling out?				Y N	
8) Is the crane equipped with a working anti-two-block device?				Y N	
		Name		Signature	
Agency Site Engineer					
Agency Site HSE Officer					
BHEL Site Engineer					
BHEL Site HSE Officer					

Note: A Lift shall be considered Critical Lift and Require Critical Lift Plan in any of the Following Cases

- Lifting more than safe working load of the Lifting equipment
- Tandem Lifting using multiple cranes
- Total load exceeding 75% of capacity of crane
- Lift of unusual difficulty or geometry
- Rigging or Lift over operating units
- Transfer of load from one arrangement to another (eg. From Winch to Chain Pulley Blocks)

- **Complex Lifting operation involving:**
 - many machines / materials
 - complicated routing of slings
 - Lifting of high value items (as defined by Site HSE / PS-Region)
- Any other lift as decided by site HSE / Erection



METHOD STATEMENT & JOB SAFETY ANALYSIS FORMAT

Region: Site: JSA No.

HSEP01:JSA

Rev. 00

Sep 21, 2024

Agency					
Activity Title					
Team Members					
Exact Location of Work					
Reference Erection Drawing No. (if any)					

JOB SAFETY ANALYSIS (JSA)					
S. No.	Job Plan Steps; Attach sketch/ drawing if required	Hazards	Control Measures	Residual Risk (High/ Medium/ Low)	Person responsible for control measure
Additional Precautions/ Control Measures (if any)					

It is certified that all possible steps and hazards in the activity are covered above, which will be carried out by competent personnel under strict supervision and following all contractual and regulatory requirements. All necessary equipment, tools & tackles, safety devices shall be ensured.

(Name)	Submitted by Agency Execution		Reviewed by Agency HSE		Reviewed by BHEL Execution		Reviewed & Approved by BHEL HSE	
(Sign)								
(Date)								



HSEP:12-F10

SAFETY FACILITY REMOVAL PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	Has the area been hard barricaded (tape/rope not to be used), to cordoned off area		
2.	Has signage been displayed to caution others of the hazard		
3.	Has proper illumination been arranged to ensure area is well lit as required		
4.	Are personal fall arrest systems being used around hole-opening as required?		
5.	Is a structurally solid hole-cover, marked with do not remove notice being used		
6.	Has the grating been properly installed with clamp/ nut & bolt/ welded		
7.	Emergency response team & Medical Facilities available.		
8.	Work hazards are identified, controlled and communicated to the worker.		
9.	Method Statements/ Job Safety Analyses attached:		
10.	Other:		
11.	List of Other Permits Required for the Activity (Attached):		
12.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.

A. Permit Requester/ Receiver (Agency):

Site Engineer:
Signature:
Name: _____ Designation: _____

Site HSE Officer:
Signature:
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature:
Name: _____ Designation: _____

(* Permit valid for 7 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HDS3rd Copy: BHEL Site HSE

All parameters from S.No. 1 to 12 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.

Reason for Closure: Job complete

Permit Validity Over

Agency

Site Engineer

Site HSE Officer

Signature:

Signature:

Name:

Name:

BHEL

Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:

Site HSE Officer*

Site Engineer*

Signature:

Signature:

Name:

Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-F11

LOCKOUT TAGOUT WORK PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

Tag No.	Device to be Tagged / Locked I.D. No.	Device Location	Device Position OPEN / CLOSED - ON/OFF	Lock No.	Tag Lock Placed by Name/Sign - Date/Time	Tag Lock Removed by Name/Sign - Date/Time

No.	Item	Yes	Not required / Remarks
1.	Emergency response team & Medical Facilities available.		
2.	Work hazards are identified, controlled and communicated to the worker.		
3.	Method Statements/ Job Safety Analyses attached:		
4.	Other:		
5.	List of Other Permits Required for the Activity (Attached):		
6.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.

A. Permit Requester/ Receiver (Agency):

Site Engineer:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer:
Signature: _____
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature: _____
Name: _____ Designation: _____

(* Permit valid for 7 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HDS3rd Copy: BHEL Site HSE

All parameters from S.No. 1 to 6 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.

Reason for Closure: Job complete

Permit Validity Over

Agency

Site Engineer

Site HSE Officer

Signature:

Signature:

Name:

Name:

BHEL

Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:

Site HSE Officer*

Site Engineer*

Signature:

Signature:

Name:

Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-F12

BEAM / TRUSS/ DUCT/ STRUCTURE FIT-UP & ALIGNMENT PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	Is the alignment procedure & Plan submitted, checked and verified safe (Please attach plan along with drawing, location & capacities of lifting tools & tackles)		
2.	Are all lifting tools & tackles, equipment tested and with valid serial numbers traceable to valid certificates		
3.	Ensured that (for load above 5 Ton) chain pulley blocks will not be used to bear full load of the hanging structure and will only be used for lateral movement. Either Winches, Leashing, Structural supports or similar arrangement will be used for hanging the load		
4.	Ensure that area below is cordoned off and barricaded		
5.	Ensured that all the workers working on the load (if any): (check whichever is applicable) a. have double lanyard safety harnesses which are hooked to a lifeline anchored with rigid structure independent of the hanging load have retractable fall arrestors, which are hooked to a lifeline anchored with rigid structure independent of the hanging load		
6.	Other Permits (Height Work, Hot Work etc. are ensured)		
7.	All necessary PPEs to be ensured		
8.	List of associated workers attached		
9.	Emergency response team & Medical Facilities available.		
10.	Work hazards are identified, controlled and communicated to the worker in daily Safety pep talk.		
11.	Method Statements/ Job Safety Analyses attached:		
12.	Other:		
13.	List of Other Permits Required for the Activity (Attached):		
14.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

*The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.***A. Permit Requester/ Receiver (Agency):**

Site Engineer:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer:
Signature: _____
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature: _____
Name: _____ Designation: _____

(* Permit valid for 7 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HOS3rd Copy: BHEL Site HSE

All parameters from S.No. 1 to 14 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.

Reason for Closure: Job complete

Permit Validity Over

Agency

Site Engineer

Site HSE Officer

Signature:

Signature:

Name:

Name:

BHEL

Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:

Site HSE Officer*

Site Engineer*

Signature:

Signature:

Name:

Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-F13

DRILLING & BLASTING PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	Agency has taken proper approval from Chief controller of explosive as per Explosive act 1884.		
2.	Are made arrangement of safety precaution as per IS 4081 during blasting.		
3.	Are all the workers are trained and proper gate pass with WC policy Document submitted to BHEL.		
4.	Permission have been taken from Local/competent authority/customer		
5.	Blasting carried out with the permission of the engineer-in-charge and by competent and experienced supervisors/ workers who are thoroughly acquainted with the details of handling explosives and blasting operations.		
6.	Are Signboards reading " DANGER-HIGH EXPLOSIVES ", " PROTECTED AREA ", " NO SMOKING ", etc., prominently displayed in front of the magazine.		
7.	Poster of " Blasting Zone " and " Entry restricted " are displayed		
8.	Drilling and Blasting plan including (No of Bore, Nos of detonator and total weight of explosive, area cover during blasting has been approved by BHEL engineer in charge.		
9.	Arrangements in place: Sufficient warning shall be given to enable the people working in the blasting area to get off the danger zone. All persons, other than blaster, shall leave the danger area at least 10 minutes before the blasting starts. The danger zone shall be suitably cordoned off and flagmen posted at important points.		
10.	Barriers at a distance of not less than 400 m, 10 minutes shall close all approaches to the project site, before firing		
11.	Arrangement for Loud wailing note of not less than 1-minute duration shall be sounded on sirens to warn the public before commencement of firing.		
12.	The Indian Explosives Act will be abided for storage of explosives and relevant provisions.		
13.	The position of all holes to be drilled shall be marked out with white paint.		
14.	Loading and drilling shall not be carried out at the same time in the same area.		
15.	Hard Barricading & Edge Protection provided		
16.	Record of explosive shall be maintained(Gate entry, Used, Record should be verified & signed)		
17.	Lighting arrangement, fire Extinguisher deployed		
18.	All holes loaded on a shift shall be fired on the same shift.		
19.	Required basic PPEs (Safety shoes, helmet, Nose mask etc) provided		
20.	Loading and drilling shall not be carried out at the same time in the same area.		
21.	Excavated soil / Construction Material / equipment kept away from the edge.		
22.	First aid in attendance.		
23.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.

A. Permit Requester/ Receiver (Agency):

Site Engineer:
Signature:
Name: _____ Designation: _____

Site HSE Officer:
Signature:
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature:
Name: _____ Designation: _____

(* Permit valid for 1 day as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HDS3rd Copy: BHEL Site HSE

[illegible]

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area. Reason for Closure: Job complete Permit Validity Over	
Agency	
Site Engineer	Site HSE Officer
Signature:	Signature:
Name:	Name:
BHEL	
Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:	
Site HSE Officer*	Site Engineer*
Signature:	Signature:
Name:	Name:



HSEP:12-WOP

WINCH OPERATION PERMITType (Refer Pg 2) (Tick Applicable): Critical ☐ Non-Critical ☐

Project & Unit:

Agency:

Permit No. & Date

Emergency Contact Nos

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	All workers on job are competent and medically fit. Do's Don'ts are explained in TBT		
2.	Winch Operator is competent, has good Eye-sight and hearing and dedicated & authorized to Operate the Winch;		
3.	Rigger & Signaller are competent and aware of Signals		
4.	Walkie-Talkie Sets are available for Communication		
5.	List of authorized operators is displayed near Winch		
6.	TPI Certificate of Winch is available		
7.	Lifting Drawing/ Plan is available in case of complex lift arrangement involving more than 2 pulleys		
8.	Proper & Safe Access to Winch is available and operator seating is conformable		
9.	Adequate lighting provided (for dark hours) as per applicable lux standards		
10.	Winch operator, Signaller and lifting gang understand each other's language		
11.	Area below the hanging load is barricaded and cleared of all activity		
12.	Necessary PPEs are ensured. Height work gang is wearing Safety Harness; Lifeline is available for movement		
13.	Supervisor and Safety Officer are available during lifting activity		
14.	Daily Inspection carried out: Winch brakes are functioning - No slippage; Gears are impacting speed in expected manner; Pulleys are in good condition and rotating freely		
15.	Path of the Winch Rope is clear of any obstructions		
16.	Method Statements/ Job Safety Analyses attached:		
17.	Other:		
18.	List of Other Permits Required for the Activity (Attached):		
19.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

*The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.***A. Permit Requester/ Receiver (Agency):**

Site Engineer:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer:
Signature: _____
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature: _____
Name: _____ Designation: _____

(* Permit valid for 7 days and to be endorsed daily before start of work as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HDS3rd Copy: BHEL Site HSE

All parameters from S. No. 1 to 19 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.	
Reason for Closure: Job complete 	Permit Validity Over
Agency	
Site Engineer	Site HSE Officer
Signature: _____	Signature: _____
Name: _____	Name: _____
BHEL	
Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:	
Site HSE Officer*	Site Engineer*
Signature: _____	Signature: _____
Name: _____	Name: _____

(* or authorized representative duly concurred by Region HSE)

A Lift shall be considered Critical Lift and Require Critical Lift Plan in any of the Following Cases

- Lifting more than safe working load of the Lifting equipment
- Tandem Lifting using multiple cranes
- Total load exceeding 75% of capacity of crane
- Lift of unusual difficulty or geometry
- Rigging or Lift over operating units
- Any other lift as decided by site HSE / Erection
- Transfer of load from one arrangement to another (eg. From Winch to Chain Pulley Blocks)
- Complex Lifting operation involving:
 - multiple machines / materials
 - complicated routing of slings
 - Lifting of high value items (as decided by Site HSE / PS-Region)
- Any other lift as decided by site HSE / Erection



Critical Lift Assessment & Plan

Format No.:
HSEP12:CLF

Annexure of Lifting Activity Work Permit Number:

Page 1 of 2

This form shall be completed prior to performing Critical Lifts

Answer the following questions and complete the required sections of the Lift Assessment & Plan.

If the answer is "yes", follow the instructions. If the answer is "no", continue to the next question.

		Y	N	Section A	Lift Details
1) Will personnel be hoisted? If "yes", complete sections A, B, D.				Type of Lift (Tick one):	Critical ☐ Personnel ☐
2) Will more than one crane be used? If "yes", complete sections A, B, C.				Project / Company Name	
3) Will the lift be more than 3 Meter from the ground and exceed 75% of the cranes/ T&Ps capacity? If "yes", complete sections A, B, C.				Lift Location	
				Pre-lift Meeting Date	
				Lift Date	
				Rigging Supervisor	
4) Will the lift meet any of the conditions listed as stated in the Note on Pg 2 of this document? If "yes", complete sections A, B, C.				Rigger Signature	
				Operator Signature	
				Signal Person Signature	

Section B

Lift Plan

1) **Numbers of T&Ps Used:** Cranes..... Winches..... Chain Pulley Blocks..... Other (Mention).....

2) **Sketch the plan and include the following** (Draw for all applicable configurations; Use additional pages if necessary)

- Weight and location of center of gravity of load & other necessary dimensions
- Rigging Setup & positions of T&Ps used with labels of their Serial Numbers

3) **Mention the Following (Attach additional papers if required):**

- Lifting Steps including load transfer from one arrangement to another & any obstructions to be avoided
- List ratings of the rigging T&Ps used to include number of sling legs, angle of the slings from horizontal, etc.
- Attach TPI Certificates and Internal Inspection records of T&Ps used
- List of Riggers, Foremen, Operators used in the activity

Agency Supervisor/Engineer [Signature with Date]:



Critical Lift Assessment & Plan

Format No.:
HSEPI2:CLF
Page 2 of 2

Annexure of Lifting Activity Work Permit Number:

Section C		Critical Lift Authorization (For all used cranes; Use additional pages (if necessary):			
Crane Manufacturer		Crane Model #		Crane Serial/Unit #	
Crane Model #		Crane Serial/Unit #		Total Boom Length	
Maximum Radius	Swing Direction and Degrees	Boom Angle Pick Set	Lift Elevation	Jib or Boom Ext.? Y N Length:	
(A) Crane Component Weights:		(B) Rated Crane Capacity	Electrical Hazards?	Y N	
Jib/Boom Extension:		(C) Load Weight	Explain:		
Aux. Boom Head:			Overhead Hazards?	Y N	
Block/Headache Ball:			Explain:		
Cable:		(D) Total Lift Weight(A+C)	Underground Hazards?	Y N	
Rigging:			Explain:		
Allowance for Unknown:		% of Crane Capacity(D÷B)	Soil Conditions		
Total Deductions:					
Critical Lift Coordinator Sign & Date			Authorized Contactor Manager Sign & Date		
Section D		Personnel Lift Authorization (For all used cranes; Use additional pages if necessary):			
Crane Manufacturer		Crane Model #		Crane Serial/Unit #	
Platform ID#		Maximum Radius		Number of Occupants	
Platform Rating		(A) Crane Rated Load at Max Radius	(C) Weight of Tools & Occupants		Occupants
(B) Platform Weight			Total Lift Weight(B+C)		
Platform Type (tick one)					
pinned on suspended		*must be less than D			
*Answering "no" to any of the following questions prohibits the lift from being performed.					
1) Does the crane have documentation of the current yearly inspection?				Y	N
2) Is the personnel platform designed by an engineer and is the maximum load capacity documented?				Y	N
3) Is the crane equipped with a positive lock means between the platform and crane?				Y	N
4) Does the weather meet all acceptable conditions? (wind speed ≤40 kmph and no rain or approaching thunderstorms)				Y	N
The following apply only to suspended personnel platforms.					
5) Does the personnel platform have documentation of current yearly inspection?				Y	N
6) Has a load test of 125% of the capacity of the personnel platform and crane been performed?				Y	N
7) Is the guardrail (minimum from mid-rail to floor) screened to prevent material/tools from falling out?				Y	N
8) Is the crane equipped with a working anti-two-block device?				Y	N
		Name	Signature	Date	
Agency Site Engineer					
Agency Site HSE Officer					
BHEL Site Engineer					
BHEL Site HSE Officer					

Note: A Lift shall be considered Critical Lift and Require Critical Lift Plan in any of the Following Cases

- Lifting more than safe working load of the Lifting equipment
- Tandem Lifting using multiple cranes
- Total load exceeding 75% of capacity of crane
- Lift of unusual difficulty or geometry
- Rigging or Lift over operating units
- Transfer of load from one arrangement to another (eg. From Winch to Chain Pulley Blocks)

- **Complex Lifting operation involving:**
 - many machines / materials
 - complicated routing of slings
 - Lifting of high value items (as defined by Site HSE / PS-Region)
- Any other lift as decided by site HSE / Erection



METHOD STATEMENT & JOB SAFETY ANALYSIS FORMAT

Region: Site: JSA No.

HSEP01:JSA

Rev. 00

Sep 21, 2024

Agency					
Activity Title					
Team Members					
Exact Location of Work					
Reference Erection Drawing No. (if any)					

JOB SAFETY ANALYSIS (JSA)					
S. No.	Job Plan Steps; Attach sketch/ drawing if required	Hazards	Control Measures	Residual Risk (High/ Medium/ Low)	Person responsible for control measure
Additional Precautions/ Control Measures (if any)					

It is certified that all possible steps and hazards in the activity are covered above, which will be carried out by competent personnel under strict supervision and following all contractual and regulatory requirements. All necessary equipment, tools & tackles, safety devices shall be ensured.								
(Name)	Submitted by Agency Execution		Reviewed by Agency HSE		Reviewed by BHEL Execution		Reviewed & Approved by BHEL HSE	
(Sign)								
(Date)								



HSEP:12-CBPO&MP

CONCRETE BATCHING PLANT OPERATION & MAINTANANCE PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	All workers on job are competent and medically fit (No Height Phobia) for working at height		
2.	Batching plant operator is trained and having adequate experience and displayed		
3.	Emergency stop buttons available, effective and clearly labelled?		
4.	All the conveyors are adequately guarded and pull-guard switch provided if applicable		
5.	All the chain block/lifting machines, compressors, chains, ropes of conveyor or bucket elevator inspected by competent third party? Test certificate with identity No. available		
6.	Work platforms protected by adequate hand rails (minimum height 1.0 meter)		
7.	Valid PV Test certificate of compressor is available & displayed.		
8.	Elect Compressor MOTOR is powered through RCCB.		
9.	Proper Housekeeping practices are followed at the work area		
10.	Limit switch is provided (and in working condition) for cleaning and maintenance work		
11.	Are the openings where there is free fall hazard covered or fenced securely by railing, toe guards etc?		
12.	Are the moving parts and point of operation of concrete pump, compressor adequately guarded?		
13.	Fire Extinguisher is available		
14.	Additional holding arrangements for mixing compartment opening lid provided (other than single chain block)		
15.	Competent Supervisor and Safety Officer are available during operation		
16.	Emergency response team & Medical Facilities available.		
17.	Work hazards are identified, controlled and communicated to the worker in daily Safety Pep talk.		
18.	Hazardous chemicals (admixtures) stored at isolated location, with proper warning signs, , MSDS displayed		
19.	Method Statements/ Job Safety Analyses attached: SOP/DCP available and displayed		
20.	Inspection of Batching Plant done frequently as per BHEL INSPECTION CHECKLIST		
21.	List of Other Permits Required for the Activity (Attached):		
22.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

*The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.***A. Permit Requester/ Receiver (Agency):**

Site Engineer:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer:
Signature: _____
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature: _____
Name: _____ Designation: _____

Original: Permittee

2nd Copy: Agency Deptt. HOS3rd Copy: BHEL Site HSE

(* Permit valid for 14 days as per overleaf format)

Page 1 of 2

P.T.O.

All parameters from S.No. 1 to 23 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.	
Reason for Closure: Job complete 	Permit Validity Over 
Agency	
Site Engineer	Site HSE Officer
Signature:	Signature:
Name:	Name:
BHEL	
Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:	
Site HSE Officer*	Site Engineer*
Signature:	Signature:
Name:	Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-EMSCOP

ELECT MOTOR SKY CLIMBER OPERATION PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	All workers on job are competent and medically fit (No Height Phobia) for working at height		
2.	Operator is competent, has good Eye-sight and hearing and dedicated & authorized to Operate the SKY CLIMBER		
3.	Walkie-Talkie Sets are available for Communication		
4.	Ensure MANUAL OPERATION of motor is functional.		
5.	Ensure REMOTE of SKY CLIMBER is in working condition & secured		
6.	MAN BASKET structure is in good condition & HANDRAILS are provided as per standard .		
7.	VALID TPI Certificate of SKY CLIMBER is available. SWL is MARKED on SKY CLIMBER.		
8.	MOTOR is powered through RCCB		
9.	Ensure all the ON/OFF & UP/DOWN switches are working .		
10.	Check all lifting tools & tackle, Wire rope are in good condition & free from cut., damage ,rust. etc		
11.	Daily Inspection of SKY CLIMBER carried out as per daily inspection checklist		
12.	Necessary PPEs are ensured. Height work gang is wearing Safety Harness.		
13.	Fire Extinguisher is available in the basket		
14.	All lifting / tightening tools, hand tools/equipment checked and in good condition		
15.	Competent Supervisor and Safety Officer are available during operation		
16.	Wind speed checked within specified limit using calibrated Anemometer		
17.	Emergency response team & Medical Facilities available.		
18.	Work hazards are identified, controlled and communicated to the worker in daily Safety Pep talk.		
19.	Minimum two levels of fall protection have been ensured to the workmen using SKY CLIMBER		
20.	Method Statements/ Job Safety Analyses attached:		
21.	Other:		
22.	List of Other Permits Required for the Activity (Attached):		
23.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

*The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.***A. Permit Requester/ Receiver (Agency):**

Site Engineer:
Signature:
Name: _____ Designation: _____

Site HSE Officer:
Signature:
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature:
Name: _____ Designation: _____

(* Permit valid for 14 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HOS3rd Copy: BHEL Site HSE

P.T.O.

Page 1 of 2

P.T.O.

All parameters from S.No. 1 to 23 on Page 1 of this Permit are to be checked physically. In case any deviation is observed, same is to be rectified, only then work is to be started

Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.

Reason for Closure: Job complete

Permit Validity Over

Agency

Site Engineer

Site HSE Officer

Signature:

Signature:

Name:

Name:

BHEL

Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:

Site HSE Officer*

Site Engineer*

Signature:

Signature:

Name:

Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-ASBWP

ABRASIVE SHOT BLASTING WORK PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	All workers on job are competent and medically fit (No Height Phobia) for working at height		
2.	Authorized & Trained blaster available		
3.	Blasting area is covered from all side and top to avoid release of slag/dust/hazardous particle in the air.		
4.	Blasting area is isolated or cordoned off?		
5.	Hood & Other Necessary PPEs are ensured		
6.	Hose pipes connected with clamped and provision of whip arrestor ensured ?		
7.	Valid Test certificate of compressor is available & displayed		
8.	Elect Compressor MOTOR is powered through RCCB		
9.	Pressure gauge attached to compressor & working properly & have valid calibration certificate available		
10.	Grit material stored in bags and at dry place to avoid contamination		
11.	Emergency Relief Valve is working		
12.	Warning sign boards are deployed around the blasting shed		
13.	Fire Extinguisher is available i		
14.	All hand tools/equipment checked and in good condition		
15.	Competent Supervisor and Safety Officer are available during operation		
16.	Emergency response team & Medical Facilities available.		
17.	Work hazards are identified, controlled and communicated to the worker in daily Safety Pep talk.		
18.	Hopper condition is good		
19.	Method Statements/ Job Safety Analyses attached:		
20.	Other:		
21.	List of Other Permits Required for the Activity (Attached):		
22.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

*The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.***A. Permit Requester/ Receiver (Agency):**

Site Engineer:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer:
Signature: _____
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature: _____
Name: _____ Designation: _____

(* Permit valid for 14 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HOS3rd Copy: BHEL Site HSE

P.T.O.

Page 1 of 2

P.T.O.

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Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.

Reason for Closure: Job complete

Permit Validity Over

Agency

Site Engineer

Site HSE Officer

Signature:

Signature:

Name:

Name:

BHEL

Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:

Site HSE Officer*

Site Engineer*

Signature:

Signature:

Name:

Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-EM&DSP

ERECTION / MODIFICATION & DISMANTLING SCAFFOLDING PERMIT		Permit No. & Date
Project & Unit:		Emergency Contact Nos
Agency:		

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	All workers on job are competent and medically fit (No Height Phobia) for working at height		
2.	Only competent & experienced people have been selected / engaged in Scaffolding erection, modification or dismantling tasks.		
3.	Area of work is effectively cordoned-off / barricaded / illuminated.		
4.	For taking-up / lowering down Scaffolding members / clamps / couplings etc. appropriate ropes / pulleys/ chains etc. have been arranged for use (not to throw any item) & the same have been verified as "fit".		
5.	Scaffold erection or dismantling tasks are being supervised by Experienced Engineer / Competent person.		
6.	Working platforms are protected with handrails & toe-boards.		
7.	Access & Exit (for reach & escape) are safe for use by people.		
8.	Items / members of scaffold. being lowered are removed from the area & stacked correctly		
9.	Proper Housekeeping practices are followed at the work area		
10.	Inspection done frequently as per BHEL INSPECTION CHECKLIST		
11.	Sole board, Base Plate & Base Lift provided		
12.	Free length of the planks should not be more than 150mm on both the sides.		
13.	Bracings Connected at node point Covered all the four sides up to the full height		
14.	All ledger connected to inside the standards & Joints occurred in same bay		
15.	Are all the Pipes / Clamps / platforms / Ladders are of EN & IS standard		
16.	TAGS (RED/YELLOW/GREEN) are provided by competent scaffolding supervisor		
17.	Required PPE's / FBH/RFA & other safety equipment's provided		
18.	Emergency response team & Medical Facilities available.		
19.	Method Statements/ Job Safety Analyses attached: SOP/DCP available and displayed		
20.	Work hazards are identified, controlled and communicated to the worker in daily Safety Pep talk.		
21.	List of Other Permits Required for the Activity (Attached):-		
22.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.

A. Permit Requester/ Receiver (Agency):

Site Engineer:
Signature:
Name: _____ Designation: _____

Site HSE Officer:
Signature:
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature:
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature:
Name: _____ Designation: _____

Original: Permittee

2nd Copy: Agency Deptt. HOS3rd Copy: BHEL Site HSE

(* Permit valid for 14 days as per overleaf format)

Page 1 of 2

P.T.O.

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Daily Work Area Condition Endorsement

Day	Date	Remarks (if any) & Signature with Date & Time				
		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
2						
3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.	
Reason for Closure: Job complete 	Permit Validity Over 
Agency	
Site Engineer	Site HSE Officer
Signature:	Signature:
Name:	Name:
BHEL	
Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:	
Site HSE Officer*	Site Engineer*
Signature:	Signature:
Name:	Name:

(* or authorized representative duly concurred by Region HSE)



HSEP:12-CDBIWP

CONSTRUCTION DB INSTALLATION WORK PERMIT

Permit No. & Date

Project & Unit:

Emergency Contact Nos

Agency:

Exact Location of Work: _____

Nature / Description of Work: _____

Duration of Work Execution *: From Date: _____ to Date: _____ Daily from _____ hrs. to _____ hrs.

Name of Agency Performing the Work: _____

Name of Agency's Site Engineer (Permit Requesting Authority): _____ Sign: _____

Name of Agency's Package In-charge: _____ Sign: _____ Date: _____

The above described work will be done under all the safety precautions mentioned on this permit to work as under during the currency of the Permit.

No.	Item	Yes	Not required / Remarks
1.	All workers on job are competent and medically fit (No Height Phobia) for working at height		
2.	MAIN DB/PDB are INDUSTRIAL TYPE & protected from RAIN & WATER LOGGING		
3.	Voltage rating, DANGER SIGN, Shock-Treatment chart displayed in the installation. Booth		
4.	Competent & valid license holder Electrician deployed for installation		
5.	Ensure MAIN/PDB DOOR lock is in working condition & Insulated MAT is provided/available		
6.	Rubber Hand Gloves available/used by Electrician		
7.	All incoming & outgoing FEEDER have adequate rating of MCCB/RCCB./RCBO.		
8.	DOUBLE EARTH PIT (FOR MAIN DB 440V) available and connected with MAIN DB./PDB		
9.	RCCB/RCBO installed in MAIN DB/PDB is tested and record checked		
10.	All Incomings & Outgoing Cables are properly glanded & terminated with LUGS		
11.	Cables route marker for U/G cable provided and are double insulated, free from CUTS & JOINTS.		
12.	Sketch for installation/connection (SLD) available & pasted.		
13.	Fire Extinguisher (DCP or CO2) & Sand Bucket is available		
14.	General Housekeeping in & around booth/installation found in order		
15.	Competent Supervisor and Safety Officer are available during installation		
16.	Only Industrial type PLUGS & SOCKET are used		
17.	Illumination arrangement available inside BOOTH/INSTALLATION ROOM		
18.	Work hazards are identified, controlled and communicated to the worker in Safety Pep talk.		
19.	MAIN DB/PDB installed have adequate space at FRONT & REAR		
20.	Labelling of incoming & outgoing feeders made		
21.	Job Safety Analyses attached:		
22.	List of Other Permits Required for the Activity (Attached):		
23.	Toolbox Talk Records with (preferably) list of workers involved in the Permit Activity (to be attached)		

*The conditions mentioned in the above checklist are sufficient for safe completion of this activity. These have been checked and found complied before issuing the Permit, and shall be monitored and ensured throughout the currency of this Permit.***A. Permit Requester/ Receiver (Agency):**

Site Engineer:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer:
Signature: _____
Name: _____ Designation: _____

B. Permit Issuer (BHEL):

Site Engineer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

Site HSE Officer/ Authorized Representative:
Signature: _____
Name: _____ Designation: _____

C. Package-in-charge (BHEL):

Signature: _____
Name: _____ Designation: _____

(* Permit valid for 14 days as per overleaf format)

Original: Permittee

2nd Copy: Agency Deptt. HOS3rd Copy: BHEL Site HSE

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Daily Work Area Condition Endorsement

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		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer *	Remarks
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3						
4						
5						
6						
7						

Permit Extension Beyond Initially Requested Hours

Sl. No.	Extension Period		Remarks	Signature with Date & Time			
	From..... (Date, Time)	To..... (Date, Time)		Agency Site Engineer	Agency HSE Officer	BHEL Site Engineer *	BHEL HSE Officer*
1							
2							
3							
4							
5							
6							
7							

Permit Closure After Work Completion

Permit is here by returned after completing the job, ensuring safe removal of men and material and proper housekeeping of the Area.

Reason for Closure: Job complete

Permit Validity Over

Agency

Site Engineer

Site HSE Officer

Signature:

Signature:

Name:

Name:

BHEL

Verified as above and Permit is Closed In case job not complete, New Permit No. Issued:

Site HSE Officer*

Site Engineer*

Signature:

Signature:

Name:

Name:

(* or authorized representative duly concurred by Region HSE)



**BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR WESTERN REGION**



GUIDELINES FOR REVERSE AUCTION - 2024

(AA:SSP:RA:00 dated 05.12.2024)

ABRIDGED VERSION

BHEL, New Delhi

Guidelines for Reverse Auction – 2024

Doc. No. AA:SSP:RA:00
Dated: 05.12.2024

1.0 Scope

This document describes the guidelines to be followed by BHEL for conducting Reverse Auction (RA) for procurement of material/ works/ services. The RA shall follow the philosophy of English Reverse (No ties).

English Reverse (No ties) is a type of auction where the starting price and bid decrement are announced before start of online reverse auction. The interested bidders can thereupon start bidding in an iterative process wherein the lowest bidder at any given moment can be displaced by an even lower bid of a competing bidder, within a given time frame. The bidding is with reference to the current lowest bid in the reverse auction. All bidders will see the current lowest quoted price and their rank. The term 'No ties' is used since more than one bidder cannot give an identical price, at a given instant, during the reverse auction. In other words, there shall never be a tie in the bids.

3.0 Upfront declaration in NIT

Decision to go for RA would be taken before floating of the tender. In case it is decided to go for RA, same shall be declared upfront in NIT by inserting the following **clause**:

"BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com) for this tender. RA shall be conducted among the techno-commercially qualified bidders.

Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered for RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed price bid along with applicable loading, if any, shall be considered for ranking."

6.0 Business rules for RA

Model Annexure-I is attached.

7.0 Role of Service Provider

- (1) Acknowledge the receipt of mandate from BHEL.
- (2) Contact the bidders, provide business rules and train them, as required.
- (3) Get the process compliance form (annexure III) signed by all the

Guidelines for Reverse Auction – 2024

Doc. No. AA:SSP:RA:00
Dated: 05.12.2024

- participating bidders before RA event.
- (4) Conduct the event as per the contract and business rules.
- (5) Submit the Login Reports, Results, History sheet and authorized final bid from the bidders.
- (6) To obtain price breakup from successful bidder and submit the same to BHEL.

10.0 Reverse Auction Process

- 10.1. Reverse Auction will be conducted if two or more bidders are techno-commercially qualified.
- 10.2. Wherever RA is opted in a tender, the techno-commercially qualified H1 will not be allowed to participate in RA. In case more than one H1 bidder quote the same rate, the Price Offer received last, as per the time log of the Portal, shall be removed first, on the principle of last in, first out by the system.
- 10.3. However, H1 will be allowed to participate in RA in the following cases:
 - a) If number of techno-commercially qualified bidders are only 2 or 3.
 - b) In case Primary product of only one OEM is left in contention for participation in RA on elimination of H1.
 - c) For cases where there are more than 3 techno-commercially qualified bidders, if lowest bidder in sealed price bid is non-MSE and H-1 is eligible MSE and H-1 price is coming within price band of 15% of Non-MSE lowest bidder.
 - d) For cases where there are more than 3 techno-commercially qualified bidders, if lowest bidder in sealed price bid is non-MII and H-1 is eligible MII and H-1 price is coming within price band of 20% of Non-MII lowest bidder.
- 10.4. Only those bidders who submit the online sealed bid within the scheduled time shall be eligible to participate further in the RA process.
- 10.7. During RA, all bidders will see their rank and current L1 price on the screen. Once the RA is done, the ranking status would be based on the last quoted price of the bidder(s) irrespective of the quote received in RA or sealed price bid.

Guidelines for Reverse Auction – 2024

Doc. No. AA:SSP:RA:00
Dated: 05.12.2024

- 10.8 No bidder shall be allowed to lower its bid below the current L1 by more than 5 decrements at one go.

13.0 Others

- 13.2 In case of enquiry through e-Procurement, the sealed electronic price bid (e-bid) is to be treated as sealed price bid.
- 13.3 BHEL will inform bidders the details of service provider who will provide business rules, all necessary training and assistance before commencement of online bidding.
- 13.4 Bidders will be advised to read the 'Business Rules' indicating details of RA event carefully, before reverse auction event.

---XXX---

ABRIDGED VERSION

Guidelines for Reverse Auction – 2024

Doc. No. AA:SSP:RA:00
Dated: 05.12.2024

Business Rules for Reverse Auction

Annexure – I

This has reference to tender no **{tender number....date...}**. BHEL shall finalise the Rates for the supply of **{item name}** through Reverse Auction mode. BHEL has made arrangement with M/s. **{Service provider}**, who shall be BHEL's authorized service provider for the same. Bidders should go through the instructions given below and submit acceptance of the same.

The technical & commercial terms are as per (a) BHEL Tender Enq. No. {...} dated {...}, (b) Bidders' technical & commercial bid (in case of two part bid) and (c) subsequent correspondences between BHEL and the bidders, if any.

1. Procedure of Reverse Auctioning

- i. Price bids of all techno-commercially qualified bidders shall be opened.
- ii. **Reverse Auction:** The 'bid decrement' will be decided by BHEL.
- iii. The lowest bidder in sealed price bid shall be shown as current L1 automatically by the system and no acceptance of that price is required. System shall have the provision to indicate this bid as current L1.
- iv. Bidders by offering a minimum bid decrement or the multiples thereof can displace a standing lowest bid and become "L1" and this continues as an iterative process. However, no bidder shall be allowed to lower its bid below the current L1 by more than 5 decrements at one go.
- v. After the completion of the reverse auction, the Closing Price shall be available for further processing.
- vi. Wherever the evaluation is done on total cost basis, after Reverse Auction, prices of individual line items shall be reduced on pro-rata basis.

2. Schedule for reverse auction: The Reverse Auction is tentatively scheduled on {date}: ;{start time}: ;{Close Time: }.

3. Auction extension time: If a bidder places a bid in the last {...} minutes of closing of the Reverse Auction and if that bid gets accepted, then the auction's duration shall get extended automatically for another {...} minutes,

Guidelines for Reverse Auction – 2024

Doc. No. AA:SSP:RA:00
Dated: 05.12.2024

Business Rules for Reverse Auction

Annexure – I

for the entire auction (i.e. for all the items in the auction), from the time that bid comes in. Please note that the auto-extension will take place only if a bid comes in those last {...} minutes and if that bid gets accepted as the lowest bid. If the bid does not get accepted as the lowest bid, the auto-extension will not take place even if that bid might have come in the last {...} minutes. In case, there is no bid in the last {...} minutes of closing of Reverse Auction, the auction shall get closed automatically without any extension. However, bidders are advised not to wait till the last minute or last few seconds to enter their bid during the auto-extension period to avoid complications related with internet connectivity, network problems, system crash down, power failure, etc.

The above process will continue till completion of Reverse Auction.

Complaints/ Grievances, if any, regarding denial of service or any related issue should be given in writing thru e-mail/ fax to M/s. {Service provider} with a copy to BHEL within 15 minutes prior to initial closing time of Reverse Auction.

4. **Bid price:** The Bidder has to quote the {...} Price inclusive of Packing & Forwarding charges, all the routine & type tests as per tender scope, taxes, duties, freight and insurance as specified in tender document, including loading (if indicated by BHEL due to deviations in technical/ commercial terms) for the Items specified. Details are as shown in Excel Sheet for calculation of total cost to BHEL (To be specified by Unit as per NIT conditions).
5. **Bidding currency and unit of measurement:** Bidding will be conducted in Indian Rupees per Unit of the material as per the specifications {...}

In case of foreign currency bids, exchange rate (TT selling rate of State Bank of India) as on scheduled date of tender opening (Part-I bid) shall be considered for conversion in Indian Rupees. If the relevant day happens to be a Bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.

6. **Validity of bids:** Price shall be valid for {... days} from the date of reverse auction. These shall not be subjected to any change whatsoever.

Guidelines for Reverse Auction – 2024

Doc. No. AA:SSP:RA:00
Dated: 05.12.2024

Business Rules for Reverse Auction

Annexure – I

7. **Lowest bid of a bidder:** In case the bidder submits more than one bid, the lowest bid at the end of Reverse Auction will be considered as the bidder's final offer to execute the work.
8. Unique user IDs shall be used by bidders during bidding process. All bids made from the Login ID given to the bidders will be deemed to have been made by the bidders/ bidders' company.
9. **Post auction procedure:** BHEL will proceed with the Lowest Bid in the Reverse Auction for further processing.
10. Any commercial/ technical loading shall be separately intimated to respective bidders prior to RA. The excel sheet provided in this regard shall cover all these aspects. Commercial/ technical loading if any, shall be added by the respective bidder in its price during Reverse Auction. Modalities of loading & de-loading shall be separately intimated to the bidders. The responsibility for correctness of total cost to BHEL shall lie with the bidders.
11. Reverse auction shall be conducted by BHEL (through M/s {Service Provider}), on pre-specified date, while the bidders shall be quoting from their own offices/ place of their choice. Internet connectivity shall have to be ensured by bidders themselves.

During the RA process if a bidder is not able to bid and requests for extension of time by FAX/ email/ phone then time extension of additional 15 minutes will be given by the service provider provided such requests come before 5 minutes of auction closing time. However, only one such request per bidder can be entertained.

In order to ward-off contingent situation of connectivity failure bidders are requested to make all the necessary arrangements/ alternatives whatever required so that they are able to circumvent such situation and still be able to participate in the reverse auction successfully. Failure of power or loss of connectivity at the premises of bidders during the Reverse auction cannot be the cause for not participating in the reverse auction. On account of this, the time for the auction cannot be extended and neither BHEL nor M/s. {Service provider} is responsible for such eventualities.

Guidelines for Reverse Auction – 2024

Doc. No. AA:SSP:RA:00
Dated: 05.12.2024

Business Rules for Reverse Auction

Annexure – I

12. Proxy bids: Proxy bidding feature is a pro-bidder feature to safe guard the bidder's interest of any internet failure or to avoid last minute rush. The proxy feature allows bidders to place an automated bid in the system directly in an auction and bid without having to enter a new amount each time a competing bidder submits a new offer. The bid amount that a bidder enters is the minimum that the bidder is willing to offer. Here the software bids on behalf of the bidder. This obviates the need for the bidder participating in the bidding process until the proxy bid amount is decrementally reached by other bidders. When proxy bid amount is reached, the bidder (who has submitted the proxy bid) has an option to start participating in the bidding process.

The proxy amount is the minimum amount that the bidder is willing to offer. During the course of bidding, the bidder cannot delete or change the amount of a proxy bid.

Bids are submitted in decrements (decreasing bid amounts). The application automates proxy bidding by processing proxy bids automatically, according to the decrement that the auction originator originally established when creating the auction, submitting offers to the next bid decrement each time a competing bidder bids, regardless of the fact whether the competing bids are submitted as proxy or standard bids. However, it may please be noted that if a manual bid and proxy bid are submitted at the same instant manual bid will be recognized as the L1 at that instant.

In case of more than one proxy bid, the system shall bid till it crosses the threshold value of 'each lowest proxy bid' and thereafter allow the competition to decide the final L1 price.

Proxy bids are fed into the system directly by the respective bidders. As such this information is privy only to the respective bidder(s).

13. Bidders are advised to get fully trained and clear all their doubts such as refreshing of Screen, quantity being auctioned, tender value being auctioned etc from M/s {Service provider}.
14. M/s. {Service provider}, shall arrange to demonstrate/ train the bidder or bidder's nominated person(s), without any cost to bidders. M/s. {Service provider}, shall also explain the bidders, all the business rules related to the

Guidelines for Reverse Auction – 2024

Doc. No. AA:SSP:RA:00
Dated: 05.12.2024

Business Rules for Reverse Auction

Annexure – I

Reverse Auction. Bidders are required to submit their acceptance to the terms/ conditions/ modalities before participating in the Reverse Auction in the process compliance form as enclosed. Without this, the bidder will not be eligible to participate in the event.

15. Successful bidder shall be required to submit the final prices (L1) in prescribed format (Annexure – VI) for price breakup, quoted during the Reverse Auction, duly signed and stamped as token of acceptance without any new condition (other than those already agreed to before start of auction), after the completion of auction to M/s. {Service provider} besides BHEL within two working days of Auction without fail.
16. Any variation between the final bid value and that in the confirmatory signed price breakup document will be considered as tampering the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
17. Bidders' bid will be taken as an offer to execute the work/ supplies the item as per enquiry no. {...} dt. {...}. Bids once made by the bidder, cannot be cancelled/ withdrawn and bidder shall be bound to execute the work as mentioned above at bidder's final bid price. Should bidder back out and not execute the contract as per the rates quoted, BHEL shall take action as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
18. Bidders shall be able to view the following on their screen along with the necessary fields during Reverse Auction:
 - a. Leading (Running Lowest) Bid in the Auction (only total price of package)
 - b. Bid Placed by the bidder
 - c. Start Price
 - d. Decrement value
 - e. Rank of their own bid during bidding as well as at the close of auction.
19. BHEL's decision on award of contract shall be final and binding on all the Bidders.
20. BHEL reserves the right to extend, reschedule or cancel the Reverse Auction process at any time, before ordering, without assigning any reason, with

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Business Rules for Reverse Auction

Annexure – I

intimation to bidders.

21. BHEL shall not have any liability to bidders for any interruption or delay in access to the site irrespective of the cause. In such cases, the decision of BHEL shall be binding on the bidders.
22. Other terms and conditions shall be as per bidder's techno-commercial offers and other correspondences, if any, till date.
23. If there is any clash between this business document and the FAQ available, if any, in the website of M/s. {Service provider}, the terms & conditions given in this business document will supersede the information contained in the FAQs. Any changes made by BHEL/ service provider (due to unforeseen contingencies) after the first posting shall be deemed to have been accepted if the bidder continues to access the portal after that time.
24. Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as per extant BHEL guidelines for suspension of business dealings (as available on www.bhel.com), shall be initiated by BHEL.

CORRIGENDUM – 1

TO

GENERAL CONDITIONS OF CONTRACTS

GCC – BOP (Rev No. 00)

wef 14/08/2024



BHARAT HEAVY ELECTRICALS LIMITED

GCC BOP Cl. No.	Existing clause	Read as
Clause no 16.1 of GENERAL COMMERCIAL TERMS & CONDITIONS (Page 15 of 31)	Timely dispatch/delivery and completion of other schedules as stipulated in Order/Contract shall be the essence of Order/Contract. If the Seller/Contractor fails to complete the dispatch/delivery and other schedules within the time period stipulated in Order/Contract, or within any extension of time granted by Purchaser, it shall be lawful for purchaser to recover damages for breach of Order/Contract and hereunder.	Timely dispatch/delivery, Erection & commissioning and completion of other schedules as stipulated in Order/Contract shall be the essence of Order/Contract. If the Seller/Contractor fails to complete the dispatch/delivery, Erection & commissioning and other schedules within the time period stipulated in Order/Contract, or within any extension of time granted by Purchaser, it shall be lawful for purchaser to recover damages for breach of Order/Contract and hereunder.
Clause no 16.2.1 (a) of GENERAL COMMERCIAL TERMS & CONDITIONS (Page 15 of 31)	a) LD on mandatory spares portion where delivery for mandatory spares is defined separately in the NIT. LD shall be applicable @ ½ percent and applicable GST thereon, of the total mandatory spares portion contract value excluding GST per week or part thereof, limiting to 10% of total contract value of mandatory spares excluding GST.	a) LD on mandatory spares - Purchaser reserves the right to recover from the Seller/ Contractor, as agreed liquidated damages if dispatch/delivery of the mandatory spares is delayed beyond the contractual completion date or extension thereof as per the period stipulated in the Order/ Contract and not by way of penalty, a sum equivalent to half (½) percent of the total contract price (mandatory spares) per week or part thereof, limited of ten (10) percent of the total contract price (mandatory spares) excluding GST.
Clause no 16.2.1 (b) of GENERAL COMMERCIAL TERMS & CONDITIONS (Page 16 of 31)	(b) LD on Supply and E&C- Purchaser reserves the right to recover from the Seller/ Contractor, as agreed liquidated damages and not by way of penalty, a sum equivalent to half (½) percent and applicable GST thereon, of the total contract price (main supply and E&C) excluding GST per week or part thereof, subject to a maximum of ten (10) percent of the total contract price (main supply and E&C) excluding GST, if E&C completion of the package is delayed beyond the contractual completion date or extension thereof as per the period stipulated in the Order/ Contract. Liquidated Damages will not be deducted from supply payment for delay in supply. LD on Mandatory spares shall be dealt as per clause (a) above.	(b1) LD on Supply- Purchaser reserves the right to recover from the Seller/ Contractor, as agreed liquidated damages if dispatch/delivery of the package (Main supply) is delayed beyond the contractual completion date or extension thereof as per the period stipulated in the Order/ Contract and not by way of penalty, a sum equivalent to half (½) percent of the total contract price (main supply) per week or part thereof, limited of ten (10) percent of the total contract price (main supply) excluding GST. (b2) LD on E&C- Purchaser reserves the right to recover from the Seller/ Contractor, as agreed liquidated damages if E&C completion of the package is delayed beyond the contractual completion date or extension thereof as per the period stipulated in the Order/ Contract and not by way of penalty, a sum equivalent to half (½) percent of the total contract price (supply+ E&C) per week or part thereof, limited to ten (10) percent of the total contract price (supply + E&C) excluding GST. However, total LD for delay in supply and E&C shall be limited to 10% of total contract price (supply + E&C) excluding GST.

GCC BOP Cl. No.	Existing clause	Read as
Clause no 16.2.1 (c) of GENERAL COMMERCIAL TERMS & CONDITIONS (Page 16 of 31)	c) LD on service portion (PG test, O&M, AMC, etc.) where delivery for services are defined separately in the NIT. LD shall be applicable @ ½ percent and applicable GST thereon, of the total service portion contract value excluding GST per week or part thereof subject to a maximum of ten (10) percent of the total contract value of service portion excluding GST.	c) LD on service portion (PG test, O&M, AMC, etc.) where delivery for services are defined separately in the NIT. LD shall be applicable @ ½ percent of the total service portion contract value per week or part thereof limited to ten (10) percent of the total contract value of service portion excluding GST.
NOTE of clause no. 16.0 of GENERAL COMMERCIAL TERMS & CONDITIONS (Page 16 of 31)	(i) Liquidated Damages will not be deducted from supply payment for delay in supply.	Stands deleted

GENERAL CONDITIONS OF CONTRACTS

GCC – BOP (Rev No. 00)

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BHARAT HEAVY ELECTRICALS LIMITED

	BHARAT HEAVY ELECTRICALS LIMITED (BHEL)	GENERAL CONDITIONS OF CONTRACT GCC – BOP Revision no. 00	DEFINITION OF TERMS

DEFINITION OF TERMS

Throughout the Tender Documents including the Enquiry Letter, the following words shall have the meanings assigned to them herein, unless the subject matter or the context requires otherwise.

- 1 **Purchaser / Buyer** means Bharat Heavy Electricals Limited (the term "Purchaser/Buyer" may hereinafter also be referred to as 'BHEL') incorporated under the Companies Act, 1956 having its registered office at BHEL House, Siri Fort, New Delhi-110049, India and inter alia having a Unit/ Region/ Division at any place in India and abroad The term 'Purchaser/Buyer' shall be deemed to include its successors and assigns.
- 2 **Owner** shall mean the **Customer** or **Client** for whose project the enquiry is issued by Purchaser and shall include its successors and assigns as well as authorized officer(s)/ representative(s).
- 3 **Consultant** shall mean the agency appointed by Owner or Purchaser to provide consultancy services for the project and shall include its successors and assigns as well as authorized officer(s)/ representative(s).
- 4 **Tenderer** shall mean the Person(s) / HUF/ AOP (Association of Persons)/ Firm / Company / a Joint Venture/ Consortium or any such other Organization/ Enterprise which quotes against the Tender Enquiry issued by **Purchaser/ Buyer**. It may also be referred as **Bidder** or **Vendor**.
- 5 **'Order / Contract'** shall mean and include the **Purchase/ Work Order** along with bid/ tender/ offer, the bidding conditions, clarifications issues by the buyer as regards the tender or the bidding conditions, covering letter, letter of intent / acceptance / award, specific agreement, the General Conditions of Contract and Special Conditions of Contract for commercial conditions of Purchase, specific agreement on technical conditions, special technical conditions and technical conditions/ specifications, Inspection/ Quality Plan, Schedule of Prices and Quantities, Drawings, if any enclosed or to be provided by the Buyer or his authorized nominee, Integrity pact (as and when if applicable), and any subsequent amendments hereto as may be mutually agreed upon, (It may also be referred to as the "Order"). Any conditions or terms stipulated by the bidder in the tender/offer or subsequent letters shall not form part of the Contract unless specifically accepted in writing by BHEL before award of the order. 'Parties to the Contract' shall mean the Seller and the Buyer as named in the main body of the Purchase Order.
- 6 **Seller/ Contractor** shall mean the Firm/ Company/ Organization with whom the Order/ Contract is made and shall be deemed to include its successors, representatives, heirs, executors, administrators and assigns *as agreed between parties to the contract*, as the case may be. It may also be referred as **Supplier or Vendor**.
- 7 **Sub-Contractor/ sub-vendor** shall mean the person/ firm/ company/ organization to whom any part of the work has been sub-contracted by Seller/ Contractor, with the written consent of Purchaser, and shall include sub-contractor's heirs, executors, administrators, representatives and assigns *as agreed between Seller and BHEL*.

Note - The terms used in this document like Tenderer/ Bidder/ Vendor/ Seller/ Contractor/ Supplier can be used interchangeably. In the same way the terms used in this document like Purchaser/Buyer/BHEL can be used interchangeably.

- 8 **Engineer** shall mean the authorized officer of Purchaser to act as the engineer on its behalf for the purpose of the Order/ Contract.
- 9 **Site** shall mean and include the land and place on which the project station related facilities are to be constructed and any adjacent land which may be allocated or used by Owner, *buyer* or Seller/ Contractor in performance of the Order/ Contract.
- 10 **Acceptance Tests** shall mean such tests as prescribed in specifications and/ or tests mutually agreed upon by Purchaser and Seller/ Contractor, to be performed by Seller/ Contractor during the process at vendors'/ sub vendors'

	BHARAT HEAVY ELECTRICALS LIMITED (BHEL)	GENERAL CONDITIONS OF CONTRACT GCC – BOP Revision no. 00	DEFINITION OF TERMS
works and after/ <i>during the erection/ commissioning</i> of equipment to establish its satisfactory operation as per specifications. 11 Commissioning shall mean all activities inter alia successful/ satisfactory completion of Initial Operation and readiness of the contracted/ ordered package / plant and materials unit wise/ set wise/ lot wise/ individual sub-system etc. including associated stand by for TRIAL operation. This will include all consumables and inputs required for pre-commissioning. (Refer Annexure-XII) 12 Trial Operation or Reliability Run shall mean continuous integrated operation of the contracted/ ordered package / plant and materials unit wise/ set wise/ lot wise/ individual sub-system etc. Under varying loads as proof of satisfactory operation for a specified period for further beneficial use in power plant/Unit. The procedure to be agreed during detailed engineering (Refer Annexure-XII). 13 Inspection Agency (IA) shall mean person(s) authorized by Purchaser / Owner to inspect the stores as per Order/ Contract at <i>Vendor's/ Contractor's/ Sub-Contractor's</i> works. Vendors to raise inspection call on BHEL – CQS website. 14 Month shall mean calendar month and week shall mean 7 days. 15 Consignee shall mean the official(s)/ person(s) to whom the stores are required to be delivered in the manner indicated in the Order/ Contract. 16 Plant/ Equipment/ Stores shall mean the goods, machinery, components, parts, spares etc. required to be supplied by Seller/ Contractor as per Order/ Contract. 17 Contract Engineer (CE) shall mean the official who signs the Order/ Contract on behalf of Purchaser. 18 Site Engineer shall mean official authorized by owner to receive and verify the in-coming stores, and issue Material Receipt Certificate (MRC)/ Stores Receipt Voucher (SRV). 19 Site Inspection Agency (Site IA) shall mean person(s) authorized by Purchaser/ Owner to inspect the stores/ works included in Order/ Contract at the Project Site. 20 Performance Guarantee Test: A test to be conducted by the vendor and witnessed by owner/ purchaser, as per procedure submitted by the vendor and approved by owner/ purchaser describing the objective of the test, detailed procedures to test the guaranteed parameters, obligations as per the order/ contract, results presentation procedure and verification and acceptance criterion (Refer Annexure-XII) 21 Technical Specification / Specification shall mean the all the Specifications wherein detailed description of the design and materials based on which project is to be delivered by Supplier. 22 Wherever term 'Due date and time' is referred, it implies Indian Standard Time and date. 23 HANDING OVER package wise definition in line with Annexure-XII 24 GENERAL - The words incorporating singular shall include plural and vice-versa, the words incorporating masculine gender shall include feminine gender and vice-versa, and the words incorporating persons shall include bodies, corporate, limited liability companies, partnership and other legal entities.			

	BHARAT HEAVY ELECTRICALS LIMITED (BHEL)	GENERAL CONDITIONS OF CONTRACT GCC – BOP Revision no. 00	ABBREVIATIONS

ABBREVIATIONS

AWB	Airway Bill
AMC	Annual Maintenance Contract
BG	Bank Guarantee
BL	Bill of Lading
BOCW	The Building and other Construction Workers (Regulation of Employment & Conditions of Service) Act
BOQ	Bill of Quantity
CAN	Cargo Arrival Notice
C&F/ CFR	Cost and Freight
CFS	Container Freight Station
CIF	Cost, Insurance and Freight
COO	Certificate of Origin
CQ	Corporate Quality
DDP	Delivery Duty Paid
DMS	Document Management System
EMD	Earnest Money Deposit
E&C	Erection and Commissioning
FCA	Free Carrier
FCL	Full Container Load
FIR	First Information Report
FOB	Free on Board
FOR	Free on Rail/ Road
FTL	Full Truck Load
GCC	General Conditions of Contract
GR	Goods Receipt
GST -	CGST/IGST/UTGST Central/ Integrated/ Union Territory Goods and Services Tax
H1 Bidder	Bidder quoting highest cost to BHEL
HSE	Health Safety and Environments Guidelines
HQ/ Hqrs	Headquarter
HUF	Hindu Undivided Family
ICC	International Chamber of Commerce
IGM	Import General Manifest
IP	Integrity Pact
IEM	Independent External Monitor
L1 Bidder	Bidder quoting lowest cost to BHEL
LC	Letter of Credit
LD	Liquidated Damages
LOA / LOI	Letter of Award / Letter of Intent
LR	Lorry Receipt
MCE	Marine cum Erection

	BHARAT HEAVY ELECTRICALS LIMITED (BHEL)	GENERAL CONDITIONS OF CONTRACT GCC – BOP Revision no. 00	ABBREVIATIONS

MDCC	Material Dispatch Clearance Certificate
MRC	Material Receipt Certificate
MSMED	Micro Small and Medium Enterprises Development
NCR	National Capital Region
NIT	Notice Inviting Tender
NND	Non Negotiable Document
OBL	Ocean Bill of Lading
O&M	Operation & Maintenance
ORC	Over run charges
PBG	Performance Bank Guarantee
PEM	Project Engineering Management
P&ID	Process & Instrumentation Diagram
PO	Purchase Order
PQR	Pre-Qualification Requirement
PTL	Part Truck Load
PVC	Price Variation Clause
QA	Quality Assurance
QS	Quality Surveillance
RA	Reverse Auction
RBI	Reserve Bank of India
RFQ	Request for Quotation
RR	Railway Receipt
SBI	State Bank of India
SCC	Special Conditions of Contract
SCE	Storage cum Erection
T&P	Tools & Plants
TReDS	Trade Receivables Discounting System
IEC	Independent Experts Committee



**BHARAT HEAVY
ELECTRICALS
LIMITED**

(BHEL)

**GENERAL CONDITIONS
OF CONTRACT
GCC – BOP**

Revision no. 00

**INSTRUCTIONS TO
BIDDERS**

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	BHARAT HEAVY ELECTRICALS LIMITED (BHEL)	GENERAL CONDITIONS OF CONTRACT GCC – BOP Revision no. 00	INSTRUCTIONS TO BIDDERS

1.0 GENERAL INSTRUCTIONS

- 1.1 Tenderers are advised to study all the tender documents carefully. Any submission of tender by the tenderer shall be deemed to have been done after careful study and examination of the tender documents and with full understanding of the implications thereof. The specifications and terms & conditions shall be deemed to have been accepted unless otherwise specifically commented upon in 'Deviation' sheet (refer annexure-II-Cost of Withdrawal) by the tenderer in his offer. Non-compliance with any of the requirements and instructions in the Tender Enquiry may result in rejection of the tender.
- 1.2 The general terms of business or sale of the bidder shall not apply to the Buyer or the Contract unless specifically agreed to otherwise in the Contract. Any other terms and conditions of the bidders attached/ referred in the bid of the Bidder against the tender enquiry will be treated as rejected by the Buyer unless specifically agreed to in the Contract.
- 1.3 Any deviations from or additions to these 'General Conditions of Contract' require Buyer's express written consent before awarding the order/ contract.
- 1.4 Acceptance, receipt of shipments or services or effecting payment as regards any such shipments or services shall not mean that the general terms of business or sale of the seller have been accepted. Any additional and new terms & conditions mentioned in any of the document submitted by vendor after award of contract shall have no effect.
- 1.5 Purchase orders/ Work orders/ Contracts, agreements and amendments thereto shall be binding if made or confirmed by the Buyer in writing. Only the Purchasing/ *Contracting* department of the Buyer is authorized to issue the Purchase Order (Contract/Work Order) or any amendment thereto. Any document purporting to be a Contract/Order or an amendment thereto issued by any person not from the Purchasing Department of the Buyer will not be binding on the Buyer and will not be deemed to create any mutual rights and obligations for the Buyer and the Seller/Bidder.
- 1.6 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following order of precedence:
 - i. Amendments to Purchase Order/ Work Order/ Framework Agreement
 - ii. Purchase Order/ Work Order/ Framework Agreement
 - iii. Letter of intent (LOI)/ Letter of Award (LOA)
 - iv. Clarifications agreed between Buyer and Seller as regards to the tender or the bidding conditions
 - v. The final set of deviations acceptable to purchaser with loading as specified in relevant section.
 - vi. Corrigenda to NIT, with those of later date having precedence over those of earlier date
 - vii. Enquiry letter and annexures except documents listed in point no (vii) to (ix) below
 - viii. Technical specifications
 - ix. Special Conditions of Contract (SCC)
 - x. General Conditions of Contract (GCC)
- 1.7 In the GCC, wherever references are being made for any particular web links, bidder to properly apprise itself about these web links before submission of the bid.

	BHARAT HEAVY ELECTRICALS LIMITED (BHEL)	GENERAL CONDITIONS OF CONTRACT GCC – BOP Revision no. 00	INSTRUCTIONS TO BIDDERS

2.0 PROCEDURE FOR SUBMISSION & OPENING OF TENDERS

- 2.1 Bids shall be submitted strictly in accordance with the requirements of tender documents. Incomplete offers are liable to be rejected.
- 2.2 Tenders shall be submitted in **Two parts** (or as specified in NIT) on or before the Due Date and time indicated in the NIT/ RFQ.

PART – I: Techno-Commercial Bid

comprising of Technical Offer, Annexure-I of GCC, Commercial Terms & Conditions, Unpriced copy of Price Bid & Annexure II of GCC, PQR documents (if applicable) in two sets or as specified in NIT.

PART – II: Price Bid

Containing Prices, cost of withdrawal of deviation as per Annexure-II of GCC, to be submitted in original, strictly, as per Price Schedule of BHEL for complete scope of Tender Enquiry.

NOTE:

Offers are liable to be rejected for changes made by bidders in the Price Schedule, except those specified in the unpriced bid and accepted by Purchaser.

Where-ever it is specified in NIT that the bids are to be submitted on BHEL e-procurement portal, bidder to upload the bid documents on specified portal and no paper bids are required to be submitted.

- 2.2.1 PART-I (Techno-Commercial bid) shall be opened on Due Date and time specified in the NIT/ RFQ, or extension thereof, in presence of bidders who may like to attend. In case of e-bid, system generated intimation of bid opening to bidders will be applicable (i.e. presence of bidders is not applicable in case of e-bid). Incomplete offers are liable to be rejected. Purchaser reserves the right to open both Part-I and Part-II together.
- 2.2.2 PART-II containing prices shall be submitted along with Part-I but in a separate sealed cover. Corrections/ amendments shall be properly authenticated; else the offer is liable to be rejected. Intimation for Part-II opening shall be given to all the techno-commercially acceptable bidders and opening of bids shall be done in presence of tenderers who may like to attend. In case of e-bid, system generated intimation of bid opening to bidders will be applicable (i.e. presence of bidders is not applicable in case of e-bid).
- 2.2.3 Any discount/ revised offer submitted by a bidder on its own shall be accepted provided it is received on or before the due date and time of offer submission. The discount shall be applied on pro-rata basis to all items unless specified otherwise by the bidder.
Unsolicited discounts/revised offers given after due date and time of offer submission shall not be accepted.

In case there is no change in the technical scope and/or specifications and/or commercial terms & conditions, the bidder/s shall not be allowed to change his/their price bids after the due date, within the validity period.

In case of changes in scope and/or technical specification and/or commercial terms & conditions, having price implications, techno-commercially acceptable bidders shall be asked by BHEL (after freezing the scope, technical specifications and commercial terms & conditions) to submit the impact of such changes on their price bid. A cut-off date and time shall be given to all the techno-commercially acceptable bidders to submit the impact on their price bids.

	BHARAT HEAVY ELECTRICALS LIMITED (BHEL)	GENERAL CONDITIONS OF CONTRACT GCC – BOP Revision no. 00	INSTRUCTIONS TO BIDDERS

In the event of any bidder, after finalizing the technical specification & scope of supply, opting to revise and submit their latest price bid instead of submitting impact on their price bid asked by BHEL, then their original price (i.e. the previous bid) shall also be opened.

Price Impact/ Discount/ Revised Price Bid shall be duly superscribed as:

“Price Impact / Discount/ Revised Price Bid (Part-II) (delete whichever is not applicable), Revision No. against Tender Enquiry No. _____ dated _____”

2.3 After technical & commercial examination of the offers received and clarifications obtained (if required), Part-II (Revised Price Bid/ Original Price Bid along with Price Impact and Discount, if any) shall be opened, for which the date and time shall be intimated to technically and commercially acceptable bidders in case of public opening. BHEL may opt to finalize the prices through Reverse Auction amongst technically and commercially acceptable bidders. BHEL reserves the right to open the earlier price bids, if any, submitted by the bidder(s), if required.

2.4 No correspondence shall be entertained from the tenderers after opening of Part-II (Price bid), except clarifications (if any) asked by BHEL in writing.

2.5 Only one representative of the bidder will be permitted to be present for tender opening. The representative to be present for tender opening should have proper authentication/ Photo Identity Proof which needs to be produced on demand by BHEL.

2.6 Purchaser may negotiate the tender with L1 bidder after price bid opening.

2.7 **BID SUBMISSION**

2.7.1 **E- Bid**

2.7.1.1 Bidders shall have to visit BHEL E-Procurement web site and have to upload their quotation on BHEL e-bid portal in line with NIT requirement by due date and time.

2.7.1.2 For uploading Bids, bidders have to use their organization's authorized Digital signature (DSC class-III/ applicable class for bidding). In case the same is not available with the bidder then such bidder has to arrange as per the existing provisions of BHEL E procurement portal and ensure timely submission of the bids.

2.7.1.3 Bidders to note that hard copy of the bid is not required to be submitted and Bid is to be uploaded on BHEL e-bid portal only. In case paper bids are received from any of the bidder against e-bid, same shall be ignored

2.7.2 **Paper Bid:**

2.7.2.1 Bid/ Quotation must be enclosed in sealed cover(s) as per requirements of the tender enquiry, on which the tender enquiry number and the due date MUST BE written. Covering letter of tender submission shall be as per Annex I.

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MARKING ON ENVELOPES

2.7.2.2 Following shall be superscribed on the envelopes which shall be addressed by name and designation to the official inviting tender:

PART-I: 1. TENDER ENQUIRY No. AND ITEM DESCRIPTION
 2. DUE DATE FOR OPENING
 3. "TECHNO-COMMERCIAL BID".

PART-II: 1. TENDER ENQUIRY No. AND ITEM DESCRIPTION
 2. DUE DATE FOR OPENING
 3. "PRICE BID".

2.7.2.3 Both Parts - I & II shall be submitted in separate sealed covers duly superscribed as indicated above and shall be enclosed further in a main cover duly sealed and superscribed as:

"TENDER FOR _____ AGAINST TENDER ENQUIRY NO. _____ DUE ON _____
CONTAINING PART-I & PART-II BIDS"

2.7.2.4 Envelope not marked with tender enquiry number is liable to be ignored and may not be opened.

2.7.2.5 Tenders shall be sent to BHEL officials by name & designation as given in NIT.

2.7.2.6 Tenders can either be deposited in tender room in person or sent by Courier/ Registered or Speed Post to the above mentioned address. It shall be bidders' responsibility to ensure that tenders are delivered in time.

2.7.2.7 Name of vendor's dealing person with Contact No(s), Email ID and Address of correspondence shall be provided in the bid.

2.7.2.8 Tenders received after the Due Date and Time of submission shall be rejected.

2.7.2.9 Unsolicited tenders will not be entertained.

Note: Bid should be free from Erasure, cutting, overwriting, whitener or corrective fluid etc. Any interlineation, cutting, erasure or overwriting shall be valid only if they are attested under full signature(s) of person(s) signing the bid else bid shall be liable for rejection

3.0 MINIMUM E&C CHARGES AND SUPERVISION OF E&C CHARGES

3.1 **Total Erection & Commissioning charges** (excluding GST) should be minimum 20% (or as specified in NIT) of the total quoted price of main equipment supply (including freight & excluding GST) and erection & commissioning (excluding GST); failing which the break-up of prices shall be adjusted accordingly for ordering. However, while doing adjustments, vendor quoted prices for mandatory spares, PG test charges, O&M spares, O&M charges, etc. will not be changed.

3.2 **Supervision of E&C charges, if applicable** should not exceed 2% of the total contract value, failing which the quoted amount shall be restricted (2% of the total contract value) by BHEL at the time of evaluation and ordering.

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4.0 **AUTHORITY FOR TENDER SIGNING**

A person signing the tender or any other document in respect of Order/ Contract on behalf of the tenderer, without disclosing his authority to do so shall be deemed to warrant that he has the authority to bind the tenderer. If it is discovered at any time that the person so signing had no authority to do so, the Purchaser may, without prejudice to any other right or remedy, cancel the Order/ Contract and make or authorize the purchase of the stores at the risk and cost of such tenderer and hold such tenderer liable to Purchaser for all costs and damages arising from cancellation of the Order/ Contract including any loss which Purchaser may sustain on account of such purchase.

Notes:

- a) Bids of Indian supplier shall be in Indian Rupee only.
- b) Bids of foreign suppliers shall preferably be USD.
- c) An authorized representative/ agent can represent only one bidder for the given package.

5.0 **CLARIFICATIONS REQUIRED BY BIDDERS**

Technical and commercial clarifications required before submission of the tender should be addressed to the official(s) inviting the tender.

6.0 **DEVIATIONS - LISTING**

Tenders shall be submitted strictly in accordance with the requirements of tender documents. In case of deviations from NIT, the tenderer shall give cost of withdrawal of such deviation in the Annexure-II (i.e. in cost of withdrawal sheet). Any deviation not mentioned in deviation sheet and shown separately or found hidden in offer, will not be taken cognizance of.

7.0 **VALIDITY OF OFFER**

Vendors' offers shall be submitted with the following validity periods:

- i. Original offer shall be valid for six months from Part-I opening date unless specified otherwise in NIT.
- ii. If revised price bid/ price impact is asked by BHEL, the validity of the same shall be two months from the date of price bid opening or six months from Part-I opening, whichever is later.
- iii. In case where Reverse auction (RA) is conducted, the validity of the same shall be two months from the date of successful RA completion or six months from Part-I opening, whichever is later.
- iv. In case of negotiation, validity of offer shall be two months from receipt of revised price /negotiated final price or six months from Part-I opening, whichever is later.
- v. Offers with shorter validity than above are liable to be rejected
- vi. Prices of Recommended Spares, O&M Spares and Mandatory Spares (wherever these are Optional items) shall be valid till three years from the date of PO (for placement of order) unless specified otherwise in NIT.
- vii. Unit prices for scope addition/ deletion shall be valid till three years from the date of PO (for amendment of PO).

8.0 **LANGUAGE & CORRECTIONS**

- i. The Bid shall be in English language. All correspondence and documents relating to the bid exchanged between the bidder and the purchaser shall also be in ENGLISH language. However, any technical document/ literature

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etc. printed in a language other than English shall be accompanied by its true English translation duly signed for its correctness. Any document submitted with the bid but not in English language shall not be treated as part of the bid document. The responsibility for the correctness of the translations if any solely rests on the bidder and purchaser shall not be responsible for any loss/likely loss arising out of error in translation whatsoever. In such cases, for the purpose of interpretation of the bid, the English translation shall prevail.

- ii. Tenderer shall quote the rates in English language and Indo-Arabic numerals only. Total Price shall be entered in figures as well as in words. For the purpose of tender, metric system of units shall be used.
- iii. All entries in the tender shall either be typed or written legibly in ink. Cancellations, corrections, insertions, erasements, over-writing (if unavoidable) shall be authenticated with signature and seal by the bidder.

9.0 **PRICE DISCREPANCY**

Following shall be considered for evaluation and ordering for non-conformities/ errors/ discrepancies in price bid:

- i. Bidders should quote total price in “figures” with corresponding words in price bid format.
- ii. If, in the price structure quoted for the required goods/ services/ works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly., unless in the opinion of the Purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.
- iii. If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected.
- iv. If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject of (ii) and (iii) above.
- v. If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date up to which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the Purchaser, the bid is liable to be ignored.

10.0 **TENDERER TO INFORM HIMSELF FULLY**

- 10.1 Tenderer shall closely peruse all clauses, specifications & drawings etc. indicated in tender documents before quoting. In case of any doubt about meaning of any portion of tender specifications or discrepancies or omissions in drawings/ tender document or clarifications regarding scope of work etc., tenderer shall contact the official(s) inviting the tender for clarifications, before submitting the offer.
- 10.2 Tenderer shall make independent enquiries as to conditions and circumstances affecting cost estimates, and possibility of executing supplies/ works as described. Tenderer shall be deemed to have inspected and examined the site and its surroundings and to have satisfied himself as to the form and nature of the site, the quantities and materials necessary for completion of the work and means of transport and access to the site, the accommodation required, general labor position at site and to have quoted prices taking into consideration the risks, contingencies and other circumstances which may influence or affect execution of the Order/ Contract.

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- 10.3 It is the responsibility of tenderer to keep himself informed about all taxes & duties applicable on materials/ services as prevailing at the time of tendering. If the rates assumed by tenderer are less than the tariff rates prevailing at the time of tendering, the tenderer will be himself responsible for such under quotations.

11.0 ETHICS IN BUSINESS DEALINGS/ SUSPENSION OF BUSINESS DEALINGS

In order to protect the commercial interests of BHEL, it becomes necessary to take action against bidders/ sellers/ suppliers / contractors by way of suspension of business dealings, who either fail to perform or are in default without any reasonable cause, cause loss of business/ money/ reputation, indulge in malpractices, cheating, bribery, fraud or any other misconduct or formation of cartels so as to influence the bidding process or influence the price etc. Suspension of Business Dealings could be in the form of "Hold" or "Banning" a bidders/ sellers/ suppliers / contractors. Detailed guidelines are available at www.bhel.com / www.pem.bhel.com. Bidders should get themselves acquainted with these guidelines.

12.0 INTEGRITY PACT (IP)

IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. A panel of Independent External Monitors (IEMs) have been appointed by BHEL with the approval of CVC. The names of the IEMs in panel are mentioned in NIT.

Integrity Pact (IP) will be applicable for all tenders/ contracts valuing more than a specific value as specified in NIT/ RFQ.

The IP as enclosed as per annexure-VIII (as enclosed in NIT) is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this pact would be a preliminary qualification. (Refer Annexure-VIII for Integrity pact).

Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to the any of the IEMs mentioned in the NIT. All correspondence with the IEMs shall be done through email only.

"No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department officials whose contact details are provide in NIT".

12.1 INTEGRITY COMMITMENT:

Integrity commitment, performance of the contract and punitive action thereof:

12.1.1 Commitment by BHEL:

- BHEL commits to take all the measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL, during the tender process will treat all Bidder(s) in a transparent and fair manner, and with equity.

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12.1.2 Commitment by Bidder/Seller:

- The Bidder/Seller commit to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which it is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of Indian penal code, 1860 or any other law in force in India.
- The Bidder/Seller will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to relevant guidelines issued from time to time by GOVT. OF India/BHEL.
- The Bidder/Seller will perform/execute the contract as per the contract terms & conditions and will not default without reasonable causes, which causes loss of business/money/reputation, to BHEL.

If any Bidder/Seller during Pre-tendering/tendering/post tendering/award/execution/post-execution stage indulges in mal-practices, cheating, bribery, fraud or and other misconduct of formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian penal code, 1860 or any other law in force in India, then, action may be taken against such Bidder/Seller as per the extent guidelines of the company (Fraud Prevention Policy, suspension of Business dealings with suppliers/contractors etc.) available on www.bhel.com and/or under applicable legal provisions.

13.0 MODE OF FINALIZATION OF PRICES (REVERSE AUCTION OR PRICE BID OPENING)

Mode of finalization of prices (through reverse auction/ price bid opening) of all techno-commercially qualified bidders shall be as specified in NIT.

Detailed terms and conditions for RA are available on www.bhel.com. Business Rules for RA shall be sent to the bidders before conducting RA.

14.0 REJECTION OF TENDER AND OTHER CONDITIONS

14.1 Acceptance of tender will rest with Purchaser and does not bind him to accept the lowest or any tender and reserves to itself full rights for the following without assigning any reasons whatsoever:

- i. To reject any or all the tenders.
- ii. To increase or decrease the quantities.
- iii. To reject any commercial or technical deviation given in offer.
- iv. To split the work amongst two or more bidders.
- v. To award the work in parts.

14.2 Standard pre-printed conditions of tenderer attached to offer will not be accepted.

14.3 Purchaser will not be bound by any new power of attorney granted by tenderer or by changes in composition of the firm made subsequent to award of Order/ Contract. Purchaser may, however, recognize such power of attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the Seller/ Contractor concerned.

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- 14.4 If tenderer gives wrong information/furnishes false documents/certificates etc., whether during the bidding stage or subsequent to award of contract then the purchaser reserves the right to reject such an offer at any stage or cancel the Order/ Contract, if awarded, and forfeit the security deposit and bank guarantee. Such actions/omission may also invite action by BHEL as per extant guidelines for suspension of business dealing with supplier/contractor (as available on www.bhel.com)

DEALING WITH BIDDERS UNDER SUSPENSION

The offers of the bidders who are under suspension as also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firm is available on BHEL web site www.bhel.com

15.0 **DEVIATIONS FROM NIT**

Deviations (Commercial as well as Technical) from NIT are generally not acceptable. In case of deviations from NIT, the tenderer shall give cost of withdrawal of such deviations as per Annexure-II.

16.0 **LOADING FOR COMMERCIAL DEVIATION (WHERE COST OF WITHDRAWAL NOT GIVEN)**

For deviations w.r.t. Payment terms, Liquidated damages, if a bidder chooses not to give any cost of withdrawal of deviation, loading as per Annexure-VII will apply.

17.0 **INTEREST RATE FOR LOADING**

Interest Rate for loading will be taken as Base rate of SBI on the date of bid opening; (Techno-commercial bid, in case of 2 part bids) + 6% for the period of relaxation sought by the bidders. If the bid opening day happens to be non-working day for SBI, then previous bank working day shall be considered.

18.0 **DISCOUNT**

Discount offered by any bidder in the original price bid, against the present Tender Enquiry, which is also indicated to be applicable to any other Enquiry, shall be considered against the present Tender Enquiry only. In case only percentage discount is indicated, the same shall be applicable to optional prices also. Discount offered shall be valid for full duration of offer validity. Any conditional discount shall not be considered for evaluation.

19.0 **EVALUATION CRITERIA**

19.1 **TENDER EVALUATION**

Techno-commercial evaluation shall be carried out on the basis of technical specifications, commercial terms and conditions and PQR (if applicable) specified in the tender documents and changes/clarifications thereof, if any.

Bidders (other than cases of single part bids) shall be given an opportunity to withdraw the deviations/ furnish clarifications/ documents by appropriate cut-off date by authorized purchase executive.

If the bidder does not withdraw its deviation(s) and the deviation(s) is/are acceptable to BHEL, loading of offers shall be done as per the loading criteria mentioned in this document/NIT.

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If no loading criteria is defined for any deviation it will be derived and communicated to the Bidder. If the Bidder does not withdraw its deviation(s) and the deviation(s) is/are not acceptable to BHEL, the bid will be liable to be rejected.

In case of changes in scope and/or technical specification and/or commercial terms & conditions, having price implications, techno-commercially acceptable bidders shall be asked to submit the impact (either positive or negative, as decided by BHEL) of such changes on their price bid on or before the cut-off date. If the bidder submits impact opposite of the asked for (positive or negative), the impact will be considered as ZERO for evaluation as well as ordering. If BHEL does not specify the type of impact (positive or negative), bidders shall be free to quote the impact in positive or negative. Bidder's query/correspondence etc. with respect to this tender shall not be entertained after opening of Price bid, except from L1 bidder. The offers of the bidders who are under suspension by BHEL and also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site www.bhel.com. Please also see clause no. 11 and other provisions in GCC.

19.2 **COST EVALUATION**

Tenders will be evaluated on the basis of total cost to BHEL, taking into consideration loadings, if any, and all available financial advantages, including those available from Owner, taxation authorities etc.

For evaluation, exchange rate (TT selling rate of State Bank of India) as on date of tender opening (Part-I bid in case of two part bid) shall be considered. If the relevant day happens to be a bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.

In case of foreign bidders for supply packages, the quoted C&F price shall be loaded by following factors to arrive at total evaluation price:

- a) Insurance for evaluation purposes shall be @ 0.1 % of quoted C&F price.
- b) Port handling/clearing charges @1% of C&F value
- c) Custom duty with applicable cess as per special conditions of contract-as prevailing on date of tender opening (Part-I).
- d) Inland freight (Indian port to project site) @ 3% of C&F value

20.0 **FOREIGN SUPPLIERS & INDIAN AGENTS OF FOREIGN SUPPLIERS**

Please refer our website www.pem.bhel.com , www.bhel.com for details.

21.0 **MICRO, SMALL & MEDIUM ENTERPRISES**

Extant regulations of Govt. of India will be applicable.

Preferences as mentioned in "Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012" shall be given to Micro and Small enterprises. Payment to MSEs will be governed as per the prevailing Act. MSE Bidders/ as defined by the MSMED Act as amended from time to time can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate/ Udyog Aadhar Memorandum certificate having deemed validity (five years from the date of issue in acknowledgement in EM III Udyog Aadhar) or valid NSIC certificate or EM III Udyog Aadhar Memorandum certificate along with attested copy of a CA certificate (Format enclosed as per Appendix I where deemed validity of EM II certificate/Udyog Aadhar Memorandum certificate of five years have expired) applicable for the relevant financial year (latest audited) or such other document as may be stipulated in the MSMED Act or its rules/regulations as amended from time to time and/or by the Buyer. The deemed validity will be assessed on the date of bid opening (Part 1 in case of two part bid). Non submission of such documents as stipulated hereinbefore will lead to consideration of their bids at par with other Bidders. No benefit shall be applicable for the concerned for the tender enquiry, if any

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deficiency in the above required documents is not submitted before the price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer. This provision for MSE will apply subject to the condition that the participating MSE meets the tender requirements.

In case of any change in the MSE status of the Bidder, it shall be the responsibility of the Bidder to notify the change as a part of the bid document. If at a later date it comes to the knowledge of BHEL, that the change in the status has not been intimated by the Bidder and the order was obtained under the premise of an MSE then BHEL may reject the bid or, as the case may be, cancel the order and take necessary steps for suspension of the business dealing against the Bidder as per the extant guidelines for suspension of business dealings with suppliers/ contractors of BHEL (as available on www.bhel.com). In case if all the items being procured under the enquiry fall under category of reserved items as defined in "Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012" and if any of the MSE bidder(s) is techno-commercially qualified then the price bids of only MSE bidders shall be opened. If no MSE bidder is techno-commercially qualified, then price bids of all techno-commercially qualified Bidders shall be opened.

22.0 **BHEL FRAUD PREVENTION POLICY**

The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice. BHEL Fraud prevention policy is also uploaded on www.pem.bhel.com & www.bhel.com

23.0 **TENDERING COST**

Tender documents are free of cost. However, Bidder shall bear all costs associated with the preparation and submission of its bid at its end. BHEL, shall in no case, be responsible or liable for these costs, regardless of the conduct or the outcome of the bidding process.

24.0 **AVAILABILITY OF SPARES**

Vendor to keep BHEL informed by giving six-month (or specified in SCC) advance notice for discontinuation of manufacturing of the spares, mentioned/ required in the order.

25.0 **SPLITTING OF ORDER**

BHEL reserves the right to award tendered quantities to one or more Bidders. In case splitting is desired, the ratio of splitting shall be as mentioned in NIT, subject to acceptance of L1 price by L2, L3 etc., in order of their ranking.

If no splitting is mentioned in the NIT but it is later discovered that the quantity needs to be distributed on more than one Bidder the intention and manner of splitting shall be disclosed to all the techno-commercial acceptable bidders before price bid opening.

However extant Guidelines/ Instructions of Govt. of India shall prevail.

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26.0 MAKE IN INDIA

For this procurement, Public Procurement (Preference to Make in India), Order 2017 dated 16.09.2020 and subsequent Orders issued by the respective Nodal Ministry shall be applicable even if issued after issue of the NIT but before finalization of contract/ PO/WO against the NIT. In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and / or local content in respect of this procurement, same shall be applicable. Vendors are requested to go through the above mentioned orders and furnish the required documents as specified in the NIT.

27.0 START UP VENDORS

MSME / Start up vendors to submit applicable documents along with their offer for availing the benefits as per GOI guidelines.

28.0 TReDS PLATFORM

BHEL is registered with TreDS platform. MSME Bidders are requested to get registered with TReDS platform to avail the facility as per the GOI guidelines.

29.0 EXPORT ADMINISTRATION REGULATIONS

If a delivery includes such technology and / or supply that is subject to the export regulations, the Seller shall obtain due permissions, approvals, license etc. as applicable from time to time under laws in force.

30.0 AGENCY AGREEMENT: - For Indian agents of foreign principals:

- i. BHEL shall deal directly with foreign bidders/vendors, wherever required, for procurement of goods. However, if the foreign principal desires to avail the services of an Indian agent, then the foreign principal should ensure compliance to regulatory guidelines- which require mandatory submission of an Agency Agreement.
- ii. It shall be incumbent on the Indian agent and the foreign principal to adhere to the relevant guidelines of Government of India, issued from time to time.
- iii. The Agency Agreement should specify the precise relationship between the foreign OEM / foreign principal and their Indian agent and their mutual interest in the business. All services to be rendered by agent/ associate, whether of general nature or in relation to the particular contract, must be clearly stated by the foreign supplier/ Indian agent. Any payment, which the agent or associate receives in India or abroad from the OEM, whether as commission or as a general retainer fee should be brought on record in the Agreement and be made explicit in order to ensure compliance to laws of the country.
- iv. Any agency commission to be paid by BHEL to the Indian agent shall be in Indian currency only.
- v. Tax deduction at source is applicable to the agency commission paid to the Indian agent as per the prevailing rules.
- vi. In the absence of any agency agreement, BHEL shall not deal with any Indian agent (authorized representative/ associate/ consultant, or by whatever name called) and shall deal directly with the foreign principal only for all correspondence and business purposes.
- vii. The "Guidelines for Indian Agents of Foreign Suppliers" (refer www.bhel.com) shall apply in all such cases.

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- viii. The supply and execution of the Purchase Order (including indigenous supplies / service) shall be in the scope of the OEM / foreign principal. The OEM / foreign principal should submit their offer inclusive of all indigenous supplies / services and
- ix. evaluation will be based on 'Total cost to BHEL'. In case OEM / foreign principal recommends placement of order(s) towards indigenous portion of supplies / services on Indian supplier(s) / agent on their behalf, the credentials / capacity / capability of the Indian supplier(s) agent to make the supplies / services shall be checked by BHEL as per the extant guidelines of Supplier Evaluation, Approval & Review Procedure (SEARP), before opening of price bids (if required as per NIT). It will be the responsibility of the OEM / foreign principal to get acquainted with the evaluation requirements of Indian supplier/ agent as per SEARP available on www.bhel.com.

The responsibility for successful execution of the contract (including indigenous supplies / services) lies with the OEM/ foreign principal. All bank guarantees to this effect shall be in the scope of the OEM/ foreign principal.

BHEL prefers to deal directly with the manufacturers. In case any Manufacturer insists for submission of offer from their agent and subsequently placement & execution of PO through their agent:

- i. Agent should submit authorization letter from the manufacturer, clearly indicating name and address of Manufacturer & agent. The authorization letter should be tender specific and clearly define that the manufacturer has authorized only the referred agent for participating in the tender. Manufacturer, should take responsibility for Quality and Guarantee. In case offer of one Manufacturer received from more than one agent (i.e. Manufacturer authorizing more than one agent), all such offer will be ignored.
- ii. Manufacturer should necessarily meet PQR defined in NIT for manufacturers in either case (i.e. In case of Submission of Offer Directly by manufacturer or Participating through agent). Offers of Manufacturers forwarded by their agent (i.e. Offer are of manufacturer and agent is only forwarding their offer with their covering letter), should be treated as direct offer from manufacturer.
- iii. The C&F price quoted will be deemed to be inclusive of Indian Agency commission. Agency commission if payable shall be converted to Indian Rupees at TT buying rates of exchange ruling on tender opening date which shall not be subjected to any further exchange rate variation, as disclosed by the bidder in his quoted C&F price will be paid in Indian Rupees on receipt & acceptance of Materials or it's installation at destination, as the case may be. The TT buying rate prevailing on the date of technical bid opening shall be considered for computation of Agency commission.
- iv. In a tender either the Indian Agent on behalf of Principal / OEM or the Principal / OEM itself can bid, but both cannot bid simultaneously for same item / product in the same Tender. If both OEM and its authorized agent submit their bids separately in that case only the offer of OEM can be considered.

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1.0 **ISSUANCE OF PURCHASE ORDER AND RECTIFICATION OF ERRORS**

Issuance of LOI / LOA / Purchase order by the Purchaser shall result in a binding contract between the Seller/ Contractor and Buyer. Seller/Contractor shall acknowledge the LOI /LOA/ Purchase Order issued by BHEL (Purchaser) within 7 days of its receipt. Seller/ Contractor should examine the LOI / LOA/ Purchase Order immediately upon receipt and bring to the notice of BHEL, within 7 days of receipt, any discrepancy/errors with regard to scope of work, rates, taxes & duties, agreed terms & conditions etc. for due rectification. If the Seller/ Contractor fails to give such acknowledgement within seven days, LOI /LOA/ Purchase order issued shall be deemed as *having no discrepancy/ errors. In case of any clerical error in the LOI /LOA/ Purchase order with respect to agreed Terms & Conditions, BHEL reserves the right to issue correction(s) as and when noticed.*

2.0 **INTENT OF CONTRACT**

Nothing in this document, unless otherwise specified, is intended to, or shall be deemed to, establish any partnership or agency between the parties.

3.0 **PRICES**

Prices shall be with PVC for the entire scope of work in line with the tender documents and subsequent clarifications/ confirmations till completion of contract.

While, total price will be considered for evaluation, as per provision of tender, separate orders will be placed for (i) Engineering, (ii) Main supply, (iii) E&C, (iv) Mandatory spares and (v) O&M, as applicable and as per price schedule.

4.0 **TAXES AND DUTIES**

4.1 **GST is defined and includes CGST/ SGST/ UTGST/ IGST**

4.1.1 Seller/ Contractor is required to ensure that the quoted price should be exclusive of GST (or specified in NIT).

4.1.2 It is the responsibility of the seller/contractor to issue the Tax Invoice strictly as per the format prescribed under the relevant applicable GST law. Vendor to indicate the proper GSTN Registration/ HSN/SAC code in their tax invoice.

4.1.3 **State wise GST registration code of purchaser units / regions as per annexure no XI.**

4.1.4 Seller/contractor is required to mention the GST registrations number as per POWO or as informed by respective region/site/unit of BHEL.

4.1.5 In general, GST shall be paid at actuals against Tax Invoice in case BHEL is able to take the input tax credit. Decision of BHEL in this regard will be final and binding on the seller/contractor

4.2 **OTHER TAXES & LEVIES**

All taxes/ duties/ Cess ~~BOCW~~ / *seignior age fee* other than GST shall be deemed to be included in the Ex-Works prices. No variation for such taxes and levies shall be paid in any circumstance unless specifically agreed upon even if the same are mentioned anywhere in the bids by the bidders.

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Note : For BOCW, please refer SCC/NIT.

4.3 **CUSTOM DUTY**

- 4.3.1 Applicable Customs Duty/ IGST/ Goods and Services Compensation Cess under Goods and Services Tax (Compensation to States) Act, 2017 element for imported items shall be included in the Ex-Works prices unless specified in the price format of the NIT.
- 4.3.2 Seller/ Contractor shall arrange for his own import license, if required, since Purchaser will not provide any import license. Therefore, Seller/ Contractor alone shall be responsible for any delay in getting import license or non-availability of the same or completion of other related formalities. Purchaser shall not be responsible for any financial liability, whatsoever, on this account.
- 4.3.3 For items where CIF is available, as specified in NIT- Essentiality Certificate or Project Authority Certificate (PAC) as per Import Policy, if required to avail concessional customs duty, shall be clearly mentioned in the offer. Import content (CIF value in rupees) with list of items, quantity, foreign currency, Country of origin etc., shall be submitted by the bidder as part of Price bid.

4.4 **DIRECT TAX**

- 4.4.1 Seller is required to update himself on its own and comply with provisions of Indian Income Tax Act as notified from time to time. Purchaser shall not be liable towards liability of income tax accruing to the Seller of whatever nature including variations thereof, arising out of this Order/ Contract, as well as tax liability of the Seller/ Contractor and his personnel.
- 4.4.2 Deductions of Tax at source at the prevailing rates shall be effected by the Purchaser before release of payment, as a statutory obligation, if applicable. TDS certificate will be issued by the Purchaser as per statutory provisions. The Seller/Contractor has to mention their Permanent Account Number (PAN) and GSTIN in all invoices.

4.5 **GST COMPLIANCES**

- 4.5.1 The bidder should be registered with the appropriate authority under relevant GST laws.
- 4.5.2 **The bidder to specify in their offer (part 1 bid) the category of registration under GST i.e. registered dealer and composite dealer.**
- 4.5.3 **In the event of any GST quoted by a bidder (registered as a composite dealer), the GST shall be considered for evaluation and ordering purpose.**
- 4.5.4 **In the event of any change in the status of vendor from composite to regular dealer after the submission of the bid but before the supply, no reimbursement of additional GST will be made. However, the vendor has to raise the invoice strictly, as per the law, by adjusting their ex-works price.**
- 4.5.5 **Vendor/Supplier will share the Tax invoice along with LR/RR (as applicable) to BHEL immediately on removal of goods from vendor/supplier works.**
- 4.5.6 All payments against Tax Invoice to vendors/contractors shall be released only after:

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- i. Vendor/ contractor declaring such invoice in GSTR-1/GST-ANX-1 as per the relevant GST Act.
- ii. The tax component charged by the vendor in the invoice should match with the details uploaded by vendor in GSTR-1/GST-ANX-2.
- iii. Confirmation of payment of GST thereon by vendor on GSTN portal. In case, any GST credit is delayed/denied to BHEL due to non/delayed receipt of goods and/or tax invoice or expiry to timeline prescribed in the relevant GST Act for availing such ITC, or any other reasons not attributable to BHEL, tax amount shall be recoverable from the vendor/contractor along with interest levied/ leviable on BHEL.

4.5.7 Wherein GST liability arises on BHEL under reverse charge, any interest levied/leviable due to any reasons not attributable to BHEL shall be recovered from the vendor/contractor.

4.5.8 The applicable TDS under GST/ Goods and Services (Compensation to States) Act will be deducted from the payments.

5.0 **STATUTORY VARIATION**

5.1 In general, Statutory variation for GST is payable to the Seller during currency of the contract between Buyer and Seller. Further, for period beyond the currency of the contract, BHEL will reimburse the actual applicable tax even if the same is higher than the amount applicable within the contractual period in case BHEL is able to take the input tax credit. However, the decision of BHEL in this regard will be final and binding on the seller/contractor otherwise vendor/contractor has to bear the differential upward increase in tax and ex- works price is to be adjusted accordingly

5.2 No other variations such as on Custom Duty, exchange rate, minimum wages, prices of controlled commodities, any other input etc. shall be payable by the purchaser unless specifically agreed upon.

6.0 **VARIATION OF CONTRACT VALUE**

Prices shall be with PVC (as specified in NIT) for any increase or decrease in the Order/ Contract value (Ex-works) as per annexure-XIII (for any amendment) within three years from the date of original PO unless specified otherwise in NIT. The Purchaser shall have the right to increase or decrease quantities and scope up to the above extent of value and Seller/ Contractor shall be bound to accept the same at the contracted prices without any escalation.

Note:

- i. In case of package *broken into Purchase Orders of main supply, services and spares, quantity variation clause shall be applicable on cumulative sum of such individual Purchase Orders.*
- ii. Quantities (within PO/permissible quantity contract price variation) shall be released within **three** years from the date of purchase order/ LOI / LOA, unless mentioned otherwise in NIT/SCC specifically.

7.0 **ENGINEERING DOCUMENTS SUBMISSION**

All engineering document submission by vendors after award of contract shall be online, using BHEL Document Management System (DMS) (as applicable). Comments would also be conveyed to vendors

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through DMS. This would ensure enhanced engineering coordination and speedy approval of documents.

For facilitating submission of documents online, vendors shall submit details as per format available on line (select Vendor Login Creation form link available at https://www.pem.bhel.com/Bhel_vendor_section.aspx) to concerned Dealing Engineer in Purchase Dept. of BHEL-PEM for creation of login account in PEM's DMS.

- i. Internet explorer version –Internet Explorer 11 or above
- ii. Internet speed – 2 mbps
- iii. Pop up from <https://www.pem.bhel.com/> should not be blocked
- iv. Vendor's internal proxy setting should not block DMS application's link <https://www.pem.bhel.com/wrenchweb>

Procedure for uploading comments, viewing comments etc. is available at https://www.pem.bhel.com/Dms_Manuals.html.

8.0 **TRANSPORTATION & FREIGHT CHARGES**

All dispatches shall be through road carriers, on freight pre-paid basis. Road Permit/E-way bill, if required, will be arranged by Supplier.

9.0 **TERMS OF PAYMENT**

9.1 **MANDATORY SPARES**

9.1.1 **INDIAN VENDORS**

Payment of 90% of basic price of materials supplied along with 100% freight and taxes & duties (as applicable), shall be paid against receipt of material (receipted LR) at site on prorata basis.

Balance 10% of basic price of materials supplied will be released on pro – rata basis on receipt of Material Receipt Certificate (MRC) / Store Receipt Voucher (SRV) from project site engineer of purchaser/customer.

9.1.2 **FOREIGN VENDORS**

Payment of 80% of C&F price of materials supplied, shall be paid against Bill of lading/ AWB on pro-rata basis. Balance 20% of C&F price of materials supplied will be released on pro – rata basis, as detailed below:

Balance 10% of C&F price of materials shall be paid against Import General Manifest (IGM)/ Bill of Entry on pro-rata basis.

Balance 10% of C&F price of materials shall be released on pro-rata basis after receipt of Material Receipt Certificate (MRC) / Store Receipt Voucher (SRV) from project site engineer of Purchaser/customer.

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9.2 SUPPLY PAYMENT

9.2.1 INDIAN VENDORS

Payment of 80% of basic price of materials supplied, as per approved billing schedule, along with 100% freight, taxes and duties (as applicable), shall be paid against receipt of material (receipted LR) at site on pro-rata basis.

10% of basic price of materials supplied will be released on pro-rata basis after submission of Material Receipt Certificate (MRC) from project site engineer of Purchaser.

Collection of Material Receipt Certificate from Site and its submission for claiming the payment shall be the responsibility of the Seller/ Contractor.

10 % of basic price of materials supplied shall be released against (2.5% against each activity) the completion of: (a) Trial run of the system/ package; (b) Successful completion of the PG test/ demonstration test of the system/ package, as applicable; (c) Submission of final documents, e.g. As-built drawings, O&M manual etc. as applicable and (d) Liquidation of Punch Point.

BHEL site(s) / ISG / REGION HQ, at discretion, may further split up the above percentages and effect payment to suit the site condition, project cash flow requirement, according to the progress of work. In case of Turnkey package-After successful TRIAL operation of package vendor shall obtain FINAL SUPPLY time extension and claim these retention payments

List of packages with PG Test applicability is as per Annexure-IX. List of documents required for FINAL bill payment (i.e RETENTION payment) shall be issued by BHEL site(s) / ISG / REGION HQ during detailed PO/VO.

Note: - In case PG test/ demonstration test of the system/ package, as applicable cannot be completed within one year after completion of Trial run, for reasons not attributable to the contractor, payment for PG Test/ demonstration test of the system/ package, as applicable can be released on submission of BG of equivalent amount, valid initially for 6 months & to be revalidated till completion of PG test/ demonstration test of the system/ package, as applicable.

However, contractor has to fulfil all formalities for final billing/ contract closing, prior to drawing this payment.

9.2.2 FOREIGN VENDORS

Payment of 75% of the C&F price of materials supplied, as per approved billing schedule, along with 100% taxes and duties (as applicable) and inland freight, shall be paid against Bill of lading/ AWB on pro-rata basis.

10% of C&F price of material supplied shall be released against Import General Manifest (IGM)/ Bill of Entry on pro-rata basis.

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5% of C&F price of material supplied shall be released after submission of Material Receipt Certificate (MRC) from project site engineer of Purchaser.

Collection of Material Receipt Certificate from Site and its submission for claiming the payment shall be the responsibility of the Seller/ Contractor.

10 % of C&F price of materials supplied shall be released against (2.5% against each activity) the completion of: (a) Trial run of the system/ package; (b) Successful completion of the PG test/ demonstration test of the system/ package, as applicable; (c) Submission of final documents, e.g. As-built drawings, O&M manual etc. as applicable and (d) Liquidation of Punch Point.

BHEL site/ Region Hqrs/ ISG, at discretion, may further split up the above percentages and effect payment to suit the site condition, project cash flow requirement, according to the progress of work.

List of packages with required final documents and PG Test applicability is as per Annexure-IX.

Note: - In case PG test/ demonstration test of the system/ package, as applicable cannot be completed within one year after completion of Trial run, for reasons not attributable to the contractor, payment for PG Test/ demonstration test of the system/ package, as applicable can be released on submission of BG of equivalent amount, valid initially for 6 months & to be revalidated till completion of PG test/ demonstration test of the system/ package, as applicable.

However, contractor has to fulfil all formalities for final billing/ contract closing, prior to drawing this payment.

9.3 **ERECTION & COMMISSIONING PAYMENT**

80 % (Eighty percent) of contract E&C price along with taxes (as applicable) shall be released on pro-rata erection of item/ material, on submission of protocol, duly signed by BHEL site official(s)/ customer, as per approved billing schedule.

10 % (Ten percent) of contract E&C price along with taxes (as applicable) shall be released on pro-rata commissioning of individual sub-system, on submission of protocol, duly signed by BHEL site official(s) and customer, as per approved billing schedule.

10 % (Ten percent) of contract E&C price along with taxes (as applicable) shall be released against (2.5% against each activity)

(a) Trial run of the system/ package; (b) Successful completion of the PG test/ demonstration test of the system/ package, as applicable; (c) Submission of final documents, e.g. As-built drawings, O&M manual etc. as applicable and (d) Liquidation of Punch Point and handing over.

BHEL site/ Region Hqrs / ISG, at discretion, may further split up the above percentages and effect payment to suit the site condition, project cash flow requirement, according to the progress of work. After successful TRIAL operation of package vendor shall obtain FINAL E & C time extension and claim these retention payments.

List of packages with PG Test applicability is as per Annexure-IX. List of documents required for FINAL bill payment (i.e RETENTION payment) shall be issued by ISG/REGION during detailed PO/WO.

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9.4 PAYMENT OF SERVICE(S) CHARGES: DEMONSTRATION CHARGES, SUPERVISION OF ERECTION / COMMISSIONING CHARGES, ENGINEERING CHARGES, O&M CHARGES (IF APPLICABLE, AS SEPARATE LINE ITEM OF PRICE FORMAT)

100% payment shall be released after successful completion of the activity on pro rata basis, on Site certification/ certification by engineering as applicable. Payment of O&M on quarterly basis after completion of each activity or as specified in NIT, on Site certification/ certification by engineering as applicable.

Note:- Engineering design, if applicable is defined as separate line item in NIT BOQ, same shall not be more than 5% of main supply (excluding freight and GST) failing which breakup shall be adjusted accordingly from supply price for ordering.

9.5 RELEASE OF PAYMENT

Vendors shall submit billing documents for payment directly to BHEL. Payment will be released within 60 days after submission of complete documents as per clause no 9.6.2 – 9.6.5 below or as per order/ contract (45 days for vendors qualified and registered as Micro or Small as per MSMED Act).

Notes:

- i. Vendors are required to issue Tax Invoice inclusive of PVC value (if applicable) wherever indices are available. In case PVC indices not available, vendors to submit PVC invoices on availability of applicable indices.
- ii. Any negative PVC, if not adjusted in earlier payments, will be adjusted at the time of MRC payment.
- iii. Payment for supply for Foreign vendors will be released within 90 days from date of Bill of Lading/AWB against payment clause no 9.1.2 and 9.2.2.

9.6 DOCUMENTS TO BE SUBMITTED BY VENDOR

9.6.1 FOR RECOGNITION OF DISPATCH

Copy of the following documents by e-mail/ fax immediately on dispatch:

- i. GST compliant invoice
- ii. LR for Indian Vendors (indicating Invoice No., no. of boxes, PTL (if applicable) etc.) / Bill of Lading or AWB for foreign vendor
- iii. Packing List: Must be indicating No. of boxes, Packing size, Gross weight and net weight of each package, Contents of the package with cross reference to BoM item code no. or item serial no. and Quantity of each item separately
- iv. Insurance Intimation to underwriter through email/fax
- v. Dispatch Clearance

Note: - Above list is tentative in nature and will be finalised at the time of PO.

9.6.2 A) FOR CLAIMING PAYMENTS (UNDER CLAUSE 9.1.1, 9.2.1 (Original + 1 copy)

- i. GST compliant invoice
- ii. PVC Calculation and copy of all applicable indices, if PVC applicable.
- iii. Receipted LR (signed & stamped)

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- iv. Packing List: Must be indicating No. of boxes, Packing size, Gross weight and net weight of each package, Contents of the package with cross reference to BoM item code no. or item serial no. and Quantity of each item separately
- v. Guarantee Certificate
- vi. Duty drawback (if applicable) documents: As per applicable law

B) FOR CLAIMING PAYMENTS (UNDER CLAUSE 9.1.2, 9.2.2) (Original + 1 copy)

- i. Invoice
- ii. Bill of Lading or AWB
- iii. Packing List: Must be indicating No. of boxes, Packing size, Gross weight and net weight of each package, Contents of the package with cross reference to BoM item code no. or item serial no. and Quantity of each item separately
- iv. Guarantee Certificate
- v. COO - Certificate of Origin

9.6.3 FOR CLAIMING MRC PAYMENT

- i. Invoice for claiming MRC payment
- ii. Copy of MRC

9.6.4 FOR CLAIMING PAYMENT FOR SERVICES

- i. GST compliant invoice
- ii. Respective documents as specified in clause 9.3 & 9.4.

9.6.5 FOR CLAIMING RETENTION PAYMENT:

- i. Activity completion certificate (i.e TRIAL operation/PG test/Final drawing/documents/liquidation of punch points as applicable) from BHEL/Customer as applicable.
- ii. FINAL time extension.
- iii. HR compliances, store NOC and any other documents checklist Shall be issued by REGION/ISG during detailed POWO. Compliance of these is required before 1st retention payment release.

9.7 LOADING DETAILS IN CASE OF DEVIATIONS

Loading details in respect to deviations in Payment Terms, LD, PVC indicated in Annexure – VII

9.8 BHEL'S BANKERS

Please refer ISG / REGION HQ "website for details.

9.9 MODE OF PAYMENT/ NON PAYMENT OF INTEREST

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Payments shall be made directly to the Seller/ Contractor by E-transfer. Seller/ Contractor to provide necessary information for the same as per Annexure – VI.

Note: Option of payment through TReDS is also available to MSME vendors.

- 9.10 Notwithstanding anything to the contrary contained in any other document comprising the contract, no interest shall be payable by the Purchaser to the Seller/Contractor on any money or balances including but not limited to the security amount, bank guarantee amount, EMD, retention money, any bills or any amount withheld which may become due owing to difference or misunderstanding or any dispute between the Purchaser and the Contractor, or any delay on the part of Purchaser in making periodical or final payment or any other aspects incidental thereto.

10.0 **RECOVERY OF OUTSTANDING AMOUNT**

In event of any amount of money being outstanding at any point of time against the Seller/ Contractor due to excess payment, imposition of liquidated damages, invocation of risk and cost clause or any other reason whatsoever, in the present order/ contract or any other order/ contract from any BHEL Unit, the outstanding amount shall be recovered from the payments due to the Seller/ Contractor from the following:

- i. Dues available in the form of bills payable to Seller, Security Deposit (SD), BGs against the same contract,
- ii. Dues payable to Seller against other contracts including SDs, BGs in the same Region/Unit/Division of BHEL.
- iii. Dues payable to Seller against other contracts including SDs, BGs in the different Region/Unit/Division of BHEL.
- iv. Any other mode as deemed fit by the Purchaser at its sole discretion.

11.0 **CONTRACT PERFORMANCE BANK GUARANTEE (CPBG)**

- 11.1 Vendor shall submit Separate bank guarantee (Engineering Charges, Main supply, services, mandatory spares etc.) for Orders / POs values (value excluding taxes, duties and freight) (as per Annexure-III) for 5% (or specified in NIT / order / PO) of Order value (excluding taxes, duties & freight) within 30 days from the date of purchase order to cover the due performance of Order / Contract and to fulfill the guarantee conditions stipulated in the Order / Contract.

Note: BG value can be proportionately reduced after completion of Guarantee Period/Defect liability Unit-wise/ Lot wise/ Stage-wise/Set-wise, subject to the units/lots/sets/stages being explicitly specified in in the contract.

- 11.2 Value of the Bank Guarantee (at the time of submission) shall remain unchanged for any subsequent variations in order/ contract value up to 20%. Beyond this, the Seller/ Contractor shall arrange to enhance or reduce the value of the Bank Guarantee accordingly.
- 11.3 Validity of the Bank Guarantee shall be for the entire Guarantee/Defect liability period or Package performance guarantee test acceptance (as applicable) whichever is later. Initially, it should be at least 18 months, later extended to cover the above period, one months before its expiry.

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- 11.4 Purchaser reserves the right to encash the bank guarantee and forfeit the amount in the event of any default, failure or neglect on part of the Seller / Contractor in fulfillment of performance of the Order/ Contract or in the event GST credit is delayed / denied to BHEL due to non/delayed receipt of goods and / or tax invoice or expiry to timeline prescribed in the relevant act for availing such Input Tax Credit or any other reasons not attributable to BHEL.
- 11.5 Equivalent amount along with interest shall be recovered from payment due to the Seller/ Contractor, before releasing any payment, in absence of a valid bank guarantee.
- 11.6 Bank Guarantees shall be from Consortium Bank as per list and directives on [www. pem.bhel.com](http://www.pem.bhel.com).
- 11.7 The expiry of claim period should be kept min. of three months after BG validity.
- 11.8 In case of private sector banks, a clause to be incorporated in the text of bank guarantee that it can be enforced by being presented at any branch of the bank located in the respective PS-region HQs.

Notes-

- (A) In case of delay in submission of performance security (CPBG), enhanced performance security (CPBG), which would include interest (SBI rate + 6%) for the delayed period, shall be submitted by the bidder. Further, if performance security is not submitted till such time the first bill becomes due, the amount of performance security due shall be recovered as per terms defined in NIT / contract, from the bills along with due interest.
- (B) In case, seller/ contractor submits CPBG later for the equivalent amount, recovered amount will be refunded. (Excluding interest penalty amount).

12.0 GUARANTEE FOR PLANT/ EQUIPMENT/ STORES

- 12.1 Seller/ Contractor shall warrant that the plant/ equipment/ stores supplied shall be free from all defects and faults in design & engineering, material, workmanship & manufacture and shall be of the highest grade and consistent with the established and generally accepted standards and in full conformity with the Order/ Contract specifications, drawing or samples, if any.

Guarantee period for packages (excluding mandatory spares) shall be as stipulated in Special Conditions of Contract or otherwise, 12 calendar months from the date of handing over of the system Unit wise/Lot-wise/Stage-wise/Set-wise/ system wise (as applicable) to customer / BHEL, OR PG test of system (if applicable), whichever is later.

Seller/ Contractor's liability in respect of any complaints, defects and claims shall not be limited to supply and installation of replaced parts free of charge, or repair of defective parts to the extent that such replacements are attributable to or arise from faulty workmanship, material or design, in the manufacture, of the plant / equipment / stores but at the option of the Purchaser, to the payment of the value, expenditure and damages as mentioned hereafter, provided defects on being discovered are brought to the notice of the Seller/ Contractor within a period of three (3) months from the date of expiry of the guarantee period.

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	Guarantee period for mandatory spares shall be 18 months from the date of handing over of complete package (as applicable) to customer / BHEL or as stipulated in Special Conditions of Contract.
12.2	All replacements and repairs during the guarantee period shall be delivered and completed promptly and satisfactorily within a period of three months from the time of reporting the defect/ loss/ rejection etc. If the Seller/ Contractor so desires and the Purchaser agrees, subject to import control regulations, the replaced parts can be taken over by Seller/ Contractor or his representative or can be dispatched at Seller/ Contractor's cost. No claim, whatsoever shall be entertained by Purchaser on account of such replaced parts.
12.3	All the replaced and replenished plant/ equipment/ stores shall also be guaranteed as per above clauses.
12.4	Decision of Purchaser with regard to Seller/ Contractor's liability and the amount involved, if any, payable by Seller/ Contractor under the guarantee shall be final, conclusive and binding. However, vendor's maximum liability will be limited to the total contract value including taxes, duties and freight except under the condition of Risk purchase including taxes, duties and freight. This shall not be applicable on the recoveries arising out of Risk and Cost, recoveries made by Customer from BHEL on account of Contractor, any other type of recoveries for workmanship, material, T&P etc. due from the contractor.
13.0	<u>(A) DELIVERY / COMPLETION SCHEDULE (FOR SUPPLY contract)</u>
13.1	Supply of plant/ equipment/ stores shall not be considered complete until they have been inspected and accepted at the place and destination specified for delivery by the time stipulated under the terms & conditions of the Order/ Contract. Mere payment by itself shall not constitute acceptance of the goods or materials in any manner, whatsoever.
13.2	Terms of delivery shall be FOR dispatch station / project site for indigenous supplies and C&F for foreign supplies.
	<u>(B) DELIVERY / COMPLETION SCHEDULE (FOR Turnkey Packages E&C contract)</u>:- E&C shall be considered completed after completion of TRIAL operation / PG test and Handing over (as applicable) of complete package.
14.0	<u>INSPECTION AND TESTING AT CONTRACTOR'S PREMISES</u>
14.1	Purchaser's nominated Inspection Agency shall have at all reasonable times access to Seller/ Contractor's premises or works and shall have the power at all reasonable times to inspect drawings of any portion of the work or examine the materials and workmanship of the plant/ equipment/ stores during their manufacture, and if part of the plant/ equipment/ stores is manufactured at other premises, the Seller/ Contractor shall arrange for inspection, examination and testing by the Inspection Agency as if the plant/ equipment/ stores is manufactured on the Seller/ Contractor's premises.
	Inspection calls should be raised by the Seller/ Contractor on BHEL CQS Website/CQIR website link.

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Such inspection, examination and testing by itself shall not relieve the Seller/ Contractor from any obligation under the Order/ Contract.

Non-conformance from the contract specifications shall be reported by the Seller/ Contractor as per Part – I of Annexure – IV.

- 14.2 Seller/ Contractor shall give Inspection Agency reasonable notice of any material being ready for testing and the Inspection Agency shall (unless the inspection of tests is voluntarily waived) attend at the Seller/ Contractor's premises within seven (7) days of the date on which the material is notified as being ready. All standard shop tests, physical and chemical tests required by the standards or as may be prescribed or approved as per Order/ Contract shall be conducted by the Seller/ Contractor. Purchaser/ Inspection Agency reserves the right to waive any of the above tests requirements and to prescribe new tests, if found necessary, to complete the work so as to conform to the best practices. Seller/ Contractor shall forthwith forward to the Inspection Agency, duly certified copies of the test certificates in quadruplicate, for approval. Further copies of the shop test certificates shall be bound with the instruction manuals referred to in "Seller/ Contractor's documents, drawings and instruction manuals".

In case of delay in witnessing of inspection beyond stipulated time (i.e. 7 days from the date on which the material is notified as being ready), by BHEL arising due to reasons not attributable to vendor, BHEL will extend the delivery period for such delay in carrying out inspection. If BHEL is not able to witness inspection up to 15 days then in addition to delay beyond stipulated period, extension in delivery time of 7 days' for arranging fresh inspection will be given.

- 14.3 Where the Order/ Contract provides for tests/ inspections at the premises or works of the Seller/ Contractor or any sub-contractor, the Seller/ Contractor, except specified otherwise, shall provide free of charge such assistance, labour, materials, electricity, fuel, water, stores, apparatus, measuring instruments and test equipment including any other facilities as may be reasonably required to carry out such tests efficiently.

14.4 INSPECTION MEASURING AND TEST EQUIPMENT'S

- 14.4.1 Inspection Measuring and Test Equipment (IMTE) whether used by the Seller/ Contractor or sub-contractor shall be calibrated, maintained and controlled. Calibration shall be valid and IMTE maintained in sound condition during usage.

- 14.4.2 In addition to above, Seller/ Contractor shall ensure the following:

- i. Measurement uncertainty is known and consistent with required measurement capability of the IMTE.
- ii. Selection of IMTEs is compatible with the necessary accuracy and precision of required measurement.
- iii. IMTEs are calibrated at the required intervals against certified equipment having known valid relationship to nationally recognized standards, at recognized calibration labs.
- iv. Calibration records are available and traceable to the particular IMTE.
- v. In case, during recalibration, the IMTE is found out of calibration, report on action taken to validate the previous results along with both calibration records of the IMTE to be furnished to Inspection Agency.

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vi. IMTEs are stored, handled and preserved such that accuracy and fitness are maintained and safeguarded from adjustments.

Note -Purchaser's decision on acceptability of the product in such cases shall be binding.

14.4.3 Responsibility of usage of valid and calibrated IMTEs by his sub-contractor(s) shall be of the Seller/ Contractor.

14.4.4 In case, calibration records are required by purchaser, copies of the same shall be furnished.

14.4.5 Seller/ Contractor shall be fully responsible for the Quality of products supplied by sub-contractors.

15.0 MATERIAL DESPATCH CLEARANCE CERTIFICATE (MDCC)

15.1 When the tests have been satisfactorily completed at Seller/ Contractor's works, the Inspection Agency shall issue an inspection report that effect within seven (07) days after completion of the tests, but if the tests were not witnessed by the Inspection Agency or his representative, the material acceptance report would be issued within seven (07) days after receipt of the test certificates by the Purchaser.

15.2 Purchaser will issue MDCC to the Seller/ Contractor within 7 days based on inspection report/ test certificates/Certificate of Conformance as applicable.

In case of delay in issuance of MDCC beyond 7 days stipulated time (i.e. from the date of successful inspection report), by BHEL arising due to reasons not attributable to vendor, BHEL will extend the delivery period for such delay in issuing MDCC. If BHEL is not able to issue MDCC up to 15 days then in addition to delay beyond stipulated period, 7 days' additional time shall be given to the vendor to facilitate the vendor for arranging logistics arrangements.

15.3 Seller/ Contractor shall not dispatch any material before issue of MDCC by Purchaser.

15.4 Satisfactory completion of tests or issue of MDCC shall not bind the Purchaser/ Owner to accept the supply/ equipment should it, on further tests after erection, be found not to comply with the contract provisions.

16.0 DELIVERY FAILURE AND TERMINATION / LIQUIDATED DAMAGES

16.1 Timely dispatch/delivery and completion of other schedules as stipulated in Order/Contract shall be the essence of Order/Contract. If the Seller/Contractor fails to complete the dispatch/delivery and other schedules within the time period stipulated in Order/Contract, or within any extension of time granted by Purchaser, it shall be lawful for purchaser to recover damages for breach of Order/Contract and hereunder.

16.2 DELAYED DELIVERY

16.2.1 a) **LD on mandatory spares portion** where delivery for mandatory spares is defined separately in the NIT. LD shall be applicable @ ½ percent and applicable GST thereon, of the total mandatory spares portion contract value excluding GST per week or part thereof, limiting to 10% of total contract value of mandatory spares excluding GST.

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b) **LD on Supply and E&C-** Purchaser reserves the right to recover from the Seller/ Contractor, as agreed liquidated damages and not by way of penalty, a sum equivalent to half ($\frac{1}{2}$) percent and applicable GST thereon, of the total contract price (main supply and E&C) excluding GST per week or part thereof, subject to a maximum of ten (10) percent of the total contract price (main supply and E&C) excluding GST, if E&C completion of the package is delayed beyond the contractual completion date or extension thereof as per the period stipulated in the Order/ Contract. Liquidated Damages will not be deducted from supply payment for delay in supply. LD on Mandatory spares shall be dealt as per clause (a) above.

c) **LD on service portion** (PG test, O&M, AMC, etc.) where delivery for services are defined separately in the NIT. LD shall be applicable @ $\frac{1}{2}$ percent and applicable GST thereon, of the total service portion contract value excluding GST per week or part thereof subject to a maximum of ten (10) percent of the total contract value of service portion excluding GST.

NOTE:

- i. Liquidated Damages will not be deducted from supply payment for delay in supply.
- ii. LR/RR date for indigenous supplies (Bill of Lading/AWB for Foreign supplies) shall be treated as the date of dispatch for levying LD as per clause 16. However, if receipted LR date for indigenous supply is beyond **30 days for FTL/ 45 days for PTL from the date of LR** (PTL to be clearly mentioned in LR), such excess period shall be considered for LD purpose irrespective of dispatch date. **Import General Manifest (IGM)/Bill of entry date** (whichever is earlier), for foreign supplies, is beyond 90 days from the date of Bill of Lading/AWB, such excess period shall be considered for LD purpose irrespective of dispatch date.
- iii. In case of any amendment/ revision, LD shall be linked to the amended/ revised contract value and delivery date(s).
- iv. If Order/ Contract involves two or more Units/ Sets/ Lots/ Stages, then Liquidated Damages shall be levied on order/ contract value excluding GST of the delayed Unit/ Set/ Lot/ Stage, provided delivery stipulated in the Order/ Contract is Unit/ Set/ Lot/Stage wise, however total LD amount shall be limited to 10% of total order/ amended order value excluding GST of delayed Unit/ Set/ Lot/Stage. Any subsequent lot released (not envisaged in original contract) due to increase in quantity within permissible quantity variation shall be treated as separate lot for the purpose of LD.
- v. The sum specified above is not a penalty but a genuine pre-estimate of the loss/ damage which will be suffered by purchaser on account of delay on the part of the Contractor/Seller and the said amount will be deductible without proof of actual loss or damage caused by such delay

16.2.2 Purchaser reserves the right to purchase from elsewhere on account of and at the risk and cost of Seller/ Contractor, with notice to Seller/ Contractor, the plant/ equipment/ stores due for delivery but not so delivered, or their equivalent without cancelling the Order/ Contract in respect of plant/ equipment/ stores not yet due for delivery. The manner and method of such purchase shall be at the discretion of the Purchaser.

16.2.3 Purchaser reserves the right to cancel the Order/ Contract or a portion thereof for the plant/ equipment/ stores not so delivered at the risk and cost of the Seller/ Contractor and the Seller/ Contractor shall be liable to the Purchaser for any excess cost thereof.

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16.2.4 Seller/ Contractor shall continue performance of the Order/ Contract, under all circumstances, to the extent not cancelled.

17.0 **INSURANCE**

17.1 It is the entire responsibility of the successful bidder to insure their workmen against accident and injury while at work as required by the relevant rules and to pay compensation, if any, to their workmen as per statutory act. The successful bidder shall also insure their staff against accident/ injury with Workmen's compensation policy, group personal insurance, etc., as may be applicable.

17.2 The successful bidder shall take insurance covering for all materials (excluding plant material), tools & plants, manpower, workers, etc., required to be provided & deployed for the job by the bidder.

17.3 These insurance covers have to be taken prior to start of work and they shall make available the policy to Construction Manager, BHEL for necessary verification before start of work. However, irrespective of such verification/ acceptance, sole responsibility to maintain adequate insurance cover at all times during the period of contract shall lie with The successful bidder. Regarding aforesaid insurance cover, The successful bidder shall directly deal with the insurance company for all matters regarding the insurance in his scope.

17.4 BHEL/ customer shall arrange comprehensive insurance policy for total supply & services for main equipment/ system covering transit risks & loss, destruction or damage during handling at site, storage, civil works, erection, testing and commissioning up to trial operation/ completion of unit(s) including theft, sabotage, fire, lightning and other natural calamities.

17.5 Successful bidder shall timely intimate dispatches/ discrepancy during contract operation, to the underwriter. The name of the underwriter and Policy No shall be intimated in due course of time.

17.6 The successful bidder will take necessary precautions/ due care to protect the material at project site, while in their custody from any damage/ loss till the same is handed over to BHEL/ customer at project site. For lodging/ processing of insurance claim The successful bidder will submit necessary documents. BHEL reserve the right to recover the loss from The successful bidder in case the damage/ loss is due to negligence/ carelessness on the part of The successful bidder. In case of theft of material under Successful bidder's custody, the same shall be reported to police by The successful bidder immediately and copy of FIR and subsequently police investigation report shall be submitted to BHEL/ customer for taking up with insurance. However, this will not relieve The successful bidder of their contractual obligation for the materials in his custody.

17.7 In case the damage/ loss/ theft of materials are attributable to negligence/ failure in discharging the duties and obligations of The successful bidder, the expenses incurred for repair/ replacement of such components in excess of the amount realized from the underwriters, limited to Normal Excess (Deductible Franchise) shall be recovered from The successful bidder.

17.8 In case the claim is summarily rejected by the underwriters due to WILFUL NEGLIGENCE of The successful bidder, the entire cost of repair/replacement will be recovered from The successful bidder.

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17.9 It will be responsibility of The successful bidder to replenish the items lost/ damaged in time without hampering the schedule of work and without waiting for settlement of insurance claim. Amount received from the underwriters on settlement of insurance claim shall be passed on to The successful bidder as and when available.

18.0 **INTER-CHANGEABILITY AND CHANGES** (Applicable for spares and replacements)

18.1 All similar components or parts of similar equipment supplied by Seller/ Contractor shall be interchangeable with one another.

18.2 Even though all the work and materials necessary for satisfactory completion of the works may not be detailed in the specifications and schedules, the cost will be considered to be within the contract price and no extra charges shall be payable. However, if there are substantial changes in the specifications of the plant/ equipment/ stores, consequential changes in prices shall be mutually agreed between Purchaser and Seller/ Contractor.

19.0 **PACKING**

19.1 Packing shall be in conformity with specifications and shall be such as to ensure prevention of damages, corrosion, deterioration, shortages, pilferage and loss in transit or storage.

19.2 In case of shipment by sea, the packing shall be sea-worthy and of international standards.

19.3 Packing List shall be submitted as per standard format along with advance set of documents for claiming payment which must indicate:

- i. No. of boxes
- ii. Packing size.
- iii. Gross weight and net weight of each package.
- iv. Contents of the package with cross reference to BoM item code no. or item serial no.
- v. Quantity of each item separately.

The Packing list must cover all the BoM items and supplier to give the following undertaking in the Packing List:

“The Packing List provided herewith is as per the BoM approved under PO No.-.....dated-”

19.4 **PACKING FOR SPARES**

Different types of spares i.e. start-up/ commissioning spares and initial spares (Mandatory spares and recommended O&M spares) are to be packed separately. Mandatory and Recommended Spares shall not be packed with main equipment but shall be packed separately.

Packing of Mandatory Spares/Recommended spares should have a Red color band all around the container / package and words “MANDATORY / RECOMMENDED SPARES” written in red color. Project, Package description, BHEL’s PO No. and date s also be clearly mentioned on the box. One copy of laminated packing slip shall be placed inside the container and one copy shall be pasted on the cover of the container.

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19.5 COLOUR CODING OF TAGS/ MARKING/ STICKERS

19.5.1 Aluminum stickers are required to be attached to large components but plastic sheet tags should be tied with small components, giving details like purchase order, description of the component, quantity etc.

19.5.2 Tags should be of the color as mentioned below:

Main equipment	: Yellow or White tag
Mandatory spares	: Pink or Red tag
Start-up/ Commissioning spares	: Blue tag
O&M spares	: Green tag

19.5.3 Similar color scheme to be followed wherever stickers are pasted on components.

20.0 STORAGE INSTRUCTIONS

Successful tenderer shall be required to submit detailed instructions for storage of supplies within three months of date of issue of LOI /LOA/ Order/ Contract. In case storage instruction available in technical specification of the tender, same shall be followed by the vendors.

21.0 MATERIAL RECEIPT CERTIFICATE

Seller/ Contractor shall arrange Material Receipt Certificate from the project site, duly signed by Purchaser/ Owner Site Engineer after receipt & physical verification of the material at site.

22.0 CONSIGNEE'S RIGHT OF REJECTION

22.1 Notwithstanding any approval of Purchaser or Engineer in respect of plant/ equipment/ stores or materials or other particulars or work or workmanship involved in performance of order/ contract (with or without any test carried out by Seller/ Contractor or Inspection Agency or under direction of Contract Engineer), and notwithstanding delivery of the plant/ equipment/ stores where so provided to the consignee, it shall be lawful for the consignee, on behalf of the Purchaser, to reject the plant/ equipment/ stores or any part/ portion of consignment thereof, within 60 days after actual delivery at the stipulated place or destination, if such plant/ equipment/ stores or part/ portion of consignment thereof is not in conformity with terms and conditions of order/ contract whether on account of any loss, storage, deterioration or damage before dispatch or otherwise, whatsoever.

22.2 Rejected goods or materials shall be removed by Seller/ Contractor within a period of 30 days from the date of receipt of notice of such rejection. The expenses to be incurred in respect thereof shall be borne entirely by the Seller/ Contractor.

23.0 RISK IN STORES (FOR TURNKEY CONTRACTS)

Seller/ Contractor shall perform the order/ contract in all respects in accordance with terms and conditions thereof. Stores and every constituent part thereof, whether in possession or control of the Seller/ Contractor, his agents or servants, or a carrier, or in joint possession of Seller/ Contractor, his agent or servants and Purchaser, his agents or servants, shall remain in every respect at the risk of Seller/ Contractor until their actual delivery to consignee at the stipulated place or destination or where so provided in acceptance of offer, until their delivery to a person specified by Purchaser as interim

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consignee for the purpose of dispatch to the consignee. Seller/ Contractor shall be solely responsible for all losses, destructions, damages or deterioration to the plant/ equipment/ stores from any cause whatsoever, while the plant/ equipment/ stores await dispatch after approval by the Inspection Agency.

24.0 SHORTAGES / DAMAGES

Any shortages or damages during unloading, storage and handling at site, including at the time of erection and commissioning, shall be made good by the Seller/ Contractor at his risk and cost, to meet the project schedule. In case of faults/ discrepancies in any material, component, sub-assembly, assembly, etc., the same shall be supplied/ replenished free of cost to enable the equipment to be put to service.

25.0 CONFIDENTIALITY

Seller/ Contractor shall, at all times, undertake to maintain complete confidentiality of all data, information, software, drawings & documents, etc. belonging to the Purchaser and also of systems, procedures, reports, input documents, manuals, results and any other company documents discussed and/ or finalized during the course of execution of order/ contract. i.e. Seller/Contractor shall in no way share or use such intellectual property of BHEL/purchaser to promote his own business with others. Purchaser reserves the right to claim damages from the Seller/Contractor, or take appropriate penal action as deemed fit against the Seller/Contractor, for any infringement of the provisions contained herein.

26.0 INTELLECTUAL PROPERTY & LICENSES

If any patent, design, trademark, trade secret or any other intellectual property rights apply to the delivery or accompanying documentation/drawings, Buyer or its customer shall be entitled to the legal use thereof free of charge by means of a non-exclusive, assignable, transferrable, sub-licensable, worldwide, perpetual license. All intellectual property rights that arise due to the execution of the delivery by the Seller and by its employees or third parties involved by the Seller for the performance of the contract shall be promptly notified by the Seller to the Buyer and shall be deemed to belong to the Buyer. The Seller shall be obligated to cooperate with the Buyer and do everything necessary to obtain or perfect the above mentioned rights in favor of the Buyer.

The Seller represents and guarantees that the delivery does not infringe on any of the intellectual property rights of third parties. In the event a third party makes a claim, the Seller shall also be obligated to do everything necessary to obtain or establish the alternate acceptable arrangement pending resolution of any (alleged) claims by third parties.

The Seller agrees to indemnify, defend and hold harmless the Buyer, its officers, employees, agents, representatives, successors, assignees or any of the Buyer's customers buying or using the goods or services specified herein, against any actual or alleged infringement of such intellectual property interests, claims by third parties in this regard and shall pay to the Buyer merely on demand without demur and without requiring the Buyer to furnish any proof of such claim, such sum as indicated in the demand towards any liabilities, damages, penalties, injuries, claims, demands, actions, cost and expenses etc. suffered as a result thereof.

The Seller agrees that its liability under this clause shall be unlimited

27.0 DEFAULT/ BREACH OF CONTRACT, INSOLVENCY AND RISK PURCHASE

27.1 In case of delays (beyond the maximum late delivery period as per LD clause) in completion of works or non-fulfilment of any other terms and conditions of the Contract as enumerated subsequently in this

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clause, then, without prejudice to its right to recover any expenses, losses or damages to which the Buyer may be put to incur or sustain by reason of the Seller/Contractor's default or breach of Order/Contract or to suspend business dealings with the Seller/Contractor in terms of the Buyers' Guidelines for Suspension of Business Dealings as applicable from time to time, the Buyer shall also be entitled to cancel the Order/ Contract either in whole or portion thereof without compensation to Seller. On the occurrence of any of the acts/omissions mentioned below, the Buyer may if it so desires, procure upon such terms and in such manner as deemed appropriate, plant/ equipment/ stores not so delivered or others of similar description where plant/ equipment/ stores exactly complying with particulars are not, in the opinion of the Buyer (which shall be final), readily procurable, at the risk and cost of the Seller.

The Seller shall be liable to the Buyer for any excess costs incurred thereof and the Seller shall continue the performance of the Order/Contract to the extent not cancelled under the provisions of this clause. The Seller shall on no account be entitled to any gain on such repurchases. If the Bidder does not agree to this Risk Purchase clause, BHEL reserves the right to reject the bid/offer of the Bidder.

The order/contract may be cancelled in whole or part thereof and Risk & Cost Clause in line with terms and conditions of PO/Contract may be invoked by the Buyer in any of the following cases:

- i. If the Seller/Contractor fails to deliver the goods or materials or any installment thereof within the period(s) fixed for such delivery or the Seller's poor progress of the supply/services vis-à-vis delivery/execution timeline as stipulated in the contract, backlog attributable to the Seller including unexecuted portion of supply does not appear to be executable within balance period available;
- ii. delivers goods or materials not of the contracted quality and failing to adhere to the contract specifications/execution methodology;
- iii. withdrawal from or repudiation/abandonment of the supply/services by the Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the order/Contract either in whole or in part or otherwise fails to perform the Order/Contract.
- iv. Non supply by the Seller within scheduled completion/delivery period as per contract or as extended from time to time for reasons attributable to the Seller;
- v. Termination of Contract on account of any other reason(s) attributable to the Seller.
- vi. Assignment, transfer, sub-letting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.
- vii. If the Seller be an individual or a Sole Proprietorship, in the event of death or insanity of the Seller.
- viii. If the Seller/Contractor being an individual or if a partnership firm thereof, shall at any time be adjudged insolvent or shall have a receiving order for administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the order/Contract or enter into any arrangement or composition with his creditors or suspend payment or if the firm dissolved under the Partnership Act;
- ix. If the Seller/Contractor being a Company is wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager
- x. Non- Compliance to any contractual condition or any other default attributable to the Seller.

Such defaulting vendor/Seller shall not be eligible to participate in re-tendering conducted on account of risk purchase made due to fault of such vendor/Seller.

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27.2 BHEL's right to go for Risk and Cost, Calculation of Risk and Cost amount & LD, recovery options to BHEL are given in detail in Annexure-V hereto.

28.0 **TERMINATION OF CONTRACT**

28.1 Purchaser shall have the right to cancel Order/ Contract, wholly or in part, in case they are obliged to do so on account of any decline, diminution, curtailment or stoppage of their business / customer requirement and in that event, the Seller/ Contractor compensation claim shall be settled mutually.

Purchaser shall have the right to cancel order/ contract at the risk and cost of Seller/ Contractor in case either the Seller/ Contractor himself or any of his representative or agent is found to have been a previous employee (rank of Executive Director or General Manager Incharge having powers of Executive Director or General Manager having powers of Executive Directors) of the Purchaser immediately before retirement and has within a period of one years of such retirement accepted the employment of the Seller/ Contractor either as a Seller/ Contractor or as an employee without having obtained prior permission of Purchaser.

28.2 In case of cancellation of main supply order/ contract, all other associated orders/ contracts like mandatory spares/ recommended spares/ E&C/ supervision of E&C would also get cancelled.

29.0 **TRANSFER, SUB-LETTING/ ASSIGNMENT/ SUB-CONTRACTING**

29.1 Seller/ Contractor shall not sublet, transfer or assign order/ contract or any part thereof or interest therein or benefit or advantage thereof save with the prior consent in writing of Purchaser. In the event of Seller/ Contractor sub-letting, transferring or assigning order/ contract or any part thereof or interest therein or benefit or advantage thereof without such permission, the Purchaser shall be entitled to cancel the Order/ Contract and to purchase the plant/ equipment/ stores from elsewhere at risk and costs of Seller/ Contractor and the Seller/ Contractor shall be liable for any loss or damage which Purchaser may sustain in consequence of or arising out of such risk purchase.

29.2 If Seller/ Contractor is an individual or proprietary concern and the individual or the proprietor dies or the partnership is dissolved or substantially affected, then unless the Purchaser is satisfied that legal representative of individual seller/ contractor or proprietor of proprietary concern and surviving partners of partnership firm are capable of carrying out and completing the order/ contract, the Purchaser shall be entitled to cancel the order/ contract as to its incomplete portion and without being in any way liable to payment of any compensation to estate of seller/ contractor and/ or to surviving partners of seller's/ contractor's firm on account of cancellation of the order/ contract.

29.3 Decision of Purchaser that legal representatives of deceased seller/ contractor or surviving partners of the seller's/ contractor's firm cannot carry out and complete the order/ contract shall be final and binding on the parties hereto.

29.4 Terms and Conditions shall not get affected in case of merger/ amalgamation/ takeover/ re-arrangement etc.

29.5 However, engagement of a labors supply contractor for providing labors for execution of work shall not be considered as transfer/ sub-letting of the job. No prior approval from BHEL for the same shall be required.

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30.0 **FORCE MAJEURE**

- 30.1 Notwithstanding anything contained in the contract, neither the Seller nor the Buyer shall be held responsible for total or partial non execution/non- performance of any of the contractual obligations, in case such execution/performance is impeded/prevented due to occurrence of a 'Force Majeure' event not within the reasonable control of the party affected, which materially interferes or directly affects the performance of the obligations or duties under the contract.

Force Majeure event means an event beyond the control of the parties to the contract including but not limited to war, Military operations of any nature, Act of God, earthquakes, floods, fire, quarantine restrictions, acts of public enemy, blockades, civil war, explosion, epidemics, insurgency, change in law or government policy etc.

- 30.2 The party claiming to be affected by such Force Majeure event shall notify/inform the other party in writing without delay within a reasonable period of the occurrence and cessation of such event specifying the Force Majeure event and its effect on performance of contractual obligations. In the event of the parties hereto not agreeing that a force majeure event has occurred, the parties shall submit the dispute(s) for resolution pursuant to the provisions hereunder, provided that the burden of proof as to whether a force majeure event has occurred shall be upon the party claiming such an event.
- 30.3 If it is agreed between the parties that a Force Majeure event has occurred and its effect continues for a period of 36 months, then either party shall be free to cancel the contract. However, if the effect of such event ceases within this period of 36 months, the performance of the obligations put on hold shall be resumed immediately.
- 30.4 Notwithstanding the above provisions, Purchaser shall reserve the right to cancel the Order/ Contract, wholly or partly, in order to meet the overall project schedule and make alternative arrangements for completion of delivery and other schedules.
- 30.5 If a war like situation has developed in a country where Sellers's works (of this PO) is located or there is political instability or civil war and Indian Embassy located in that country/Indian Government forbids or advises for not having any business dealings in that country/ region/zone, then BHEL reserves the right to cancel the order/Contract without incurring any liability for any kind of payment or compensation to the Seller on that account.

31.0 **INDEMNIFICATION**

Seller/ Contractor shall fully indemnify and keep indemnified the Purchaser against all claims /losses/damages/demands/expenses of any nature of whatsoever nature arising during the course and out of the execution of this Order/ Contract on in connection of this contract.

32.0 **SETTLEMENT OF DISPUTES**

- 32.1 Except as otherwise specifically provided in the Order/ Contract, all disputes concerning questions of the facts arising under the Order/ Contract, shall be decided by Purchaser, subject to written appeal by the Seller/ Contractor to the Purchaser, whose decision shall be final.
- 32.2 Any dispute or difference shall be, to the extent possible, settled amicably between the parties hereto, failing which the disputed issues shall be settled through arbitration.

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32.3 Seller/ Contractor shall continue to perform the order/ contract, pending settlement of dispute(s).

33.0 **ARBITRATION & CONCILIATION**

33.1 **CONCILIATION**

If at any time (whether before, during or after the arbitral or judicial proceedings), any Disputes (which term shall mean and include any dispute, difference, question or disagreement arising in connection with construction, meaning, operation, effect, interpretation or breach of the agreement, contract), which the Parties are unable to settle mutually, arise inter-se the Parties, the same may, be referred by either party to Conciliation to be conducted through Independent Experts Committee (IEC) to be appointed by competent authority of BHEL from the BHEL Panel of Conciliators under BHEL Conciliation Scheme.

Notes:

- i. No serving or a retired employee of BHEL/Administrative Ministry of BHEL shall be included in the BHEL Panel of Conciliators.
- ii. Any other person(s) can be appointed as Conciliator(s) who is/are mutually agreeable to both the parties from outside the BHEL Panel of Conciliators.
- ii. The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof and as provided in Procedure (Annexure-X) to this GCC. The Procedure (Annexure-X) together with its Formats will be treated as if the same is part and parcel hereof and shall be as effectual as if set out herein in this GCC.
- iii. The Contractor/ supplier hereby agrees that BHEL may make any amendments or modifications to the provisions stipulated in the Procedure (Annexure-X) to this GCC from time to time and confirms that it shall be bound by such amended or modified provisions of the Procedure (Annexure-X) with effect from the date as intimated by BHEL to it.
- iv. The venue of conciliation shall be Delhi/ New Delhi/ PO issuing agency city where PO is issued by BHEL Power Sector Regional HQ

33.2 **ARBITRATION**

Except as provided elsewhere in this Contract, in case amicable settlement is not reached between the Parties, in respect of any dispute or difference; arising out of the formation, breach, termination, validity of execution of the Contract; or, the respective rights and liabilities of the Parties; or, in relation to interpretation of any provision of the Contract; or, in any manner touching upon the contract, then, either Party may, by a notice in terms of Section 21 of Arbitration & Conciliation Act in writing to the other Party commence arbitration. The notice shall as far as possible contain the particulars of all claims to be referred to arbitration.

The arbitration shall be conducted by Sole Arbitrator to be appointed mutually by the Competent Authority of BHEL (purchaser) & Seller within the statutory period as applicable. As far as practicable, names of 2 or more persons shall be forwarded to the Seller for seeking consent of the Seller to one of the names proposed for appointment as arbitrator in the case. If the parties fail to agree on the name of Sole Arbitrator, then appointment shall be made as per the provisions of section 11 of the Arbitration & Conciliation Act.

The Arbitrator shall pass a reasoned award and the award of the Arbitrator shall be final and binding upon the Parties. The language of Arbitration shall be English.

Subject as aforesaid, the provisions of Arbitration of Conciliation Act 1996 (India) or statutory modification/ Amendments or re-enactments thereof and the rules made thereunder and for the time

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being in force shall apply to the arbitration proceedings under this clause. The seat and venue of arbitration shall be Delhi/ New Delhi/ PO issuing agency city where PO is issued by BHEL Power Sector Regional HQ

The cost of arbitration shall be borne equally by the parties' subject to the final apportionment of the cost of the arbitration as per the award/order of the arbitrator.

Subject to the arbitration in terms of Clause above, the Courts at Delhi-NCR/ (PO issuing agency city- where PO has been issued by BHEL Power Sector Regional HQ) shall have exclusive jurisdiction over any matter arising out of or in connection with this contract.

Notwithstanding the existence or any dispute or difference and/or reference for the arbitration, the Contractor shall proceed with and continue without hindrance the performance of its obligations under this Contract with due diligence and expedition in a professional manner except where the Contract has been terminated by either Party in terms of this Contract.

33.3 IN CASE OF CONTRACT WITH PUBLIC SECTOR ENTERPRISE (PSE) OR A GOVERNMENT DEPARTMENT & INSTITUTES, THE FOLLOWING SHALL BE APPLICABLE

In the event of any dispute or difference relating to the interpretation and application of the provisions of the commercial contract between Central Public Sector Enterprises(CPSEs)/Port Trusts inter se and also between CPSEs and Government Departments/Organizations (excluding disputes concerning railways, Income Tax, Customs and Excise Departments) such dispute or difference shall be taken up by either party for resolution through Administrative Mechanism for Resolution of CPSEs Disputes(AMRCD) as mentioned in Department of Public Enterprises(DPE) office Memorandum No. 4 (1)/2013-DPE(GM)/FTS-1835 dated 22.05.2018 as amended from time to time.

A copy of the extant Department of Public Enterprises (DPE) Office Memorandum is available on Govt. of India website and the same shall apply with any amendments as made from time to time.

34.0 LAWS GOVERNING THE CONTRACT

34.1 Contract, including all matters connected with contract, shall be governed by the Indian Law, both substantive and procedural, for the time being in force including modification thereto, and shall be subject to the exclusive jurisdiction of the Indian courts at Delhi-NCR/ (PO issuing agency city- where PO has been issued by BHEL Power Sector Regional HQ).

It shall be responsibility of the vendor to ensure compliance of Labor laws, safety regulations, workmen compensation, insurance, BOCW act or other relevant acts.

34.2 **HEALTH SAFETY AND ENVIRONMENT GUIDELINES (HSE)** of BHEL are available on www.pem.bhel.com vendor section for compliance for erection (composite) contracts.

35.0 JURISDICTION OF COURT

Courts at Delhi-NCR/ (PO issuing agency city- where PO has been issued by BHEL Power Sector Regional HQ) shall have exclusive jurisdiction to decide the dispute, if any, arising out of or in respect of the contract(s) to which these conditions are applicable.

36.0 **HEALTH SAFETY AND ENVIRONMENT GUIDELINES (HSE)** of BHEL are available on www.pem.bhel.com under tenders/EOI > Important instructions to bidders compliance for by supplier/ seller/ contractor at given link- <https://www.pem.bhel.com/Documents/GCC/HSE%20Plan.pdf>

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37.0 SUPPLIER PERFORMANCE MONITORING AND RATING SYSTEM

- 37.1.1 A detailed plan/ programme for completion of the contractual scope of work as per the time schedule given in the contract shall be jointly agreed between BHEL and Contractor, before commencement of work. The above programme shall be supported by month/ Quarter wise deployment of resources viz. Manpower, T&P, Consumables, etc. Progress will be reviewed periodically (Monthly/ Quarterly) vis a vis this jointly agreed programme. Joint periodical progress reports monthly/ Quarterly and other reports/information including manpower, consumables, T&P mobilization etc. as applicable shall be made. These progress reports shall also form basis for evaluating agency time extension proposal.
- 37.1.2 Monthly/ Quarterly progress review between BHEL and Contractor shall be based on the agreed program as above, availability of inputs/fronts etc., and constraints if any, as per prescribed formats.
- 37.1.3 The monthly/ Quarterly Joint progress review shall record shortfalls attributable to (i) Contractor, (ii) Force Majeure Conditions, and (iii) BHEL
- 37.1.4 Online performance monitoring system as defined in NIT will be used for quarterly/ overall performance review of the vendors.

38.0 PHYTOSANITARY CERTIFICATE:

- i. As per the Indian Law, all consignments being imported into India by air/sea require a phytosanitary certificate from the country of origin-if articles have been packed with wooden packaging materials. This is mandatory. Please confirm in your offer/dispatch documents that the required phytosanitary certificate will be submitted.
- ii. Packaging material means any kind of material of plant origin used for packing which include, hay, straw wood shavings, wood chips, saw dust, wood waste, wooden pallets, dunnage mats, wooden packages, coir pith, peat or sphagnum moss etc.

39.0 HOLD ON CONTRACT EXECUTION CASES OTHER THAN FORCE MAJEURE

In case of uncertainty regarding lifting of HOLD on contract execution relating to any activity put by Buyer/BHEL (because of any reason other than Force Majeure) or by end customer (cancellation or hold on project), the contract/Purchase Order may be short closed by Buyer/BHEL after 3 years from date of imposition of HOLD without prejudice to any claim of either party with regard to the executed portion of the contract. However, all future obligations of the Buyer and Seller with respect to the contract/Purchase Order shall come to end in case of such short closure.

40.0 NON DISCLOSURE AND INFORMATION OBLIGATIONS

All drawing and technical documents or technical information whether contained in physical form or in electronic form or any oral information that is subsequently transcribed in to physical/electronic form etc. (hereinafter referred to as "Technical Information") relating to the product or it's manufacture submitted by one party to the other, prior or subsequent to the formation of contract, shall remain property of the disclosing party. Technical Information belonging to one party and received by the other party, shall be treated as Confidential Information and shall not, without the express written consent of such disclosing party, be used by the receiving party or any of its agents, employees, representatives etc., for any other purpose, other than that, for which such Technical Information was

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provided. Such Technical Information shall not, without the prior written consent of the disclosing party, otherwise be used or copied, reproduced, transmitted or communicated to a third party.

The Seller shall provide Buyer with all information pertaining to the delivery in so far as it could be of importance to Buyer. The Seller shall not reveal confidential information (including price) to its own employees not involved with the tender/ Contract & its execution and delivery or to third parties, or to make use of such information pertaining to any data, designs, drawings, specifications and other information furnished to it by the Buyer, unless Buyer has agreed to this in writing beforehand. The Seller shall not be entitled to use the Buyer's name in advertisements and other commercial publications without prior written permission from Buyer.

Upon completion, cancellation or termination of this order, Seller shall return to the Buyer all such data, designs drawings, specifications and other information, including copies made by Seller.

DRAWINGS, PATTERNS & TOOLS: All drawings, patterns & tools supplied by BHEL or made at BHEL's expense are BHEL's property. These cannot be used or referred to any other party and must only be used in the execution of BHEL's orders. These should be preserved at the seller's/ contractor's cost for a period of not less than 5 years. Patterns & tools should be returned to BHEL within 90 days of issue of the same or completion of work, whichever is later.

Bidder/Seller/ Contractor shall, at all times, maintain complete confidentiality of all technical information including data, information, software, drawings & documents, etc. belonging to the Buyer and also of systems, procedures, reports, input documents, manuals, results and any other company documents discussed and/ or finalized during the course of execution of order/ contract.

The Confidentiality obligation of the Seller under this Agreement shall survive the Expiration/early termination of this contract. The above undertaking in this clause shall, however, not apply to Technical Information which:

- i. through no fault of the receiving Party, is or comes in public domain through publication or otherwise, or
- ii. the receiving Party can establish was in its possession, without any restrictions as to its disclosure at the time of its receipt, or
- iii. is subsequently lawfully acquired by the receiving Party independently of the other Party, or
- iv. receiving Party is required to disclose to comply with applicable law, rule, regulation, or court order or other compulsory process of a court or other governmental body.

If the Seller, in order to perform its Contract needs to disclose to a subcontractor or suppliers the Technical Information received from the other Party e.g. for the purpose of use, manufacture, repair, maintenance and purchase, then such first mentioned Party shall have the right to do so to the extent needed for such purpose, but shall first obtain from such subcontractor or supplier a confidentiality undertaking consistent with the provisions of this Clause and submit to BHEL for records. In case of failure of seller to ensure compliance of this clause, he seller shall be liable to compensate BHEL for any damage/ loss whatsoever suffered by BHEL as a result of breach of this clause.

41.0 NON WAIVER OF DEFAULTS

If any individual provision of the Contract is held by a Court or any other Responsible Authority to be unlawful, invalid, void or unenforceable, that provision shall be deemed to be deleted from the Contract and shall be of no force or effect and this Contract shall remain in full force and effect as if such provision had not originally been contained in this Contract and the other provisions shall not be affected. In the event of any such deletion the Parties shall negotiate in good faith in order to agree to terms of a mutually acceptable and satisfactory alternative provision in place of the provision so deleted.

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No waiver shall be effective unless it is communicated in writing to the other party. A waiver accorded on one occasion shall not constitute a continuing waiver in respect of such such/similar breach/event in future and separate waiver shall be necessary for each event/breach.

The failure of BHEL to exercise any contractual right or remedy or to enforce any of the terms and conditions of this Order/Contract or to exercise any right or privilege granted to BHEL under this Contract or under law shall not constitute a waiver thereof or constitute a waiver of any right or remedy arising from any other breach of the Contract nor shall it release the seller from any of the warranties or obligations of the Order/Contract and the same shall continue in full force and effect.

42.0 **QUALITY ASSURANCE DOCUMENTS (AS APPLICABLE)**

The vendor shall be required to submit the following Quality Assurance Documents (in original + one copy) within 2 weeks after dispatch of the equipment (as applicable).

- a) Test report of components.
- b) Non-destructive examination results/ reports including radiography interpretation reports.
- c) Welder identification list listing welders and welding operator's qualification procedures and welding identification symbols.
- d) Sketches and drawings used for indicating methods of traceability of the radiographs to the location of the equipment.
- e) Stress relief time temperature charts.
- f) Factory test results for testing required as per applicable codes and standards referred to in the specification.
- g) Inspection Report duly signed by QA Personnel of BHEL/ Third Party/and customer and vendor for the agreed inspection hold points. During course of inspection the following will also be recorded:
 - i. When some important work repair work is involved to make the job acceptable.
 - ii. The repair works remain part of the accepted product quality.
 - iii. Letter of conformity certifying that that requirement is in compliance with finalised
 - iv. specification requirements.

43.0 **EXTENSION OF TIME FOR COMPLETION**

a) If the completion of work as detailed in the scope of work gets delayed beyond the contract/ completion period, the seller/ contractor shall request for an extension of the contract and BHEL at its discretion may extend the contract as per procedure prescribed in clause 43.0 (b), (c) & (d).

Pending finalization of extension of time, payment to vendors for supply/E&C executed during such periods will be done only in excess of maximum LD amount as per LD clause for delayed delivery (clause no 16.1). On finalization of extension of time, payments to vendor shall be regularized in line with approved time extension proposal.

b) Based on the reviews jointly signed as per clause no 37.1, the scope balance at the end of original contract period less the backlog attributable to the seller/ contractor shall be quantified, and the number of months of 'Time extension' required for completion of the same shall be jointly worked out. Within this period of 'Time extension', the seller/ contractor is bound to complete the portion of backlog attributable to the seller/ contractor. Any further 'Time extension' or 'Time extensions' at the end of the previous extension shall be worked out similarly.

c) However, if any 'Time extension' is granted to the seller/ contractor to facilitate continuation of work and completion of contract, due to backlog attributable to the seller/ contractor alone, then it shall be without

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prejudice to the rights of BHEL to impose LD in line with clause no 16.1 for the delays attributable to the seller/ contractor, in addition to any other actions BHEL may wish to take at the risk and cost of seller/ contractor.

d) A joint program shall be drawn for the balance amount of work to be completed during the period of 'Time Extension'. Review of the program and record of shortfall shall be done as per clause no 37.1.

e) During time extension of E&C contract, Time extension for Supply contract shall also be issued based on delay analysis of E&C contract.

44.0 OVER RUN CHARGES (Only for E&C contract): - This shall be applicable only for Erection and commissioning (E&C) contract:

i. In case the E & C scheduled completion time gets extended beyond the period as stated in E&C LOI / LOA due to reasons not attributable to the contractor, the contractor shall be considered for payment of over run charges @1% of E&C contract value (excluding taxes) limiting up to Rs 1,00,000 per month or as defined in SCC subject to total ORC limited to 10% of E&C contract value (excluding taxes) . on fulfilment of following conditions:-

1. Initial mobilisation of manpower, T&P has been completed and Erection work started by agency.
2. Materials worth 80% of supply contract value have been received at site. (20% assumed as ready stock & shelf life items)
3. The reasons for delay in completion of work are not attributable to contractor but however subject to the provisions of clause 30 of GCC related to "Force Majeure".
4. Contractor achieves the month wise targets fixed during the overrun period for which ORC is being claimed. No payment shall be paid for the month, if the targets are not achieved for that month due to reasons attributable to the contractor. Monthly package Joint review shall form basis for such evaluation. In case of dispute about the same, BHEL engineer decision shall be final.
5. The contractor maintains sufficient workforce and other resources required for proper E&C/storage of material already received at site.

45.0 PRICE VARIATION CLAUSE: - PVC (as per SCC / NIT) shall be applicable for Supply, Mandatory Spares & E&C portions, if there is delay beyond original overall completion schedule not attributable to vendor.

46.0 ADVANCE

- i. **ADVANCE:** Normally no advance is payable to the contractor. However, advance payment in exceptional circumstances shall be interest bearing and secured through a Bank Guarantee and shall be limited to a maximum of 5% of contract value. This 'Interest Bearing Recoverable Advance' shall be payable in not less than two instalments with any of the instalment not exceeding 60% of the total eligible advance.
- ii. **ADDITIONAL INTERIM ADVANCE:** In exceptional circumstances, with due justification, Competent Authority of BHEL is empowered to approve proposals for payment of additional interim interest bearing advance against Bank Guarantee, for resource augmentation towards expediting work for project implementation.

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- iii. Bank Guarantee towards 'Interest Bearing Recoverable Advance' shall be at least 110% of the advance so as to enable recovery of not only principle amount but also the interest portion, if so required.
- iv. Contractor shall establish the utilization of advance drawn before the release of next instalment.
- v. Payment and recovery of Interest Bearing Recoverable advance shall be at the sole discretion of BHEL and shall not be a subject matter of arbitration.
- vi. The rate of interest applicable for the above advances shall be the base rate of State Bank of India prevailing on the date of release of advance plus 6%, and such rate will remain fixed till the total advance amount is recovered.
- vii. Unadjusted amount of advances paid shall not exceed 5% of the total contract value at any point of time. Recovery of advances shall be made from the due Bills progressively such that the advance amounts paid along with the interest is fully recovered by the time the contractor's billing reaches 90% of contract value.
- viii. Recovery rate per month shall be the sum of:
 - Not less than 10% of Running Bill amount
 - Simple interest up to the date of due Bill on the outstanding Principle amount/amounts
- ix. Contractor to submit Bank Guarantee as per prescribed formats for each of the advance and shall be valid for at least one year or the recovery duration whichever is earlier. In case the recovery of dues does not get completed within the aforesaid BG period, the contractor shall renew the BG or submit fresh BG for the outstanding amount, valid for at least one year or the remaining recovery duration whichever is earlier.
- x. BHEL is entitled to make recovery of the entire outstanding amount in case the contractor fails to comply with the BG requirement.

47.0 RESTRICTIONS UNDER RULE 144(xi) OF THE GENERAL FINANCIAL RULES (GFRs), 2017

- I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.
- II. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
- III. "Bidder from a country which shares a land border with India" for the purpose of this Order means
 - a. An entity incorporated, established or registered in such a country; or
 - b. A subsidiary of an entity Incorporated. established or registered in such a country; or
 - c. An entity substantially controlled through entities incorporated, established or registered in such a country; or
 - d. An entity whose beneficial owner is situated in such a country; or
 - e. An Indian (or other) agent of such an entity; or
 - f. A natural person who is a Citizen of such a country; or
 - g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above.
- IV. The beneficial owner for the purpose of (iii) above will be as under:

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1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership Interest or who exercises control through other means,

Explanation-

- a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent. of shares or capital or profits of the company;
- b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions Including by virtue of their shareholding or management rights or shareholder's agreements or voting agreements;

2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together. or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;

3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of Individuals;

4. Where no natural person is Identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official;

5. In case of a trust, the identification of beneficial owner(s) shall Include identification of the author of the trust. the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.

V. An Agent is a person employed to do any act for another, or to represent another in dealings with third person

VI. The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

Note- The above clause shall not be applicable for the bidders from those countries (even if sharing a land order with India) to which the Government of India (GoI) has extended lines of credit or in which the GoI is engaged in development work.

Bidders to submit the certification (as applicable) as per Order issued by Ministry of Finance.



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ANNEXURES

ANNEXURE No.	DESCRIPTION OF ANNEXURES
I	OFFER SUBMISSION AS PER NIT
II	DEVIATION SHEET (COST OF WITHDRAWAL)
III	BANK GUARANTEE FOR PERFORMANCE SECURITY
IV	NON-CONFORMANCE REQUEST (NCR)
V	RISK AND COST CLAUSE
VI	NEFT DETAILS
VII	LOADING CRITERIA
VIII	INTEGRITY PACT
IX	LIST OF PACKAGES WITH PG TEST AND REQUIRED FINAL DOCUMENTS
X	PROCEDURE OF CONCILIATION
XI	GSTN CODES OF BHEL
XII	DEFINITION OF SUCCESSFUL COMMISSIONING, TRIAL OPERATION, HANDOVER, PG TEST & PBG RELEASE CLAUSE
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ANNEXURE – I

(To be filled up by the Bidder)

Ref. No. :
Date :

M/s Bharat Heavy Electricals Ltd.,
Project Engineering Management,
PPEI Building, HRD & ESI Complex,
Plot No. 25, Sector – 16A,
NOIDA – 201 301 (U.P.)

Attention: Shri

Dear Sir,

1. Having examined the tender documents against your tender Enquiry No. _____ dated _____ and having understood the provisions of the said tender documents and having thoroughly studied the requirements of BHEL related to the work tendered for, in connection with _____ (name of work & project site), we hereby submit our offer for the proposed work in accordance with terms and conditions mentioned in the tender documents, at the prices quoted by us in your price schedule format and as per the indicated delivery schedule.
2. If the work or any part thereof is awarded to us, we undertake to submit security-cum-contract performance bank guarantee as per your requirement.
3. We have annexed to this tender the following documents: -

Part-I (Techno Commercial Bid) - in a properly sealed cover/ uploaded on BHEL e-procurement website

- i) Complete Techno-Commercial Offer (in two sets).
- ii) Unpriced copy of deviation sheet (cost of withdrawal) – annexure -II
- iii) Unpriced copy of Price Schedule using format given by BHEL.
- iv) Any other documents (please specify).

Part-II (Price Bid along with Priced Annexure-II) - in a separate, properly sealed cover, in the format given by BHEL/ uploaded (filled in the online price schedule) of BHEL e-procurement website

Thanking you,

Yours faithfully,

(Signature of the bidder with Name, Designation and Company's Seal)



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ANNEXURE-II: DEVIATION SHEET (COST OF WITHDRAWAL)									
PROJECT:-									
PACKAGE:-									
TENDER ENQUIRY REFERENCE:-									
NAME OF VENDOR:-									
SL NO	VOLUME/ SECTION	PAGE NO.	CLAUSE NO.	TECHNICAL SPECIFICATION/ TENDER DOCUMENT	COMPLETE DESCRIPTION OF DEVIATION	COST OF WITHDRAWAL OF DEVIATION	REFERENCE OF PRICE SCHEDULE ON WHICH COST OF WITHDRAWAL OF DEVIATION IS APPLICABLE	NATURE OF COST OF WITHDRAWAL OF DEVIATION (POSITIVE/NEGATIVE)	REASON FOR QUOTING DEVIATION
TECHNICAL DEVIATIONS									
COMMERCIAL DEVIATIONS									
PARTICULARS OF BIDDERS' AUTHORISED REPRESENTATIVE									
				DESIGNATIONS		SIGN & DATE			
NAME									
NOTES:									
1. Cost of withdrawal of deviation will be applicable on the basic price (i.e. excluding taxes, duties & freight) only.									
2. All the bidders have to list out all their Technical & Commercial Deviations (if any) in detail in the above format.									
3. Any deviation not mentioned above and shown separately or found hidden in detail, will not be taken cognizance of.									
4. Bidder shall submit duly filled unpriced copy of above format indicating "quoted" in "cost of withdrawal of deviation" column of the schedule above along with their techno-commercial offer, wherever applicable. In the absence of same, such deviation(s) shall not be considered and offer shall be considered in total compliance to NIT.									
5. Bidder shall furnish price copy of above format along with price bid.									
6. The final decision of acceptance/rejection of the deviations quoted by the bidder shall be at discretion of the Purchaser.									
7. Bidders to note that any deviation (technical/commercial) not listed in above and asked after Part-I opening shall not be considered.									
8. For deviations w.r.t. Credit Period, Liquidated damages, Firm prices if a bidder chooses not to give any cost of withdrawal of deviation loading as per Annexure-VII, will apply. For any other deviation mentioned in un-priced copy of this format submitted with Part-I bid but not mentioned in priced copy of this format submitted with Priced bid, the cost of withdrawal of deviation shall be taken as NIL.									
9. Any deviation mentioned in priced copy of this format, but not mentioned in the un-priced copy, shall not be considered.									
10. All techno-commercial terms and conditions of NIT shall be deemed to have been accepted by the bidder, other than those listed in unpriced copy of this format.									
11. Cost of withdrawal is to be given separately for each deviation. In no event bidder should club cost of withdrawal of more than one deviation else cost of withdrawal of such deviations which have been clubbed together shall be considered as NIL.									
12. In case nature of cost of withdrawal (positive/negative) is not specified it shall be assumed as positive.									
13. In case of discrepancy in the nature of impact (positive/negative), positive will be considered for evaluation and negative for ordering.									

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ANNEXURE-III

CONTRACT PERFORMANCE BANK GUARANTEE

Bank Guarantee No: _____

Date: _____

To,

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of the Bharat Heavy Electricals Limited 1 (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at 1 through its Unit at..... (name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) having its registered office at 2 hereinafter referred to as the 'Vendor/Contractor/Supplier', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated 3 valued at Rs 4 (Rupees)/ FC (in words) for..... 5 (hereinafter called the 'Contract') and the Vendor/Contractor/Seller having agreed to provide a Contract Performance Guarantee, equivalent to % (.... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we, ... , (hereinafter referred to as the Bank), having registered/Head office at and inter alia a branch at being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer a maximum amount Rs 6 (Rupees) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor/Contractor/ Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor/Contractors/Supplier shall have no claim against us for making such payment.

We the bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor/Contractor/Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor/Contractor/Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor/Contractor/Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor/Contractor/Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor/Contractor/Supplier and notwithstanding any

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security or other guarantee that the Employer may have in relation to the Vendor/Contractor/Supplier 's liabilities.

This Guarantee shall remain in force up to and including 7 and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor/Contractor/Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the 8 we shall be discharged from all liabilities under this guarantee thereafter.

We, ... BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a. The liability of the Bank under this Guarantee shall not exceed 6
- b. This Guarantee shall be valid up to 7
- c. Unless the Bank is served a written claim or demand on or before 8 all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, ...Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

Dated..... ..

For and on behalf of

Place of Issue..... ..

(Name of the Bank)

1 NAME AND ADDRESS OF EMPLOYER i.e. Bharat Heavy Electricals Limited

2 NAME AND ADDRESS OF THE VENDOR / CONTRACTOR / SUPPLIER.

3 DETAILS ABOUT THE NOTICE OF AWARD/ CONTRACT REFERENCE

4 CONTRACT VALUE

5 PROJECT/SUPPLY DETAILS

6 BG AMOUNT IN FIGURES AND WORDS

7 VALIDITY DATE

8 DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. Units are advised that expiry of claim period may be kept 3-6 months after validity date. It may be ensured that the same is in line with the agreement/ contract entered with the vendor.
2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Contractor/Supplier/Bank issuing the guarantee.
3. In line with the GCC, SCC and contractual terms, Unit may carry out minor modifications in the Standard BG Formats. If required, such modifications may be carried out after taking up appropriately with the Unit/Region's Law Deptt.
4. In Case of Bank Guarantees submitted by Foreign Vendors-

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- a) From Nationalized Public Sector / Private Sector/ Foreign Banks (BG Issued by Branches In India) can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/ city or at nearest branch where the Unit (New Delhi for POs issued from PEM Noida/ PO issuing agency) is located i.e. Demand can be presented at the Branch located in the town/ city or at nearest branch where the Unit is located.
- b) From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)
- b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks** only will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It is advisable that all charges for issuance of Bank Guarantee/ Counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
- b.2 In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at sl.no. b.1 will required to be followed.
- b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). The BG Format provided to them should clearly specify the same.

or & On behalf of Guarantee issuing bank
(Office Seal)

Name:
E-mail ID:
Contact number:



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ELECTRICALS
LIMITED
(BHEL)**

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OF CONTRACT
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ANNEXURE – IV

NON-CONFORMANCE REQUEST (NCR) (GRANTING OF NCR DOES NOT ENTITLE ANY INCREASE IN PRICE OR EXTENTION OF SCHEDULE, TO VENDOR)			
PART-I (TO BE FILLED BY VENDOR)			
NAME OF VENDOR:		NCR NUMBER:	
SPECIFICATION TITLE:		SPECIFICATION NUMBER:	
PROJECT SITE:		LOI/ PO NUMBER:	
DRAWING TITLE:		DRAWING NUMBER:	
DATE BY WHICH DECISION REQUIRED ON NCR:			
SL. NO.	REQUIREMENT AS PER SPECIFICATION/ DRAWING	NON-CONFORMANCE OBSERVED/ REQUESTED	REASON
PROPOSED ACTION:			
FORWARDED TO CE IA TO SITE IA (2 Copies)			
		SIGNATURE	DATE
			SEAL

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ANNEXURE – IV (contd.)

NON-CONFORMANCE REQUEST (NCR)

(GRANTING OF NCR DOES NOT ENTITLE ANY INCREASE IN PRICE OR EXTENTION OF SCHEDULE, TO VENDOR)

PART – II (TO BE FILLED BY IA OR SITE IA)

- ☐ NCR RECOMMENDED
☐ NCR RECOMMENDED AS PER REMARKS BELOW
☐ NCR NOT RECOMMENDED

REMARKS:

ACTION

- ☐ Returned to Vendor
☐ Forwarded to CE (PEM) (2 Copies)

NAME

SIGNATURE

DATE

PART-III (TO BE FILLED IN BY BHEL)

- ☐ NCR APPROVED
☐ NCR APPROVED AS PER REMARKS
☐ NCR NOT APPROVED

REMARKS:

- A) WITHOUT INCREASE IN CONTRACT PRICE
B) WITH REDUCTION IN CONTRACT PRICE (DETAILS ENCLOSED)
C) WITHOUT AFFECTING PROJECT SCHEDULE

ACTION

- ☐ Returned to Vendor (in case NCR not approved)
☐ Forwarded to MM/ PG on _____
(For issue of PO amendment)

NAME

SIGNATURE

DATE

NOTE: Project Engineer (PEM) shall approve the NCR after obtaining consent/ approval of affected departments/ agencies and also of SH and DH.

PART- IV (TO BE FILLED BY CONTRACT ENGINEER (PEM))

PO No.

PO Date

PO Amendment No.

PO Amendment Date

DISTRIBUTION: ☐ VENDOR

(1COPY EACH) ☐ SITE IA

☐ IA

☐ PEM-ENGG.

NAME

SIGNATURE

DATE

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ANNEXURE – IV (contd.)

INSTRUCTIONS FOR VENDOR REGARDING NON-CONFORMANCE REQUEST (NCR)

1. Photo-copies of the NCR Form can be used by the Vendor, whenever required.
2. Non-conformances, due to the following and/ or other reasons, shall be raised by the Vendor, in this form, in order to obtain BHEL decision on the same.
 - a) Changes from Bid Specification and Deviations agreed during negotiations.

OR

Changes from Contract Specification required as a result of detailed design and preparation of drawings by the Vendor.

 - b) Changes in Contract Drawings and Documents approved by BHEL.
 - c) Inaccurate workmanship, procedure or practice.
 - d) Use of material other than the size, type of grade as called for in the specification/ drawing.
3. Vendor shall send two copies of the NCR to :
 - a) Contract Engineer (CE) of BHEL/ PEM for non-conformances required as a result of detailed design and preparation of drawings by the Vendor etc.
 - b) Inspection Agency (IA) for all non-conformances during manufacture/ fabrication, assembly etc.
 - c) Site Inspection Agency (Site IA) for all non-conformances during site fabrication, erection and commissioning.
4. Vendor shall mark copies of NCRs and all correspondence, in this respect, to Contract Engineer (CE) of BHEL/ PEM.
5. Names and addresses of Inspection Agency and Site Inspection Agency are given in the Letter of Intent/ Purchase Order.
6. Non-conformances raised in this form only, will be entertained by BHEL.
7. NCRs shall be kept to a minimum.
8. A summary of non-conformances granted, if any, shall be included by the Vendor in the Quality Assurance Document Package to be forwarded to BHEL & Customer, on satisfactory completion of inspection and tests.
9. Granting of NCR by BHEL does not entitle the Vendor to any increase in price or extension of schedule.

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ANNEXURE-V

(RISK AND COST CLAUSE)

1. BHEL reserves the right to terminate the contract or withdraw portion of work and get it done through other agency, at the risk and cost of the contractor *after due notice of a period of 14 days' by BHEL* in any of the following cases:
- i) If the Seller/Contractor fails to deliver the goods or materials or any instalment thereof within the period(s) fixed for such delivery or the Seller's poor progress of the supply/ services vis-a-vis delivery/execution timeline as stipulated in the Contract, backlog attributable to seller including unexecuted portion of supply does not appear to be executable within balance available period;
 - ii) Delivers goods or materials not of the contracted quality and failing to adhere to the contract specifications;
 - iii) Withdrawal from or repudiation/ abandonment of the supply/ services by Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the Order/Contract either in whole or in part or otherwise fails to perform the Order/Contract;
 - iv) Non-supply by the Seller within scheduled completion/delivery period as per Contract or as extended from time to time, for the reasons attributable to the Seller;
 - v) Termination of Contract on account of any other reason (s) attributable to Seller.
 - vi) Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.
 - vii) If the Seller be an individual or a sole proprietorship Firm, in the event of the death or insanity of the Seller;
 - viii) If the Seller/Contractor being an individual or if a firm on a partnership thereof, shall at any time, be adjudged insolvent or shall have a receiving order for administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the Order/Contract or enter into any arrangement or composition with his creditors or suspend payment or if the firm dissolved under the Partnership Act;
 - ix) If the Seller/Contractor being a company is wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances shall have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager;
 - x) Non-compliance to any contractual condition or any other default attributable to Seller.

1.1 Risk & Cost Amount against Balance Work:

Risk & Cost amount against balance work shall be calculated as follows:

$$\text{Risk \& Cost Amount} = [(A-B) + (A \times H/100)]$$

Where,

A= Value of Balance scope of Work (*) as per rates of new contract

B= Value of Balance scope of Work (*) as per rates of old contract being paid to the contractor at the time of termination of contract i.e. inclusive of PVC & ORC, if any.

H = Overhead Factor to be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

1.2 * Balance scope of work (in case of termination of contract):

Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities.

Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose.

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Substitute/ extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions.

However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose.

NOTE: In case portion of work is being withdrawn at risk & cost of contractor instead of termination of contract, contract quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work' for calculating Risk & Cost amount.

1.3 LD against delay in executed work in case of Termination of Contract:

LD against delay in executed work shall be calculated in line with LD clause no. 16 of GCC, for the delay attributable to contractor. For limiting the maximum value of LD, contract value shall be taken as Executed Value of work till termination of contract.

Method for calculation of LD against delay in executed work in case of termination of contract" is given below.

- i. Let the time period from scheduled date of start of work till termination of contract excluding the period of Hold (if any) not attributable to contractor = T1
- ii. Let the value of executed work till the time of termination of contract = X
- iii. Let the Total Executable Value of work for which Inputs/fronts were made available to contractor and were planned for execution till termination of contract = Y
- iv. Delay in executed work attributable to contractor i.e. $T2 = [1 - (X/Y)] \times T1$
- v. LD shall be calculated in line with LD clause (clause 16) of the Contract for the delay attributable to contractor taking "X" as Contract Value and "T2" as period of delay attributable to contractor.

2. Recoveries arising out of Risk & Cost and LD or any other recoveries due from Contractor

Without prejudice to the other means of recovery of such dues from the Seller recoveries from the Seller on whom risk & cost has been invoked shall be made from the following:

- a) Dues available in the form of Bills payable to seller, SD, BGs against the same contract.
- b) Dues payable to seller against other contracts, SDs, BGs in the same Region/Unit/ Division of BHEL.
- c) Dues payable to seller against other contracts, SDs, BGs in the different Region/Unit/ division of BHEL.

In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against contractor.

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ANNEXURE– VI

NEFT APPLICATION FORM

Name of the Vendor Name of the Bank Address of the Bank Vendor's A/c no

Type of A/c

IFSC Code

RTSG Code

Vendor's e-mail address

Authorized Signatory Seal

ABOVE DETAILS ARE TO BE SUBMITTED ON COMPANY'S LETTERHEAD.

THE DETAILS MAY EITHER BE ATTESTED BY VENDOR'S BANKERS OR ACCOMPANIED BY A CANCELLED CHEQUE LEAF WITH IFSC CODE & A/C NO. PRINTED ON IT.

UNDERTAKING TO REPORT IMMEDIATELY ANY CHANGES IN THE ABOVE TO BE SUBMITTED ON COMPANY'S LETTERHEAD.

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ANNEXURE– VII

LOADING CRITERIA

No deviations in GCC terms and conditions are generally acceptable, and bids with deviations are liable to be rejected. However, in exceptional circumstances, BHEL may accept deviations with Loading as given below:

A) PAYMENT TERMS

Payment will be released generally within 60 days after receipt of material/ services and complete documents as per order/ contract (45 days for vendors qualified and registered as Micro or Small as per MSMED Act).

Loading will be done for vendors seeking earlier payment w.r.t. above, for the value and the period of deviation, as per Clause 17.0 of 'Instructions to Bidders'.

Time periods assumed by BHEL/ PEM for a few activities are as follows:

Material Receipt Certificate (MRC) – 120 days from dispatch.

B) BANK GUARANTEE `

Non submission of Bank Guarantee – No deviation is permitted.

C) LIQUIDATED DAMAGES

If maximum limit asked for is on Undelivered Portion – 10% value of the total quoted ex works price & freight (excluding GST).

If maximum limit asked is less than 10 % of contract value loading shall be to the extent to which not agreed by bidder (at offered value).

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ANNEXURE– VIII

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi – 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for

_____. The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 – Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

Section 2 – Commitments of the Bidder(s)/ Contractor(s)

2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits

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himself to observe the following principles during his participation in the tender process and during the contract execution.

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he / she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant IPC/ PC Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and will await their decision in the matter.

Section 3 – Disqualification from tender process & exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors". framed by the Principal.

Section 4 – Compensation for Damages

4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/Bid Security.

4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

Section 5 – Previous Transgression

5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

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5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 – Equal treatment of all Bidders/ Contractors/ Sub-contractors

6.1 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors. In case of sub-contracting, the Principal contractor shall be responsible for the adoption of IP by his sub-contractors and shall continue to remain

responsible for any default by his sub-contractors.

6.2 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 – Criminal Charges against violating Bidders / Contractors / Sub-contractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 –Independent External Monitor(s)

8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.

8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality in line with Non-disclosure agreement.

8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

8.5 The role of IEMs is advisory, would not be legally binding and it is restricted to resolving issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.

8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter should be examined by the full panel of IEMs jointly as far as possible, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.

8.7 The IEMs would examine all complaints received by them and give their recommendations! views to CMD, BHEL, at the earliest. They may also send their report directly to the CVO and the Commission, in case of suspicion of serious

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irregularities requiring legal/ administrative action. IEMs will tender their advice on the complaints within 10 days as far as possible.

8.8 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.

8.9 IEM should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the organization should be looked into by the CVO of the concerned organization.

8.10 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code/ Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.11 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.

8.12 The word 'Monitor' would include both singular and plural.

Section 9 – Pact Duration

9.1 This Pact shall be operative from the date IP is signed by both the parties till the final completion of contract for successful bidder and for all other bidders 6 months after the contract has been awarded. Issues like warranty/ guarantee etc. should be outside the purview of IEMs.

9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 – Other Provisions

10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.

10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders/ contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

For & On behalf of the Principal
(Office Seal)

For & On behalf of the Bidder/ Contractor
(Office Seal)

Place _____

Date _____

Witness: _____
(Name & Address) _____

Witness: _____
(Name & Address) _____

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ANNEXURE IX

LIST OF TURNKEY PACKAGES WITH REQUIRED PG TEST & FINAL DOCUMENTS

SL. NO.	PACKAGE NAME	AS BUILT DRAWINGS	O&M MANUAL	FINAL DRAWINGS	INSPECTION DOCUMENTS	PG TEST APPLICABILITY
1	AIRCONDITIONING SYSTEM	Y	Y	Y	Y	Y
2	CHLORINE DIOXIDE DOSING SYSTEM	Y	Y	Y	Y	Y
3	COAL BUNKER DEBLOCKING DEVICES	Y	Y	Y	Y	Y
4	COMPRESSED AIR SYSTEM	Y	Y	Y	Y	Y
5	CONDENSATE POLISHING UNIT	Y	Y	Y	Y	Y
6	CW TREATMENT PLANT	Y	Y	Y	Y	Y
7	D.M. PLANT	Y	Y	Y	Y	Y
8	D/G EOT CRANES ABOVE 100T	N	Y	Y	Y	N
9	D/G EOT CRANES UP TO 100T	N	Y	Y	Y	N
10	EFFLUENT TREATMENT PLANT	Y	Y	Y	Y	Y
11	EFFLUENT/SEWAGE TRANSFER SYSTEM	Y	Y	Y	Y	Y
12	ELECTROLYTIC CHLORINATION PT.	Y	Y	Y	Y	Y
13	ELEVATORS	N	Y	Y	Y	N
14	FUEL OIL HANDLING AND STORAGE SYSTEM	Y	Y	Y	Y	Y
15	GAS CHLORINATION PLANT	Y	Y	Y	Y	Y
16	H2 GEN. PLANT	N	Y	Y	Y	Y
17	HVAC FOR FGD	Y	Y	Y	Y	Y
18	HVAC FOR HYDRO	Y	Y	Y	Y	Y
19	IDCT	Y	Y	Y	Y	Y
20	MILL REJECT SYSTEM (CONVEYOR TYPE)	Y	Y	Y	Y	Y
21	MILL REJECT SYSTEM (PNEUMATIC TYPE)	Y	Y	Y	Y	Y
22	MISC. TANKS(SITE FABRICATED)	N	Y	Y	Y	N
23	NDCT	Y	Y	Y	Y	Y
24	OZONE GENERATION PLANT	N	Y	Y	Y	Y
25	PRETREATMENT PLANT	Y	Y	Y	Y	Y
26	SEWAGE TREATMENT PLANT	Y	Y	Y	Y	Y
27	SIDE STREAM FILTERATION SYSTEM	N	Y	Y	Y	Y
28	SOLID WASTE MANAGEMENT	Y	Y	Y	Y	Y
29	VENTILATION SYSTEM	Y	Y	Y	Y	Y
30	WATER TREATMENT PACKAGES	Y	Y	Y	Y	Y
31	WEIGH BRIDGE	N	Y	Y	Y	N

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ANNEXURE X

BRIEF PROCEDURE FOR CONDUCT OF CONCILIATION PROCEEDINGS

1. The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof and as provided herein:
2. The party desirous of resorting to Conciliation shall send an invitation/notice in writing to the other party to conciliate specifying all points of Disputes with details of the amount claimed. The party concerned shall not raise any new issue thereafter. Parties shall also not claim any interest on claims/counter-claims from the date of notice invoking Conciliation till the conclusion of the Conciliation proceedings. If BHEL is to initiate Conciliation, then, the invitation to Conciliate shall be extended to the concerned Stakeholder in **Format 7** hereto. Where the stakeholder is to initiate the Conciliation, the notice for initiation of Conciliation shall be sent in **Format-8** hereto.
3. The party receiving the invitation/notice for Conciliation shall within 30 days of receipt of the notice of Conciliation intimate its consent for Conciliation along with its counter-claims, if any.
4. The Conciliation in a matter involving claim or counter-claim (whichever is higher) up to Rs 5 crores shall be carried out by sole Conciliator nominated by BHEL while in a matter involving claim or counter-claim (whichever is higher) of more than Rs 5 crores Conciliation shall be carried out by 3 Conciliators nominated by BHEL. The appointment of Conciliator(s) shall be completed and communicated by the concerned Department/Group of BHEL Unit/Division/Region/Business Group to the other party and the Conciliator(s) within 30 days from the date of acceptance of the invitation to conciliate by the concerned party in the **Format-9**. The details of the Claim, and counter-claim, if any, shall be intimated to the Conciliator(s) simultaneously in **Format-5**.
5. The Parties shall be represented by only their duly authorized in-house executives/officers and neither Party shall be represented by a Lawyer.
6. The first meeting of the IEC shall be convened by the IEC by sending appropriate communication/notice to both the parties as soon as possible but not later than 30 days from the date of his/their appointment. The hearings in the Conciliation proceeding shall ordinarily be concluded within two (2) months and, in exceptional cases where parties have expressed willingness to settle the matter or there exists possibility of settlement in the matter, the proceedings may be extended by the IEC by a maximum of further 2 months with the consent of the Parties subject to cogent reasons being recorded in writing.
7. The IEC shall thereafter formulate recommendations for settlement of the Disputes supported by reasons at the earliest but in any case within 15 days from the date of conclusion of the last hearing. The recommendations so formulated along with the reasons shall be furnished by the IEC to both the Parties at the earliest but in any case within 1 month from the date of conclusion of the last hearing.
8. Response/modifications/suggestions of the Parties on the recommendations of the IEC are to be submitted to the IEC within time limit stipulated by the IEC but not more than 15 days from the date of receipt of the recommendations from the IEC.
9. In the event, upon consideration, further review of the recommendations is considered necessary, whether by BHEL or by the other Party, then, the matter can be remitted back to the IEC with request to reconsider the same in light of the issues projected by either/both the Parties and to submit its recommendations thereon within the following 15 days from the date of remitting of the case by either of the Parties.

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10. Upon the recommendations by the Parties, with or without modifications, as considered necessary, the IEC shall be called upon to draw up the Draft Settlement Agreement in terms of the recommendations.
11. When a consensus can be arrived at between the parties only in regard to any one or some of the issues referred for Conciliation the draft Settlement Agreement shall be accordingly formulated in regard to the said Issue(s), and the said Settlement Agreement, if signed, by the parties, shall be valid only for the said issues. As regards the balance issues not settled, the parties may seek to resolve them further as per terms and conditions provided in the contract.
12. In case no settlement can be reached between the parties, the IEC shall by a written declaration, pronounce that the Conciliation between the parties has failed and is accordingly terminated.
13. Unless the Conciliation proceedings are terminated in terms of para 22 (b), (c) & (d) herein below, the IEC shall forward his/its recommendations as to possible terms of settlement within one (1) month from the date of last hearing. The date of first hearing of Conciliation shall be the starting date for calculating the period of 2 months.
14. In case of 3 members IEC, 2 members of IEC present will constitute a valid quorum for IEC and meeting can take place to proceed in the matter after seeking consent from the member who is not available. If necessary, videoconferencing may be arranged for facilitating participation of the members. However, the IEC recommendations will be signed by all members. Where there is more than one (1) Conciliator, as a general rule they shall act jointly. In the event of differences between the Members of IEC, the decision/recommendations of the majority of the Members of IEC shall prevail and be construed as the recommendation of the IEC.
15. The Draft Settlement Agreement prepared by the IEC in terms of the consensus arrived at during the Conciliation proceedings between the Parties shall be given by the IEC to both the parties for putting up for approval of their respective Competent Authority.
16. Before submitting the draft settlement agreement to BHEL's Competent Authority viz. the Board Level Committee on Alternative Dispute Resolution (BLCADR) for approval, concurrence of the other party's Competent Authority to the draft settlement agreement shall be obtained by the other party and informed to BHEL within 15 days of receipt of the final draft settlement agreement by it. Upon approval by the Competent Authority, the Settlement Agreement would thereafter be signed by the authorized representatives of both the Parties and authenticated by the members of the IEC.
17. In case the Draft Settlement Agreement is rejected by the Competent Authority of BHEL or the other Party, the Conciliation proceedings would stand terminated.
18. A Settlement Agreement shall contain a statement to the effect that each of the person(s) signing thereto (i) is fully authorized by the respective Party(ies) he/she represents, (ii) has fully understood the contents of the same and (iii) is signing on the same out of complete freewill and consent, without any pressure, undue influence.
19. The Settlement Agreement shall thereafter have the same legal status and effect as an arbitration award on agreed terms on the substance of the dispute rendered by an arbitral tribunal passed under section 30 of the Arbitration and Conciliation Act, 1996.
20. Acceptance of the Draft Settlement Agreement/recommendations of the Conciliator and/or signing of the Settlement Agreement by BHEL shall however, be subject to withdrawal/closure of any arbitral and/or judicial proceedings initiated by the concerned Party in regard to such settled issues.

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21. Unless otherwise provided for in the agreement, contract or the Memorandum of Understanding, as the case may be, in the event of likelihood of prolonged absence of the Conciliator or any member of IEC, for any reason/incapacity, the Competent Authority/Head of Unit/Division/Region/Business Group of BHEL may substitute the Conciliator or such member at any stage of the proceedings. Upon appointment of the substitute Conciliator(s), such reconstituted IEC may, with the consent of the Parties, proceed with further Conciliation into the matter either de-novo or from the stage already reached by the previous IEC before the substitution.

22. The proceedings of Conciliation under this Scheme may be terminated as follows:

- On the date of signing of the Settlement agreement by the Parties; or,
- By a written declaration of the IEC, after consultation with the parties, to the effect that further efforts at conciliation are no longer justified, on the date of the declaration; or,
- By a written declaration of the Parties addressed to the IEC to the effect that the Conciliation proceedings are terminated, on the date of the declaration; or,
- By a written declaration of a Party to the other Party and the IEC, if appointed, to the effect that the Conciliation proceedings are terminated, on the date of the declaration; or,
- On rejection of the Draft Settlement Agreement by the Competent Authority of BHEL or the other Party.

23. The Conciliator(s) shall be entitled to following fees and facilities:

SI No	Particulars	Amount
1	Sitting fees	Each Member shall be paid a Lump Sum fee of Rs 75,000/- for the whole case payable in terms of paragraph No.27 herein below.
2	Towards drafting of settlement agreement	In cases involving claim and/or counter-claim of up to Rs 5crores. Rs 50,000/- (Sole Conciliator) In cases involving claim and/or counter-claim of exceeding Rs 5 crores but less than Rs 10 crores.
SI No	Particulars	Amount
		Rs 75,000 (per Conciliator) In cases involving claim and/or counter-claim of more than Rs 10 crores. Rs 1,00,000/- (per Conciliator) Note: The aforesaid fees for the drafting of the Settlement Agreement shall be paid on the, Signing of the Settlement Agreement after approval of the Competent Authority or

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		Rejection of the proposed Settlement Agreement by the Competent Authority of BHEL.
3	Secretarial expenses	Rs 10,000/- (one time) for the whole case for Conciliation by a Sole Member IEC. Where Conciliation is by multi member Conciliators –Rs 30,000/- (one time)-to be paid to the IEC
4	Travel and transportation and stay at outstation Retired Senior Officials of other Public Sector Undertakings (pay scale wise equivalent to or more than E-8 level of BHEL)	As per entitlement of the equivalent officer (pay scale wise) in BHEL.
	Others	As per the extant entitlement of whole time Functional Directors in BHEL. Ordinarily, the IEC Member(s) would be entitled to travel by air Economy Class.
5	Venue for meeting	Unless otherwise agreed in the agreement, contract or the Memorandum of Understanding, as the case may be, the venue/seat of proceedings shall be the location of the
SI No	Particulars	Amount
		concerned Unit / Division / Region / Business Group of BHEL. Without prejudice to the seat/venue of the Conciliation being at the location of concerned BHEL Unit / Division / Region / Business Group, the IEC after consulting the Parties may decide to hold the proceedings at any other place/venue to facilitate the proceedings. Unless, Parties agree to conduct Conciliation at BHEL premises, the venue is to be arranged by either Party alternately.
24. The parties will bear their own costs including cost of presenting their cases/evidence/witness(es)/expert(s) on their behalf. The parties agree to rely upon documentary evidence in support of their claims and not to bring any oral evidence in IEC proceedings. 25. If any witness(es) or expert(s) is/are, with the consent of the parties, called upon to appear at the instance of the IEC in connection with the matter, then, the costs towards such witness(es)/expert(s) shall be determined by the IEC with the consent of the Parties and the cost so determined shall be borne equally by the Parties. 26. The other expenditures/costs in connection with the Conciliation proceedings as well as the IEC's fees and expenses shall be shared by the Parties equally.		

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27. Out of the lump sum fees of Rs 75,000/- for Sitting Fees, 50% shall be payable after the first meeting of the IEC and the remaining 50% of the Sitting Fees shall be payable only after termination of the conciliation proceedings in terms of para 22 hereinabove.
28. The travelling, transportation and stay at outstation shall be arranged by concerned Unit as per entitlements as per Serial No. 4 of the Table at para 23 above, and in case such arrangements are not made by the BHEL Unit, the same shall be reimbursed to the IEC on actuals limited to their entitlement as per Serial No. 4 of the Table at Para 23 above against supporting documents. The IEC Member(s) shall submit necessary invoice for claiming the fees/reimbursements.
29. The Parties shall keep confidential all matters relating to the conciliation proceedings. Confidentiality shall extend also to the settlement agreement, except where its disclosure is necessary for purposes of its implementation and enforcement or as required by or under a law or as per directions of a Court/Governmental authority/ regulatory body, as the case may be.
30. The Parties shall not rely upon or introduce as evidence in any further arbitral or judicial proceedings, whether or not such proceedings relate to the Disputes that is the subject of the Conciliation proceedings:
 - a. Views expressed or suggestions made by the other party in respect of a possible settlement of the Disputes;
 - b. admissions made by the other party in the course of the Conciliator proceedings;
 - c. proposals made by the Conciliator;
 - d. The fact that the other Party had indicated his willingness to accept a proposal for settlement made by the Conciliator.
31. The Parties shall not present the Conciliator(s) as witness in any Alternative Dispute Resolution or Judicial proceedings in respect of a Disputes that is/was the subject of that particular Conciliation proceeding.
32. None of the Conciliators shall act as an arbitrator or as a representative or counsel of a Party in any arbitral or judicial proceeding in respect of a Disputes that is/was the subject of that particular Conciliation proceeding.
33. The Parties shall not initiate, during the Conciliation proceedings, any arbitral or judicial proceedings in respect of a Disputes that is the subject matter of the Conciliation proceedings except that a Party may initiate arbitral or judicial proceedings where, in his opinion, such proceedings are necessary for preserving his rights including for preventing expiry of period of limitation. Unless terminated as per the provisions of this Scheme, the Conciliation proceedings shall continue notwithstanding the commencement of the arbitral or judicial proceedings and the arbitral or judicial proceedings shall be primarily for the purpose of preserving rights including preventing expiry of period of limitation.
34. The official language of Conciliation proceedings under this Scheme shall be English unless the Parties agree to some other language.

Format 5 to BHEL Conciliation Scheme, 2018 STATEMENT OF CLAIMS/COUNTER CLAIMS TO BE SUBMITTED TO THE IEC BY BOTH THE PARTIES

1. Chronology of the Disputes
2. Brief of the Contract/MoU/Agreement/LOI/LOA
3. Brief history of the Disputes:
4. Issues:
5. Details of Claim(s)/Counter Claim(s):

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Sl. No.	Description of claim(s)/Counter Claim	Amount (in INR) or currency applicable in the contract	Relevant contract clause

6. Basis/Ground of claim(s)/counter claim(s) (along with relevant clause of contract)

Note– The Statement of Claims/Counter Claims may ideally be restricted to maximum limit of 20 pages. Relevant documents may be compiled and submitted along with the statement of Claims/Counter Claims. The statement of Claims/Counter Claims is to be submitted to all IEC members and to the other party by post as well as by email.

FORMAT-7

FORMAT FOR NOTICE INVOKING CONCILIATION CLAUSE BY BHEL FOR REFERRING THE DISPUTES TO CONCILIATION THROUGH IEC

To,

M/s. (Stakeholder's name)

Subject: **NOTICE FOR INVOCATION OF THE CONCILIATION CLAUSE OF THE CONTRACT BY BHEL**

Ref: Contract/No/MoU/Agreement/LOI/LOA& date_____.

Dear Sir/Madam,

As you are aware, with reference to above referred Contract/MoU/Agreement/LOI/LOA, certain disputes have arisen, which, in spite of several rounds of mutual discussions and various correspondances have remained unresolved. The brief particulars of our claims which arise out of the above- referred Contract/MoU/Agreement/LOI/LOA are reproduced hereunder:

Sl. No.	Claim description	Amount involved

As you are aware, there is a provision in the captioned Contract/MoU/Agreement/LOI/ LOA for referring disputes to conciliation.

In terms of Clause _____ of Procedure i.e., Annexure _____ to the Contract/MoU /Agreement / LOI / LOA, we hereby seek your consent to refer the matter to Conciliation by Independent Experts Committee to be appointed by BHEL. You are invited to provide your consent in writing to proceed with conciliation into the above mentioned disputes within a period of 30 days from the date of this letter along with details of counter-claims, if any, which you might have with regard to the subject Contract/ MoU/ Agreement/ LOI/ LOA.

Please note that upon receipt of your consent in writing within 30 days of the date of receipt of this letter by you, BHEL shall appoint suitable person(s) from the BHEL Panel of Conciliators.

This letter is being issued without prejudice to our rights and contentions available under the contract and law.

Thanking you Yours faithfully

Representative of BHEL

Note: The Format may be suitably modified, as required, based on facts and circumstances of the case.

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FORMAT-8 FORMAT FOR NOTICE INVOKING CONCILIATION CLAUSE BY A STAKEHOLDER FOR REFERRING THE DISPUTES TO CONCILIATION THROUGH IEC

To,

BHEL (Head of the Unit/Division/Region/Business Group)

Subject: **NOTICE FOR INVOCATION OF THE CONCILIATION CLAUSE OF THE CONTRACT BY A STAKEHOLDER**

Ref: Contract No/MoU/Agreement/LOI/LOA & date _____.

Dear Sir/Madam,

As you are aware, with reference to above referred Contract/MoU/Agreement/LOI/LOA, certain disputes have arisen, which, in spite of several rounds of mutual discussions and various correspondences have remained unresolved. The brief particulars of our claims which have arisen out of the above- referred Contract/MoU/Agreement/LOI/LOA are enumerated hereunder:

Sl.No.	Claim description	Amount involved

As you are aware, there is a provision in the captioned Contract/MoU/Agreement/LOI/ LOA for referring inter-se disputes of the Parties to conciliation.

We wish to refer the above-said disputes to Conciliation as per the said Clause of the captioned Contract/MoU/Agreement/LOI/ LOA. In terms of Clause _____ of Procedure i.e., Annexure _____ to the Contract/MoU /Agreement / LOI / LOA, we hereby invite BHEL to provide its consent in writing to proceed with conciliation into the above mentioned disputes within a period of 30 days from the date of this letter along with details of counter-claims, if any, which it might have with regard to the subject Contract/ MoU/ Agreement/ LOI/ LOA and to appoint suitable person(s) as Conciliator(s) from the BHEL Panel of Conciliators.

This letter is being issued without prejudice to our rights and contentions available under the contract and law.

Thanking you Yours faithfully

Representative of the Stakeholder

Note: The Format may be suitably modified, as required, based on facts and circumstances of the case.

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FORMAT-9

FORMAT FOR INTIMATION TO THE STAKEHOLDER ABOUT APPOINTMENT OF CONCILIATOR/IEC

To,

M/s. (Stakeholder's name)

Subject: **INTIMATION BY BHEL TO THE STAKEHOLDER AND CONCILIATOR(S) ABOUT APPOINTMENT OF CONCILIATOR/IEC**

Ref: Contract No/MoU/Agreement/LOI/LOA & date _____, Sir,

This is with reference to letter dated _____ regarding reference of the disputes _____ arising _____ in connection with the _____ subject Contract No _____/MoU/Agreement/LOI/LOA to conciliation and appointment of Conciliator(s).

In pursuance of the said letter, the said disputes are assigned to conciliation and the following persons are nominated as Conciliator(s) for conciliating and assisting the Parties to amicably resolve the disputes in terms of the Arbitration & Conciliation Act, 1996 and the Procedure — to the subject Contract/MoU/Agreement/LOI/LOA, if possible. Name and contact details of Conciliator(s)

a)

b)

c)

You are requested to submit the Statement of Claims or Counter-Claims (strike off whichever is inapplicable) before the Conciliator(s) in Format 5 (enclosed herewith) as per the time limit as prescribed by the Conciliator(s).

Yours faithfully,

Representative of BHEL

CC: To Conciliator(s)... for Kind Information please. Encl: As above

Note: The Format may be suitably modified, as required, based on facts and circumstances of the case.

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ANNEXURE XI

STATE WISE GST REGISTRATION CODE OF BHEL

Sl.No	State	Nodal Unit Registered as Supplier of Goods/Services in GST	GSTIN of Nodal Unit
1	Andhra Pradesh	HPVP	37AAACB4146P7Z8
2	Assam	PSER	18AAACB4146P1ZE
3	Bihar	PSER	10AAACB4146P1ZU
4	Chandigarh	PSNR	04AAACB4146P1ZN
5	Chattishgarh	PSWR	22AAACB4146P1ZP
6	Daman & Diu	EDN	25AAACB4146P1ZJ
7	Delhi	TBG	07AAACB4146P1ZH
8	Gujarat	PSWR	24AAACB4146P1ZL
9	Haryana	PSNR	06AAACB4146P1ZI
10	Himachal Pradesh	PSNR	02AAACB4146P1ZR
11	Jharkhand	PSER	20AAACB4146P5ZP
12	Karnataka	EDN	29AAACB4146P1ZB
13	Kerala	PSSR	32AAACB4146P1ZO
14	Maharashtra	PSWR	27AAACB4146P1ZF
15	Madhya Pradesh	BPL	23AAACB4146P1ZN
16	Punjab	IVP	03AAACB4146P2ZO
17	Rajasthan	PSNR	08AAACB4146P1ZF
18	Tamil Nadu	TRY	33AAACB4146P2ZL
19	Telangana	Hyd	36AAACB4146P1ZG
20	Tripura	PSER	16AAACB4146P1ZI
21	Uttar Pradesh	PSNR	09AAACB4146P2ZC
22	Uttarakhand	HWR	05AAACB4146P1ZL
23	West Bangal	PSER	19AAACB4146P1ZC
24	Mizoram	PSER	15AAACB4146P1ZK
25	Orissa	PSSR	21AAACB4146P1ZR
26	Arunachal Pradesh	PSER	17AAACB4146P1ZQ

Annexure-XII

Sl.No.	Package	Definition for successful Commissioning	Definition for successful TRIAL operation	Handover	PG test- applicability and retention release (FINAL bill) clause	PAG release clause
1	MISC. TANK (DM,CST/SITE FABRICATED)	First fill of liquid/water/oil (as applicable) in Tank (After painting).	Operation of Tanks with fill of liquid/water/oil (as applicable) in Tank for ONE MONTH for further beneficial use to Plant.	After successful TRIAL operation and 1 year defect liability period, package deemed to be handed over to BHEL/customer.	Not applicable. Final bill shall be paid after TRIAL operation completion	After defect liability period completion.
2	FUEL OIL HANDLING/UNLOADING SYSTEM (TANKS WITH FUEL UNLOADING SYSTEM)	First fill of LDO or HFO in TANK with respective unloading pumps.	Operation of all drives/sub systems and equipment's (Drain pump, sump pump, APRDS, panel as per scope) its demonstration through PLC/DCS as applicable.	After successful PG test conductance package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion.	After completion of successful PG test OR defect liability period completion, which ever is later.
3	D/G EOT CRANES UP TO 100T & D/G EOT CRANES ABOVE 100T	Load Test of EOT and statutory certificate/licence/Third party inspection report	trouble free/stable operation of EOT for 1 month for beneficial use in plant	Handover protocol with BHEL/Customer	Not applicable. Final bill shall be paid After Handover	After handover to customer
4	COMPRESSED AIR SYSTEM	Commissioning of compressor stream with air dryer and air receiver	trouble free/stable operation of system including PLC/DCS operation of package for 1 month for beneficial use in plant	After successful PG test conductance package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion.	After completion of successful PG test OR defect liability period completion, which ever is later.
5	D.M. PLANT	Demonstration of two cycle of continuous DM water production per stream	trouble free/stable operation of system including PLC/DCS operation of package for 1 month for beneficial use in plant	After successful PG test conductance package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion.	After completion of successful PG test OR defect liability period completion, which ever is later.
6	PRETREATMENT PLANT	"1 week generation of treated water including commissioning of chemical dosing system.	trouble free/stable operation of system including PLC/DCS operation of package covering all other sub systems like thickener/sludge disposal (as applicable) for 1 month for beneficial use in plant	After successful PG test conductance package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion.	After completion of successful PG test OR defect liability period completion, which ever is later.
7	COOLING TOWER-NDCT	First water Charge of Cooling water and readiness for operation	trouble free/stable operation of system including operation of package covering all other sub systems sump pump, aviation light,elevator, etc. (as applicable) for 1 month beneficial use in plant	After successful PG test conductance package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion.	After completion of successful PG test OR defect liability period completion, which ever is later.
8	COOLING TOWER-IDCT	Trial RUN of all CT FANs + First water Charge of Cooling water	trouble free/stable operation of system including PLC/DCS operation of package covering all other sub systems sump pump,hoist for 1 month beneficial use in plant.	After successful PG test conductance package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion.	After completion of successful PG test OR defect liability period completion, which ever is later.
9	ELECTROLYTIC CHLORINATION PLANT	1 week of continuous Chlorine dosing in water (CW,RAW, Potable as applicable)	trouble free/stable operation of system (including PLC/DCS operation of package covering all elect and C&I part.) for 1 month for beneficial use in plant	After successful PG test conductance package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion.	After completion of successful PG test OR defect liability period completion, which ever is later.
10	GAS CHLORINATION PLANT	1 week of continuous Chlorine dosing in water (CW,RAW, Potable as applicable)	trouble free/stable operation of system (including PLC/DCS operation of package covering all elect and C&I part.) for 1 month for beneficial use in plant	After successful PG test conductance package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion.	After completion of successful PG test OR defect liability period completion, which ever is later.
11	CW TREATMENT PLANT	1 week of continuous Chemical dosing in CW	trouble free/stable operation of system (including PLC/DCS operation of package covering all elect and C&I part.) for 1 month for beneficial use in plant	After successful PG test conductance package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion.	After completion of successful PG test OR defect liability period completion, which ever is later.

Annexure-XII

S.No.	Package	Definition for successful Commissioning	Deficiencies for successful TVAL operation	Handover	PG test- acceptability and readiness release (TVAL, test) clause	PMG release clause
12	AC SYSTEM	3 week continuous operation of AC UNIT (Efflu/AM/Avi)/PM/MS per as installed in line independent AC system.)	trouble free/usable operation of ONE independent AC system (including PU/DCS operation of package covering all plant and C&I part.) for 3 months for beneficial use in plant	UNIT when BILL DINGS when PG test of ONE independent UNIT shall be allowed after 13 months operation of each system, that part of package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion	After completion of successful PG test C&I defect liability period completion, which ever is later.
13	WELL REJECT SYSTEM (CONVEYOR TYPE) & WELL REJECT SYSTEM (PNEUMATIC TYPE)	Commissioning of all drives and instruments UNIT and readiness for Start of "WII reject conveying/rejection"	trouble free/usable operation of system (including PU/DCS operation of package covering all plant and C&I part.) for 3 months for beneficial use in plant	UNIT when PG test of ONE independent UNIT shall be allowed after 13 months operation and that part deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion	After completion of successful PG test C&I defect liability period completion, which ever is later.
14	EFFLUENT TREATMENT PLANT	Commissioning of efflu/purps and C&I work (area/area when) and its chemical treatment to OMB	trouble free/usable operation of all sub system for 3 months	After successful PG test commissioning package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion	After completion of successful PG test C&I defect liability period completion, which ever is later.
15	VENTILATION SYSTEM	Demonstration of All well/bw/UNIT operations for 1 week	trouble free/usable operation of ONE independent AG system / UNIT system (including PU/DCS operation of package covering all plant and C&I part.) for 1 month for beneficial use in plant	UNIT when BILL DINGS when PG test of ONE independent UNIT shall be allowed after 13 months operation of each system, that part of package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion	After completion of successful PG test C&I defect liability period completion, which ever is later.
16	SIDE STREAM FILTRATION SYSTEM	Demonstration of Filtration Plant for 1 week	trouble free/usable operation of system for 1 month	After successful PG test commissioning package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion	After completion of successful PG test C&I defect liability period completion, which ever is later.
17	ELEVATOR	Load Test of Elevation and satisfactory certificate/issue/Third party inspection report	trouble free/usable operation of elevator for 1 month	Handover proceed with BHEL/Customer	Not applicable, final bill shall be paid after Handover	After defect liability period completion.
18	CONDENSATE POLISHING UNIT	2 cycle operation of each service vessel in respective UNIT including water regeneration system.	trouble free/usable operation of CPU (including PU/DCS operation of package covering all plant and C&I part.) for 1 month for beneficial use in plant	UNIT when PG test of ONE independent UNIT shall be allowed after 13 months operation and that part deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion	After completion of successful PG test C&I defect liability period completion, which ever is later.
19	H2 GENERATOR PLANT	1st PSSS baseline for reaction and 2nd baseline for commissioning & operation. 2 week operation of all equipment's (generation side, purification side and compressor side) and availability of H2 at filling station.	2 week trouble free/usable operation of H2 generation system for beneficial use in plant	After successful PG test commissioning package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion	After completion of successful PG test C&I defect liability period completion, which ever is later.
20	CO2NE FILTRATION PLANT			Not Required		
21	SEWAGE TREATMENT PLANT	1 week operation of all the drives including commissioning of chemical dosing system and generate trouble water for final use	trouble free/usable operation of system for 1 month	After successful PG test commissioning package deemed to be handed over to BHEL/Customer	Final bill shall be paid after successful PG test completion	After completion of successful PG test C&I defect liability period completion, which ever is later.
22	COAL SLURRY BLOCKING SERVICES			Not Required		
23	SOLID WASTE MANAGEMENT			Not Required		
24	WATER REUSE	Load Test of Water Reuse and satisfactory certificate/issue/Third party inspection report	trouble free/usable operation of Water Reuse for 1 month	Handover proceed with BHEL/Customer	Not applicable, final bill shall be paid after Handover	After defect liability period completion.



**BHARAT
HEAVY
ELECTRICALS
LIMITED
(BHEL)**

**GENERAL CONDITIONS
OF CONTRACT
GCC - BOP**

Revision no. 00

ANNEXURES

Annexure-XIII

Package wise variation in contract value

S. No.	Package Name	Overall variation in contract value
1	CHLORINE DIOXIDE DOSING SYSTEM	+/- 10%
2	CONDENSATE POLISHING UNIT	+/- 10%
3	SIDE STREAM FILTRATION SYSTEM	+/- 10%
4	CW TREATMENT PLANT	+/- 10%
5	Water Treatment Packages	+/- 10%
6	PRETREATMENT PLANT	+/- 10%
7	MILL REJECT SYSTEM (CONVEYOR TYPE)	+/- 10%
8	MILL REJECT SYSTEM (PNEUMATIC TYPE)	+/- 10%
9	COAL BUNKER DEBLOCKING DEVICES	+/- 10%
10	D.M. PLANT	+/- 10%
11	EFFLUENT TREATMENT PLANT	+/- 10%
12	IDCT	+/- 10%
13	NDCT	+/- 10%
14	FUEL OIL HANDLING AND STORAGE SYSTEM	+/- 10%
15	MISC. TANKS(SITE FABRICATED)	+/- 10%
16	H2 GEN. PLANT	+/- 10%
17	ELECTROLYTIC CHLORINATION PT.	+/- 10%
18	OZONE GENERATION PLANT	+/- 10%
19	GAS CHLORINATION PLANT	+/- 10%
20	SOLID WASTE MANAGEMENT	+/- 10%
21	D/G EOT CRANES UP TO 100T	+/- 10%
22	D/G EOT CRANES ABOVE 100T	+/- 10%
23	ELEVATORS	+/- 10%
24	AIRCONDITIONING SYSTEM	+/- 30%
25	VENTILATION SYSTEM	+/- 30%
26	COMPRESSED AIR SYSTEM	+/- 10%
27	WEIGH BRIDGE	+/- 10%
28	HVAC for Hydro	+/- 30%
29	HVAC FOR FGD	+/- 30%
30	Sewage Treatment Plant	+/- 10%
31	Effluent/Sewage Transfer System	+/- 10%

	BHARAT HEAVY ELECTRICALS LIMITED (BHEL)	GENERAL CONDITIONS OF CONTRACT GCC - BOP Revision no. 00	ANNEXURES

CUMULATIVE ENGG PLAN & REVIEW WITH VENDOR

Annexure XIV

LOA date											
Sl. No.	Customer Drawing No.	BHEL Drawing No.	Drawing Title	Scheduled/ Resubmission Date	Submitted Date	Rev. No	Comment Date	APPROVAL Date	Approval Category	Delay in Submission	Remarks
1		Dwg 1									
2		Dwg 1									
3		Dwg 1									
4		Dwg 2									
5		Dwg 2									
6		Dwg 3									
7		Dwg 4									
8		Dwg 4									
9		Dwg 4									
10		Dwg 4									
11		Dwg 5									

	BHARAT HEAVY ELECTRICALS LIMITED (BHEL)	GENERAL CONDITIONS OF CONTRACT GCC – BOP Revision no. 00	ANNEXURES

Annexure XV

PART – B: PLAN(PHYSICAL) FOR THE NEXT QUARTER i.e.

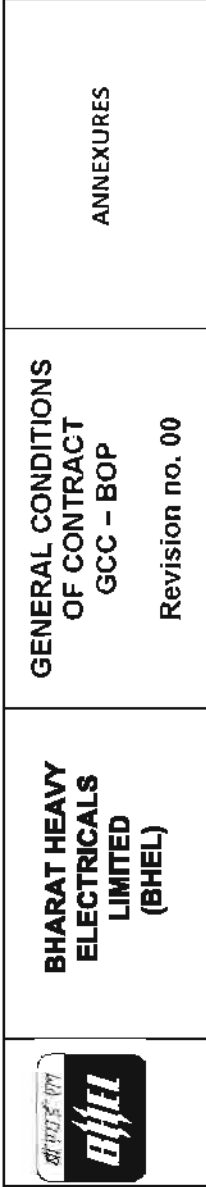
Date of Plan

SN.	Description of Supply	Original Planned Quantity	Planned Quantity (excluding shortfalls attributable to Vendor till date)	Unit of Measurement	REMARKS (Reasons for difference in Original Planned Quantity w.r.t Planned quantity to be given)

Note : “Original Planned Quantity” shall be as per latest jointly agreed programme between BHEL and Vendor before commencement of work or at the time of latest Time Extension, as the case may be.

BHEL
(Sign with name, designation and date)

VENDOR
(Sign with name, designation and date)



WORK PLAN & REVIEW WITH VENDOR

Date of Plan/ Review.....

BHEL
(Sign with name, designation and date)

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Annexure XVI

PART – B: PLAN(PHYSICAL) FOR THE NEXT QUARTER i.e.

Date of Plan

SN.	Description of work	Original Planned Quantity	Planned Quantity (excluding shortfalls attributable to Vendor till date)	Unit of Measurement	REMARKS (Reasons for difference in Original Planned Quantity w.r.t. Planned quantity to be given)

Note: “Original Planned Quantity” shall be as per latest jointly agreed programme between BHEL and Vendor before commencement of work or at the time of latest Time Extension, as the case may be.

BHEL
(Sign with name, designation and date)

VENDOR
(Sign with name, designation and date)

APPENDIX – I

(CERTIFICATE BY CHARTERED ACCOUNTANT ON LETTER HEAD)

This is to Certify that M/S, (hereinafter referred to as 'company') having its registered office at is registered under MSMED Act 2006, (Entrepreneur Memorandum No (Part II) dtd:, Category: (Micro/Small)). (copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the latest audited financial year as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No. S.O.1722 (E) dated October 5, 2006:
Rs Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:
Rs Lacs

(STRIKE OFF WHICHEVER IS NOT APPLICABLE)

The above investment of Rs Lacs is within permissible limit of Rs Lacs for Micro/ Small (Strike off which is not applicable) Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/Small) (strike off which is not applicable) and the date of graduation of such enterprise from its original category is (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O.No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

Name-

Membership Number-

Seal of Chartered Accountant-