VOLUME – IA
Part I & II

TECHNICAL CONDITIONS OF CONTRACT (TCC)

CONTENTS

VOLUME - IA PART – I CHAPTER –I

PROJECT INFORMATION

A.1.1	Project Title	:	5th Stream Alumina Refinery Expansion at Damanjodi, Odisha
A.1.2	Owner	:	National Aluminium Company Limited
A.1.3	Plant site location	:	Damanjodi village, Semiliguda block, Koraput District ,Odisha
A.1.4	Location co-ordinates	:	18.82°N 82.72°E
A.1.5	Nearest Village	:	Damanjodi, Odisha
A.1.6	Nearest Town & City	:	Koraput (36 km)
A.1.7	State Capital	:	Bhubaneswar (475 km)
A.1.8	Nearest Railway Station	:	Damanjodi Railway Station (6 km)
A.1.9	Nearest Airport	:	Domestic airport at Vishakhapatnam (140 km)
A.1.10	Nearest Seaport	:	Vishakhapatnam (140 km)
A.1.11	Nearest Road access	:	10 km from South west of NH 26
A.**2.0**	Meteorological Condition		
A.2.1	Site Elevation	:	910 m avg. altitude from mean sea level
A.2.2	Temperature		
a.	Maximum Dry bulb temperature	:	46.6°C
b.	Minimum Dry bulb temperature	:	3°C
c.	Ambient temperature for design purpose	:	35°C
A.2.3	Relative Humidity for design purpose		70 ± 20%
A.2.4	Annual Rainfall		
	Average	:	1430 mm (avg.)
A.2.5	Basic Design Wind Pressure	:	As per IS: 875 (Latest Edition) 50m/sec
A.2.6	Wind Direction	:	Predominantly in Southwest direction
A.2.7	Seismic zone	:	Zone II as defined in IS:1893-Part-I

VOLUME-IA PART-I CHAPTER – II
SCOPE OF WORKS

THE SCOPE OF THE WORK WILL COMPRISE OF BUT NOT LIMITED TO THE FOLLOWING:

(All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

1.2.1 **The broad scope of the work will comprise of but not limited to the following:**

1.2.1.1 Development of storage yard with internal roads & drains, chain linked fencing and gate at specified location within the plant boundary.

1.2.1.2 Precast concrete Sleepers – 1500 Nos

1.2.1.3 Civil foundation works for closed storage shed - 2 Nos

- Closed storage shed is being shifted from other site of BHEL and the same will be re-erected at Nalco site by BHEL. Typical drawings of storage shed and foundation drawings will be provided by BHEL.
- However, bidder to assess the soil data at identified location to ascertain the suitability foundation design for the prevailing soil condition before execution of civil foundation.
- Bidder need to modify the design of civil foundation, if required as per the soil data and the modified design has to be vetted by the civil design agency/consultant of good reputation /Civil engineering department of reputed engineering college.

1.2.1.4 Civil foundation works for Office shed – 1 No

- Office shed is being shifted from other site of BHEL and the same will be re-erected at Nalco site by BHEL. Typical drawings of Office shed and foundation drawings will be provided by BHEL.
- However, bidder to assess the soil data at identified location to ascertain the suitability foundation design for the prevailing soil condition before execution of civil foundation.
- Bidder need to modify the design of civil foundation, if required as per the soil data and the modified design has to be vetted by the civil design agency/consultant of good reputation /Civil engineering department of reputed engineering college.

1.2.1.5 Supply and erection of Steel structure (height 4m) along with PVC overhead water tank (2000 litres). Water tank compliance to BIS std IS 12701.

1.2.1.6 Construction of 1 no. Mess building and necessary water tank with structure

1.2.1.7 Septic Tank

1.2.1.8 Steel structure Watch tower for security guard- 2 Nos.

1.2.1.9 Other related civil works

1.2.2 In addition to above, execution of similar nature of work in other area/buildings, as applicable, shall be carried out by bidder as per quoted rates.

1.2.3 The successful bidder is to provide all materials including supply of Cement, sand, chips, Stones, Aggregates, chain link fencing, fixtures, reinforcement steel, structural steel etc, complete as required for the complete scope of works as per drawings and specification within the quoted rates.

1.2.4 Providing of all types of labour, supervisors, Engineers, watch and ward as required, T&P including fuel, operators etc. as the case may be, consumables as required for completing the works shall be the responsibility of the contractor.

1.2.5 All quality standards, tolerances, welding standards & other technical requirements shall be strictly adhered to.

1.2.6 Testing of all materials, cement, steel etc. shall be the responsibility of the contractor including submission of test reports

1.2.7 Structural fabrication and erection including painting for fencing post, gates etc. shall also be the responsibility of the contractor. All steel such tie rod, caging grouting/anchoring materials to be supplied by the contractor within the quoted price.

1.2.8 For detailed scope refer enclosed Bill of quantity (rate schedule) & drawings.

1.2.9 Special arrangements to be made for tackling COVID-19 pandemic –
Contractor shall make arrangements for stay of workers within their premises as far as possible and/ or adjacent building and for implementation of STANDARD OPERATING PROTOCOL (SOP) as per government order. The transportation of workers to work place shall be arranged by the contractor in dedicated transport by ensuring social distance. Any person violating the COVID -19 measures published vide government order time to time will be liable to be proceeded for legal action as per the government order. Following shall be observed in work place:

1.2.9.1 All work places shall have adequate arrangements for temperature screening and provide sanitizers at convenient places.

1.2.9.2 Work places shall have a gap of one hour between shifts and will stagger the lunch breaks of staff, to ensure social distancing.

1.2.9.3 Use of AROGYA SETU will be encouraged for all employees both private and public.

1.2.9.4 Contractor shall sanitize their work place between shifts.

1.2.9.5 Large meetings to be prohibited. Spitting shall be strictly prohibited. Wearing of face cover is compulsory.

1.2.9.6 Government order (state/ center) being issued time to time for protective measures of COVID-19 pandemic shall be complied with strictly until government (state/ center) declares end of pandemic.

1.2.9.6.1 **Standard operating procedure for social distancing for workplace and offices**

The following measures shall be implemented by contractor for their office and workplaces:

i. All areas in the work premises including the following shall be disinfected completely using user friendly disinfectant mediums:
   a. Entrance gate of work place, office, if any
   b. Cafeteria and canteens, if any
   c. Meeting room, conference halls/ open area available/ verandah/ entrance gate of site, bunkers, porta cabins, buildings, etc.
   d. Equipments and lifts
   e. Washroom, toilet, sink, water points, etc
   f. Wall/ all other surfaces

ii. For workers coming from outside, special transportation facility shall be arranged without any dependency on the public transport system. These vehicles should be allowed to work only with 30-40% passenger capacity.

iii. All vehicles and machinery entering the premise should be disinfected by spray mandatorily.

iv. Mandatory thermal scanning of everyone entering and exiting the work place to be done.

v. Medical insurance for the workers to be made mandatory.

vi. Provision for hand wash & sanitizer preferably with touch free mechanism shall be made at all entry and exit points and common areas. Sufficient quantities of all the items should be available.

vii. Work places shall have a gap of one hour between shifts and will stagger the lunch breaks of staff, to ensure social distancing.

viii. Large gatherings or meetings of 10 or more people to discouraged. Seating at least 6 feet away from others on job sites and in gatherings, meetings and training sessions.

ix. Not more than 2/4 persons (depending on size) will be allowed to travel in lifts or hoists.

x. Use of staircase for climbing should be encouraged.

xi. There should be strict ban of gutka, tobacco, etc. and spitting should be strictly prohibited.

xii. There should be total ban on non-essential visitors at sites.

xiii. Hospitals/ clinics in the nearby areas, which are authorized to treat COVID-19 patients, should be identified and list should be available at work place all the times.

Note to Chapter-II

1) The bidder should visit site and acquire full knowledge & information about site conditions and acquaint themselves with the conditions prevailing at site and in & around the plant premises, together with all statutory, obligatory, mandatory requirements of various authorities before submission of bid.

2) The materials and workmanship must be of good quality and accepted standards and specifications. The site engineer reserves the right to reject any material not up to the specification. After completion of work, surrounding area should be cleared of all rubbish, debris etc. and handed over in fit condition for occupation

3) FOR FURTHER DETAILED SCOPE OF WORKS REFER RELEVANT CHAPTERS IN THIS BOOK.

VOLUME IA PART – I CHAPTER – III

FACILITIES IN THE SCOPE OF CONTRACTOR / BHEL

(SCOPE MATRIX)

Sl.No	Description 1.3.1 PART I	Scope to be taken care by		Remarks
		BHEL	Bidder	
1.3.1.1	**ESTABLISHMENT**			
1.3.1.1.1	FOR CONSTRUCTION PURPOSE:			
1.3.1.1.1.1	Open space for office	Yes		Free
1.3.1.1.1.2	Open space for storage	Yes		Free
1.3.1.1.1.3	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
1.3.1.1.1.4	Bidder's all office equipment, office / store / canteen consumables		Yes	
1.3.1.1.1.5	Canteen facilities for the bidder's staff, supervisors and engineers etc		Yes	
1.3.1.1.1.6	Firefighting equipment like buckets, extinguishers etc		Yes	
1.3.1.1.1.7	Fencing of storage area, office, canteen etc of the bidder		Yes	
1.3.1.1.2	FOR LIVING PURPOSES OF THE BIDDER			
1.3.1.1.2.1	Open space		Yes	
1.3.1.1.2.2	Living accommodation		Yes	
1.3.1.2	**ELECTRICITY**			
1.3.1.2.1	Electricity (LT) For construction purposes and 'Operation & Maintenance' purpose			
1.3.1.2.1.1	Single point source		Yes	
1.3.1.2.1.2	Further distribution for the work to be done which include supply of materials and execution		Yes	
1.3.1.2.2	Electricity for the office, stores, canteen etc of the bidder which include:		Yes	
1.3.1.2.2.1	Distribution from single point including supply of materials and service		Yes	
1.3.1.2.2.2	Supply, installation and connection of material of energy meter including operation and maintenance		Yes	
1.3.1.2.2.3	Duties and deposits including statutory clearances for the above		Yes	
1.3.1.2.2.4	Living facilities for office use including charges		Yes	

Sl.No	Description 1.3.1 PART I	Scope to be taken care by		Remarks
		BHEL	Bidder	
1.3.1.2.2.5	Demobilization of the facilities after completion of works		Yes	
1.3.1.2.3	Electricity for living accommodation of the bidder's staff, engineers, supervisors etc on the above lines		Yes	
1.3.1.3.0	**WATER SUPPLY**			
1.3.1.3.1	For construction purposes:			
1.3.1.3.1.1	Making the water available at single point		Yes	
1.3.1.3.1.2	Further distribution as per the requirement of work including supply of materials and execution		Yes	
1.3.1.3.2	Water supply for bidder's office, stores, canteen etc		Yes	
1.3.1.4.0	**LIGHTING**			
1.3.1.4.1	For construction work (supply of all the necessary materials) At office storage area At the preassembly area At the construction site /area		Yes	
1.3.1.4.2	For construction work (Execution of the lighting work / arrangements) At office storage area At the preassembly area At the construction site /area		Yes	
1.3.1.5.0	**COMMUNICATION FACILITIES for site operations of the bidder**			
1.3.1.5.1	Telephone, Fax, internet, intranet, email etc		Yes	

Sl.No	Description 1.3.2 PART II	Scope to be taken care by		Remarks
		BHEL	Bidder	
1.3.2	**ERECTION FACILITIES**			
1.3.2.1.0	**Engineering works for construction**			
1.3.2.1.1	Providing the erection drawings covered under this scope		Yes	
1.3.2.1.2	Drawings for construction methods		Yes	In consultation with BHEL
1.3.2.1.3	As-built drawings – wherever deviations observed and executed and also based on the decisions taken at site- example – routing of small bore pipes		Yes	,,
1.3.2.1.4	Preparation of site erection schedules and other input requirements		Yes	,,
1.3.2.1.5	Review of performance and revision of site erection schedules in order to achieve the end dates and other commitments		Yes	
1.3.2.1.6	Weekly erection schedules based on Sl No 1.3.2.1.5		Yes	
1.3.2.1.7	Daily erection / work plan based on Sl No 1.3.2.1.7		Yes	For daily monitoring meeting at site
1.3.2.1.8	Periodic visit of the senior official of the bidder to site to review the progress so that works are completed as per schedule. It is suggested this review by the senior official of the bidder should be done once in every two months.		Yes	

1.3.3 OPEN SPACE:

1.3.3.1 To establish a temporary site office, fabrication yard and storage area at the job site, minimum open space will be provided free of charges.

1.3.3.2 Location and area requirement for office / storage sheds / fabrication yard shall be discussed and mutually agreed to after award of work at site. Construction of necessary stores and storage of materials shall be in

contractor's scope. Security of stores & work place shall be in Contractor's scope.

1.3.3.3 BHEL shall not provide to the contractor any residential accommodation to any of his staff and labourer and the contractor has to make his own arrangements at his cost.

1.3.4 WATER

1.3.4.1 Contractor has to make his own arrangements for his water requirement for construction purposes as well as for his labour colony at his cost.

1.3.5 ELECTRICITY:

1.3.5.1 The contractor shall make his own arrangement for all the electricity requirement for execution of his scope of work, including his labour hutment.

1.3.5.2 The Contractor shall make his own arrangement for further necessary distribution of the above, at his cost.

1.3.5.3 Any duty, deposit involved in getting the Electricity shall be borne by the bidder.

1.3.5.4 BHEL is not responsible for any loss or damage to the contractor's equipment as a result of variations in voltage / frequency or interruptions in power supply.

1.3.5.5 The bidder shall have to provide earth leakage circuit breaker at each point wherever human operated electrical drives / T&Ps are deployed.

1.3.6 MATERIAL SUPPLY:

All materials required for the work are in the scope of the contractor.

1.3.7 CONSUMABLE

All consumables, like gas, electrodes, chemicals, lubricants etc. required for the scope of work, shall be arranged by the contractor at his cost unless otherwise specifically mentioned in the contract.

In the event of failure of contractor to bring necessary and sufficient consumables, BHEL may arrange for the same at the risk and cost of the contractor. The entire cost towards this along-with overhead shall be paid by the contractor or deducted from the contractor's bills.

1.3.8 LIGHTING FACILITY:

1.3.8.1 Adequate lighting facilities such as flood lamps, hand lamps and area lighting shall be arranged by the contractor at the site of construction, and contractor's material storage area etc. at his cost.

1.3.9 DEWATERING

Contractor shall ensure at all times that his work area & approach/ access roads are free from accumulation of water, so that the materials are safe and the erection/ progress schedule are not affected. No separate claim in this regard shall be admitted by BHEL. No separate payments for dewatering of subsoil, surface water or catchments water, if required, at any time during execution of the work including monsoon period (except in case of floods) shall be considered by BHEL

1.3.10 CONTRACTOR'S OBLIGATION ON COMPLETION:

1.3.10.1 On completion of work, all the temporary buildings, structures, pipe lines, cables etc. shall be dismantled and leveled and debris shall be removed as per instructions of BHEL by the contractor at his cost. In the event of his failure to do so, the expenditure towards clearance of the same will be recovered from the contractor. The decision of BHEL Engineer in this regard is final.

1.3.11 BID DRAWINGS

The following drawings (Typical) have been enclosed in chapter-11 of Part – II, Volume –IA, Technical Conditions of Contract for information:

i) Storage Yard layout

ii) Gate

iii) Internal Roads & drains

iv) Precast Concrete Sleepers

v) Foundation for closed storage shed

vi) Foundation for office shed

vii) Septic Tank

VOLUME-IA PART-I CHAPTER – IV
T&PS and MMEs TO BE DEPLOYED BY CONTRACTOR

1.4.1 All the tools & plants/vehicles and MMEs required for this scope of work are to be arranged by the contractor within the quoted rates. Necessary accessories for the tools & plants shall also be provided by the contractor.

1.4.2 Contractor shall deploy all necessary T&P to meet the schedules & as prescribed by BHEL engineer and required for completion of work in time without any delay.

1.4.3 In the event of non-mobilization of Tools, Plants, Machinery, Equipment, Material or non-availability of the same owing to breakdown and as a result progress of work suffered, BHEL reserves the right to make alternative arrangement (available or higher capacity) in line with SCC clause no. 4.2.1.7 and hire charges shall be applicable as under

Case 1: BHEL provides its own Capital T&P: If BHEL provides owned T&P then BHEL, hire charges (as per BHEL norms) will be recovered from the contractor as per the prevailing BHEL Corporate hire charges applicable (as enclosed in Chapter 4 of Part II Volume IA-Technical Conditions of Contract Volume I Book I) as per following cases:

- In case the T&P is specifically listed in "T&Ps to be deployed by Contractor", 'Rates of hire charges applicable to outside agencies other than contractors working for BHEL' will apply.
- In case the T&P is not specifically listed in "T&Ps to be deployed by Contractor", 'Rates of hire charges applicable to contractors working for BHEL' will apply.
- The hire charges of Capital Tools & Plants are exclusive of operating expenses e.g., Operator, fuel & Consumables and the same shall be arranged by the contractor at his cost.

Case 2: BHEL provides hired T&P: In all cases other than that specified in Case 1 above, actual expenses incurred by BHEL along with applicable overheads will be back-charged to the contractor.

VOLUME-IA PART-I CHAPTER - V
T&Ps AND MMEs TO BE DEPLOYED BY BHEL ON SHARING BASIS

1.5.1 BHEL will not provide any T & Ps for this scope of work.

1.5.2 All tools and plants required for execution of the above work are in contractor's scope.

1.5.3 In case if the contractor fails to provide T&P and other equipment's, BHEL will arrange for the same and the cost will be recovered from the contractor's bill with BHEL overheads as applicable from time to time which may vary during contract period as elaborated under clause 1.4.3.

VOLUME-IA PART-I CHAPTER - VI
TIME SCHEDULE

1.6.1 TIME SCHEDULE

1.6.1.1. The entire work as detailed in the Tender Specification shall be completed within 3 (three) months from the “date of commencement of work at site.”.

1.6.1.2. During the total period of contract, the contractor has to carry out the activities in a phased manner as required by BHEL site.

1.6.1.3. The work shall be deemed as completed in all respect only when so certified by the site Engineer. The decision of BHEL in this regard shall be final and binding of the contractor.

1.6.1.4. After commencement of work at site, performance of successful bidder shall be monitored and evaluated on monthly basis in line with form-15 of Volume I– Book II (Refer Forms & Procedures). Please note that the Monthly Performance Evaluation of Contractor Form -15 in the Vol ID - Forms and Procedures is revised and attached in Chapter 7 of Part II Volume IA, Technical Conditions of Contract

1.6.2 COMMENCEMENT OF CONTRACT PERIOD

The date of commencement of contract period shall be the date of commencement of work at site which shall be the mutually agreed date between successful bidder and BHEL Engineer in-charge. In case of discrepancy, the decision of BHEL Engineer in-charge is final.

1.6.3 CONTRACT PERIOD

The contract period for completion of entire work under scope shall be 3 (three) months from the “COMMENCEMENT OF CONTRACT PERIOD” as specified earlier MOBILISATION

1.6.4 MOBILISATION

1.6.4.1 The activities shall be started as per directions BHEL site-in-charge. The contractor has to augment his resources in a manner so that the Work shall be completed progressively in line with the instruction of BHEL engineer in charge.

1.6.4.2 The above time allowed for completion of work including Sundays and Holidays is from the date of commencement of work. Detailed program to be prepared by the tenderer taking into consideration of the COMPLETION SCHEDULE and submit for BHEL's approval.

1.6.4.3 In order to meet above schedule in general, and any other intermediate targets set, to meet customer / project schedule requirements, contractor shall arrange & augment all necessary resources from time to time on the instructions of BHEL. No extra payment whatsoever shall be paid on this account.

1.6.5 GUARANTEE PERIOD

1.6.5.1 The guarantee period shall be 6 (six) months for the, quality of materials/items supplied by the bidder and also for the workmanship for works covered under the scope of the contract. The guarantee period shall commence from the date of completion of the entire work as certified by BHEL Engineer.

VOLUME-IA PART-I CHAPTER - VII
TERMS OF PAYMENT

1.7.1 SECURED ADVANCE AND ADVANCE FOR MOBILIZATION

Not Applicable

1.7.2 TERMS OF PAYMENT:

1.7.2.1 The progressive payment against monthly running bills for the completed items will be released on accepted rate / price of contract value on Pro rata basis.

1.7.2.2 100% of the accepted item rate in the rate schedule shall be paid after completion of works and certification by BHEL Engineer.

1.7.2.3 All admissible deductions shall be made from this 100% value.

1.7.3 ROYALTY/SEIGNIORAGE CHARGES

As per Mines and Minerals Act of Govt. of Odisha the bidder is required to pay royalty for various types of construction materials (minor minerals) used in the work. The royalty charges shall have to be deposited in the office of Tahsildar from whose jurisdiction the minerals have been lifted. The party should submit the statutory payment of royalty for minor minerals used for the work up to date along with R.A.Bills.

1.7.4 METHOD OF MEASUREMENT

Mode of measurement shall be as per relevant IS 1200. In case the same is also not available, the standard procedure adopted in CPWD shall be adopted. In case, the same is also not available in CPWD, the measurement of the work done will be based on the mutual agreement between BHEL and contractor. In all the above cases, the interpretation of BHEL will be final and binding to the contractor.

NO CLAIM WHAT SO EVER MAY BE, WILL BE ENTERTAINED UNDER THIS CONTRACT, AFTER DULY SIGNING THE FINAL BILL ALONG WITH MEASURMENT BOOKS AND ACCEPTED BY BHEL.

VOLUME-IA PART-I CHAPTER - VIII
TAXES AND OTHER DUTIES

1.8.1 Goods and Service Tax (GST) & Cess

1.8.1.1 The successful bidder shall furnish proof of GST registration with GSTN Portal in the State in which the Project is being executed, covering the services under this contract. Registration should also bear endorsement for the premises from where the billing shall be done by the successful bidder on BHEL for this project/ work.

1.8.1.2 Contractor's price/rates shall be exclusive of GST & Cess (if applicable) (herein after termed as GST). Contractor shall submit to BHEL the GST compliant tax invoice/debit note/revised tax invoice on the basis of which BHEL will claim the input tax credit in its return. Since this is a works contract, the applicable rate shall be @ 18% GST, as applicable presently

1.8.1.3 Bidder shall note that the GST Tax Invoice complying with GST Invoice Rules wherein the 'Bill To' details will as below:

BHEL GSTN: 21AAACB4146P1ZR
NAME: BHARAT HEAVY ELECTRICALS LIMITED
ADDRESS: BHEL Site Office, NALCO DAMANJODI, Damanjodi, Koraput, ODISHA , 763008

1.8.1.4 GST charged in the tax invoice/debit note/revised tax invoice by the contractor shall be released separately to the contractor only after contractor files the outward supply details in GSTR-1 on GSTN portal and input tax credit of such invoice is matched with corresponding details of outward supply of the contractor and has paid the GST at the time of filing the monthly return.

1.8.1.5 In case BHEL has to incur any liability (like interest / penalty etc.) due to denial/reversal / delay of input tax credit in respect of the invoice submitted by the contractor, for the reasons attributable to the contractor, the same shall be recovered from the contractor.

1.8.1.6 Further, in case BHEL is deprived of the Input tax credit due to any reason attributable to contractor, the same shall not be paid or Recovered if already paid to the contractor.

1.8.1.7 Tax invoice/debit Note/revised tax invoice shall contain all such particulars as prescribed in GST law and comply to the timelines for issue of the same. Invoices shall be submitted on time to the concerned BHEL Engineer In Charge.

1.8.1.8 TDS under GST (if/ as & when applicable) shall be deducted at prevailing rates on gross invoice value from the running bills.

1.8.1.9 E-way bills / Transit passes / Road Permits, if required for materials / T&P etc., bought into the project site is to be arranged by the Contractor only.

1.8.1.10 BHEL shall not reimburse any amounts towards any interest / penalty etc., incurred by contractor. Any additional claim at a later date due to issues such as wrong rates / wrong classification by contractor shall not be paid by BHEL.

1.8.2 **All taxes and duty other than GST & Cess**

The contractor shall pay all (except the specific exclusion viz GST & Cess) taxes, fees, license charges, deposits, duties, tools, royalty, commissions, Stamp Duties, or other charges / levies, which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract and the same shall not be reimbursed by BHEL. In case BHEL is forced to pay any of such taxes, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit.

1.8.3 **Statutory Variations**

Statutory variations are applicable under the GST Acts, against production of proof. The changes implemented by the Central / State Government during the tenure of the contract viz. increase / decrease in the rate of taxes, applicability, etc. and its impact on upward revision / downward revision are to be suitably paid/ adjusted from the date of respective variation. The bidder shall give the benefit of downward revision in favour of BHEL. No other variations shall be allowed during the tenure of the contract.

1.8.4 **New Taxes/Levies**

In case Government imposes any new levy / tax after submission of bid during the tenure of the contract, BHEL shall reimburse the same at actual on submission of documentary proof of payment subject to the satisfaction of BHEL that such new levy / tax is applicable to this contract.

1.8.5 **Direct Tax**

BHEL shall not be liable towards Income Tax of whatever nature including variations thereof arising out of this contract as well as tax liability of the bidder and their personnel. Deduction of tax at source at the prevailing rates shall be effected by BHEL before release of payment as a statutory obligation, unless exemption certificate is produced by the bidder. TDS certificate will be issued by BHEL as per the provisions of Income Tax Act.

VOLUME-IA PART-I CHAPTER -IX

BILL OF QUANTITY

1.9.1 Bill of Quantities

As mentioned in the Volume II, Price Bid.

VOLUME-IA PART-I CHAPTER -X
GENERAL

1.10

1.10.1 Contractors are requested to furnish the following at PSSR-HQ, Chennai immediately after release of Letter of Intent (LOI)

I. Security Deposit and Additional Security Deposit (As applicable).
II. Unqualified Acceptance for Detailed LOI/ Work Order.
III. Rs.100/- Stamp Paper for preparation of Contract Agreement.
IV. Option (whether a or b of said clause) exercised towards Performance Security Deposit for the subject contract as per Sl. No. 16 of Volume IA Part II Chapter 1 of TCC.

1.10.2 Contractors are requested to furnish the proof of documents for the following at PSSR- Site.

I. PF Regn No.
II. Labour License No.
III. Workmen Insurance Policy No.

1.10.3 In addition to the clause 2.8 of General Conditions of Contract (Volume-1C of Book-II) the contractor shall comply with the following.

1.10.4 BOCW Act & BOCW Welfare Cess Act (SCT TO COLLECT FROM FINANCE)

1.10.4.1 The Contractor Should Register their Establishment under BOCW Act 1996 read with rules 1998 by submitting Form I (Application for Registration of Establishment) and Form IV (Notice of Commencement /Completion of Building Other Construction Work) to the respective Labour Authorities i.e.,

a) Assistant Labour Commissioner (Central) in respect of the project premises which is under the purview of Central Govt.–NTPC, NTPL etc.

b) Appropriate State authorities in respect of the project premises which is under the purview of State Govt.

1.10.4.2 The Contractor should comply with the provisions of BOCW Welfare Cess Act 1996 in respect of the work awarded to them by BHEL.

1.10.4.3 The contractor should ensure compliance regarding Registration of Building Workers as Beneficiaries, Hours of work, welfare measures and other

conditions of service with particular reference to Safety and Health measures like Safety Officers, safety committee, issue of Personal protective equipments, canteen, rest room, drinking water, Toilets, ambulance, first aid centre etc.,

1.10.4.4 The contractor irrespective of their nature of work and manpower (Civil, Mechanical, Electrical works etc) should register their establishment under BOCW Act 1996 and comply with BOCW Welfare Cess Act 1996.

1.10.4.5 Contractor shall make remittance of the BOCW cess as per Act in consultation with BHEL as per the rates in force (presently 1%). BHEL shall reimburse the same upon production of documentary evidence. However, BHEL shall not reimburse the Fee paid towards the registration of establishment, fess paid towards registration of beneficiaries and contribution of beneficiaries remitted.

1.10.4.6 Non-compliance to provisions of the BOCW act and BOCW welfare Cess act is not acceptable. In case of any non-compliance, BHEL reserves the right to withhold any sum it deems fit. Only upon total compliance to the BOCW act and also discharge of total payment of Cess under the BOCW Cess act by the contractor, BHEL shall consider refund of the amounts

1.10.5 PROVIDENT FUND

1.10.5.1 The contractor is required to extend the benefit of Provident Fund to the labour employed by the contractor in connection with this contract as per the Employees Provident Fund and Miscellaneous Provisions Act 1952. For due implementation of the same, the contractor is hereby required to get themselves registered with the Provident Fund authorities for the purpose of reconciliation of PF dues and furnish to us the code number allotted to them by the Provident Fund authorities within one month from the date of issue of this letter of intent. In case the contractor is exempted from such remittance an attested copy of authority for such exemption is to be furnished. Please note that in the event of contractor's failure to comply with the provisions of said Act, if recoveries therefore are enforced from payments due to BHEL by the customer or paid to statutory authorities by BHEL, such amount will be recovered from payments due to the contractor.

1.10.5.2 The final bill amount would be released only on production of clearance certificate from PF / ESI and labour authorities as applicable.

1.10.6 Employees State Insurance Act

i) The Bidder agrees to and does hereby accept full and exclusive liability for the compliance with all obligations imposed by the Employee State Insurance Act 1948 and the Bidder further agrees to defend, indemnify and hold BHEL & Owner harmless for any liability or penalty which may

be imposed by the Central, State or Local authority by reasons of any asserted violation by Bidder or his sub-contractor of the Employees' State Insurance Act, 1948 and also from all claims, suits or proceeding that may be brought against the BHEL & Owner arising under, growing out of or by reasons of the work provided for by this Bidder, whether brought by employees of the Bidder, by third parties or by Central or State Government authority or any political sub-division thereof.

ii) The Bidder agrees to fill in with the Employee's State Insurance Corporation, the Declaration forms, and all forms which may be required in respect of the Bidder's or is sub-contractor's employees, who are employed in the WORK provided for or those covered by ESI from time to time under the Agreement. The Bidder shall deduct and secure the agreement of his sub-contractor to deduct the employee's contribution as per the first schedule of the Employee's State Insurance Act from wages and affix the Employees Contribution Card at wages payment intervals. The Bidder shall remit and secure the agreement of his sub-contractor to remit the State Bank of India, Employee's State Insurance Corporation account the Employees contribution as required by the Act. The Bidder agrees to maintain all Cards and Records as required under the Act in respect of employees and payments and the Bidder shall secure the agreement of his sub-contractor to maintain such records. Any expenses incurred for the contributions; making contributions or maintaining records shall be to the Bidder's or his sub-contractor's account.

iii) BHEL shall retain such sum as may be necessary from the total value of contract until the Bidder shall furnish satisfactory proof that all contributions as required by the Employees State Insurance Act, 1948 have been paid. This will be pending on the bidder when the ESI Act is extended to the place of work.

1.10.7 OTHER STATUTORY REQUIREMENTS

1.10.7.1 The Contractor shall submit a copy of Labour License obtained from the Licensing Officer (Form VI) u/r25 read with u/s 12 of Contract Labour (R&A) Act 1970 & rules and Valid WC Insurance copy or ESI Code (if applicable) and PF code no along with the first running bill.

1.10.7.2 The contactor shall submit monthly running bills along with the copies of monthly wages (of the preceding month) u/r78(1)(a)(1) of Contract Labour Rules, copies of monthly return of PF contribution with remittance Challans under Employees Provident Fund Act 1952 and copy of renewed WC Insurance policy or copies of monthly return of ESI contribution with Challans under ESI Act 1948 (if applicable) in respect of the workmen engaged by them.

1.10.7.3 The Contractor should ensure compliance of Sec 21 of Contract Labour (R&A) Act 1970 regarding responsibility for payment of Wages. In case of "Non-compliance of Sec 21 or non-payment of wages" to the workmen before the expiry of wage period by the contactor, BHEL will reserve its right to pay the workmen under the orders of Appropriate authority at the risk and cost of the Contractor.

1.10.7.4 Wages paid to the workmen by the Bidder should not be less than the rates specified by the Central Govt. as per Minimum Wages Act, 1948 and as adopted by NALCO from time to time.

1.10.7.5 Wages to the workmen should be paid on or before the 7th of the subsequent month. If 7th falls on a holiday or weekly off day, the payment should be made one day prior to that.

1.10.7.6 Where the Minimum wages notified by the concerned State Government are higher than the rates notified by the Central Government, the states Government rates should apply in concerned scheduled employment as long as the same remains higher than the Central Government rates. The classification on workers in different categories will be as per the notification issued by the Central Govt. fixing the minimum wages for the above scheduled appointment.

1.10.7.7 The Contractor shall submit copies of Final Settlement statement of disbursal of retrenchment benefits on retrenchment of each workman under I D Act 1948, copies of Form 6-A (Annual Return of PF Contribution) along with Copies of PF Contribution Card of each member under PF Act and copies of monthly return on ESI Contribution – Form 6 under ESI Act1948 (If applicable) to BHEL along with the Final Bill.

1.10.7.8 In case of any dispute pending before the appropriate authority under I D act 1948, WC Act 1923 or ESI Act 1948 and PF Act 1952, BHEL reserve the right to hold such amounts from the final bills of the Contractor which will be released on submission of proof of settlement of issues from the appropriate authority under the act.

1.10.7.9 In case of any dispute prolonged/pending before the authority for the reasons not attributable to the contractor, BHEL reserves the right to release the final bill of the contractor on submission of Indemnity bond by the contractor indemnifying BHEL against any claims that may arise at a later date without prejudice to the rights of BHEL.

1.10.8 Comprehensive General Liability Insurance

1.10.8.1 This insurance shall protect the Bidder against all claims arising from injuries, disabilities, disease or death of members of public or damage to property of others, due to any act or omission on the part of the Bidder, his agents, his employees, his representative and sub-contractors or from riots,

strikes and civil commotion. This insurance shall cover all the liabilities of the Bidder arising out of the relevant clauses of enquiry documents.

1.10.8.2 The hazards to be covered will pertain to all the works which and areas where, the Bidder, his Sub-contractors, his agents and his employees have to perform work pursuant to the contract.

1.10.8.3 The above are only illustrative list of insurance covers normally required and it will be the responsibility of the Bidder to maintain all necessary insurance coverage to the extent both in time and amount to take care of all his liabilities either direct or indirect, in pursuance of the contract.

1.10.9 Liability for Accident and damage

The Contractor shall Indemnify the Purchaser against any claims which may be made under the workman's Compensation Act, 1923, or any statutory modification thereof or otherwise for or in respect of any damages under the workman's Compensation Act, 1923, or any statutory modification thereof or otherwise for or in respect of any damages or compensation payable in consequence of any accident or injury sustained by any workman or other person whether in the employment of the Contractor or not.

1.10.10 DEPLOYMENT OF SKILLED / SEMI-SKILLED TRADESMEN

The following clause is applicable in case the contract value / contract price is Rs. Five crores and above.

The contractor shall, at all stages of work deploy skilled / semi-skilled tradesmen who are qualified and possess certificate in particular trade from CPWD Training Institute / Industrial Training. Institute / National Institute of Construction Management and Research (NICMAR), National Academy of Construction, CIDC or any similar reputed and recognized Institute managed / certified by State / Central Government. The number of such qualified tradesmen shall not be less than 20% of total skilled / semi-skilled workers required in each trade at any stage of work. The contractor shall submit number of man days required in respect of each trade, its scheduling and the list of qualified tradesmen along with requisite certificate from recognized Institute to Engineer-in-Charge for approval. Notwithstanding such approval, if the tradesmen are found to have inadequate skill to execute the work of respective trade, the contractor shall substitute such tradesmen within two days of written notice from Engineer-in-Charge. Failure on the part of contractor to obtain approval of Engineer-in-Charge or failure to deploy qualified tradesmen will attract a compensation to be paid by contractor at the rate of Rs. 100 per such tradesman per day. Decision of Engineer-in-Charge as to whether particular tradesman possesses requisite skill and amount of compensation in case of default shall be final and binding.

1.10.11 RECOVERY OF COMPENSATION PAID TO VICTIM(S) BY BHEL IN CASES OF DEATH/ PERMANENT INCAPACITATION OF PERSON DUE TO AN ACCIDENT DURING THE WORKS

BHEL shall recover the amount of compensation paid to victim(s) by BHEL towards loss of life / permanent disability due to an accident which is attributable to the negligence of contractor, agency or firm or any of its employees as detailed below.

1.10.11.1 Victim: Any person who suffers permanent disablement or dies in an accident as defined below.

1.10.11.2 Accident: Any death or permanent disability resulting solely and directly from any unintended and unforeseen injurious occurrence caused during the manufacturing / operation and works incidental thereto at BHEL factories/ offices and precincts thereof, project execution, erection and commissioning, services, repairs and maintenance, trouble shooting, serving, overhaul, renovation and retrofitting, trial operation, performance guarantee testing undertaken by the company or during any works /during working at BHEL Units/ Offices/ townships and premises/ Project Sites.

1.10.11.3 Compensation in respect of each of the victims:

(i) In the event of death or permanent disability resulting from Loss of both limbs: Rs. 10,00,000/- (Rs. Ten Lakh)

(ii) In the event of other permanent disability: Rs. 7,00,000/- (Rs. Seven Lakh)

1.10.11.4 Permanent Disablement: A disablement that is classified as a permanent total disablement under the proviso to Section 2 (I) of the Employee's Compensation Act, 1923.

1.10.12 GENERAL

1.10.12.1 **Site Visit by the Bidder**

The bidder shall, prior to submitting his tender for the work, visit, examine the site of works and its surroundings at his own expense, and obtain and ascertain for himself on his own responsibility all information that may be necessary for preparing his tender and entering into a contract, and take the same into account in the quoted contract price for the work.

The bidder shall satisfy themselves about the following factors:

i). Site conditions including access to the site, existing and required roads and other means of transport/communication for use by him in connection with the work including diverting and re-routing of services.

ii). Requirement and availability of land and other facilities of his enabling works, establishment of his nursery, office, stores etc.

iii). Ground conditions including those bearing upon transportation, disposal, handling and storage of materials required for the work or obtained there-from.

iv). Source and extent of availability of suitable materials, including water etc., and labour (skilled and unskilled) required for work, and laws and regulations governing their use and employment.

v). Geological, meteorological, topographical and other general features of the site and its surroundings as are pertaining to and needed for the performance of the work.

vi). The limit and extent of surface and subsurface water to be encountered during the performance of the work, and the requirement of drainage and pumping.

vii). The type of equipment and facilities needed, for and in the performance of the work;

viii). The extent of lead and lift required for the work in complete form over the entire duration of the contract, and

ix). All other information pertaining to and needed for the work including information as to the risks, contingencies and other circumstances which may influence or affect the work or the cost thereof under this contract.

1.10.12.2 The bidder should note that information, if any, in regard to the local conditions, as contained in these tender documents, has been given to tenderer merely for guidance and is not warranted to be complete.

1.10.12.3 A bidder shall be deemed to have full knowledge of the site, whether he inspects it or not, and no extra charges consequent on any misunderstanding or otherwise shall be allowed.

1.8.12.3.1 The bidder and any of his personnel or agents will be granted permission by the Site-In-Charge or his authorized nominee, on receipt of formal application in respect thereof a week in advance of the proposed date of inspection of site, to enter upon his premises and lands for purpose of such inspection, but only on the express condition that the tenderer (and his personnel and agents) will relieve and indemnify the Employer (and his personnel and agents) from and against all liability in respect thereof and will be responsible for personal injury (whether fatal or otherwise), loss of or damage to property and any other loss, damage, costs and expenses however caused which, but for the exercise of such permission, would not have arisen.

1.10.12.4 All works shall be carried out in proper workmen like manner. Items of works covered by the following specification shall be carried out as per the best practices and according to the direction of the Engineer In-charge / BHEL, Site Engineer and to his satisfaction. Unless otherwise specified in this section or in the description of item, the cost of stage of works mentioned here under shall be deemed to have been included in the rates of items provided in the schedule.

1.10.12.5 Scope of work covered under this specification requires quality workmanship, engineering and construction management. The contractor shall ensure timely completion of work. The contractor shall have adequate tools, measuring instruments, etc. in his possession. He shall also have adequate trained, qualified and experienced engineers, supervisory staff and skilled personnel. The manpower deployment identified by contractor shall match with above scope of works.

1.10.12.6 It is not the intent to specify herein all details of material. Any item related this work not covered by this but necessary to complete the system will be deemed to have been included in the scope of the work.

1.10.12.7 All the necessary certificates and licenses required to carry out this scope of work are to be arranged by the contractor then and there at no extra cost.

1.10.12.8 Site testing wherever required shall be carried out for all items / materials installed by the contractor to ensure proper installation and functioning in accordance with drawings, specifications and manufacturer's recommendations.

1.10.12.9 The contractor shall carryout additional tests, if any, which the Engineer feels necessary because of site conditions and also to meet system specification.

1.10.12.10 The work shall be executed under the usual conditions without affecting the plant construction and in conjunction with other operations and contracting agencies at site. The contractor and his personnel shall co-operate with the personnel of other agencies, co-ordinate his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.

1.10.12.11 The Contractor may have to execute work in such a place and condition where other agencies also will be under such circumstances. The

contractor shall co-operate with other contractors and agencies so that various activities can be carried out simultaneously in order to achieve an early completion.

1.10.12.12 All the work shall be carried out as per instructions of BHEL engineer. BHEL engineer's decision regarding the correctness of the work and method of working shall be final and binding on the contractor.

1.10.12.13 Wherever work sequences are furnished by BHEL, the contractor shall follow the same sequence.

1.10.12.14 Contractor shall execute the supply and works as per sequence prescribed by BHEL at site engineer. No claims for extra payment from the contractor will be entertained on the grounds of deviation from the methods of execution of similar job in any other site or for any reasons whatsoever.

1.10.12.15 If required by BHEL, the contractor shall change the sequence of his operation so that work on priority sectors can be completed within the projects schedule. The contractor shall afford maximum assistance to BHEL in this connection without causing delay to agreed completion date.

1.10.12.16 Contractor shall, transport all materials to site and unload at site / working area for inspection and checking. All material handling equipment required shall be arranged by the contractor

1.10.12.17 The contractor will be responsible for the safe custody and proper accounting of all materials in connection with the work.

1.10.12.18 The contractor must obtain the signature and permission of the security personnel of the customer for bringing any of their materials inside the site premises. Without the Entry Gate Pass these materials will not be allowed to be taken outside.

1.10.12.19 Contractor shall retain all T&Ps, Material handling equipments etc at site as per advice of BHEL engineer and same shall be taken out from site only after getting the clearances from Engineer In-charge.

1.10.12.20 The contractor at his cost shall arrange necessary security measures for adequate protection of his machinery, equipment, tools, materials etc. BHEL shall not be responsible for any loss or damage to the contractor’s construction equipment and materials. The contractor may

consult the Engineer-in-Charge on the arrangements made for general site security for protection of his machinery equipment tools etc.

1.10.12.21 Any wrong erection shall be removed and re-erected promptly to comply with the design requirements to the satisfaction of Site Engineer.

1.10.12.22 The Contractor may have to execute work in such a place and condition where other agencies also will be under such circumstances. However, completion time for construction, agreed will be subject to the condition that contractor's work is not hampered by the agencies.

1.10.12.23 Contractor has to work in close co-ordination with other erection agency at site. BHEL engineer will co-ordinate area clearance. In a project of such magnitude, it is possible that the area clearance may be less / more at a particular given time. Activities and erection program have to be planned in such a way that the milestones are achieved as per schedule/ plans. Contractor shall arrange & augment the resources accordingly.

1.10.12.24 Contractor shall remove all scrap materials periodically generated from his working area in and around power station and collect the same at one place earmarked for the same. Failure to collect the scrap is likely to lead to accidents and as such BHEL reserves the right to collect and remove the scrap at contractor's risk and cost if there is any failure on the part of contractor in this respect. All the package materials, including special transporting frames, etc. shall be returned to the BHEL stores by the contractor.

1.10.12.25 The contractor shall ensure that his premises are always kept clean and tidy to the extent possible. Any untidiness noted on the part of the contractor shall be brought to the attention of the contractor's site representative who shall take immediate action to clean the surroundings to the satisfaction of the Engineer-in-Charge.

1.10.12.26 The contractor is strictly prohibited from using BHEL's regular components like angles, channels, beams, plates, pipe / tubes, and handrails etc for any temporary supporting or scaffolding works. Contractor shall arrange himself all such materials. In case of such misuse of BHEL materials, a sum as determined by BHEL engineer will

be recovered from the contractor's bill. The decision of BHEL engineer is final and binding on the contractor.

1.10.12.27 No member of the already erected structure / platform, pipes, grills, platform, other component and auxiliaries should be cut without specific approval of BHEL engineer.

1.10.12.28 Contractors shall ensure that all their Staff / Employees are exposed to periodical training programme conducted by qualified agencies/ personnel on ISO 9001 – 2015 Standards.

1.10.12.29 The terminal points decided by BHEL are final and binding on the contractor for deciding the scope of work and effecting the payment for the work done up to the terminals.

1.10.12.30 Crane operators deployed by the contractor shall be tested by BHEL before he is allowed to operate the cranes.

1.10.12.31 On Completion of work, all the temporary buildings, structures, pipe lines, cable etc. shall be dismantled and leveled and debris shall be removed as per instruction of BHEL by the contractor at his cost. In the event of his failure to do so, the expenditure towards clearance of the same will be recovered from the contractor. The decision of BHEL Engineer in this regard is final.

1.10.12.32 It is the responsibility of the contractor to do the checking, testing etc. if necessary, repeatedly to satisfy BHEL Engineer with all the necessary tools and tackles, manpower etc. without any extra cost. The testing will be completed only when jointly certified so, by the BHEL Engineer.

1.10.12.33 The contractor shall ensure that his premises are always kept clean and tidy to the extent possible. Any untidiness noted on the part of the contractor shall be brought to the attention of the contractor's site representative who shall take immediate action to clean the surroundings to the satisfaction of the Engineer-in-Charge.

1.10.12.34 If any item not covered but requires being executed, same shall be carried out by the contractor. Equivalent or proportional unit rate shall be considered wherever possible from the BOQ. The rates quoted by the contractor shall be uniform as far as possible for similar items appearing in rate schedule.

1.10.12.35 The contractor's work shall not hinder other work, either underground or over ground, such as electrical, phone lines, water or sewage lines, etc. In areas of overlap, the contractor shall work in coordination with other related contractors. Any damage by the contractor's workmen/ staff to such utilities will be penalized and contractor shall be responsible for cost for such damages.

1.10.12.36 E way Bills to be arranged by contractor whenever required.

1.10.12.37 Bidders may take note of the following points while sending their offers:

i) Quoted Price shall be inclusive of all the above.

ii) The materials and workmanship must be of good quality and accepted standards and specifications. The site engineer reserves the right to reject any material not up to the specification. All taxes, levies and duties on construction materials will be on bidder's account. After completion of work, the building and areas around them should be cleared of all rubbish, debris etc. and handed over in fit condition for occupation.

1.10.12.38 **Gate Pass for Bidder's Labour:**

The Bidder shall arrange to obtain from the Owner the required gate pass for entry to the Owner's Works for each one of his workmen and staff as per the Owner's prescribed procedure and format. Each gate pass shall contain the photograph of the person concerned. In the event of loss and/or damage to the gate pass the Bidder shall pay to the Owner the prescribed penalty before a new gate pass can be issued.

All gate passes, for the entry of labour inside the Works, engaged by or through the Bidder and all material gate passes will be issued only in the name of the Bidder, and he will be directly responsible for the same. All gate passes issued as aforesaid to the Bidder shall be returned by the Bidder to the Owner on completion of the Works or on termination of the Contract.

1.10.12.39 The contractor must obtain the signature and permission of the security personnel of the customer for bringing any of their materials inside the site premises. Without the Entry Gate Pass these materials will not be allowed to be taken outside.

1.10.12.40 Contractor shall retain all T&Ps, Material handling equipments etc at site as per advice of BHEL engineer and same shall be taken out from site only after getting the clearances from Engineer In charge.

1.10.12.41 **Social Accountability 8000 (SA 8000)**

The Bidders may be aware that NALCO are installing and implementing Social Accountability 8000 (SA 8000). As a part of Implementation, it is necessary that all bidders, sub-contractors of NALCO make a written commitment to conform all requirements of SA 8000. Bidder to submit / upload with his Part-I bid details of SA 8000 as per Appendix – xxxx

1.10.12.42 The bidder to follow NALCO's occupational health & safety policy. The bidder has to ensure attendance in a training programme for all his contract workers conducted by safety department and obtain a certificate before putting the workers to work front. The bidder has to adhere to "NALCO's safety code for contractors" while executing the work and the same has to be collected from NALCO's T & C department.

1.10.12.43 Medical Check-up: The bidder will have to submit medical certificate from a Govt. Hospital or registered medical practitioner in the prescribed format for the workmen engaged by him along with application for gate pass and for annual renewal. No gate pass will be issued / renewed unless the medical certificate is enclosed along with the application.

1.10.12.44 No female labour shall be employed during dark hours.

1.10.12.45 The Engineer in-charge executing the contract upon his satisfaction that the bidder is not performing as per the safety requirements may direct stoppage of work. The bidder shall not proceed with the work until he has complied with such directions to the satisfaction of concerned Engineer in-charge.

Without prejudice to the right conferred by the 1.10.17 above for stoppage of work for violating of safety requirements, the bidder shall be liable for penalty up to Rs. 3,000/- for the first violation and up to Rs. 5,000/- for the second violation. For the third violation, he shall be liable to be debarred from further contracts up to a period of one-year minimum from the date of completion of jobs in hand.

1.10.12.46 NON-COMPLIANCE OF THE SHE AND SAFETY NORMS

Penalty may be imposed on successful bidder and their sub-contractors/sub vendors working in the Project for non-compliance to the SHE (Safety, Health & Environment) requirements working in the Project as per The National Aluminium Company Limited (NALCO)'s norms.

ENVIRONMENTAL CLAUSE (ISO-14000)

In line with the requirement of ISO – 14001, all Bidders shall comply with the following:

i) Each and every Bidder engaged inside the Works shall maintain the upto-date training certificate of their employees of Environment. The training shall be provided during safety & Environment training prior to start of the job.

ii) Any earth excavated during the job shall be disposed off in a preassigned area. The Bidder shall take preventive steps to avoid spillage of earth/debris during transport/dumping.

iii) Maintain a clear work area in and around the work place.

iv) Ensure optimum use of water and avoid misuse/ wastage.

Ensure that the vehicles used by them meet the emission norms. These are being checked by Owner's Safety department.

1.10.12.47 SITE INSPECTION

BHEL or his authorized agents may inspect various stages of work during the currency of the contract awarded to him. The contractor shall make necessary arrangements for such inspection and carry out the rectification pointed out by the owner / employer without any extra cost to the owner / employer. No cost whatsoever such duplication of inspection of work be entertained.

BHEL will have full power and authority to inspect the works at any time, either on the site or at the contractor's premises. The contractor shall arrange every facility and assistance to carry out such inspection. On no account will the contractor be allowed to proceed with work of any type unless such work has been inspected and entries are made in the site inspection register by BHEL.

Wherever the performance of work by the contractor is not satisfactory in respect of workmanship, deployment of sufficient labour or equipment, delay in execution of work or any other matter, BHEL shall have the right to engage labour at normal ruling rates and get the work executed through other agency and debit the cost to the contractor and the contractor shall have no right to claim compensation thereof. In such a case, BHEL shall have the right to utilize the materials and tools brought by the contractors for the same work.

1.10.13 DOCUMENTATION

1.10.13.1 As built drawings: After successful completion of installation work, drawings / documents shall be updated in line with the actual work carried out and as built drawings / documents shall be submitted by the contractor.

1.10.13.2 Other documents as specified in PROGRESS OF WORK (VOLUME-IA PART- II CHAPTER-XI)

RECORDS TO BE MAINTAINED AT SITE:

1.10.13.3 Record of Quantity of FREE / Chargeable items issued by BHEL must be maintained during contract execution. Also reconciliation statement to be prepared at regular intervals.

1.10.3.4 The under mentioned Records/ Log-books/ Registers applicable to be maintained

Hindrance Register.
Site Order Book.
Test Check of measurements.
Cement Supply and Consumption Daily Register
Records of Test reports of Field tests.
Records of manufacture's test certificates.
Records of disposal of scraps generated during and after the work completion.

1.10.3.5 The following information shall be furnished by the bidder after testing and inspection

a) Test certificates of various tests conducted at site. All inspection and test certificates shall be signed by BHEL representative also.

1.10.3.6 Detailed schedule as specified in chapter VI – TIME SCHEDULE in PART-I of Technical conditions of Contract Volume IA (Volume I Book I)

VOLUME – IA PART-I CHAPTER – XI
PROGRESS OF WORK

The scope of the work will comprise of following but not limited to the following: (All the works mentioned hereunder shall be carried out within the accepted rate unless otherwise specified.)

1.11.1 Refer forms F -14 and F-15 furnished in Volume 1A, Part II, Chapters 2 & 3 as well as to forms F-16 to F-18 of volume I D (Forms & Procedure) of Volume -I Book-II. Plan and review will be done as per the formats.

1.11.2 It is the responsibility of the contractor to provide all relevant information on a regular basis regarding progress of work, labour availability, equipment deployment, testing, etc.

1.11.3 Contractor is required to draw mutually agreed monthly work programmes in consultation with BHEL well in advance. Contractor shall ensure achievement of agreed program and shall also timely arrange additional resources considered necessary at no extra cost to BHEL.

1.11.4 Progress review meetings will be held at site during which actual progress during the week vis-a-vis scheduled programme shall be discussed for actions to be taken for achieving targets. Contractor shall also present the programme for subsequent week. The contractor shall constantly update / revise his work programme to meet the overall requirement. All quality problems shall also be discussed during above review meetings. Necessary preventive and corrective action shall be discussed and decided upon in such review meetings and shall be implemented by the contractor in time bound manner so as to eliminate the cause of nonconformities.

1.11.5 The contractor shall submit daily, weekly and monthly progress reports, manpower reports, materials reports, T & Ps availability report and other reports as per Performa considered necessary by BHEL Engineer as per the BHEL formats. The periodicity of the reports will be decided by BHEL Engineer at site.

1.11.6 The progress reports shall indicate the progress achieved against plan, indicating reasons for delays, if any. The report shall also give remedial actions which the contractor intends to make good the slippage or lost time so that further works can proceed as per the original plan the slippages do not accumulate and affect the overall programme.

1.11.7 The contractor to reflect actual progress achieved during the month and will be submitted to BHEL, so that slippages can be observed and necessary action taken in order to ensure that the situation does not get out of control will update the construction schedule forming part of this contract each month.

1.11.8 It is the responsibility of the contractor to provide all relevant information on a regular basis regarding construction progress, labour availability, equipment deployment, testing, etc.

VOLUME-IA PART – II CHAPTER 1

CORRECTIONS / REVISIONS IN SPECIAL CONDITIONS OF CONTRACT, GENERAL CONDITIONS OF CONTRACT AND FORMS & PROCEDURES

Sl No: 1

Clause 4.1.11 under 'Obligations of Contractor' in SCC is deleted.

Sl No: 2:

OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT MANAGEMENT/ QUALITY ASSURANCE PROGRAMME

The following clauses in Occupational Health, Safety & Environment Management / Quality Assurance Programme published in Chapter-IX of Special Conditions of Contract (Volume I Book-II) is revised as under.

Chapter IX Clause 9.1 is modified as below:

Contractor will comply with HSE (Health, Safety & Environment) requirements of BHEL as per the "HSE Plan sub contractors for Nalco Damanjodi" (Document No. HSEP: 14 Rev 01 dated 31.03.2021) enclosed.

Chapter IX Clause 9.1.1 to 9.1.25 stands deleted.

Chapter IX Clause 9.2 to 9.62 stands deleted.

Sl No: 3:

Clause No. 10.5 on RA Bill Payments, in Special Conditions of Contract (SCC), Volume-IB, Book-II, is revised as under:

The payment for running bills will normally be released within 30 days of submission of running bill complete in all respects with all documents. It is the responsibility of the contractor to make his own arrangements for making timely payments towards labour wages, statutory payments, outstanding dues etc., and other dues in the meanwhile.

Sl No: 4:

Earnest Money Deposit (EMD) clause 1.9 in General Conditions of Contract (GCC) (Volume I Book-II) is revised as under.

1.9 EARNEST MONEY DEPOSIT

1.9.1 Every tenderer shall submit the prescribed amount of Earnest Money Deposit (EMD) to BHEL PSSR, only in the following forms: -

i. Electronic Fund Transfer credited in BHEL account (before tender opening)

ii. Through Online EMD payment portal of BHEL with SBI (before tender opening) by following steps as below:-
    1. Visit www.onlinesbi.com -> Go to State Bank Collect (In the tab section)
    2. Click Check box to proceed for payment -> Click on Proceed
    3. Under State of Corporate/ Institution ->Select Tamilnadu
    4. Under Type of Corporate/ Institution -> Select PSU – Public Sector Undertaking ->Go
    5. Under PSU – Public Sector Undertaking Name -> Select BHEL PSSR CHENNAI and Submit
    6. Under Select Payment Category ->-> SCT TENDER EMD & TENDER FEES

iii. Banker's cheque or Pay order or Demand Draft in favour of 'Bharat Heavy Electricals Limited' (along with offer) and payable at Chennai.

iv. Fixed Deposit Receipt (FDR) issued by Scheduled Banks/ Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL) along with the offer.

v. In case EMD amount is more than Rs. Two Lakhs, Tenderer has the option to submit Rs. Two lakhs in the forms described above in clause no. 1.9.1. (i) to (iv) and the remaining amount over and above Rs. Two Lakhs in the form of Bank Guarantee from Scheduled Bank (along with the Offer).

Note:

a) Proforma of Bank Guarantee (in lieu of Earnest Money)- Form WAM 23 is enclosed with this Tender.
b) The Bank Guarantee shall be valid for at least six months from the due date of tender submission mentioned in the Notice Inviting Tender.
c) Date of Expiry of Claim shall be as given in Proforma of Bank Guarantee (in lieu of Earnest Money)- Form WAM 23.

Bank Details for the purpose of Taking EMD

Name and Address of Beneficiary:	Bharat Heavy Electricals Ltd. Tek Towers, No. 11, Old Mahabalipuram Road, Okkiyam Thoraipakkam, Chennai - 600097
Name of Bank:	State Bank Of India
Bank Branch Address:	SBI Saidapet Branch, EVR Periyar Building, Nandanam, Anna Salai, Chennai - 600035
IFSC Code :	SBIN0000912
Account No. :	10610819499

Details for SFMS (Structured Financial Messaging System) transmission of BG

Bank and Branch	SBI TFCPC Branch
Branch Code	5056
IFSC Code	SBIN0005056

1.9.2 EMD shall not carry any interest.

1.9.3 EMD by the Tenderer will be forfeited as per NIT Conditions, if:

i. After opening the tender and within the offer validity period, the Tenderer revokes his tender or makes any modification in his tender which is not acceptable to BHEL.

ii. The Contractor fails to deposit the required Security deposit or commence the work within the period as per LOI/Contract.

1.9.4 EMD given by all unsuccessful tenderers will be refunded normally within 15 days of award of work.

1.9.5 EMD of successful tenderer will be retained as part of Security Deposit.

1.9.6 EMD by the tenderer shall be withheld in case any action on the tenderer is envisaged under the provisions of extant" Guidelines on Suspension of Business dealings with suppliers/contactors" and forfeited / released based on the action determined under these guidelines.

Sl No: 5

SECURITY DEPOSIT The SECURITY DEPOSIT (SD) clause 1.10 published in General Conditions of Contract (Volume I Book-II) is revised as under.

1.10 Security Deposit:

1.10.1 Upon acceptance of Tender, the successful Tenderer should deposit the required amount of Security Deposit for satisfactory completion of work, as given below:

1.10.2 The total amount of Security Deposit will be 5% of the contract value. EMD of the successful tenderer shall be converted and adjusted towards the required amount of Security Deposit.

1.10.3 The security Deposit should be furnished before start of the work by the contractor.

1.10.4 Modes of deposit:

1.10.4.1 The balance amount to make up the required Security Deposit of 2% of the contract value may be furnished in any one of the following forms

i. Cash (as permissible under the extant Income Tax Act)

ii. Local cheques of Scheduled Banks (subject to realization)/ Pay Order/ Demand Draft/ Electronic Fund Transfer in favour of BHEL

iii. Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format for Security Deposit shall be in the prescribed formats.

iv. Fixed Deposit Receipt issued by Scheduled Banks/ Public Financial Institutions as defined in the Companies Act. The FDR should be in the name of the contractor, A/C BHEL, duly discharged on the back.

v. Securities available from Indian Post offices such as National Savings Certificates, Kisan Vikas Patras etc. (Certificates should be held in the name of Contractor furnishing the security and duly endorsed/ hypothecated/ pledged, as applicable, in favour of BHEL and discharged on the back)

(Note: BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith)

1.10.5 At least 50% of the Security Deposit including the EMD should be deposited in any form as prescribed before start of the work and the balance 50% of the Security Deposit will be recovered by deducting 10% of the gross amount progressively from each running bills of the contractor till the total amount of the required Security Deposit is collected.

1.10.6 The recoveries made from running bills (cash deduction towards balance SD amount) will be released against submission of equivalent Bank Guarantee in the prescribed formats, but only once, before completion of work.

1.10.7 The Security Deposit shall not carry any interest.

1.10.8 If the value of work done at any time exceeds the contract value, the amount of Security Deposit shall be correspondingly enhanced and the excess Security Deposit due the enhancement shall be immediately deposited by the Contractor or recovered from payment/s due to the Contractor.

A) The validity of Bank Guarantees towards Security Deposit shall be initially upto the completion period as stipulated in the Letter of Intent/Award + 3 months, and the same shall be kept valid by proper renewal till the acceptance of Final Bills of the Contractor, by BHEL

B) Date of Expiry of Claim shall be as given in the prescribed formats for Bank Guarantee towards Security Deposit

1.10.9 BHEL reserves the right of forfeiture of Security Deposit in addition to other claims and penalties in the event of the Contractor's failure to fulfill any of the contractual obligations or in the event of termination of contract as per terms and conditions of contract. BHEL reserves the right to set off the Security Deposit against any claims of other contracts with BHEL.

1.10.10 Penalty for Delayed Remittance of Security Deposit

If the contractor fails to furnish SD before start of work, in line with 1.10.3 above, Simple Interest against delayed remittance of the Security Deposit shall be deducted from the sub-contractor at the rate of SBI PLR + 2% on the value of 50% SD of the contract, for the delayed period (i.e., period between start of work and date of remittance of Initial SD, i.e., atleast 50% of SD). In case, the delayed period has different SBI PLR rates, Simple Interest shall be calculated based on different rates by considering the corresponding time period. On similar lines Penalty shall be levied for delayed remittance of Additional Security Deposit (if applicable).

Note: - Bank details & SFMS details provided above in Sl. No. 04 Earnest Money Deposit) may be used for the purpose of arranging Bank Guarantees towards Security Deposit / Additional Security Deposit also.

Sl No: 6

Clause 2.7.2 and 2.7.3 in GCC regarding Rights of BHEL is revised as under:

2.7.1 To withdraw any portion of work and / or to restrict / alter quantum of work as indicated in the contract during the progress of work and get it done through other agencies to suit BHEL's commitment to its customer or in case BHEL decides to advance the date of completion due to other emergent reasons / BHEL's obligation to its customer.

In case of inadequate manpower deployed by the contractor, BHEL reserves the right to deploy additional manpower through any other agency for expediting activities in the interest of the project. Supplied manpower shall be put on job by the contractor and payments and other statutory compliances related to manpower shall be the contractor's responsibility. In case of contractor's failure to fulfill his obligations in

respect of such manpower, BHEL reserves the right to take necessary action as per contract conditions.

2.7.2.

2.7.2.1 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. Contractor's poor progress of the work vis-à-vis execution timeline as stipulated in the Contract, backlog attributable to contractor including unexecuted portion of work does not appear to be executable within balance available period considering its performance of execution.
ii. Withdrawal from or abandonment of the work by contractor before completion of the work as per contract.
iii. Non-completion of work by the Contractor within scheduled completion period as per Contract or as extended from time to time, for the reasons attributable to the contractor.
iv. Termination of Contract on account of any other reason (s) attributable to Contractor.
v. Assignment, transfer, subletting of Contract without BHEL's written permission.
vi. Non-compliance to any contractual condition or any other default attributable to Contractor.

Risk & Cost Amount against Balance Work:

Risk & Cost amount against balance work shall be calculated as follows: Risk & Cost Amount= [(A-B) + (A x 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).

* 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. 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: Incase 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.

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. 2.7.9 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)] x T1

v). LD shall be calculated in line with LD clause (clause 2.7.9) of the Contract for the delay attributable to contractor taking "X" as Contract Value and "T2" as period of delay attributable to contractor.

1.7.2.2 In case Contractor fails to deploy the resources as per requirement, BHEL can deploy own/hired/otherwise arranged resources at the risk and cost of the contractor and recover the expenses incurred from the dues payable to contractor. Recoveries shall be actual expenses incurred plus 5% overheads or as defined in TCC.

2.7.3 **Recoveries arising out of Risk & Cost and LD or any other recoveries due from Contractor**

Following sequence shall be applicable for recoveries from contractor:

a) Dues available in the form of Bills payable to contractor, SD, BGs against the same contract.

b) Demand notice for deposit of balance recovery amount shall be sent to contractor, if funds are insufficient to effect complete recovery against dues indicated in (a) above.

c) If contractor fails to deposit the balance amount to be recovered within the period as prescribed in demand notice, following action shall be taken for balance recovery:

i) Dues payable to contractor against other contracts in the same Region shall be considered for recovery.

ii) If recovery cannot be made out of dues payable to the contractor as above, balance amount to be recovered, shall be informed to other Regions/Units for making recovery from the Unpaid
Bills/Running Bills/SD/BGs/Final Bills of contractor.

iii) In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against contractor.

SL No: 7: Penalty for Intermediate Milestones– Not applicable

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SL No: 8: OVERRUN COMPENSATION (ORC) -Not applicable

Sl. No: 9: Interest Bearing Recoverable Advance - Not applicable

Sl. No: 10: Quantity Variation - Not applicable

Sl No: 11: PRICE VARIATION COMPENSATION (PVC) – Not applicable

Sl No: 12

Clauses 2.21 in GCC regarding Arbitration is amended as below

2.21 ARBITRATION & CONCILIATION

2.21.1 ARBITRATION :

2.21.1.1 Except as provided elsewhere in this Contract, in case Parties are unable to reach amicable settlement (whether by Conciliation to be conducted as provided in Clause 2.21.2 herein below or otherwise) in respect of any dispute or difference; arising out of the formation, breach, termination, validity or 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 (hereinafter referred to as the 'Dispute'), then, either Party may, commence arbitration in respect of such Dispute by issuance of a notice in terms of section 21 of the Arbitration & Conciliation Act, 1996 (hereinafter referred to as the 'Notice'). The Notice shall contain the particulars of all claims to be referred to arbitration in sufficient detail and shall also indicate the monetary amount of such claim. The arbitration shall be conducted by a sole arbitrator to be appointed by the Head of the BHEL Power Sector Region issuing the Contract within 60 days of receipt of the complete Notice. The language of arbitration shall be English.

The Arbitrator shall pass a reasoned award.

Subject as aforesaid, the provisions of Arbitration and Conciliation Act 1996 (India) or statutory modifications or re-enactments thereof and the rules made thereunder as in force from time to time shall apply to the arbitration proceedings under this clause. The seat of arbitration shall be **Chennai** (the place from where the contract is Issued). The

Contract shall be governed by and be construed as per provisions of the laws of India. Subject to this provision 2.21.1.1 regarding ARBITRATION, the principal civil court exercising ordinary civil jurisdiction over the area where the seat of arbitration is located shall have exclusive jurisdiction over any DISPUTE to the exclusion of any other court.

2.21.1.2 In case of Contract with Public Sector Enterprise (PSE) or a Government Department, the following shall be applicable:
In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) 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 & Excise Departments), such dispute or difference shall be taken up by either party for resolution through AMRCD (Administrative Mechanism for Resolution of CPSEs Disputes) as mentioned in DPE OM No. 4(1)/2013-DPE(GM)/FTS-1835 dated 22-05-2018 as amended from time to time.

2.21.1.3 The cost of arbitration shall initially be borne equally by the Parties subject to the final allocation thereof as per the award/order passed by the Arbitrator.

2.21.1.4 Notwithstanding the existence of any dispute or differences 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 unless the dispute inter-alia relates to cancellation, termination or short-closure of the Contract by BHEL.

2.21.2 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.

Notes:

1. No serving or a retired employee of BHEL/Administrative Ministry of BHEL shall be included in the BHEL Panel of Conciliators.
2. 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.

   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 2.3 enclosed in Vol 1A Part II Chapter 4. The Procedure 2.3 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.

   The Contractor hereby agrees that BHEL may make any amendments or modifications to the provisions stipulated in the Procedure 2.3 enclosed in Vol 1A Part II Chapter 5 from time to time and confirms that it shall be bound by such amended or modified provisions of the Procedure 2.3 with effect from the date as intimated by BHEL to it.

2.21.3 No Interest payable to Contractor

Notwithstanding anything to the contrary contained in any other document comprising in the Contract, no interest shall be payable by BHEL to Contractor on any moneys or balances including but not limited to the Security Deposit, EMD, Retention Money, RA Bills or the Final Bill, or any amount withheld and/or appropriated by BHEL etc., which becomes or as the case may be, is adjudged to be due from BHEL to Contractor whether under the Contract or otherwise.

Sl No: 13

The chapter Reverse auction procedure published in 'Forms and Procedures' of Volume I Book-II stands deleted. 'Guidelines for Reverse Auction-2021' available in the website http://www.bhel.com -> Supplier Registration, shall be applicable.

Sl No: 14:

Existing format on Monthly Performance Evaluation of Contractor, as available in Form No F-14 of Volume ID Forms and procedure stands Deleted. Form No.- F-14 (Rev 01) is enclosed.

Sl No: 15:

Existing format on Monthly Performance Evaluation of Contractor, as available in Form No F-15 of Volume ID Forms and procedure stands Deleted. Form No.- F-15 (Rev 02) is enclosed.

Sl No: 16 : Integrity Pact - Not applicable

Sl No: 17

Existing format for BANK GUARANTEE FOR SECURITY DEPOSIT, as available in Form No. F-11 (Rev 00) of Volume ID Forms and procedures stands deleted. Refer Proforma of Bank Guarantee (in lieu of Security Deposit)-Form WAM 22 provided in Chapter-10, Part-II of Volume-IA Technical Conditions of Contract.

Sl No: 18

Clause 2.15.5 of GCC in Extra Works is revised as under:

2.15.5: After eligibility of extra works is established and finally accepted by BHEL engineer / designer, payment will be released on competent authority's approval at the following rate.

MAN-HOUR RATE FOR ELIGIBLE EXTRA WORKS:

Single composite average labour man-hour rate, including overtime if any, supervision, use of tools and tackles and other site expenses and incidentals, consumables for carrying out any major rework / repairs / rectification / modification / fabrication as certified by site as may arise during the course of erection, testing, commissioning or extra works arising out of transit, storage and erection damages, payment, if found due will be at Rs 108/- per man hour.

VOLUME-IA PART – II CHAPTER 2 to CHAPTER 11

In the next pages as below:

CHAPTER	Details	No. of sheets
Chapter-2	Format for Form no.: F-14 (Rev 01); Monthly Plan and Review with Contractors	06
Chapter-3	Format for Form no.: F-15 (Rev 02); Monthly Performance Evaluation of contractor	06
Chapter-4	Hire charges on issue of capital tools & Plants (Only corresponding charges)	14
Chapter-5	Proforma of Bank Guarantee (in lieu of Earnest Money)- Form WAM 23	03
Chapter-6	Proforma of Bank Guarantee (in lieu of Security Deposit)- Form WAM 22	03
Chapter-7	Procedure for conduct of Conciliation	11
Chapter-8	General Technical Requirements of Civil Works	09
Chapter-9	Drawings (for tendering purpose only)	16
Chapter-10	Social Accountability format	05
Chapter-11	HSE Plan sub contractors for Nalco Damanjodi	139

PSSR	MONTHLY PLAN & REVIEW WITH CONTRACTOR	Page **1** of **6**

Name of Project		Contract No.	
Name of Work		Name of Contractor	

PART- A: PLAN/ REVIEW OF WORK FOR THE MONTH OF …….. Date of Plan/ Review……

SN.	Description of Work	Unit of Measur-ement	Unit Rate	Planned (QTY Planned for the month as per Part –C of last month)		Cumulative Shortfall attributable to contractor upto last month (Refer Note 1)		Achieved		Shortfall attributable to BHEL w.r.t Plan (as per Col. 3 of Part-D)		Cumulative Shortfall attributable to Contractor upto & including this month		REMARKS (Reasons for Shortfall attributable to Contractor. Supporting documents to be kept as record.)
(a)	(b)	(c)	(d)	A		B		C		D		E=A+B-C-D		
				Phy.	Financial	Phy	Financial	Phy.	Financial	Phy.	Financial	Phy.	Financial	
	Value of Other Items not mentioned above but planned to be executed in this month													
Total					ΣA		ΣB		ΣC		ΣD		ΣE	

BHEL
(Sign with name, designation and date)

CONTRACTOR
(Sign with name, designation and date)

Name of Project		Contract No.	
Name of Work		Name of Contractor	

PART- A: Contd…….

Note 1: **In addition to the work planned as per Col. 'A', Contractor shall also make full efforts to minimize the 'Cumulative shortfall attributable to contractor upto the month' as mentioned in Col. 'B' by enhancing its resources, so as to achieve the completion of activities as per agreed schedule. In case contractor is not able to execute the entire shortfall, then BHEL 'Engineer in-charge', shall decide the priority of work to be executed and it shall be binding on the contractor.**

Note 2: Percentage Shortfall attributable to contractor w.r.t. "Plan - Shortfall attributable to BHEL" for the month = $[(\Sigma E-\Sigma B)/(\Sigma A-\Sigma D)]x100$
In case, $(\Sigma E-\Sigma B)$ is negative, then it shall be treated as zero percent."

Note 3: Form 14 should include all items being planned in the current month, and all items against which shortfall was attributable to contractor till previous month. However, for practical reason, if it is not possible to mention some of the items in Form-14 being planned to be executed in this month, then also value of such items shall necessarily be included in calculation of Total Value.

Note 4: In case reason for shortfall attributable to contractor is w.r.t. T&P and Manpower, it should be in conformity with Part B1 and B2.

BHEL
(Sign with name, designation and date)

CONTRACTOR
(Sign with name, designation and date)

PSSR	MONTHLY PLAN & REVIEW WITH CONTRACTOR	Page **3** of **6**

Name of Project		Contract No.	
Name of Work		Name of Contractor	

PART – B-1: PLAN/REVIEW OF DEPLOYMENT OF MAJOR T&Ps FOR THE MONTH OF …….. Date of Plan/ Review……

CONTRACTOR'S SCOPE: -

SN.	PLAN				DEPLOYMENT STATUS			
	Major T&P to be deployed as per work planned for the month	QTY	Deployment Period (in days)	Weightage assigned to planned T&P (in fraction such that ΣC =1)	Actual Deployed Quantity	Actual Deployment Period (in days)	Weighted T&P Deployed	REMARKS (Works affected due to non-deployment of T&Ps)
		A	B	C	D	E	F=(C x D x E) / (A x B)	

Note: In case, E>B, it shall be considered as E=B. Similarly, in case D>A, it shall be considered as D=A.
Percentage of T&P Deployed = ΣF x 100

BHEL SCOPE: -

SN.	PLAN			DEPLOYMENT STATUS		
	Major T&P to be deployed as per work planned for the month	QTY	Deployment Period (in days)	Actual Deployed Quantity	Actual Deployment Period (in days)	REMARKS (Works affected due to non-deployment of T&Ps)

BHEL
(Sign with name, designation and date)

CONTRACTOR
(Sign with name, designation and date)

PSSR	MONTHLY PLAN & REVIEW WITH CONTRACTOR	Page **4** of **6**

Name of Project		Contract No.	
Name of Work		Name of Contractor	

PART – B-2: PLAN/ REVIEW OF DEPLOYMENT OF MANPOWER FOR THE MONTH OF …….. Date of Plan/ Review……

CONTRACTOR'S SCOPE: -

SN.	Area of Work	Category of Labour	No. of Labour required as per category	Deployment Period (in days)	No. of Labour actually deployed	Actual Deployment Period (in days)	REMARKS (Works affected due to non-availability of labour)
			A	B	C	D	

Percentage of Manpower Deployed=100 x Σ(CxD)/Σ(AxB)

BHEL
(Sign with name, designation and date)

CONTRACTOR
(Sign with name, designation and date)

Name of Project		Contract No.	
Name of Work		Name of Contractor	

PART – C: PLAN(PHYSICAL) FOR THE NEXT MONTH i.e. …….. Date of Plan ……

SN.	Description of work	Original Planned Quantity	Planned Quantity (excluding shortfalls attributable to contractor till date)	Unit of Measu-rement	T&Ps Required				Manpower Required		REMARKS (Reasons for difference in Original Planned Quantity w.r.t. Planned quantity to be given)
					Contractor Scope		BHEL Scope		Category of Labour	No. of Labour required as per Category	
					Major T&P to be deployed as per work planned for the month	Quantity	Major T&P to be deployed as per work planned for the month	Quantity			

Note 1: Planned quantity should be based on available/ expected fronts/ inputs in the next month

Note 2: "Original Planned Quantity" shall be as per latest jointly agreed programme between BHEL and Contractor before commencement of work or at the time of latest Time Extension, as the case may be.

BHEL
(Sign with name, designation and date)

CONTRACTOR
(Sign with name, designation and date)

Name of Project		Contract No.	
Name of Work		Name of Contractor	

PART – D: REASONS FOR SHORTFALL ATTRIBUTABLE TO BHEL IN RESPECT OF PLAN FOR THE MONTH……

SN.	Description of Work (from Part-A)	Quantities Affected		Reasons for Shortfall attributable to BHEL	Agency responsible for reasons for Shortfall	Remarks (Supporting Documents in respect of agency responsible)
		(Physical Quantity)	Unit of Measu-rement			
1	2	3	4	5	6	7

Note1: Reasons for shortfall shall include non-availability of fronts/ drawings/ materials/ T&P (BHEL Scope)/ clearances etc. and other hindrances for which contractor is not responsible.

Note2: Agency responsible may be BHEL Site/ MUs/ Design Centre/ BHEL Customer/ other Contractors etc.

BHEL
(Sign with name, designation and date)

MONTHLY PERFORMANCE EVALUATION OF CONTRACTOR

Form No.: F-15 (Rev 02)

Project		Vendor			Package/Unit	
Sl. No.	Parameter for Measurement	Classification	Max Score	Score Obtained	Measurement Key/Scheduled date	Supporting Documents
#1.01	Cumulative number of days in the month, the nominated Quality Officer or his authorised nominee was not available	QUALITY	1.5		Quality Officer or his authorised nominee should be available for all the days of working at site	Daily Log Book entry/Incident Registers/letter references
#1.02	Number of instances of non- compliance wrt FQP, Standard Drawings, Specifications, E&C Manuals etc.	QUALITY	1.5		No deviation from FQP, Standard Drawings, Specifications, E&C Manuals etc. is allowed without BHEL Engineer's approval.	Daily Log Book entry/Incident Registers/letter references
#1.03	Percentage submission of test certificates for batches of welding electrodes, cement, sand, aggregate, consumable, Paints etc. as applicable for this month OR In case of MM & MH package, monthly checks for Storage/Preservation of material.	QUALITY	1		Submission of 100% Test certificates for materials as per FQP is mandatory. MM & MH package: Storage/Preservation as per manual/procedure.	Daily Log Book entry/Incident Registers/letter references
#1.04	Number of incidences of improper storage & preservation (not in accordance to the guidelines of BHEL MUs or approved FQP) of materials, consumables (viz. gases, welding electrodes & fluxes, fuel etc.) & bought-out items (paints, fasteners etc.) under the custody of the contractor	QUALITY	1		Total number of non-compliances	Daily Log Book entry/Incident Registers/letter references
#1.05	Rework/ Rejection instances in a month necessitated due to deviation from Standard Drawings /Specifications /Manuals /E&C procedures /FQPs or due to Poor Workmanship by contractor	QUALITY	2		Reworks/ Rejection should be as mirimum as possible. Total number of reworks/ rejections due to reasons attributable to contractor.	Daily Log Book entry/Incident Registers/letter references
#1.06	Delay in preparation & submission of signed protocols / log sheets / site register / NDT test reports as per approved FQP/ Qualified Welder List along with photocopies of Welder ID cards / Welder Performance Evaluation records etc. in the month OR in case of MM / MH package reconciliation statement / verification report.	QUALITY	1		Within 2 days of measurements taken or within first 3 working days of next month, as advised by BHEL Engineer	Daily Log Book entry/Incident Registers/letter references
#1.07	Number of instances for Major equipment/product failure due to negligence/improper work/poor workmanship by contractor	QUALITY	1		No such event should happen	Daily Log Book entry/Incident Registers/letter references
#1.08	Total number of complaints received in the month on the quality of finish / aesthetics	QUALITY	1		Total number of non-compliances	Daily Log Book entry/Incident Registers/letter references

Name and Signature of BHEL Package In-charge

Name and Signature of Contractor

Project		Vendor			Package/Unit	
Sl. No.	Parameter for Measurement	Classification	Max Score	Score Obtained	Measurement Key/Scheduled date	Supporting Documents
#2.01	Cumulative number of days of delay in submission of Plan FOR THE MONTH supported by deployment plan of Major T&Ps and Manpower (as per Form F-14) and relevant construction/layout drawings - like A4 plan / elevation views of plan status for structures / pressure parts/Civil Works, Piping isometrics for piping, Layout / PID / System reference sketch, Unloading / storage plans etc.as applicable.	PERFORMANCE	5		Number of days delayed from second working day of the month	Daily Log Book entry/Incident Registers/letter references
#2.02	Percentage of timely submission of Daily Reports for Progress of work, Resources, Consumables etc.	PERFORMANCE	1.5		Percentage of timely submission of daily reports/ Scheduled date is successive next day for each day	Daily Log Book entry/Incident Registers/letter references
#2.03	Number of days delayed for submission of FQP log sheets / protocols / Monthly Progress Reports for the work executed during the month under measurement	PERFORMANCE	1.5		Number of days delayed/Scheduled date is first 2 working days of next month	Daily Log Book entry/Incident Registers/letter references
#2.04	Percentage Shortfall attributable to contractor w.r.t. "Plan - Shortfall attributable to BHEL" for the month as per Form-14	PERFORMANCE	35		As per Part-A of Form-14	Progress review formats
#2.05	Number of days delayed in submission of Running bills with complete supporting documents (including updated reconciliation statement of BHEL issued material) for the month	PERFORMANCE	2		Number of cays delayed / Scheduled date is 7th day of next month	Daily Log Book entry/Incident Registers/letter references
#2.06	Number of times the Top Management of contractor did not respond to critical issues of site, for the month	PERFORMANCE	1		Total number of instances	Daily Log Book entry/Incident Registers/letter references
#2.07	Cumulative number of days in the month the works were stopped / refused on interpretation of contract clauses/scope due to tendency of taking undue advantage by interpreting contract clauses in their favour	PERFORMANCE	2		Cumulative number of days lost	Daily Log Book entry/Incident Registers/letter references
#2.08	Number of times rework was refused by contractor	PERFORMANCE	1		Total number of non-compliances	Daily Log Book entry/Incident Registers/letter references

Name and Signature of BHEL Package In-charge

Name and Signature of Contractor

Project		Vendor			Package/Unit	
Sl. No.	Parameter for Measurement	Classification	Max Score	Score Obtained	Measurement Key/Scheduled date	Supporting Documents
#2.09	Cumulative number of days in the month recording / logging was not done in daily log / history register / hindrance register / soft form in a PC maintained at BHEL Site Office	PERFORMANCE	1		Cumulative number of days recording or logging was not done / all days of the month	Daily Log Book entry/Incident Registers/letter references
#3.01	Percentage of Manpower Deployed w.r.t. Plan for the month as per Form-14.	RESOURCES	7		As per Part-B2 of Form-14	Daily Log Book entry/Incident Registers/letter references
#3.02	Percentage of T&P Deployed w.r.t. Plan for the month as per Form-14.	RESOURCES	7		As per Part-B1 of Form-14	Daily Log Book entry/Incident Registers/letter references
#3.03	Cumulative number of major instances in the month hampering / affecting progress of work due to breakdown or non-availability of major T&P and MME for the work, under the scope of Contractor	RESOURCES	3		Cumulative number of instances	Daily Log Book entry/Incident Registers/letter references
#3.04	Cumulative number of major instances in the month hampering / affecting progress of work due to non-availability of Consumables/ use of improper consumables under the scope of contractor	RESOURCES	3		Cumulative number of instances	Daily Log Book entry/Incident Registers/letter references
#4.01	Number of non-compliances during the month for Statutory requirements like validity of Labour Licence, Insurance Policy, Labour Insurance, PF, BOCW Compliance etc. and any other applicable laws/ Regulation, Electrical Licence, T&P fitness certificate, Contractors' All Risk Policy etc. as applicable	SITE INFRASTRUCTURE & SERVICE	1		Total number of non-compliances	Daily Log Book entry/Incident Registers/letter references
#4.02	Cumulative number of days in a month poor illumination is reported at storage area, erection area, pre-assembly area and other designated areas by BHEL site.	SITE INFRASTRUCTURE & SERVICE	0.5		Total number of non-compliances/random checks	Daily Log Book entry/Incident Registers/letter references
#4.03	Cumulative number of days of non-availability of well-maintained toilets facilities for workers (separate for men and women) and non-availability of potable drinking water stations for workers in specified areas.	SITE INFRASTRUCTURE & SERVICE	1		Total number of non-compliances/random checks	Daily Log Book entry/Incident Registers/letter references

Name and Signature of BHEL Package In-charge

Name and Signature of Contractor

Project		Vendor			Package/Unit	
Sl. No.	Parameter for Measurement	Classification	Max Score	Score Obtained	Measurement Key/Scheduled date	Supporting Documents
#4.04	Total number of instances in the month, Housekeeping NOT attended to in spite of instructions by BHEL -i.e. removal / disposal of surplus earth / debris / scrap / unused / surplus cable drums / other electrical items / surplus steel items / packing materials, thrown out scrap like weld butts, cotton waste etc. from the working area to identified locations	SITE INFRASTRUCTURE & SERVICE	2		Total number of non-compliances/random checks	Daily Log Book entry/Incident Registers/letter references
#4.05	Total number of instances in a month, Site Office with reasonably good facilities including enough nos. of computers and printers etc. for use by office and supporting staff was not made available/maintained.	SITE INFRASTRUCTURE & SERVICE	0.5		No discrepancy during regular or surprise visits	Photograph and report of the Engineer
#5.01	Number of days delayed in making labour payments for the last month	SITE FINANCE	2		Number of days delayed / Scheduled date is 7th day of next month	Daily Log Book entry/Incident Registers/letter references
#5.02	Number of complaints from labour/ sub supplier/ sub-contractor for non-receipt of payments from contractor	SITE FINANCE	1.5		Total number of complaints or reporting	Daily Log Book entry/Incident Registers/letter references
#5.03	Number of times the site operations were hampered for want of funds at the disposal of site-in-charge.	SITE FINANCE	1.5		Total number of non-compliances	Daily Log Book entry/Incident Registers/letter references
#6.01	Cumulative number of days in a month the nominated Safety Officer was not available	HSE & SA	1		Safety Officer should be available for all the days	Daily Log Book entry/Incident Registers/letter references
#6.02	Shortfall in number of weekly safety meetings in the month conducted or attended by the Safety Officer	HSE & SA	0.5		Safety meetings to be held every week	Copy of Minutes of meeting
#6.03	Level of compliance w.r.t decisions taken in previous Safety meetings	HSE & SA	0.5		Number of consolidated issues discussed in Safety meetings	Copy of Minutes of meeting, Non-compliance intimation documents from BHEL site
#6.04	Delay in submission of monthly report on safety (including electrical safety for equipment & personnel etc.) in the prescribed form	HSE & SA	1		Number of days delayed/Scheduled date is third working day of next month	Daily Log Book entry/Incident Registers/letter references
#6.05	Number of days taken for lodging FIRs from date of occurrence/notice of incident of theft / accident etc.	HSE & SA	0.5		Number of days delayed/Scheduled date is within 24 Hrs of occurrence/notice of incidence	Copy of FIR lodged by Contractor

Name and Signature of BHEL Package In-charge

Name and Signature of Contractor

Project		Vendor			Package/Unit	
Sl. No.	Parameter for Measurement	Classification	Max Score	Score Obtained	Measurement Key/Scheduled date	Supporting Documents
#6.06	Number of times written(email, letters etc.) warning issued for non-availability/ use of improper Fall protection and rescue arrangement as lifeline, fall arrestors, safety net, hand-railings, covered floors, man-basket, rescue basket & kit etc. by the contractor	HSE & SA	2		Total number of non-compliances	Daily Log Book entry/Incident Registers/letter references
#6.07	Number of times punitive fines imposed for unsafe practices as per contract like non-availability/use of PPEs as safety shoes, helmets, goggles, gloves, lifeline, safety belts etc.	HSE & SA	1		Total number of non-compliances	Non-compliance intimation documents from BHEL site
#6.08	Percentage compliance to Emergency preparedness and response plan: Portable Fire-extinguishers, Buckets, Fire-wardens, display of emergency numbers, mock-drills, Hazard Identification and Risk Assessment(HIRA) etc.	HSE & SA	1		Compliance should be 100% as per HSE Plan or as finalized in Safety Meetings	Non-compliance intimation documents from BHEL site
#6.09	Number of times the agency has defaulted on display of safety posters / safety slogans / safety barriers/emergency numbers etc. in identified areas	HSE & SA	0.5		Total number of instances	Non-compliance intimation documents from BHEL site
#6.10	Non compliances observed during HSE and Safety Audit	HSE & SA	0.5		Total number of non-compliances	Non-compliance intimation documents from BHEL site, Audit Reports
#6.11	Cumulative number of days in the month, non-availability of First Aid Kit, First Aider & Emergency Vehicles/Ambulance.	HSE & SA	0.5		Cumulative number of days	Non-compliance intimation documents from BHEL site
#6.12	Number of days taken for submission of Root Cause analysis (RCA) for the accident from the cut-off date intimated by BHEL for submission of RCA	HSE & SA	0.5		Number of days delayed/Scheduled date is cut-off date intimated by BHEL	Daily Log Book entry/Incident Registers/letter references
#6.13	Non conductance of training (induction, job specific, height work etc.), tool box meeting and health check-up as per Contract requirements	HSE & SA	0.5		Number of incidences of non-conductance during the month	Daily Log Book entry/Incident Registers/letter references
		Total	**100**			

Name and Signature of BHEL Package In-charge

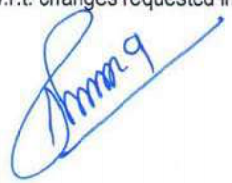
Name and Signature of Contractor

Project		Vendor			Package/Unit	
Sl. No.	Parameter for Measurement	Classification	Max Score	Score Obtained	Measurement Key/Scheduled date	Supporting Documents
Less Deduction in Score Due to Major Accidents (Fatal, Permanent Disability or bodily injury by which person injured is prevented to resume to work within 48 hours or more after accident,, Major Damage to Equipment etc.) attributable to the contractor @ 3 points/ accident						
Less Deduction in Score Due to Minor Accidents attributable to the contractor @ 1 point/ accident						
Less Deduction in Score Due to not Maintaining of Labour Colony (if applicable) as per BHEL HSE policy @2 points in a month on verification any day						
				Final Score		

Performance Score Summary for the Month	Total Score	Score Obtained
QUALITY	10	
PERFORMANCE	50	
RESOURCES	20	
SITE INFRASTRUCTURE & SERVICE	5	
SITE FINANCE	5	
HSE & SA	10	
OTHERS (deductions if any)	0	
TOTAL	**100**	

Note:

1) It is only indicative and shall be as per the online format issued by BHEL time to time.
2) No request will be entertained after specified date of current month w.r.t. changes requested in the sccres of immediate previous month.



Name and Signature of BHEL Package In-charge

Name and Signature of Contractor

BHARAT HEAVY ELECTRICALS LTD.
POWER SECTOR(FINANCE)- HEAD QUARTERS
ASIAD, NEW DELHI

From : Kalyan Coari
AGM-Finance

For : As Per Distribution List

No. PW:FM:FAX:T&P Hire :2019-21
Dated : 31st May, 2019

Subject : Revision of Hire Charges on Issue of Capital Tools & Plants

The rates of hire charges for capital Tools and Plants and Operator's charges circulated vide letter No. PWR:FM:T&P Hire 2017-19 dated 01st June,2017 were valid upto 31.5.2019. The Revised Rates effective from 01.06.2019 are enclosed as detailed below :

(i) Annexure C1 & T1 : Rates of hire charges applicable to contractors working for BHEL

(ii) Annexure C2 & T2 : Rates of hire charges applicable to outside agencies other than Contractors working for BHEL.

2. The Crane Operator's charges will be as follows :

A. **If BHEL operator is utilised Rs. 7200/- (Rupees Seven thousand two hundred only) per day of 8 hours.** For services less than 4 hours, half of per day rate will be charged. For services for 4 hours or more but up to 8 hours, full day rate will be charged. Overtime Allowance (OTA) will be charged at double the rate on hourly basis.

B. **If vendor sourced operator is provided, the rates shall be the actual cost to BHEL with 30% overheads.**

3. The hire charges of Capital Tools & Plants are exclusive of operating expenses e.g. fuel & consumables. **All Operating expenses are chargeable to User's account.**

4. All other terms and conditions / aspects governing the issue of T&P on Hire "will remain the same as already circulated vide our letter of even number dated 22.1.1992 (copy enclosed).

5. **The revised rates will be effective from 01.06.2019 and will remain valid upto 31.5.2021.** This will be subject to revision thereafter.

6. For any additional item, the rates of hire charges will be worked out jointly by PS-MSX & Finance (PS-Hqrs) on specific request. All necessary details will be provided by the concerned Region.

(Kalyan Coari) 31/05/19
AGM (Fin)

Encl : As above

आर०एल० साहा
महा प्रबन्धक (वित्त)
R.L. SAHA
General Manager (Fin.)

भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited
पावर सेक्टर/Power Sector

REF: PWR:FAX:HIRE CHARGES
DT : 22.1.92.

SUBJECT ISSUE OF TOOLS AND PLANTS TO SUB-CONTRACTORS AND RECOVERY OF HIRE CHARGES THEREOF - - - -

The rates of hire charges for capital tools and plants last circulated vide Sr. Manager/Finance 's letter reference PWA:SMQ:FAX:24.02 dated 20.5.88 have been revised. The revised rates have been worked out based upon the recommendations of the study team set up vide office order No. PW:SMQ:FAX:11.36 Dt. 1.10.88. The study team's/committee's recommendations relating to issue of T&P to sub contractors A e enclose ; ra es of hire charges ave been worked out and are enclosed as follows :-

i) Annexures 1.1, 1.2, 1.3,&1.4
Rates for hire charges as applicable to contractors working for BHEL.

ii) Annexures 2.1 & 2.2
Rates of hire charges as applicable to outside agencies other than contractors working for BHEL.

iii) Annexure - III
Crane operators charges.

The important conditions/aspects governing the issue of T&P on hire are as follows :-

i) The tender documents shall specify :-

a) List of T&P to be provided by BHEL free of hire charges

b) List of T&P which may be given on hire, if available at site and the rate of hire charges recoverable for the same. For items and rates specified in the N.I.T. these charges shall not change during the currency of that contract. For items/rates not specified in N.I.T. the current rates shall be charged.

ii) The rates given in Annexure 1.1, 1.2, & 2.1 are on hourly basis. The unit of recovery is an hour and for fraction of an hour, the chargeable unit will be an hour only. The rates given in Annexure 1.3, 1.4 & 2.2 are on day basis (day means a calender day) and fraction of a day will be charged as full day/purpose of recovery of hire charges.

...2/-

"बीएचईएल हाउस" सिरी फोर्ट, नई दिल्ली-110049 फोन (का.) 6445246, 6442031/2516, तार: भेलप्रोएंग टेलेक्स: 031-71396, फैक्स: 011-6444021
"BHEL HOUSE", Siri Fort, New Delhi-110049 Phones: (O) 6445246, 6442031/2516, Grams: BHELPROENG, Telex: 031-71396, Fax: 011-6444021

iii) Operator's charges are on per day basis considering average 8 working hours, For services of less than 4 hours, half the rates will be charged. For services of 4 hours upto 8 hours, full daily rates will be charged. Overtime will be charged at double the rates on hourly basis.

iv) The hire charges are recoverable on the basis of out time and In time i.e. from the time a particular item is issued to the contractor from BHEL's store till the time it is returned. However, where the hourly rate is applicable for T&P which cannot be frequently returned due to intermittent use, logging shall be done for actual use and charged accordingly. In case of cranes, marching time for onward and return shall be charged at 50% of the hire charges rates.

v) The rates do not include transportation charges from and to BHEL's store. Safe transportation of T&P from and to BHEL's store shall be the contractors responsibility.

vi) Small T&P items i.e. items costing less than Rs. 10,000/- each shall not be issued to contractors on hire charges. Such items may however be issued to contractors on non-returnable basis at replacement cost plus 30% overheads reduced by depreciation as applicable or a certain reserve price whichever is higher.

vii) If a contractor commits certain T&P at the time of award of contract/L.O.I. and fails to actually deploy the same in time at site, then even for contractors working for BHEL, higher rates of hire charges as given in Annex 2.1 & 2.2 shall be applicable for such items.

~~The revised rates of hire charges and operator's~~ charges as enclosed, together with terms stated above and other aspects/conditions relating to issue of T&P to sub contractors as given in Appendix I shall be effective from 1.2.1992 till 31.10.93 and will be subject to revision thereafter.

...3/-

For any additional item not appearing in the enclosed list, rates of hire charges may be calculated by TS HQ in consultation with PS-HQ (Finance) on receipt of necessary details from regions and communicated to the regions.

This issues with the approval of competent authority.

(R.L. SAHA)
GENERAL MANAGER (F)
PS-HQ

Encl : As above.

DISTRIBUTION :

ED, PS-NR, New Delhi
ED, PS-WR, NAGPUR
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ED/PMG&TS/New Delhi

Advisor (Finance) Corporate Office, N.Delhi.
S.A. to Director (Power).

Annexure

C1

DATE:31/05/2019

REVISED RATES OF T&P HIRE CHARGES FOR CRANES & TRAILERS ETC. FOR
SUB-CONTRACTORS WORKING FOR BHEL FOR DOING BHEL JOBS

SL NO.	ITEM DESCRIPTION	USEFUL LIFE (IN YRS)	Revised rates (Rs./Hour) valid from 01/06/2019 to 31/5/2021 (WITHIN USEFUL LIFE)	Revised rates (Rs./Hour) valid from 01/06/2019 to 31/5/2021 (BEYOND USEFUL LIFE)
I.	CRANES: -			
1	Portal Gantry Crane 500T	15	20100.00	19980.00
2	100MT Crawler Crane ZOOMLION CRANE-QUY-100	10	11370.00	11320.00
3	Heavy Lift Crawler Crane 600MT Class DEMAG Model CC2800	15	56290.00	55940.00
4	PORTAL CRANE, 360T	15	14070.00	13980.00
5	600MT Class Crawler Crane- Manitowoc Model 18000-UPGRADED	15	55460.00	55110.00
6	600MT Class Crawler Crane- Liebherr Model LR1600-2 (Upgraded version)	15	68610.00	68180.00
7	CRAWLER CRANE FMC/LINKBELT 718, 250T (WITH RINGER)	15	33510.00	33300.00
8	CRAWLER CRANE FMC/LINKBELT 718, 250T (WITH-OUT RINGER)	15	20940.00	20810.00
9	MANITOWOC M-250T TRUCK CRANE	15	30160.00	29970.00
10	270 MT Class Crawler Crane- Manitowoc Model 2250	15	31660.00	31470.00
11	300MT Crane Crawler Crane LIEBHERR Model LR-1350/1	15	26390.00	26220.00
11.A	300MT Crane Crawler Crane LIEBHERR Model LR-1350/1 (UPGRADED)	15	36110.00	36110.00
12	250MT Class Mid range Crawler Crane- Kobelco Model CKE2500-2	15	15130.00	15030.00
12.A	250MT Class Mid range Crawler Crane- Kobelco Model CKE2500-2 (UPGRADED)	15	18850.00	18850.00
13	LINKBELT LS- 248H CRAWLER CRANE (180T)	15	16750.00	16650.00
14	MANITOWAC MODEL 888 CRAWLER CRANE (200 MT)	15	21780.00	21640.00
15	CRAWLER CRANE SUMITOMO, 150T	15	10890.00	10820.00
16	All Terrain Crane, 150MT- Liebherr Model LTM1150	15	13400.00	13320.00
17	CRAWLER CRANE, 120 T Fushun Model QUY120	10	10830.00	10780.00
18.A	CRAWLER CRANE 135MT Kobelco Model CK1350- 1F	15	10720.00	10650.00
18.B	CRAWLER CRANE 135MT Kobelco Model CK1350	15	8880.00	8820.00
19	CRAWLER CRANE 120MT - Tata-Sumitomo Model SCX1200-2	15	10050.00	9990.00
20	CRAWLER CRANE 100 T (KH 500)	15	10050.00	9990.00
21	Hydraulic Crawler Crane 80MT, Fushun Model QUY 80B	10	5410.00	5390.00
22	ROUGH TERRAIN CRANE 75T (RT880)	12	6140.00	6110.00
23	CRAWLER CRANE, 75T -Tata Model 955ALC/TFC280	12	5370.00	5340.00
24	Mobile Crane, 55MT (TIL)	12	4410.00	4390.00
25	CRAWLER CRANE, 25T -Tata Model TFC75	10	3030.00	3010.00
26	MOBILE CRANE, 20MT (TIL)	10	2270.00	2260.00
27	MOBILE CRANE, 20MT (ESCORTS)	10	2270.00	2260.00
28	MOBILE CRANE ESCORTS- 14MT	10	710.00	710.00
29	HYDAULIC PICK & CARRY CRANE, 8/9/10/11/12 MT	10	390.00	380.00
30	ELECTRIC GANTRY CRANE 3T	5	430.00	430.00
31	ELECTRIC GANTRY CRANE 5T	5	540.00	540.00
32	ELECTRIC GANTRY CRANE 30T	5	3640.00	3620.00
33	FORK LIFT 5T	5	650.00	650.00
34	FORK LIFT 3T	5	540.00	540.00

Annexure C2 DATE 31/05/2019

REVISED RATES OF T&P HIRE CHARGES FOR CRANES & TRAILERS ETC. FOR OUTSIDE AGENCIES

SL NO.	ITEM DESCRIPTION	USEFUL LIFE (IN YRS)	Revised rates (Rs./Hour) valid from 01/06/2019 to 31/5/2021 (WITHIN USEFUL LIFE)	Revised rates (Rs./Hour) valid from 01/06/2019 to 31/5/2021 (BEYOND USEFUL LIFE)
I.	CRANES:-			
1	Portal Gantry Crane 500T	15	22340.00	22200.00
2	100MT Crawler Crane ZOOMLION CRANE-QUY-100	10	12630.00	12570.00
3	Heavy Lift Crawler Crane 600MT Class DEMAG Model CC2800	15	62550.00	62160.00
4	PORTAL CRANE, 360T	15	15630.00	15540.00
5	600MT Class Crawler Crane- Manitowoc Model 18000-UPGRADED	15	61620.00	61240.00
6	600MT Class Crawler Crane- Liebherr Model LR1600-2 (Upgraded version)	15	76230.00	75760.00
7	CRAWLER CRANE FMC/LINKBELT 718, 250T (WITH RINGER)	15	37230.00	37000.00
8	CRAWLER CRANE FMC/LINKBELT 718, 250T (WITH-OUT RINGER)	15	23270.00	23120.00
9	MANITOWOC M-250T TRUCK CRANE	15	33510.00	33300.00
10	270 MT Class Crawler Crane- Manitowoc Model 2250	15	35180.00	34960.00
11	300MT Crane Crawler Crane LIEBHERR Model LR-1350/1	15	29320.00	29130.00
11.A	300MT Crane Crawler Crane LIEBHERR Model LR-1350/1 (UPGRADED)	15	40120.00	40120.00
12	250MT Class Mid range Crawler Crane- Kobelco Model CKE2500-2	15	16810.00	16700.00
12.A	250MT Class Mid range Crawler Crane- Kobelco Model CKE2500-2 (UPGRADED)	15	20950.00	20950.00
13	LINKBELT LS- 248H CRAWLER CRANE (180T)	15	18610.00	18500.00
14	MANITOWAC MODEL 888 CRAWLER CRANE (200 MT)	15	24200.00	24050.00
15	CRAWLER CRANE SUMITOMO, 150T	15	12100.00	12020.00
16	All Terrain Crane, 150MT- Liebherr Model LTM1150	15	14890.00	14800.00
17	CRAWLER CRANE, 120 T Fushun Model QUY120	10	12030.00	11970.00
18.A	CRAWLER CRANE 135MT Kobelco Model CK1350- 1F	15	11910.00	11840.00
18.B	CRAWLER CRANE 135MT Kobelco Model CK1350	15	9860.00	9800.00
19	CRAWLER CRANE 120MT - Tata-Sumitomo Model SCX1200-2	15	11170.00	11100.00
20	CRAWLER CRANE 100 T (KH 500)	15	11170.00	11100.00
21	Hydraulic Crawler Crane 80MT, Fushun Model QUY 80B	10	6010.00	5980.00
22	ROUGH TERRAIN CRANE 75T (RT880)	12	6830.00	6790.00
23	CRAWLER CRANE, 75T -Tata Model 955ALC/TFC280	12	5970.00	5940.00
24	Mobile Crane, 55MT (TIL)	12	4900.00	4880.00
25	CRAWLER CRANE, 25T -Tata Model TFC75	10	3370.00	3350.00
26	MOBILE CRANE, 20MT (TIL)	10	2520.00	2510.00
27	MOBILE CRANE, 20MT (ESCORTS)	10	2520.00	2510.00
28	MOBILE CRANE ESCORTS- 14MT	10	790.00	790.00
29	HYDAULIC PICK & CARRY CRANE, 8/9/10/11/12 MT	10	430.00	430.00
30	ELECTRIC GANTRY CRANE 3T	5	480.00	480.00
31	ELECTRIC GANTRY CRANE 5T	5	600.00	600.00
32	ELECTRIC GANTRY CRANE 30T	5	4040.00	4030.00
33	FORK LIFT 5T	5	720.00	720.00
34	FORK LIFT 3T	5	600.00	600.00

ANNEXURE-T I
DT: 31/05/2019

RATES OF T&P HIRE CHARGES FOR ITEMS OTHER THAN CRANES & TRAILERS ETC. FOR SUB-CONTRACTORS WORKING FOR BHEL FOR DOING BHEL JOBS

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 01/06/2019 to 31/5/2021
I.	LIFTING EQUIPMENTS	
1	Strand Jack System for Boiler Drum Lifting	20930
2	MULTI SHEAVE PULLEY BLOCK 40/50T/60T	310
3	MULTI SHEAVE PULLEY BLOCK 100T	630
4	MULTI SHEAVE PULLEY BLOCK 150T	1260
5	ELCTRIC WINCH 5T	1270
6	ELCTRIC WINCH 10T	2360
7	ELECTRIC WINCH 15 T	2150
8	PASSENGER CUM GOODS HOIST 1T	2270
9	FURNACE MAINTENANCE PLATFORM	5040
10	Gang Operated Hydraulic Jack (Set of 4 Jacks - 175 MT each)	2100
II	WELDING & HEAT TREATMENT EQUIPMENT	
1	125KW, 3KHZ, AIR-COOLED INDUCTION HEATING EQUIPMENT	16380
2	75KW, 10 KHZ, COMPACT INDUCTION HEATING EQUIPMENT	8190
3	WELDING GENERATOR 320/300 A	300
4	WELDING RECTIFIER 400A/300A	300
5	WELDING RECTIFIER 600A	400
6	DIESEL WELDING GENERATOR 400A/300A	400
7	TRANSFORMER,600A	300
8	TRANSFORMER 300/400A	200
III	SERVICE PLANTS & ALLIED EQUIPT.	0
1	500KVA DIESEL GENERATOR	3800
2	TRANSFORMER OIL FILTERATION EQUIPMENT 6000LPH CAPACITY WITHOUT STORAGE TANK	6370
3	-DO- , WITH STORAGE TANK	7280
4	OIL FILTERATION M/C, 250/500 LPH (OTHER THAN SILICON OIL)	910
5	OIL FILTERATION M/C, 250GPH/1000LPH (OTHER THAN SILICON	1360
6	OIL FILTERATION M/C, 500GPH/2500LPH (OTHER THAN SILICON	1820
7	OIL FILTERATION M/C, 1000GPH/5000LPH (OTHER THAN SILICON	3640
8	Portable Lube Oil Purification Unit (Centrifuge M/c) Capacity: 750	1270
9	Low Vacuum de-hydration unit	630
10	DIESEL GENERATING SET,250 KVA	1770
11	DIESEL GENERATING SET,25 KVA	500
12	VACUUM PUMP(ABSOLUTE V.C.)	540
13	ACID CIRCULATING PUMP WITH MOTOR 120M HEAD, 150T/HR	1090
14	ACID TRANSFER PUMP 20/50 T/HR	540
15	DEWATERING PUMP (Kirloskar make,11KW/15HP)	80
16	HP Air compressor (32 Kg/Sq. Cm, 150 CFM)	4240

RATES OF T&P HIRE CHARGES FOR ITEMS OTHER THAN CRANES & TRAILERS ETC. FOR SUB-CONTRACTORS WORKING FOR BHEL FOR DOING BHEL JOBS

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 01/06/2019 to 31/5/2021
17	AIR COMPRESSORS 250/300/330/360/350 CFM	2730
18	AIR COMPRESSORS 140/150/190/210 CFM	910
19	ACID CIRCULATING PUMP WITH MOTOR & STARTER, 200T/HR, 150M, 220 HP	1820
20	Industrial Blower 2000CFM	1270
21	Air Leak Test Blower (Flow: 40000 m^3/Hr)	1160
22	Air Blower (Flow: 20000 m^3/Hr)	940
IV	METAL FORMING /CUTTING EQUIPMENT	
1	TUBE EXPANDING M/C PNEUMATIC 60-100 MM	630
2	ELECTRO HYDRAULIC PIPE BENDING M/C 4"	1630
3	BOLTING MACHINE (ALCOA/AVLOCK/ HUCK)	1800
4	-do- Gun with nose Assembly only	540
V	TESTING/INSPECTION EQUIPMENT	
1	DATA LOGGER for PG TESTING	36980
2	MOTORISED HYDRAULIC TEST PUMP 250kg/cmsq	800
3	MOTORISED HYDRAULIC TEST PUMP 400-450kg/cmsq	1090
4	MOTORISED HYDRAULIC TEST PUMP 600 KG/CMSQ	1270
5	HYDRAULIC TEST PUMP 800 KG/CMSQ	1330
6	HYDRAULIC TEST PUMP 1000 KG/CMSQ	2230
7	BOLT STRETCHING DEVICE	910
8	BOROSCOPE/FIBROSCOPE FLEXIBLE TYPE (FLEXUX) IMPORTED	3640
9	ULTRASONIC FLAW DETECTOR	2730
10	MPI TEST KIT	360
11	GAS LEAK DETECTOR	270
12	VIBRATION/SOUND LEVEL METER IRD-306	360
13	VIBRATION/SOUND LEVEL METER IRD-308	360
14	VIBRATION ANALYSER/DYNAMIC BALANCING M/C IRD 350	1450
15	VIBRATION ANALYSER/DYNAMIC BALANCING M/C IRD 360	2540
16	SHOCK PULSE METER	630
17	HV.DC TEST KIT UPTO 50 KV	540
18	HV.DC TEST KIT ABOVE 50 KV	1000
19	HV.AC TEST KIT UPTO 50KV	810
20	HV.AC TEST KIT ABOVE 50KV	2910
21	MOTORISED MEGGER 2.5KV	400
22	MOTORISED MEGGAR 5KV	450
23	OSCILLOSCOPE-DUAL BEAM INDIGENOUS	450
24	OSCILLOSCOPE-DUAL BEAM IMPORTED	1090
25	WAVEFORM ANALYSER	910
26	OSCILLOGRAPH/UV RECORDER 24 CHANNEL	1630
27	OSCILLOGRAPH/UV RECORDER 12 CHANNEL	1090
28	OSCILLOGRAPH/UV RECORDER 6 CHANNEL	910
29	DIGITAL LOW RESISTANCE METER	630
30	DC POTENTIOMETER	180
31	PRECISION DEAD WEIGHT TESTER	1000
32	OPTICAL ALIGNMENT KIT	1360
33	BOROSCOPE/FIBROSCOPE(NON FLEXIBLE)	1200
34	VERNIER THEODOLITE,PRECISION	1200
35	VERNIER THEODOLITE,ORDINARY	200
36	ENGINEERS PRECISION LEVEL/DUMPY LEVEL	120
37	ISKAMATIC 'A'	3200
38	CALIBRATOR '03'	1000
39	48 POLE EXTENDER CARD	200

ANNEXURE-T I
DT: 31/05/2019

RATES OF T&P HIRE CHARGES FOR ITEMS OTHER THAN CRANES & TRAILERS ETC. FOR SUB-CONTRACTORS WORKING FOR BHEL FOR DOING BHEL JOBS

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 01/06/2019 to 31/5/2021
40	MULTIJET NPM	400
41	OSCILLOMETER	10190
42	VOC EQUIPMENT	1400
43	BINARY SIGNAL GENERATOR	290
44	ELECTRIC COUNTER	690
45	FREQUENCY GENERATOR	1000
46	DBF 3 VIBRATION RECORDER/ANALYSER	3270
47	L&T GOULD OSCILLOGRAPH 2-CHANNEL	490
48	L&T GOULD OSCILLOGRAPH 6-CHANNEL	1180
49	VIBROPORT 41/FFT ANALYSER	5460
50	ELCID kit	10010
51	UNIVERSAL CALIBRATION SYSTEM	2730
52	NATURAL FREQUENCY TESTER	2910
53	DIGITAL HARDNESS TESTER	360
54	ADRE 208 VIBRATION ANALYSER	7280
55	PCB DIAGONISTIC REPAIR KIT	2000
56	SECONDARY INJECTION RELAY TEST KIT	5270
57	MICRO OHM METER	1450
58	DIGITAL MICRO OHM METER MEASURING RANGE: 200 μΩ TO 20KΩ	3230
59	PMI Machine OLYMPUS make	3350
60	Mobile Lighting Mast - 9 metres (4X400 W)	860
61	10KVA RESISTANCE BRAZING MACHINE	140
62	RECURRENT SURGE OSCILLOGRAPH (RSO) TEST KIT WITH PORTABLE HANDHELD OSCILLOSCOPE.	460
63	HYDROGEN GAS LEAK DETECTOR	50
64	STATOR WEDGE ANALYZER KIT WITH COMPLETE ACCESSORIES	4980
65	WEDGE DEFLECTION KIT	80
66	TILE PRESSING MACHINE FOR GAS TURBINE	270
67	INDUCTION BRAZING MACHINE	4870
68	MAGNETIC COHESIVE FORCE (MCF) EQUIPMENT	3640
69	ULTRASONIC FLOW METER	180
70	PORTABLE VIBRATION ANALYSER (MODEL 811T)	40
71	CENTRIFUGAL PUMP SET FOR ACID CLEANING (WITH MOTOR AND PANEL) : PRESSURE -14KG/SQ CM. : FLOW 60 M3/HR	470
72	CENTRIFUGAL PUMP SET FOR ACID CLEANING (WITH MOTOR AND PANEL) : PRESSURE -30KG/SQ CM. : FLOW 15 M3/HR	430
73	HI SPEED MEMORY RECORDER, MAKE -YOKOGAWA, MODEL DL850E-Q-HE/B5/HD1	1810
74	TROLLEY MOUNTED HYDRAULIC JACK (100 MT)	1260
75	5KV Insulation Tester	450
76	4 Channel Digital Oscilloscope /Fast Recorder	1710
77	4 Channel Oscillographic Recorder	580
78	Sound Level Meter	230
79	Thermal Imaging Camera	770
80	Videoscope (Video Boroscope)	1510
81	DO (Dissolve Oxygen) Meter (0 to 1500 ppb)	1310
82	Conductivity Meter	80
83	Core Flux Test Kit	7280
84	Primary Current Injection Kit (2000A)	870
85	3 Phase Secondary Injection Kit (Relay Test)	3760
86	FRF Filtration Kit	1330
87	FFT Analyser	2290

ANNEXURE-T I
DT: 31/05/2019

RATES OF T&P HIRE CHARGES FOR ITEMS OTHER THAN CRANES & TRAILERS ETC. FOR SUB-CONTRACTORS WORKING FOR BHEL FOR DOING BHEL JOBS

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 01/06/2019 to 31/5/2021
88	Flue Gas Analyser	1030
89	Oil Test Kit (Mineral Oil)-Transformer	1010
90	Winding Resistance kit (R L C Load)	880
91	SFRA test Kit	1190
92	Tan Delta test Kit	4060
93	PF Meter	330
94	Ultrasonic Flow Meter	830
95	Oil Particle Counter	360

ANNEXURE-T II
DT: 31/05/2019

RATES OF T & P HIRE CHARGES FOR ITEMS OTHER THAN CRANES & TRAILLERS ETC. FOR OUTSIDE AGENCIES

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 01/06/2019 to 31/5/2021
I.	LIFTING EQUIPMENTS	
1	Strand Jack System for Boiler Drum Lifting	23250
2	MULTI SHEAVE PULLEY BLOCK 40/50T/60T	350
3	MULTI SHEAVE PULLEY BLOCK 100T	700
4	MULTI SHEAVE PULLEY BLOCK 150T	1400
5	ELCTRIC WINCH 5T	1410
6	ELCTRIC WINCH 10T	2620
7	ELECTRIC WINCH 15 T	2390
8	PASSENGER CUM GOODS HOIST 1T	2520
9	FURNACE MAINTENANCE PLATFORM	5600
10	Gang Operated Hydraulic Jack (Set of 4 Jacks - 175 MT each)	2330
II	WELDING & HEAT TREATMENT EQUIPMENT	
1	125KW, 3KHZ, AIR-COOLED INDUCTION HEATING EQUIPMENT	18190
2	75KW, 10 KHZ, COMPACT INDUCTION HEATING EQUIPMENT	9090
3	WELDING GENERATOR 320/300 A	330
4	WELDING RECTIFIER 400A/300A	330
5	WELDING RECTIFIER 600A	440
6	DIESEL WELDING GENERATOR 400A/300A	440
7	TRANSFORMER,600A	330
8	TRANSFORMER 300/400A	220
III	SERVICE PLANTS & ALLIED EQUIPT.	
1	500KVA DIESEL GENERATOR	4220
2	TRANSFORMER OIL FILTERATION EQUIPMENT 6000LPH	7070
3	-DO- , WITH STORAGE TANK	8080
4	OIL FILTERATION M/C, 250/500 LPH (OTHER THAN SILICON OIL)	1010
5	OIL FILTERATION M/C, 250GPH/1000LPH (OTHER THAN SILICON	1510
6	OIL FILTERATION M/C, 500GPH/2500LPH (OTHER THAN SILICON	2020
7	OIL FILTERATION M/C, 1000GPH/5000LPH (OTHER THAN SILICON	4040
8	Portable Lube Oil Purification Unit (Centrifuge M/c) Capacity: 750	1410
9	Low Vacuum de-hydration unit	700
10	DIESEL GENERATING SET,250 KVA	1970
11	DIESEL GENERATING SET,25 KVA	560
12	VACUUM PUMP(ABSOLUTE V.C.)	600
13	ACID CIRCULATING PUMP WITH MOTOR 120M HEAD, 150T/HR	1210
14	ACID TRANSFER PUMP 20/50 T/HR	600
15	DEWATERING PUMP (Kirloskar make,11KW/15HP)	90
16	HP Air compressor (32 Kg/Sq. Cm, 150 CFM)	4710

ANNEXURE-T II
DT: 31/05/2019

RATES OF T & P HIRE CHARGES FOR ITEMS OTHER THAN CRANES & TRAILLERS ETC. FOR OUTSIDE AGENCIES

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 01/06/2019 to 31/5/2021
17	AIR COMPRESSORS 250/300/330/360/350 CFM	3030
18	AIR COMPRESSORS 140/150/190/210 CFM	1010
19	ACID CIRCULATING PUMP WITH MOTOR & STARTER, 200T/HR, 150M, 220 HP	2020
20	Industrial Blower 2000CFM	1410
21	Air Leak Test Blower (Flow: 40000 m^3/Hr)	1290
22	Air Blower (Flow: 20000 m^3/Hr)	1040
IV	METAL FORMING /CUTTING EQUIPMENT	
1	TUBE EXPANDING M/C PNEUMATIC 60-100 MM	700
2	ELECTRO HYDRAULIC PIPE BENDING M/C 4"	1810
3	BOLTING MACHINE (ALCOA/AVLOCK/ HUCK)	2000
4	-do- Gun with nose Assembly only	600
V	TESTING/INSPECTION EQUIPMENT	
1	DATA LOGGER for PG TESTING	41090
2	MOTORISED HYDRAULIC TEST PUMP 250kg/cmsq	880
3	MOTORISED HYDRAULIC TEST PUMP 400-450kg/cmsq	1210
4	MOTORISED HYDRAULIC TEST PUMP 600 KG/CMSQ	1410
5	HYDRAULIC TEST PUMP 800 KG/CMSQ	1480
6	HYDRAULIC TEST PUMP 1000 KG/CMSQ	2480
7	BOLT STRETCHING DEVICE	1010
8	BOROSCOPE/FIBROSCOPE FLEXIBLE TYPE (FLEXUX) IMPORTED	4040
9	ULTRASONIC FLAW DETECTOR	3030
10	MPI TEST KIT	400
11	GAS LEAK DETECTOR	300
12	VIBRATION/SOUND LEVEL METER IRD-306	400
13	VIBRATION/SOUND LEVEL METER IRD-308	400
14	VIBRATION ANALYSER/DYNAMIC BALANCING M/C IRD 350	1610
15	VIBRATION ANALYSER/DYNAMIC BALANCING M/C IRD 360	2830
16	SHOCK PULSE METER	700
17	HV.DC TEST KIT UPTO 50 KV	600
18	HV.DC TEST KIT ABOVE 50 KV	1110
19	HV.AC TEST KIT UPTO 50KV	900
20	HV.AC TEST KIT ABOVE 50KV	3230
21	MOTORISED MEGGER 2.5KV	440
22	MOTORISED MEGGAR 5KV	500
23	OSCILLOSCOPE-DUAL BEAM INDIGENOUS	500
24	OSCILLOSCOPE-DUAL BEAM IMPORTED	1210

ANNEXURE-T II
DT: 31/05/2019

RATES OF T & P HIRE CHARGES FOR ITEMS OTHER THAN CRANES & TRAILLERS ETC. FOR OUTSIDE AGENCIES

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 01/06/2019 to 31/5/2021
25	WAVEFORM ANALYSER	1010
26	OSCILLOGRAPH/UV RECORDER 24 CHANNEL	1810
27	OSCILLOGRAPH/UV RECORDER 12 CHANNEL	1210
28	OSCILLOGRAPH/UV RECORDER 6 CHANNEL	1010
29	DIGITAL LOW RESISTANCE METER	700
30	DC POTENTIOMETER	200
31	PRECISION DEAD WEIGHT TESTER	1110
32	OPTICAL ALIGNMENT KIT	1510
33	BOROSCOPE/FIBROSCOPE(NON FLEXIBLE)	1330
34	VERNIER THEODOLITE,PRECISION	1330
35	VERNIER THEODOLITE,ORDINARY	220
36	ENGINEERS PRECISION LEVEL/DUMPY LEVEL	130
37	ISKAMATIC 'A'	3550
38	CALIBRATOR '03'	1110
39	48 POLE EXTENDER CARD	220
40	MULTIJET NPM	440
41	OSCILLOMETER	11320
42	VOC EQUIPMENT	1550
43	BINARY SIGNAL GENERATOR	320
44	ELECTRIC COUNTER	760
45	FREQUENCY GENERATOR	1110
46	DBF 3 VIBRATION RECORDER/ANALYSER	3630
47	L&T GOULD OSCILLOGRAPH 2-CHANNEL	540
48	L&T GOULD OSCILLOGRAPH 6-CHANNEL	1310
49	VIBROPORT 41/FFT ANALYSER	6060
50	ELCID kit	11120
51	UNIVERSAL CALIBRATION SYSTEM	3030
52	NATURAL FREQUENCY TESTER	3230
53	DIGITAL HARDNESS TESTER	400
54	ADRE 208 VIBRATION ANALYSER	8080
55	PCB DIAGONISTIC REPAIR KIT	2220
56	SECONDARY INJECTION RELAY TEST KIT	5860
57	MICRO OHM METER	1610
58	DIGITAL MICRO OHM METER	3590
59	PMI Machine OLYMPUS make	3730
60	Mobile Lighting Mast -	960
61	10KVA RESISTANCE BRAZING MACHINE	160
62	RECURRENT SURGE OSCILLOGRAPH (RSO) TEST KIT WITH	510

ANNEXURE-T II
DT: 31/05/2019

RATES OF T & P HIRE CHARGES FOR ITEMS OTHER THAN CRANES & TRAILLERS ETC. FOR OUTSIDE AGENCIES

SL NO.	ITEM DESCRIPTION	Revised rates (Rs./Day) valid from 01/06/2019 to 31/5/2021
63	HYDROGEN GAS LEAK DETECTOR	60
64	STATOR WEDGE ANALYZER KIT WITH COMPLETE	5530
65	WEDGE DEFLECTION KIT	90
66	TILE PRESSING MACHINE FOR GAS TURBINE	300
67	INDUCTION BRAZING MACHINE	5410
68	MAGNETIC COHESIVE FORCE (MCF) EQUIPMENT	4040
69	ULTRASONIC FLOW METER	200
70	PORTABLE VIBRATION ANALYSER (MODEL 811T)	50
71	CENTRIFUGAL PUMP SET FOR ACID CLEANING (WITH MOTOR	520
72	CENTRIFUGAL PUMP SET FOR ACID CLEANING (WITH MOTOR	480
73	HI SPEED MEMORY RECORDER, MAKE -YOKOGAWA, MODEL	2010
74	TROLLEY MOUNTED HYDRAULIC JACK (100 MT)	1400
75	5KV Insulation Tester	500
76	4 Channel Digital Oscilloscope /Fast Recorder	1900
77	4 Channel Oscillographic Recorder	650
78	Sound Level Meter	260
79	Thermal Imaging Camera	860
80	Videoscope (Video Boroscope)	1680
81	DO (Dissolve Oxygen) Meter (0 to 1500 ppb)	1460
82	Conductivity Meter	90
83	Core Flux Test Kit	8090
84	Primary Current Injection Kit (2000A)	960
85	3 Phase Secondary Injection Kit (Relay Test)	4180
86	FRF Filtration Kit	1480
87	FFT Analyser	2550
88	Flue Gas Analyser	1140
89	Oil Test Kit (Mineral Oil)-Transformer	1120
90	Winding Resistance kit (R L C Load)	970
91	SFRA test Kit	1320
92	Tan Delta test Kit	4510
93	PF Meter	360
94	Ultrasonic Flow Meter	920
95	Oil Particle Counter	400

Form WAM 23

PROFORMA OF BANK GUARANTEE (in lieu of EARNEST MONEY)
(On non-Judicial paper of appropriate value)
(Para 4.7.6 of Works Accounts Manual)

Bank Guarantee No……
Date……

To
(Employer's Name and Address)
……

Dear Sirs,

In accordance with the terms and conditions of Invitation for Bids/Notice Inviting Tender No……[1] (Tender Conditions), M/s. ……[2] having its registered office at ……[3] (hereinafter referred to as the 'Tenderer'), is submitting its bid for the work of……[4] invited by Bharat Heavy Electricals Limited (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 *BHEL House, Siri Fort, Asiad, New Delhi – 110049* through its unit at *Bharat Heavy Electricals Limited, Power Sector Southern Region, 690, Anna Salai, Nandanam, Chennai 600035*

The Tender Conditions provide that the Tenderer shall pay a sum of Rs ……[5] as Earnest Money Deposit in the form therein mentioned. The form of payment of Earnest Money Deposit includes Bank Guarantee executed by a Scheduled Bank.

In lieu of the stipulations contained in the aforesaid Tender Conditions that an irrevocable and unconditional Bank Guarantee against Earnest Money Deposit for an amount of .....[6] is required to be submitted by the Tenderer as a condition precedent for participation in the said Tender and the Tenderer having approached us for giving the said Guarantee,

we, the .....(Name & address of the Bank) ..... having our Head Office at .....(hereinafter referred to as the Bank) being the Guarantor under this Guarantee, hereby irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer without any demur, merely on your first demand any sum or sums of Rs.....[6] (in words Rupees.....) without any reservation, protest, and recourse and without the beneficiary 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. _____.[6]

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Tenderer 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 hereunder and the Tenderer shall have no claim against us for making such payment.

We …… Bank further agree 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 Tender or to extend the time of submission of 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

Tenderer and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Tenderer or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Tenderer 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 Tenderer and notwithstanding any security or other guarantee that the Employer may have in relation to the Tenderer's liabilities.

This Guarantee shall be irrevocable and shall remain in force upto and including……[7] and shall be extended from time to time for such period as may be desired by the Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Tenderer but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms hereof. However, 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.

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.

For and on behalf of
(Name of the Bank)

(Signature of Authorised signatory)

Date……
Place of Issue……

[1] Details of the Invitation to Bid/Notice Inviting Tender (Tender Ref. No. Eg. - BHEL PSSR SCT XXXX)
[2] Name of Tenderer
[3] REGISTERED Office Address of the Tenderer
[4] Details of the Work i.e Tender Description
[5] EMD Amount as mentioned in Notice Inviting Tender
[6] BG Amount in words and Figures (BG Amount shall be Minimum of EMD amount less Rs. 2 Lakhs)
[7] Validity Date
[8] Date of Expiry of Claim Period (Claim Period shall be minimum of 3 Months after the validity date of Bank Guarantee)

Note:
1. 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.
2. In Case of Bank Guarantees submitted by Foreign Vendors-

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 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).

PROFORMA OF BANK GUARANTEE (in lieu of SECURITY DEPOSIT)

(On non-Judicial paper of appropriate value)

(Para 4.7.6 of Works Accounts Manual)

Bank Guarantee No……

Date……

To

(Employer's Name and Address)

……..

In consideration of Bharat Heavy Electricals Limited (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 *BHEL House, Siri Fort, Asiad, New Delhi – 110049* through its unit at *Bharat Heavy Electricals Limited, Power Sector Southern Region, 690, Anna Salai, Nandanam, Chennai 600035* having agreed to exempt _____[1] (Name of the Vendor / Contractor / Supplier) with its registered office at_____[2] (hereinafter called the said "Contractor" which term includes supplier), from demand under the terms and conditions of the Contract arising vide Letter of Intent (LOI) reference No._____ dated _____ [3] valued at Rs. _____ [4] (Rupees _____ only)[4] (hereinafter called the said Contract), of Security Deposit for the due fulfilment by the said Contractor of the terms and conditions contained in the said Contract, on production of a Bank Guarantee for Rs. _____ [5] (Rupees _____ only),

We, the ……(Name & address of the Bank) ..... having our Head Office at ……..(hereinafter referred to as the Bank), at the request of _____ [Contractor(s)], being the Guarantor under this Guarantee, do hereby irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer, an amount not exceeding Rs._____ without any demur, immediately on 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. _____ [5].

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceeding pending before any Court or Tribunal or 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 hereunder and the Contractor(s) shall have no claim against us for making such payment.

We, 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 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 & the Employer certifies that the terms and conditions of the said Contract have been fully and properly carried out by the said contractor(s) or acceptance of the final bill or discharge of this guarantee by the Employer, whichever is earlier. This guarantee shall initially remain in force upto and including _____[6] and shall be extended from time to time for such period as may

be desired by the Employer. Unless a demand or claim under this guarantee is made on us in writing on or before the _____[7], we shall be discharged from all the liability under this guarantee thereafter.

We, _____(indicate the name of the 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 contractor(s) 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 contractor(s) 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 any reason of any such variation or extension being granted to the said contractor(s) or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said contractor(s) 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 Contractor and notwithstanding any security or other guarantee that the Employer may have in relation to the Contractor's liabilities.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Contractor 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. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

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…… [5]

b) This Guarantee shall be valid up to ……[6]

c) Unless the Bank is served a written claim or demand on or before _____[7] 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.

Date _____ Day of _____

for_____ (indicate the name of the Bank)

(Signature of Authorised signatory)

[1] NAME OF VENDOR /CONTRACTOR / SUPPLIER
[2] REGISTERED OFFICE ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.
[3] LETTER OF INTENT(LOI) REFERENCE NO. WITH DATE
[4] CONTRACT VALUE (AS MENTIONED IN LOI)
[5] BG AMOUNT IN FIGURES AND WORDS
[6] VALIDITY DATE
[7] DATE OF EXPIRY OF CLAIM PERIOD (CLAIM PERIOD SHALL BE MINIMUM OF 3 MONTHS AFTER VALIDITY DATE)

Note:

1. 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.
2. In Case of Bank Guarantees submitted by Foreign Vendors-
   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 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).

Procedure-2.3

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.

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.

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:

a. On the date of signing of the Settlement agreement by the Parties; or,

b. 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,

c. 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,

d. 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,

e. 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:

Sl 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. Rs 75,000 (per Conciliator)

Sl No	Particulars	Amount
		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 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 concerned Unit / Division / Region /

Sl No	Particulars	Amount
		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.

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

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 Clam(s)/Counter Claim(s):

SI. 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 correspondences 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.

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.

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.

VOLUME-IA PART – II CHAPTER – 08

TECHNICAL SPECIFICATION

8.1 Leveling and Grading

8.1.1 The area has to be levelled with excavated earth/ approved good quality soil/ murrum which has to be arranged by bidder. Bidders to locate and arrange for borrow earth and also to include all formalities like royalty, seigniorage charges etc. in the rate to be quoted. The material shall be free from lumps and clods, roots and vegetation, harmful salts and chemicals, organic materials, etc. The area shall be levelled and graded with proper slope as per the requirement of site to the satisfaction of the site engineer.

8.2 Clearing and **Grubbing**

8.2.1 The area shall be cleared out of fences, trees, logs, stumps, bushes, vegetation, rubbish, slush etc. Trees upto 300mm girth shall be uprooted. Trees above 300mm girth to be cut shall be approved by the engineer and marked. Cutting of trees shall include removing roots as well. After the tree is cut and roots taken out, the pot holes formed shall be filled with good earth in 250mm layers and compacted unless directed otherwise by the engineer. The trees shall be cut in to suitable pieces as instructed by the engineer. The stacking shall be done as per instructions of Engineer in charge.

8.3 Internal Roads and Drains

Internal roads and drains have to be provided as per the instruction of the Site.

8.3.1 Formation level or sub-grade has to be properly compacted with 15T Heavy duty Vibro max up to a desired thickness along with removal of loose earth & filling of pavement with selected earth as per proper compaction requirement of 95% MDD.

8.3.2 Proper camber has to be provided on both sides of the road.

8.3.3 Interstices are required to be filled with medium sand.

8.3.4 Drains have been considered to be of PCC 1:2:4, 75 mm thick.

8.3.5 Maximum depth of drain is 600 mm and internal width of drain is 300 mm.

8.3.6 Drain has to be constructed with proper slope.

8.3.7 Road crossing by cement concrete pipe should be of minimum NP-2 Class and other criterion should fulfil IS-458.

8.3.8 Water bound macadam shall consist of clean crushed aggregates mechanically

interlocked by rolling and bonded together with screenings, binding material wherever necessary and water, laid on the prepared sub-grade or sub-base as the case may be and finished in accordance with the specification and in conformity with the lines, grades and cross-sections shown on the approved drawings.

8.4 **Miscellaneous Steel Structure**

This section covers supply, fabrication and erection of miscellaneous metal items of light nature in gate and fencing etc. as specified or shown on drawing or as instructed by the Engineer. The above items shall be of fabricated or cast of mild steel, aluminium, brass, cast iron, M.S.& galvanized M.S. sheets, aluminium sheets, expanded metal, wire mesh as shown on drawings or specified.

8.4.1 <u>Chain linked fencing with structural post</u>

8.4.1.1 GI Chain linked fencing shall be provided for height of 2.4m above ground level

8.4.1.2 The fencing must be GI chain linked fencing of required width in mesh size 50x50mm made of GI wire of 4mm dia including strengthening with 2 mm dia wire or nuts, bolts and washers

8.4.1.3 Fencing shall be done with Y angle iron post of 50x50x6mm.

8.4.1.4 The above post shall be placed at every 3m C/C and double post at every 15m C/C embedded in cement concrete blocks of size 45x45x75 CM of grade 1:2:4 with 20mm nominal size aggregate.

8.4.1.5 Every 15th post last but one end post and corner post shall be strutted on both sides and end post on one side only

8.4.1.6 Razor barbed wire fencing of 500mm dia shall be provided on the top of Y-post i.e. above 2.4m height depends on the site requirement as per the instruction of engineer in charge in line with price bid.

8.5 RCC Sleepers

8.5.1 The Agency must take an approval for the pre-cast manufacturing unit from BHEL

8.5.2 The size of R.C.C Sleeper considered is 300mmwidthin base and 150mm width in top x200mm height x 1000length mm length.

8.5.3 The grade of Concrete should be minimum of M-20 Grade.

8.5.4 Cement used should be of OPC-43 Grade.

8.5.5 Grade of reinforcement steel should be of minimum FE-500.

8.5.6 RCC Sleepers should be made with minimum reinforcement of 4-10MM Main bar with Stirrup 8 mm @ 120 MM C/C.

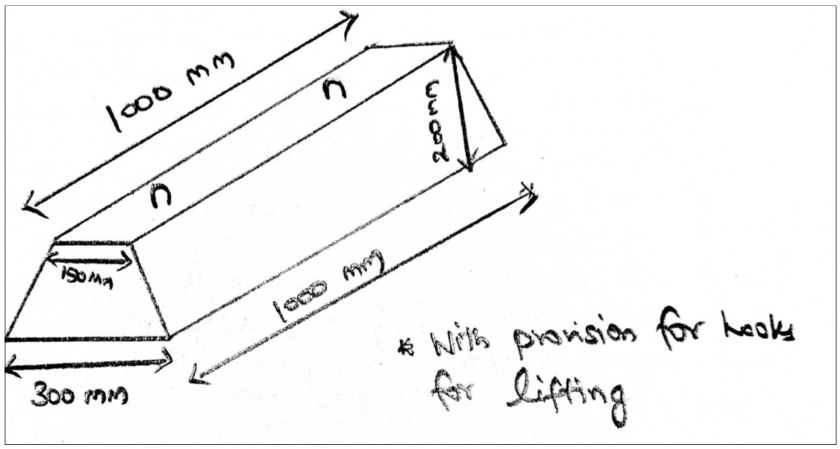
8.5.7 RCC Sleepers should be made with two hooks as shown in the drawing with 16mm dia rod for enabling lifting of sleepers.

8.5.8 RCC Sleepers should be properly cured as per Indian Standard code of practice.

8.5.9 The concrete surface has to be smooth & neatly finished that is free from Honey combing concrete.

8.5.10 Test Cubes shall be cast for each batch of sleeper casting and tested as per IS 456

Typical drawing



8.6 Earthwork

8.6.1 Earth work excavation in all types of soil for foundations, trenches including the shoring, strutting, dewatering, filling around foundations and to grade, compaction of fills etc. for the works covered under.

8.6.2 Excavated material shall not be deposited within 1.5 M from the top edge of the excavation or within distance equal to the depth of excavation, whichever is higher.

8.6.3 If Contractor excavates beyond the specified depth, the over excavated portion shall be filled back only with 1:4:8 cement concrete and well compacted without any extra cost.

8.6.4 The excavated soil will be disposed off by using it for back filling or by either spreading at designated disposal area. All surplus materials from excavation shall be carried away from excavation side and dumped at dumping site selected

by the Engineer.

8.6.5 The earth filling shall be carried out by cutting & removing by Mechanical means, transporting within Plant Building (or) from outside borrowed earth, filling in layer, watering, compacting by Roller/Compacters to carry out construction works over the filling as per the direction of Engineer In charge.

8.7 Concrete

8.7.1 All the concrete works under the scope of Contract will be done in accordance with the enclosed BOQ, Drawings & relevant IS standards.

8.7.2 The reinforcement shall conform to the latest revisions of IS specification. The bars will be used of deformed bars conforming to IS 1786. The cutting, bending and placing of the reinforcement will be as per the drawing and direction of Engineer-in-Charge. Reinforcement steel as available at site shall be supplied by BHEL as free issue.

8.7.3 The form work should be capable of carrying the dead load of the concrete, the reinforcements and the forces due to vibration.

8.7.4 The form work shall be designed by the Contractor and approved by the Engineer-in-Charge.

8.7.5 Curing shall be done for all the concrete works continuously as per relevant IS recommendations. The form work shall be removed only after sufficient curing is done.

8.8 Masonry Work

8.8.1 Bricks used are of standard size as required or as directed by Engineer in charge. The brick work in cement mortar 1:6 shall be done for all the walls all around as shown in the drawing. All the partition works will also be made with brick work.

8.8.2 The plastering will be done over the brick masonry in cement mortar 1:6 of 12mm thick both for interior as well as external walls.

8.9 RATES AND MEASUREMENTS

8.9.1 Rates

8.9.1.1 The item of work in the schedule of quantities describe the work very briefly. The various items of the schedule of quantities shall be read in conjunction with the corresponding section in the technical specification including amendments and additions if any. For each item in the schedule of quantities, the bidder's

rate shall include all the activities covered in the description of the items as well as for all necessary operations in detail as described in the technical specification.

8.9.1.2 The unit rate quoted shall include minor details which are obviously and fairly intended and which may not have been included in these documents but are essential for the satisfactory completion of the work.

8.9.1.3 The bidder's quoted rate shall be inclusive of supplying and providing all labour, men, materials, equipment's, tools and plants, supervision, services, approaches, schemes etc.

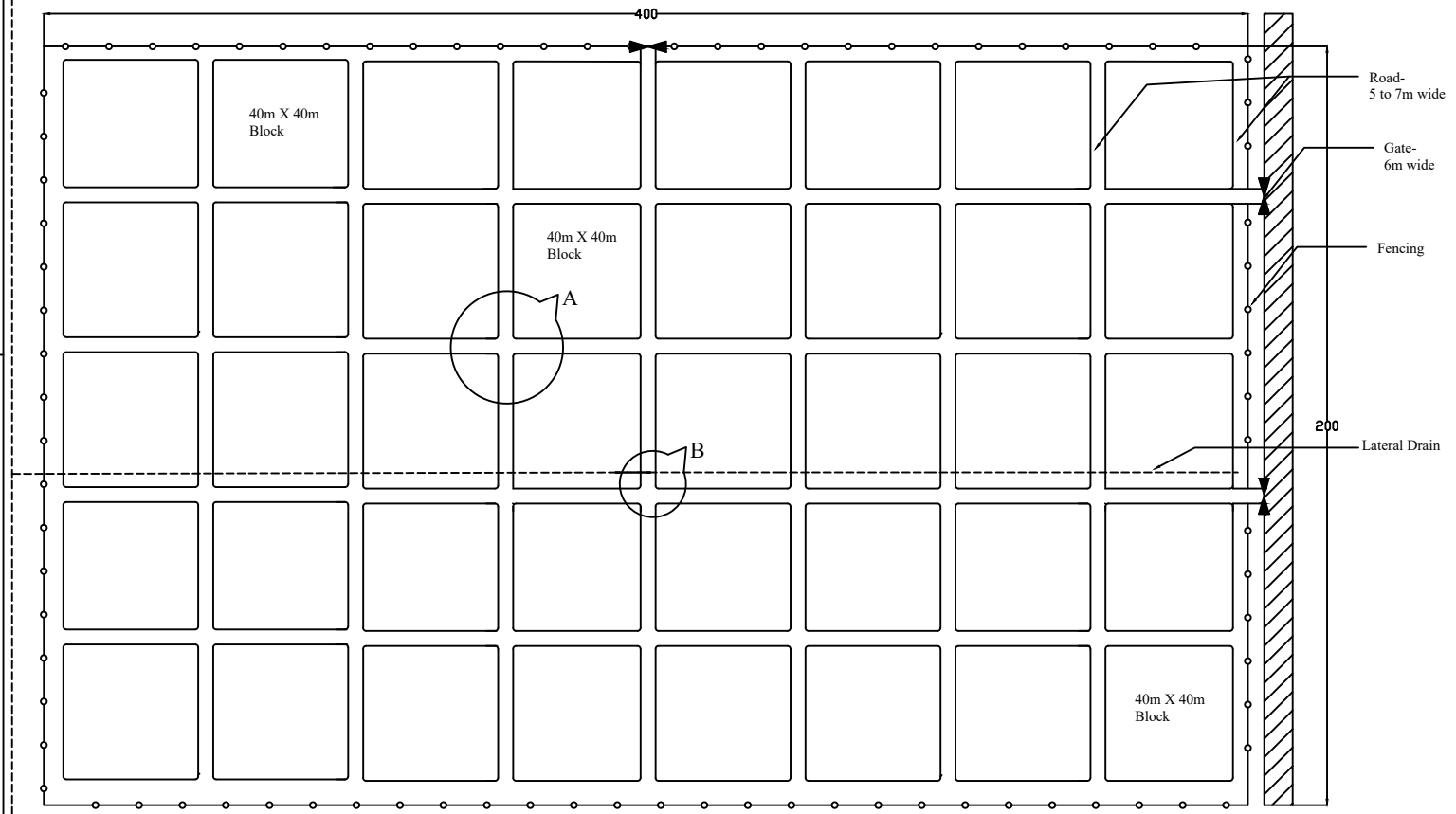
8.10 Measurements

Mode of measurement shall be as per the relevant IS 1200 in conjunction of IS code 3385 shall be adopted. In case the same is also not available, the standard procedure adopted in CPWD shall be adopted. In case the same is also not available in CPWD, the measurement of the work done will be based on the mutual agreement between BHEL and contractor. In all the above cases, the interpretation of BHEL will be final and binding to the contractor.

NOTE: The above should not be concluded as final. They are meant for general guidelines. BHEL reserves the right to include or exclude any item which is required for completing the job as per rates indicated in rate schedule. Contractor should carry out all such jobs as per the instructions of BHEL, Engineer in charge.

ISA 50X50X6

TITLE:-
TYPICAL LAYOUT OF STORAGE YARD



GOOD EARTH FILLING (ITEM–3)

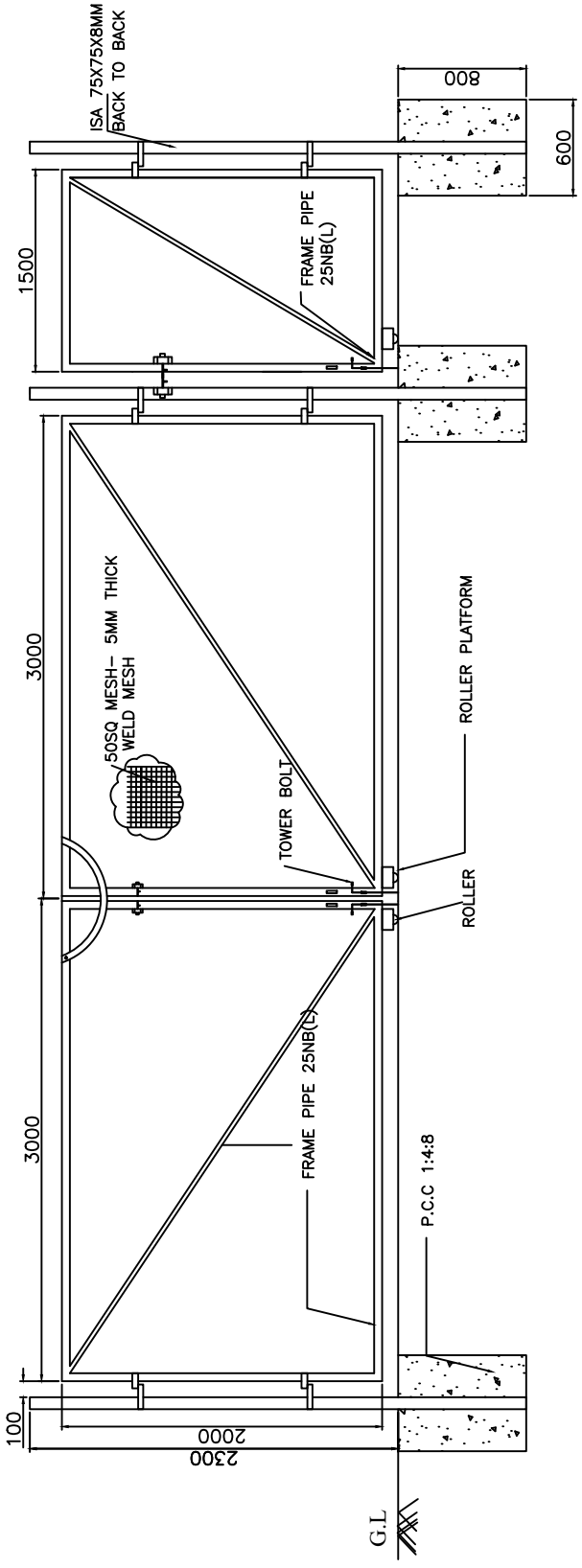
TYPICAL LAYOUT OF STORAGE YARD

NOTES :–

1. ALL DIMENSIONS ARE IN METRE
2. LATERAL DRAINS PROVIDED SHALL BE MADE TO JOIN WITH THE EXISTING MAIN DRAIN.
3. FENCING SHALL BE PROVIDED ALL ROUND WITH AN OFFSET OF 3m FROM THE EDGE OF STORAGE YARD.
4. ENTIRE AREA TO BE FILLED WITH GOOD EARTH PRIOR TO PREPARATION OF ROADS.
5. REFER SHEET–4 FOR DETAILS OF 'A' AND 'B'.
6. LAYOUT CAN BE ALTERED AS PER SITE CONDITIONS

DATE : 15.05.2019
BHEL PSSR

BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR-SOUTHERN REGION-CHENNAI



ELEVATION OF GATE (6M & 1.5M)

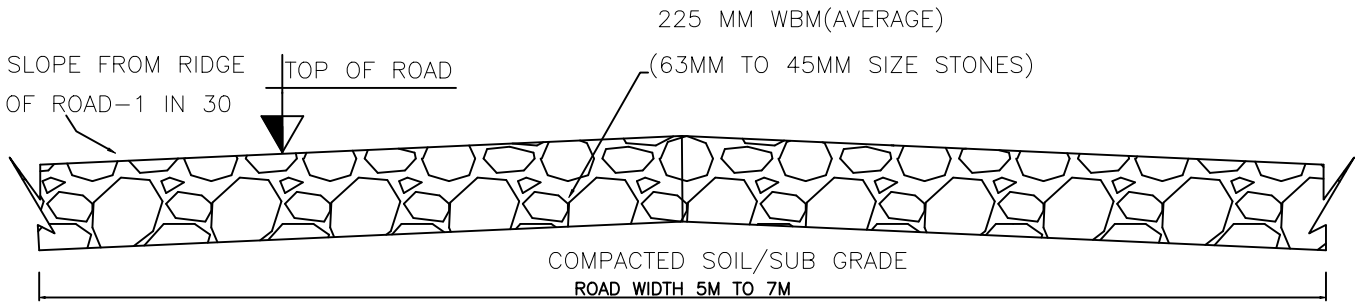
NOTES :-

1. ALL DIMENSIONS ARE IN MM
2. FRAME PIPE FOR THE GATE SHALL BE ERW PIPE LIGHT AS PER IS:1161
3. STEEL SECTIONS SHALL BE PROVIDED WITH TWO COATS OF SYNTHETIC ENAMEL PAINT OVER ONE COAT OF RED OXIDE.

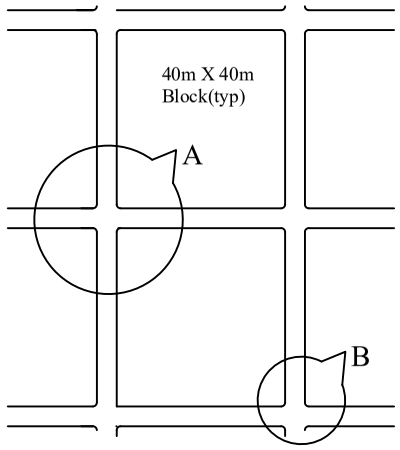
TITLE:-
ELEVATION OF GATE (6M WIDE)

DATE : 15.05.2019
BHEL PSSR

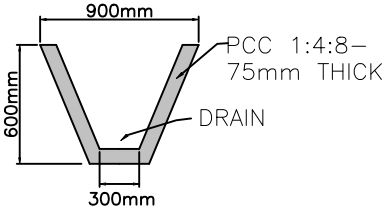
TITLE:-
TYPICAL ROAD CROSS SECTION DETAILS



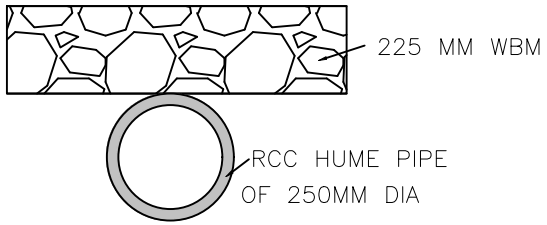
TYPICAL DETAIL OF WBM ROAD



TYP YARD FORMATION WITH ROADS

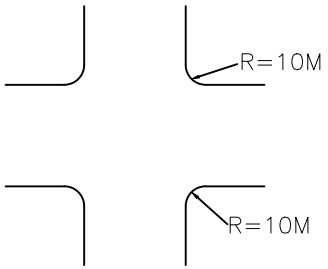


CROSS SECTION OF DRAIN



TYPICAL DETAIL OF DRAIN UNDER ROAD

DETAIL–B



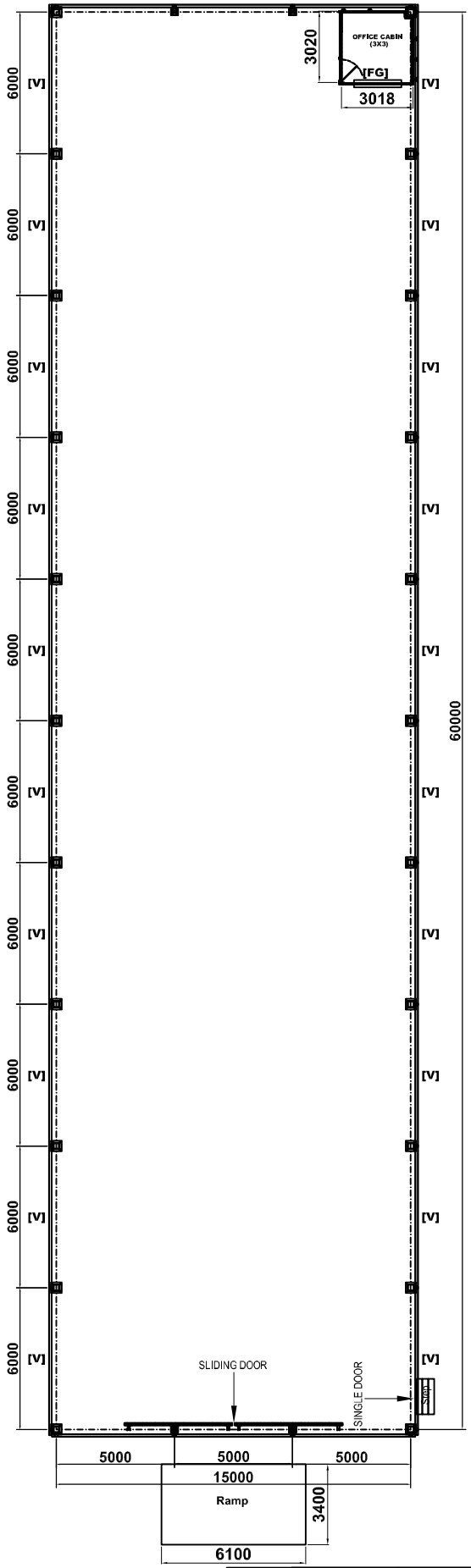
DETAIL–A

NOTE:
1. AT ALL INTERSECTION OF THE ROAD ELEVATION SHALL BE MAINTANED CONSTANT BETWEEN EDGES OF THE ROAD UNLESS OTHERWISE SPECIFIED.
2. CAMBER TO THE ROAD SHALL BE 1 IN 30.

DATE : 15.05.2019
BHEL PSSR

BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR-SOUTHERN REGION-CHENNAI

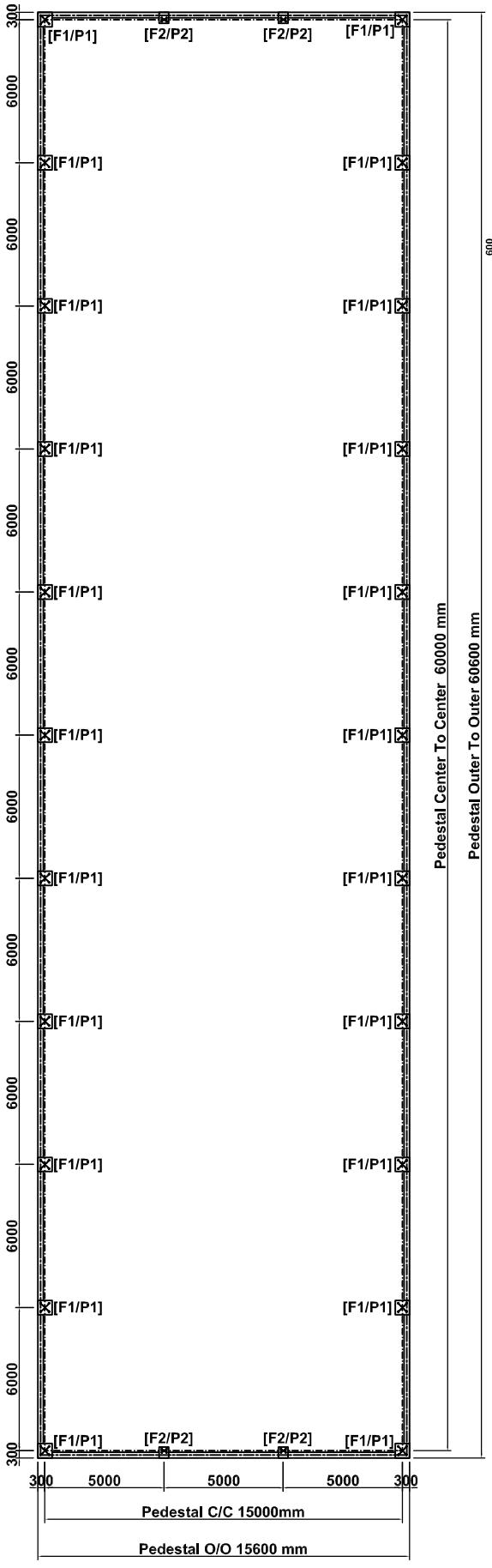
PUNCHING AREA

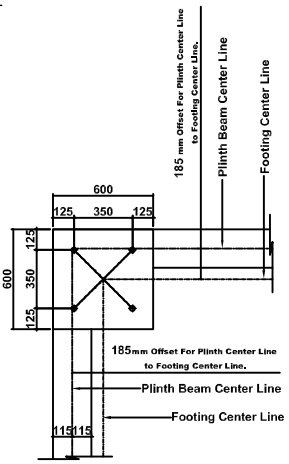


	BHEL				TITLE :- PLAN OF CLOSED SHED				Sheet :- 1
SIZE :	60 Length	15 Width	6 mtr. Height		NAME	SIGN.	DATE	Scale NTS	PROJECTION
DWG NO :	PIPL - 165 - MAR 12 - BHEL - P 001			DSGN	BK		07.04.12		
PROJECT :	G.I CLOSED SHED			DRWN	RSR		07.04.12		
				CHKD	CRJ		07.04.12	Sh. Size A4	REVISION : 0
				APPD					

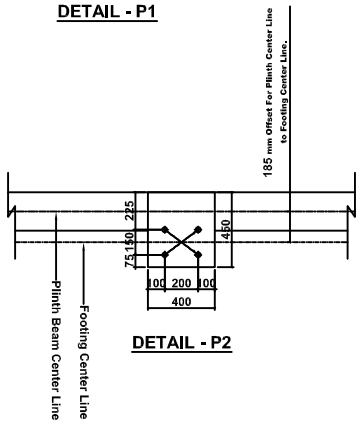
Note : All Dimensions are in mm

PUNCHING AREA





DETAIL - P1

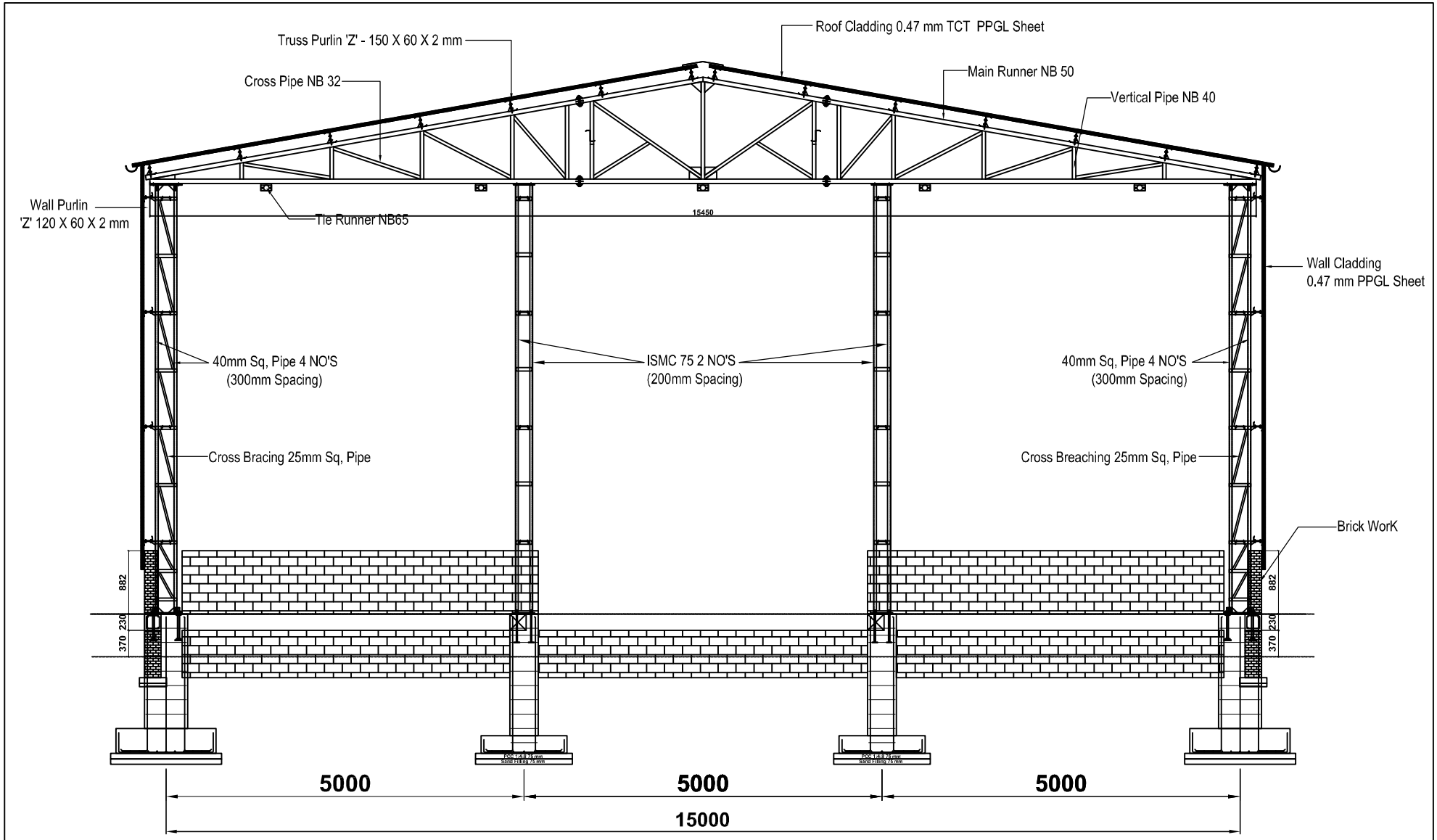


DETAIL - P2

Note : All Dimensions are in mm

BHEL				TITLE :- PLAN OF PEDESTAL & PLINTH BEAM					Sheet :- 02
SIZE :	60 Length	15 Width	6 mtr. Height		NAME	SIGN.	DATE	Scale NTS	PROJECTION
DWG NO : PIPL - 165 - MAR 12 - BHEL - P 002				DSGN	BK		07.04.12		
PROJECT : G.I CLOSED SHED				DRWN	RSR		07.04.12		
				CHKD	CRJ		07.04.12	Sh. Size A4	REVISION : 0
				APPD					

PUNCHING AREA

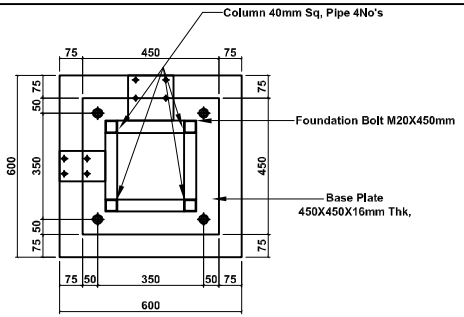


SECTIONAL VIEW

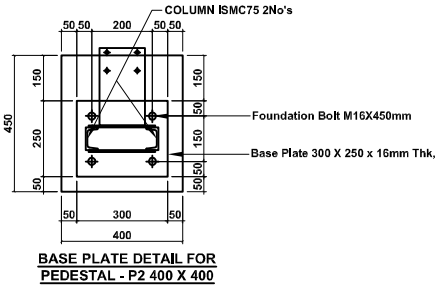
BHEL				TITLE :- SECTIONAL VIEW					Sheet :- 3
SIZE :	60 Length	15 Width	6 mtr. Height		NAME	SIGN.	DATE	Scale NTS	PROJECTION
				DSGN	BK		07.04.12		
DWG NO : PM - 165 - MAR12 - BHEL - FCV 003				DRWN	RSR		07.04.12		
				CHKD	CRJ		07.04.12	Sh. Size A4	REVISION : 0
PROJECT : G.I CLOSED SHED				APPD					

Note : All Dimensions are in mm

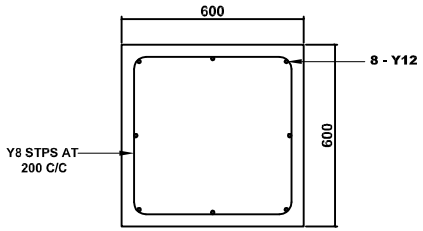
PUNCHING AREA



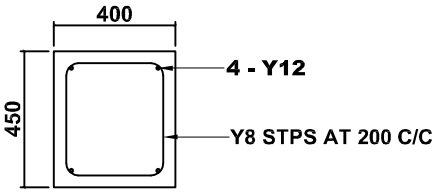
BASE PLATE DETAIL FOR
PEDESTAL - P1 450 X 450



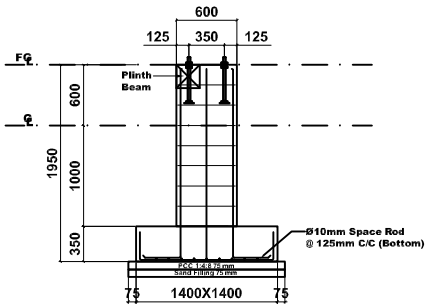
BASE PLATE DETAIL FOR
PEDESTAL - P2 400 X 400



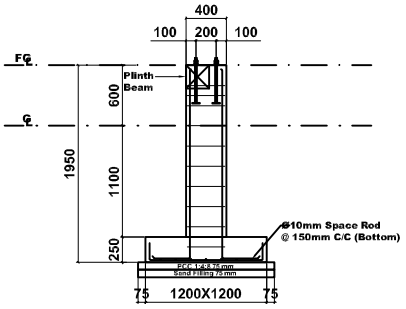
PEDESTAL - P1
600 x 600



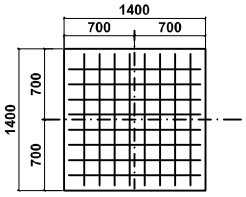
PEDESTAL - P2
400 x450



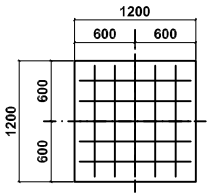
FOOTING - F1



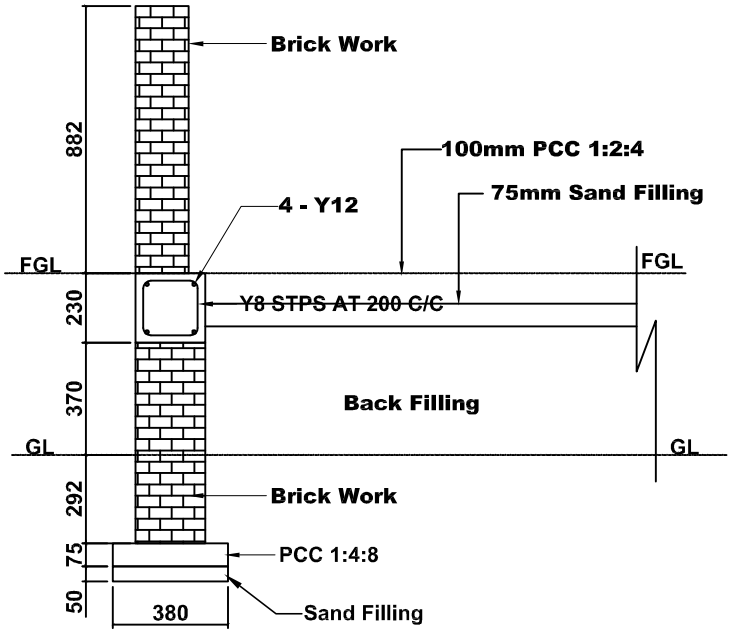
FOOTING - F2



(PLAN FOR FOOTING - F1 TYPE)



(PLAN FOR FOOTING - F2 TYPE)

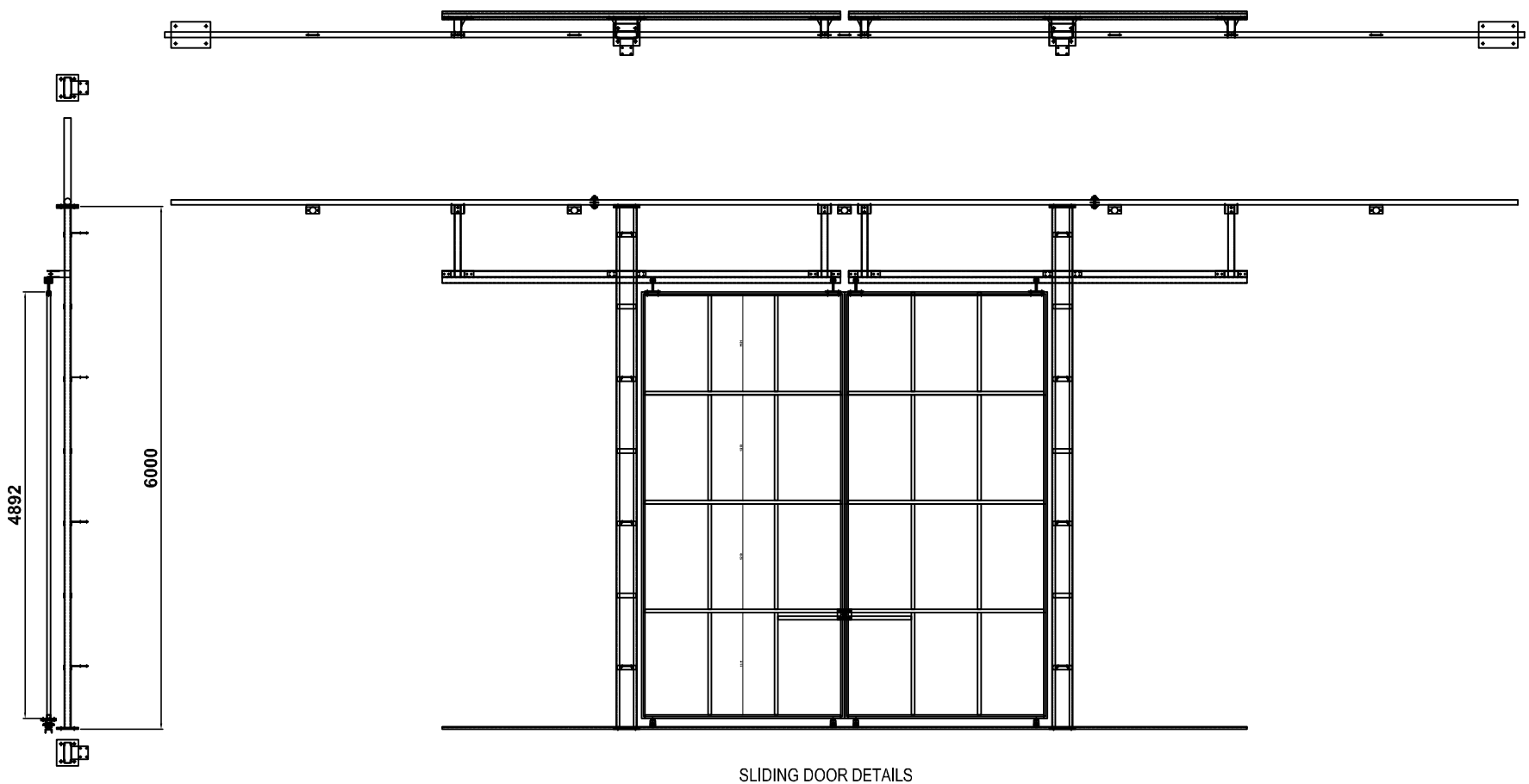


Detail - 'A' - 'A'

Note :
1.All Dimensions are in mm
2.Wind Speed Considered IS 50m/s
3.SBC OF 15T/SQ.M CONSIDERED
4.USE CONCRETE MIX : M20 GRADE
5. LAP LENGTH 56Ø
6. CLEAR COVER TO THE REINFORCEMENT FOR
COLUMN : 40 & FOOTING :50

BHEL				TITLE :- FOOTING CROSS SECTIONAL VIEW				Sheet :- 4
SIZE :	60 Length	15 Width	6 mtr. Height		NAME	SIGN.	DATE	Scale NTS
				DSGN	BK		07.04.12	PROJECTION
DWG NO : PM - 165 - MAR12 - BHEL - FCV 004				DRWN	RSR		07.04.12	
				CHKD	CRJ		07.04.12	Sh. Size A4
PROJECT : G.I CLOSED SHED				APPD				REVISION : 0

PUNCHING AREA

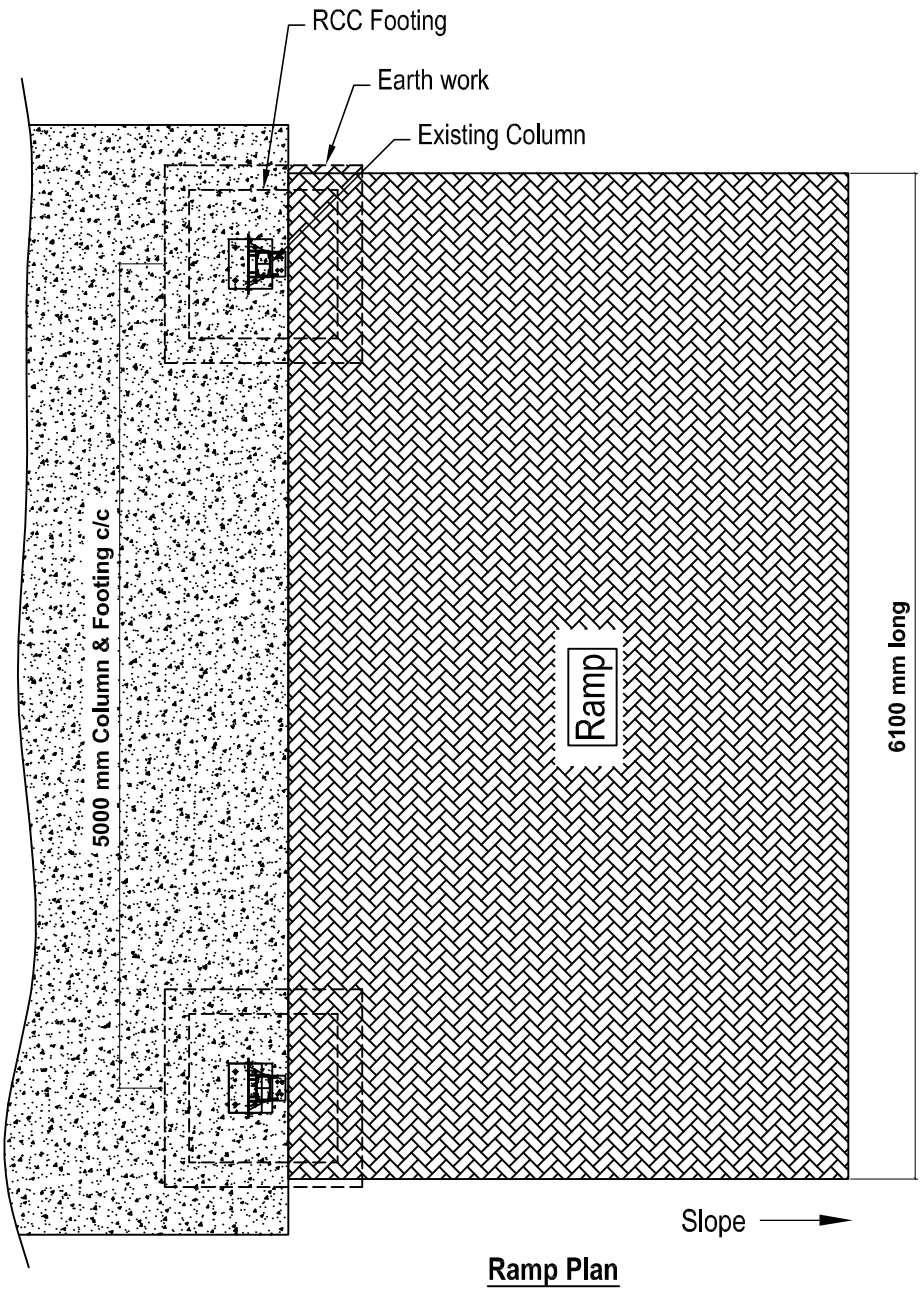


SLIDING DOOR DETAILS

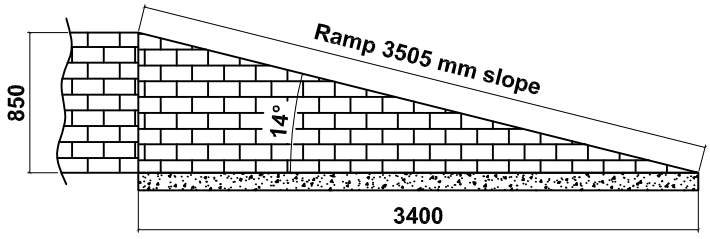
Note : All Dimensions are in mm

BHEL				TITLE :- SLIDING DOOR DETAILS					Sheet :- 5
SIZE :	60 Length	15 Width	6 mtr. Height		NAME	SIGN.	DATE	Scale NTS	PROJECTION
				DSGN	BK		19.03.12		
DWG NO : PM - 165 - MAR12 - BHEL - FCV 002				DRWN	RSR		19.03.12		
				CHKD	CRJ		19.03.12	Sh. Size A4	REVISION : 0
PROJECT : G.I CLOSED SHED				APPD					

PUNCHING AREA



Ramp Plan

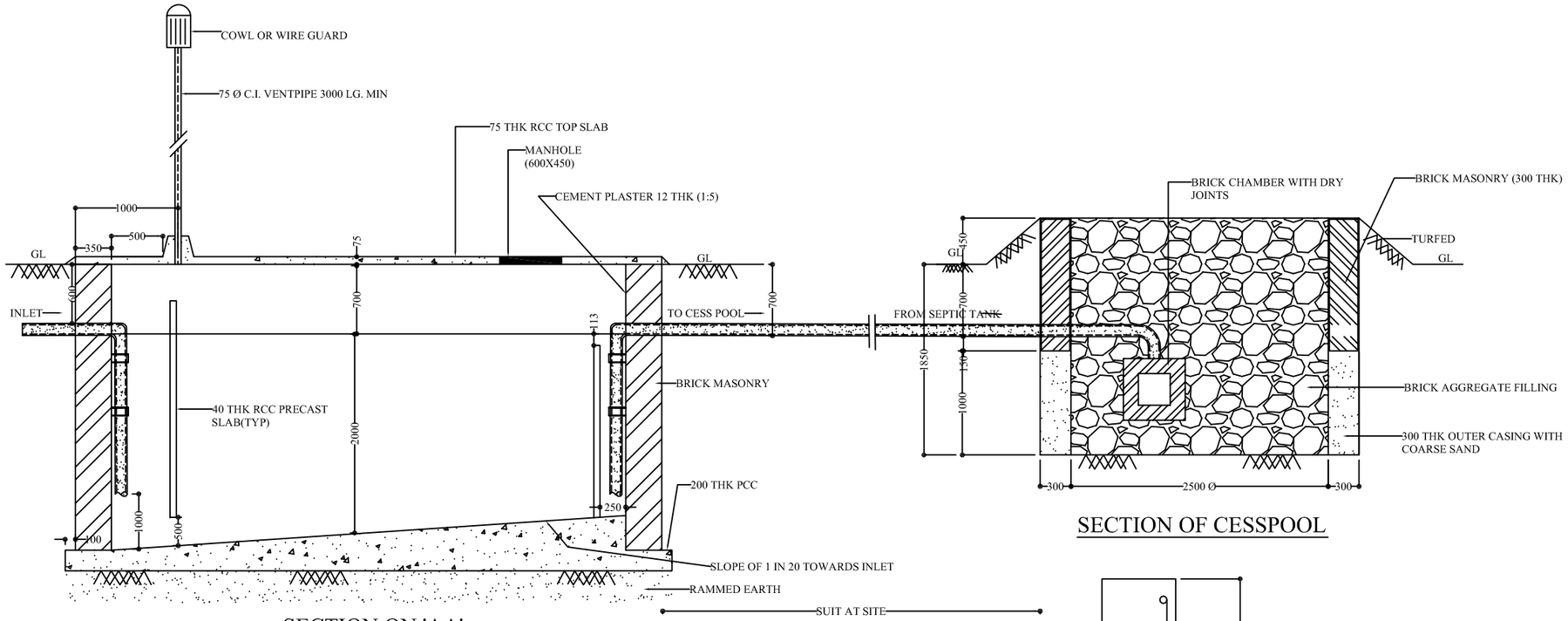


Ramp Side View

Note : Ramp slope and pcc details take care of james.

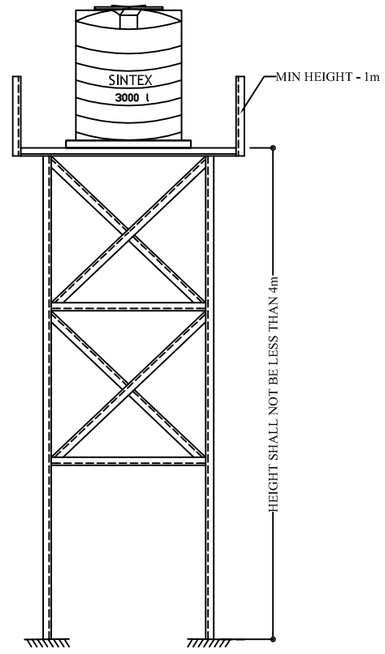
Note : All Dimensions are in mm

	BHEL CLOSED SHED			TITLE :- Ramp Details						Sheet :- 6
SIZE :	60 Length	15 Width	6 mtr. Height			NAME	SIGN.	DATE	Scale NTS	PROJECTION
				DSGN						
DWG NO :	PM - 131 - BHEL - CLOSED - RMP 001			DRWN	DSA			21.03.12		
PROJECT :	G.I ENCLOSED LABOUE SHED			CHKD					Sh. Size A4	REVISION : 0
				APPD						

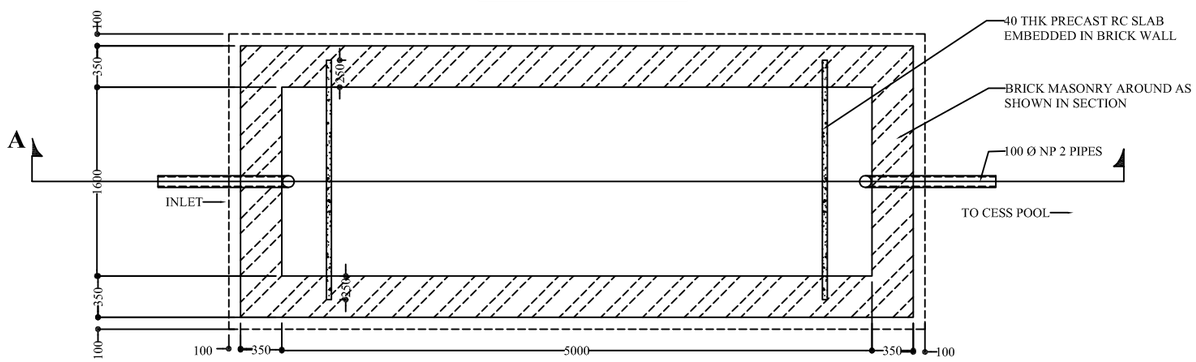


SECTION ON 'AA'

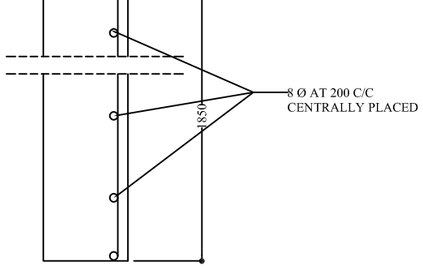
SECTION OF CESSPOOL



WATER TANK - ELEVATION



SECTIONAL PLAN



DETAILS OF PRECAST RCC SLAB

SCALE - NTC

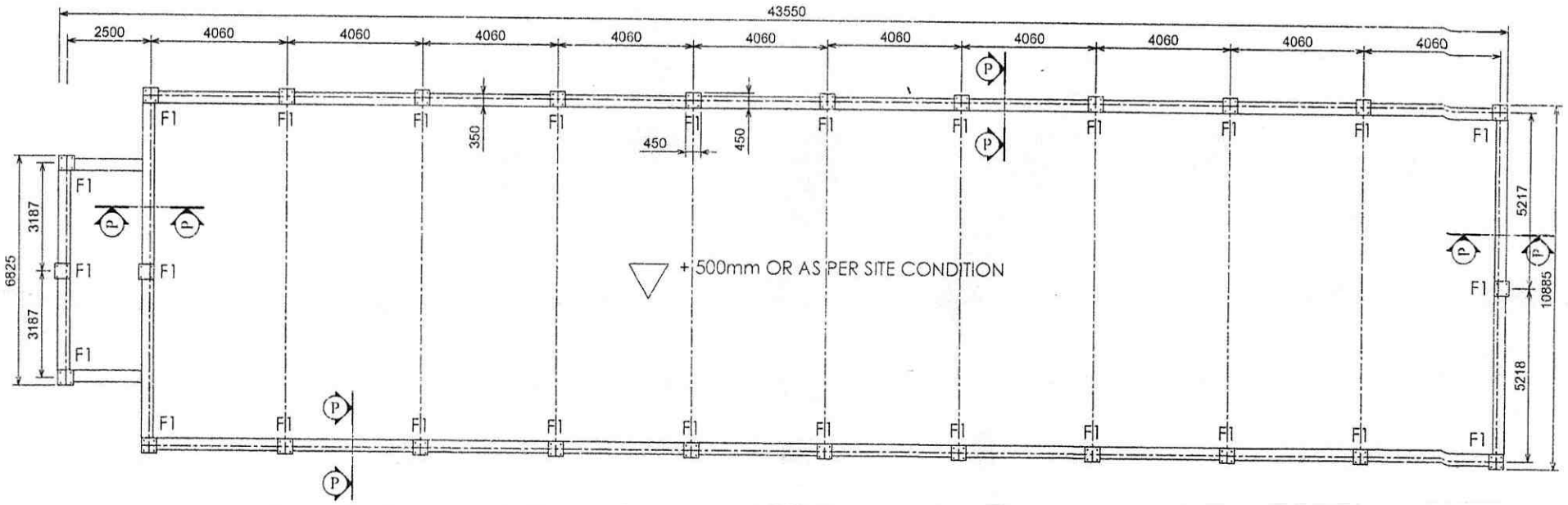
NOTE:

1. All Dimension are in MM.
2. Grade of Concrete is M15
3. All reinforcements are CTD bars conforming to IS-1786
5. Use 1:5 Mortar for masonry works.
6. The inside of Septic tank shall have cement plaster 1:3 with approved water proof agent.

SEPTIC TANK AND WATER TANK STRUCTURE

(DETAILS FOR 50 USERS)

DRAWING NO : PS-SR-PMX-CVL004-DRG002

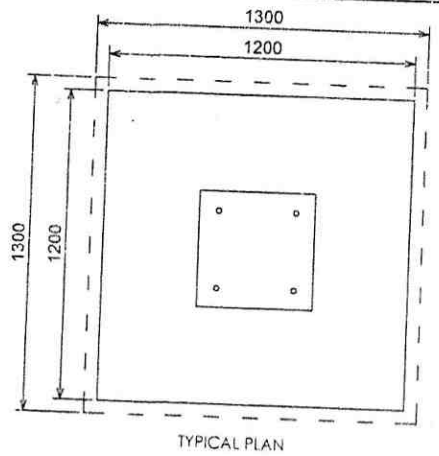


NOTE :

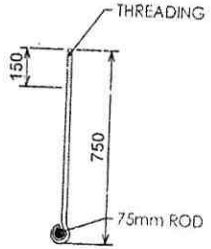
1. ALL DIMENSIONS ARE IN MM.
2. DO NOT SCALE THE DRG. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. THE ABOVE DESIGN & DRAWING ARE BASED ON SBC OF 15T/M² WITH NORMAL SOIL CONDITION WITHOUT WATER TABLE. IN CASE ANY DIFFERENT SOIL STRATA, ADVICE OF STRUCTURAL ENGINEER BE TAKEN.
4. ALL CONCRETE GRADE M 20
5. FOR F.G.L. REFER CONTOUR PLAN OF SITE.

SINTEX ACTIVE THINKING SINTEX INFRA PROJECTS LIMITED KALOL (N.G.)	CUSTOMER NAME:- PRADEEP STRUCTURE - KOLKATA	DRAWING TITLE:- FOUNDATION LAYOUT FOR SITE OFFICE	DRAWN BY:- A.M.C.	DATE:- 17-03-2015	DRAWING NO:- PSK/MAR-15/04-102
			CHECKED BY:- S.G.G.	REV. DATE:- -	DWG. CLASS:- PLASTO
THIS DRAWING IS THE PROPERTY OF SINTEX INFRA PROJECTS LIMITED AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF SINTEX INFRA PROJECTS LTD.	SCALE:- NTS	TOLERANCE:-	PREFAB SIZE:- 43.1 x 10.2 x 3.0Mt. + TOILET	APPROVED BY:- P.R.K.	UNLESS AND OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MM.

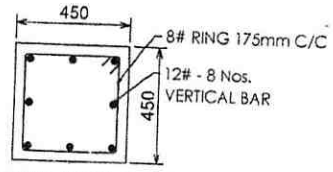
prefab/order 2015
pradeep structure



TYPICAL PLAN

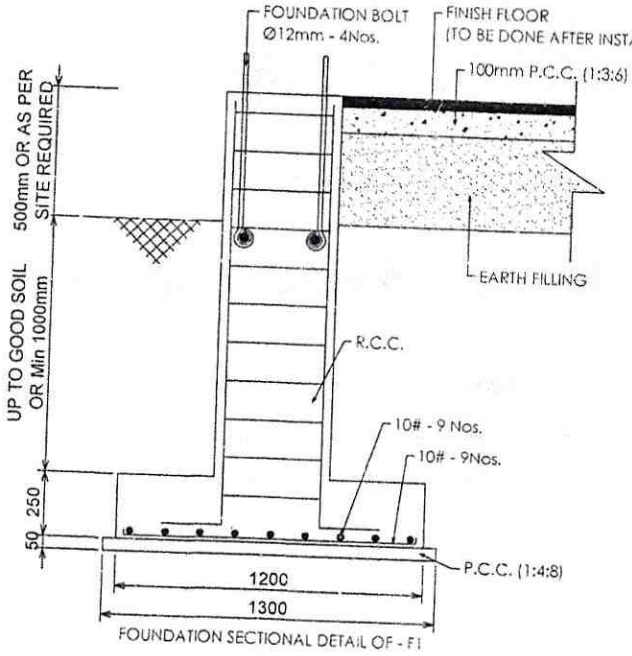


Detail Of Foundation Bolt
(12Ø - 750 mm Long M.S. Bolt)

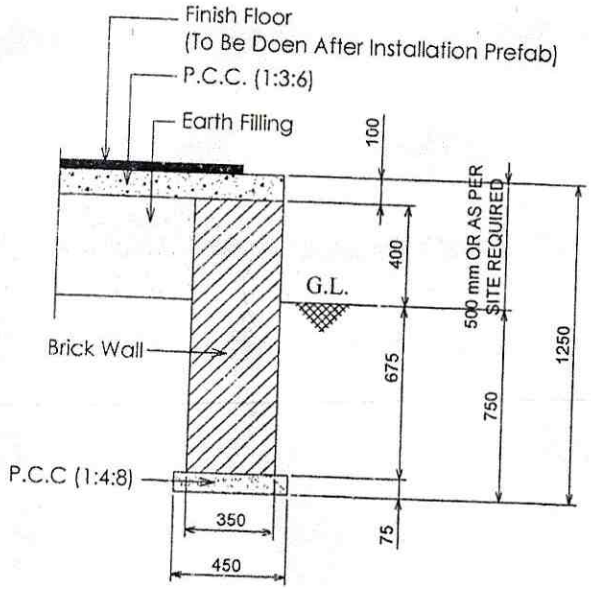


COLUMN STEEL DETAIL

DETAIL OF FOUNDATION BOLT



FOUNDATION SECTIONAL DETAIL OF - F1



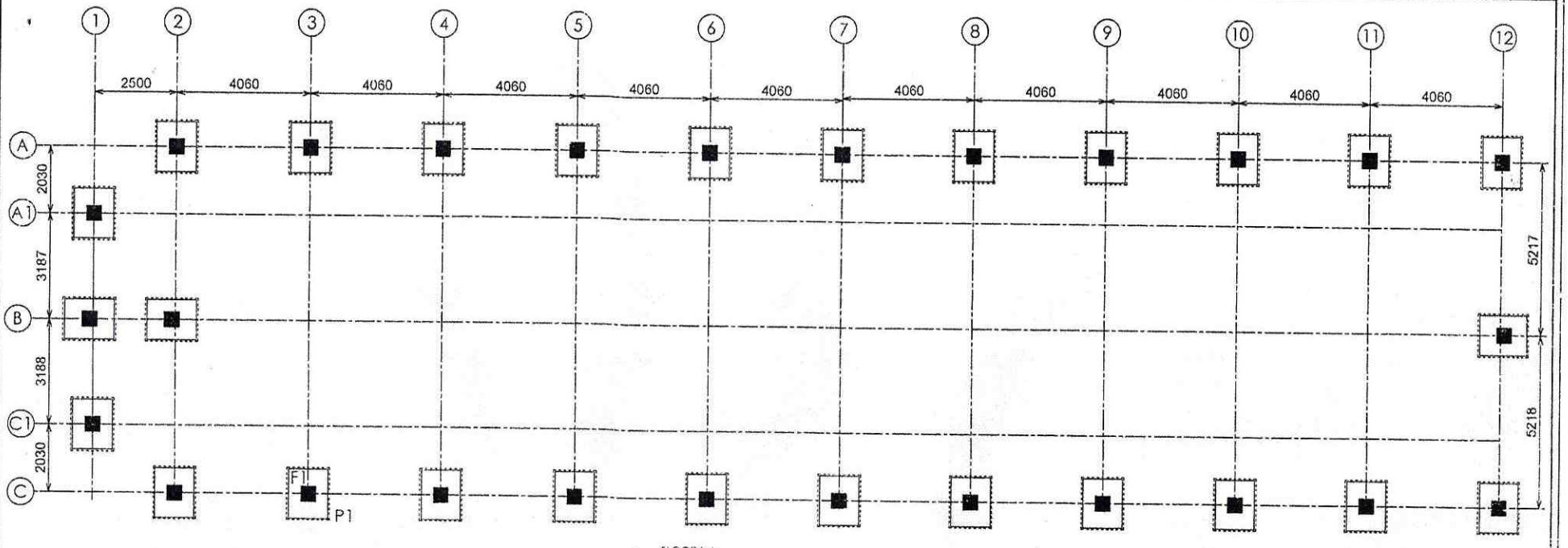
SECTION DETAIL AT 'P-P'

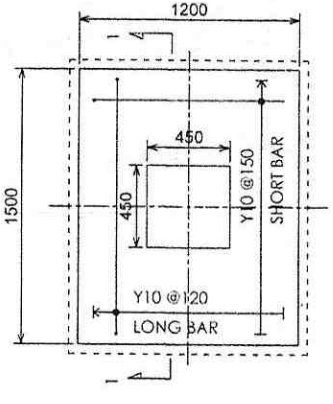
NOTE :

1. ALL DIMENSIONS ARE IN MM.
2. DO NOT SCALE THE DRG. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. THE ABOVE DESIGN & DRAWING ARE BASED ON SBC OF 15T/M² WITH NORMAL SOIL CONDITION WITHOUT WATER TABLE. IN CASE ANY DIFFERENT SOIL STRATA, ADVICE OF STRUCTURAL ENGINEER BE TAKEN.
4. ALL CONCRETE GRADE M 20
5. FOR F.G.L. REFER CONTOUR PLAN OF SITE.

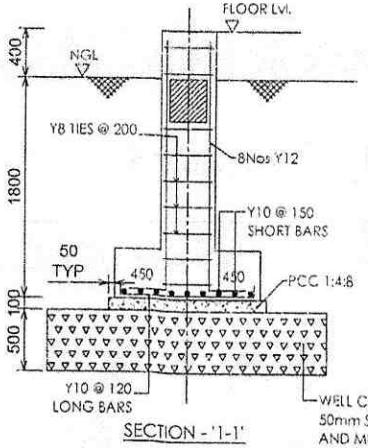
SINTEX ACTIVE THINKING
SINTEX INFRA PROJECTS LIMITED
KALOL (N.G.)

CUSTOMER NAME:	PRADEEP STRUCTURE - KOLKATA
DRAWING TITLE :-	FOUNDATION DETAIL FOR SITE OFFICE
SCALE :-	NTS
TOLERANCE :-	.....
PREFAB SIZE :-	43.1 x 10.2 x 3.0Mt. + TOILET
DRAWN BY:-	A.M.C.
DATE:-	17-03-2015
CHECKED BY:-	S.G.G.
REV. DATE:-	-
APPROVED BY:-	P.R.K.
DRAWING NO.:-	PSK/MAR-15/04-103
DWG. CLASS:-	PLASTO
	prefab/order 2015
	pradeep structure
	UNLESS AND OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MM.

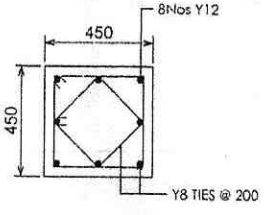




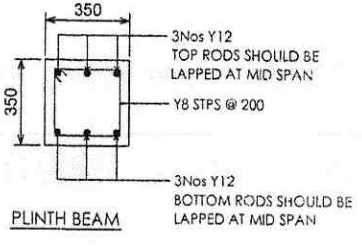
PLAN OF FOOTING - F1



SECTION - '1-1'



PEDESTAL P1

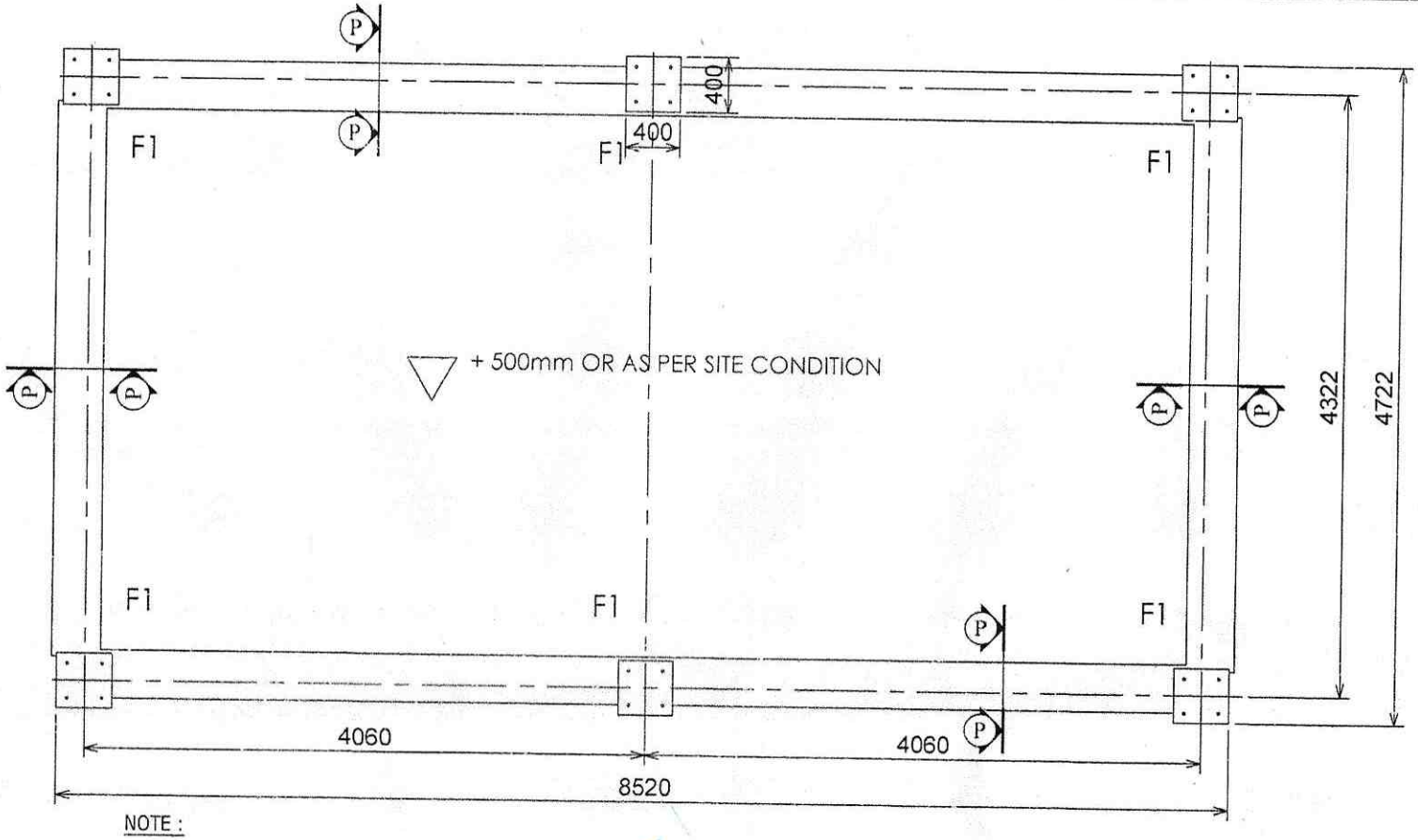


PLINTH BEAM

NOTE :

1. GRADE OF MIX M20
2. GRADE OF STEEL - Fe500
3. LAP LENGTH SHALL BE 47 TIMES OF DIA BAR AND SHALL BE KEPT STAGGERED

SINTEX ACTIVE THINKING SINTEX INFRA PROJECTS LIMITED KALOL (N.G.)	CUSTOMER NAME :- PRADEEP STRUCTURE - KOLKATA	DRAWING TITLE :- FOUNDATION LAYOUT FOR SITE OFFICE	DRAWN BY :- A.M.C.	DATE :- 17-03-2015	DRAWING NO. :- PSK/MAR-15/04-112	
			CHECKED BY :- S.G.G.	REV. DATE :- -	DWG. CLASS :- PLASTO	prefab/order 2015 pradeep structure
THIS DRAWING IS THE PROPERTY OF SINTEX INFRA PROJECTS LIMITED AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF SINTEX INFRA PROJECTS LTD.	SCALE :- NTS	TOLERANCE :-	PREFAB SIZE :- 43.1 x 10.2 x 3.0Mt. + TOILET	APPROVED BY :- P.R.K	-	UNLESS AND OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MM.



NOTE :

1. ALL DIMENSIONS ARE IN MM.
2. DO NOT SCALE THE DRG. ONLY WRITTEN DIMENSIONS SHALL BE FOLLOWED.
3. THE ABOVE DESIGN & DRAWING ARE BASED ON SBC OF 15T/M² WITH NORMAL SOIL CONDITION WITHOUT WATER TABLE. IN CASE ANY DIFFERENT SOIL STRATA, ADVICE OF STRUCTURAL ENGINEER BE TAKEN.
4. ALL CONCRETE GRADE M 20
5. FOR F.G.L. REFER CONTOUR PLAN OF SITE.

SINTEX ACTIVE THINKING SINTEX INFRA PROJECTS LIMITED KALOL (N.G.)	CUSTOMER NAME:- PRADEEP STRUCTURE - KOLKATA	DRAWING TITLE:- FOUNDATION LAYOUT FOR TOILET	DRAWN BY:- A.M.C.	DATE:- 19-03-2015	DRAWING NO.:- PSK/MAR-15/05-202	
			CHECKED BY:- S.G.G.	REV. DATE:- -	DWG. CLASS.:- PLASTO	prefabforder 2015 pradeep structure
THIS DRAWING IS THE PROPERTY OF SINTEX INFRA PROJECTS LIMITED AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF SINTEX INFRA PROJECTS LTD.	SCALE:- NTS	TOLERANCE:-	PREFAB SIZE - 8.1 x 4.1 x 3.0Mt.	APPROVED BY:- P.R.K.	UNLESS AND OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MM.	

Social Accountability 8000 Compliance Format

A. Basic information

Name of the organization		
Address		
Telephone No		
Name of the Proprietor		
Nature of Business		
License Number and date of expiry		
Employees	Staff (Total Number)	Workmen (Total Number)
• **Permanent**		
• Casual		
• Badli		
• Temporary		
• Contracted		

B. Information regarding Social Accountability

- What is the minimum age required to join your organization? _____Years
- What types of certificates (Like mark sheet, birth certificate) you keep with you? Original Copy / Xerox
- Do you require to keep any kind of deposit inform of cash at the time of employment? Yes/No
- Do you provide safe & healthy work environment as per statutory requirement? Yes/No
- If directly not provided by you, do you get health & safety benefits from NALCO? Yes/No

Are you certified for SA 8000? Yes/No
If Yes, please submit a copy of SA8000 Certificate along with this filled up questionnaire

Have you undergone Code of Conduct Audit (COC Audit) in last 2 years ? Yes/No

If yes, please submit a copy of Code of Conduct Audit Report along with this filled up questionnaire

Have your sub-suppliers been certified for SA 8000? Yes/No

Have your sub-suppliers undergone Code of Conduct Audit (COC Audit) in last 2 years? Yes/No

- Do you provide personal protective equipment(s) to your employees free of cost? Yes/No
- Do you provide safety training to your employees? Yes/No
- Do you ensure canteen facility for your employees? Yes/No
- If not, do you get the facilities from NALCO Yes/No
- What types of medical benefits you provide to your employees?

_____

_____

_____

- Do you allow trade union and collective bargaining in your organization? Yes/No

  If no, how do you ensure freedom of expression?

_____

_____

_____

- Incase of non-performance of any employee, how do you deal with such situations?

_____

_____

_____

- What are the procedures of hiring/promotion/ remuneration in your organization?

_____

_____

_____

- Do you provide appointment letter to your employees? Yes/No
- Do you maintain a documented terms and conditions of employment? Yes/No
- Do you maintain a disciplinary procedure? Yes/No
- If no, how do you terminate your employee?

_____

_____

_____

- How do you ensure that your employees are not discrimination on the basis of cast creed, gender, religion, age and dieses?

_____

_____

_____

- How many shift you have? _____shifts
- What is the official working time? _____hours
- Which day is off day in your organization? _____
- In case, a person works in off day or holiday, how is he/she compensated?

_____

_____

_____

- Do you pay overtime to your employees as per law? Yes/No
- What is the lowest amount (salary/wage) you pay to your employees? Rs._____/-
- Is there any case of deduction in wage? Yes/No

- In case, it is yes, what are the general reasons for such deduction?

_____

_____

_____

- Is there any apprentice period in your organization? Yes/No
- If yes, what is the apprentice period in your organization? _____
- Do you have any international certification Yes/No
- If yes, please specify

_____

_____

- Do you receive, handle or promote goods and/or services from supplier/subcontractors or sub-suppliers Yes/No
- Do you receive, handle or promote goods and/or services from supplier/subcontractors or sub-suppliers who are classified as home worker? Yes/No
- If yes, what steps you have taken to ensure that they get similar level of protection as afforded to directly employed employees?

_____

_____

_____

- Have you taken care to look into issues related to child labor Forced labor, health & safety, working hours and remuneration of your suppliers Yes/No

We do hereby declare that our organization is committed to social accountability. We will promptly implement remedial/corrective actions identified against the requirement and promptly inform your organization. We also declare that the sub-contractors/sub supplier's performances are monitored by us. Moreover, we declare that if invited, we shall participate in awareness program as well as monitoring program organized by you.

We declare that the above-mentioned information is correct.

Signature:

Designation:

Date Seal of the organization

HEALTH, SAFETY AND ENVIRONMENT PLAN

For

SITE OPERATION
For BHEL PSSR
NALCO
DAMANJODI SITE.
1 X 18.5 MW,
BTG PROJECT.

POWER SECTOR

HSE PLAN FOR SITE OPRATIONS BY BHEL'S SUB-CONTRACTORS

AT A GLANCE

BEFORE START

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

PLAN

HSE ORGANISATION	
Manpower • 1 (one) safety officer for every 500 workers or part there of • 1(one) safety-steward/ supervisor for every 100 workers • **Qualification** As per Cl. 7.1	**HSE Roles and responsibilities** • Site In-charge- As per clause7.2.1 • Safety officer- As per clause7.2.2

HSE Planning
for Man, Machinery/Equipment/Tools & Tackles

PROVIDE

HSE INFRASTUCTURE	
• PPEs • Drinking Water • Washing Facilities • Latrines and Urinals • Provision of shelter for rest • Medical facilities	• Canteen facilities • Labour Colony • Emergency Vehicle • Pest Control • Scrapyard • Illumination

TRAIN

HSE TRAINING , AWARENESS & PROMOTION	
Training • Induction training • Height work and other critical areas • Tool Box talk & Pep Talk	**Awareness & Promotion** • Signage • Poster • Banner • Competition • Awards

COMMUNICATE

HSE COMMUNICATION	
Incident Reporting • Accident- Fatal & Major • Property damage • Near Miss	**Event Reporting** • Celebrations • Training • Medical camp

EXECUTE SAFELY

OPERATIONAL CONTROL PROCEDURES

PERMIT TO WORK

Height work (above 1.8 meters), Hot Work, Heavy Lifting, Confined Space, Radiography, Excavation (More than 1.5 meters)

SAFETY DURING WORK EXECUTION	
• Welding • Rigging • Cylinder- storage & Movement • Demolition work • T&Ps • Chemical Handling • Electrical works	• Fire • Scaffolding • Height work • Working Platform • Excavation • Ladder • Lifting • Hoisting appliance
HOUSE KEEPING	
WASTE MANGEMENT	
TRAFFIC MANAGEMENT	
ENVIRONMENTAL CONTROL	
EMERGENCY PREPAREDNESS AND RESPONSE PLAN	

CHECKS

HSE AUDITS & INSPECTION	
• Daily Checks • Inspection of PPEs • Inspection of T&Ps • Inspection of Cranes, Hydra ,Winches & lifting tool and tackles	• Inspection of Height work • Inspection of Welding and Gas cutting • Inspection of elevators etc.

HSE PERFORMANCE EVALUATION PARAMETERS

NON CONFORMANCE

PENALTY for NON-CONFORMANCE

Refer Clause 16

Incremental Penalty

For repeated violation by the same person, the penalty would be double of the previous penalty for repeated fatal incident in the same Unit incremental penalty to be imposed. The subcontractor will pay 2 times the penalty compared to previously paid in case there are repeated cases of fatal incidents under the same subcontractor for the same package in the same unit.

	HEALTH, SAFETY AND ENVIRONMENT PLAN FOR NALCO DAMANJODI SITE	Doc no.: HSEP: 14 REV: 01
	POWER SECTOR	Date: 31.03.2021

HSE
PLAN FOR SITE OPERATION FOR

PROJECT: -

BHEL PSSR NALCO DAMANJODI SITE. 1 X 18.5 MW, BTG PROJECT

SCOPE OF WORK: -

SITE WORK FOR COAL FIRED STEAM GENERATOR, TURBO GENERATOR, Sox & NOx Control System & its Auxiliaries along with associated facilities for steam & power Plant under 5th Stream Alumina Refinery Expansion Project at NALCO Damanjodi, Odisha

LOA No:-

REVISION HISTORY SHEET

Date	Revision No	Details of Changes	Reason	Prepared	Reviewed	Approved
20.1.2021	00	First issue	First issue	Sandeep Dalal, SE/ HSE-HQ	M. Shrivastava, AGM/HSE/HQ	M. Shrivastava, AGM/HSE/HQ
31.03.2021	01	Second issue	Discussed with consultant (M/s Dastur) to incorporate few points	Sandeep Dalal, SE/ HSE-HQ	M. Shrivastava, AGM/HSE/HQ	M. Shrivastava, AGM/HSE/HQ

SIGNATURES

Prepared By:-	Reviewed By:-	Approved By:-
Sandeep Dalal/ Sr. Engr (HSE) PSSR-HQ Sandeep 19/4/2021	M. Shrivastava /AGM (HSE) PSSR-HQ 19.4.2021 मुकेश श्रीवास्तव MUKESH SRIVASTAV अपर महाप्रबंधक (एच.एस.ई) / Addl. General Manager (HSE) बी.एच.ई.एल. - पी.एस.एस.आर. / B.H.E.L. - P.S.S.R. टेक टॉवर्स / Tek Towers नं.11, राजीव गाँधी सालै, तोरईपाक्कम, ओ.एम.आर., चेन्नै - 600 097 11, Rajiv Gandhi Salai, Thoraipakkam, OMR, Chennai - 600 097	M. Shrivastava /AGM (HSE) PSSR-HQ 19.4.2021 मुकेश श्रीवास्तव MUKESH SRIVASTAV अपर महाप्रबंधक (एच.एस.ई) / Addl. General Manager (HSE) बी.एच.ई.एल. - पी.एस.एस.आर. / B.H.E.L. - P.S.S.R. टेक टॉवर्स / Tek Towers नं.11, राजीव गाँधी सालै, तोरईपाक्कम, ओ.एम.आर., चेन्नै - 600 097

FOR DASTUR/NALCO

	CHECKED BY	APPROVED BY
NAME	MR. SUBHASH MUKHERJEE	MR. SUBHASH MUKHERJEE
DESIGNATION	ASST. MANAGER SAFETY	ASST. MANAGER SAFETY
DATE	27.04.2021	27.04.2021
SIGNATURE	SUBHASH MUKHERJEE Asst. Manager Safety M.N. Dastur & Co. Pvt. Limited NALCO, Damanjodi	SUBHASH MUKHERJEE Asst. Manager Safety M.N. Dastur & Co. Pvt. Limited NALCO, Damanjodi

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SL. NO.	DESCRIPTION	PAGE NO.

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1.0 PURPOSE

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 arisen from foreseeable conditionsduringinstallationandservicingofindustrialprojectsandpowerplants.

This document shall be followed by BHEL's Sub-contractor at all installation and servicing sites. In case customer specific documents are to be implemented, this document will be followed in conjunction with customer specific documents.

Although every effort has been made to make the procedures and guidelines in line with statutory requirements, in case of any discrepancy relevant statutory guidelines must be followed.
In case the customer has any specific requirement, the same is to be fulfilled.

2.0 SCOPE

The document is applicable for BHEL's Sub-contractor at all installation / servicing activities of BHEL Power Sector as per the relevant contractual obligations.

3.0 OBJECTIVES AND TARGETS

The HSE Plan reflects that BHEL places high priority upon the Occupational Health, Safety and Environment at workplaces.

- Ensure the Health and Safety of all persons at work site is not adversely affected by the work.
- Ensure protection of environment of the worksite.
- Comply at all times with the relevant statutory and contractual HSE requirements.
- Provide trained, experienced and competent personnel. Ensure medically fit personnel only are engaged at work.
- Provide and maintain plant, places and systems of work that are safe and without risk to health and the environment.
- Provide all personnel with adequate information, instruction, training and supervision on the safety aspect of their work.
- Effectively control, co-ordinate and monitor the activities of all personnel on the Project sites including Sub-contractor in respects of HSE.
- Establish effective communication on HSE matters with all relevant parties involved in the Project works.
- Ensure that all work planning takes in to account all persons that may be affected by the work.
- Ensure fitness testing of all T&Ps/Lifting appliances like cranes, Hydra, chain pulley blocks etc. are to be certified by competent person.
- Ensure timely provision of resources to facilitate effective implementation of HSE requirements.
- Ensure continual improvements in HSE performance
- Ensure conservation of resources and reduction of wastage.
- Capture the data of all incidents including near misses, process deviation etc. Investigate and analyze the same to find out the root cause.
- Ensure timely implementation of correction, corrective action and preventive action.

BHEL POWER SECTOR HSE TARGETS

EXPLOSION FATALITY	**ZERO**
LOST TIME INJURY FIRE	**ZERO**
VEHICLE INCIDENTS ENVIRONMENTAL INCIDENTS	**ZERO**
	ZERO
	ZERO
	ZERO

4.0 BHEL POWER SECTOR HEALTH, SAFETY & ENVIRONMENT POLICY

Health, Safety &Environment Policy of BHEL

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.

` **sd/-**

CMD, BHEL

5.0 MEMORANDUM OF UNDERSTANDING:

After award of work, Sub-contractor 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_____do hereby also commit to comply with the same HSE Policy w h i l e Executing the Contract Number

M/s_____shall ensure that safe work practices as per the HSE plan. Spirit and content therein shall be reached to 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 with in prescribed time limit.

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

Name :

Place & Date:

6.0 TERMS AND DEFINITIONS

6.1 DEFINITIONS

6.1.1 INCIDENT

Work- related or natural event(s) in which an injury, or ill health (regardless of severity), damage to property or fatality occurred, or could have occurred.

6.1.2 NEAR MISS

An incident where no ill health, injury, damage or other loss occurs, but it had a potential to cause, is referred to as "Near-Miss".

6.1.3 MAN-HOURS WORKED

The total number of man-hours worked by all employees including sub-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.

6.1.4 FIRST AID CASES

First aids are essentially all reportable cases, where the injured person is given medical treatment and discharged immediately for reporting on duty, without counting any lost time.

6.1.5 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.

6.1.6 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.

6.1.7 TYPE OF INCIDENTS & THEIR REPORTING:

The three categories of Incident are as follows:

Non- Reportable Cases:
An incident, where the injured person is given medical help and discharged for work without counting any lost time.

REPORTABLE CASES:
In this case the injured person is disable for 48 hours or more and is not able to perform his duty.

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.

6.1.8 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:

$$\frac{\text{Number of Reportable LTI}}{\text{Man Hours Worked}} \times 1{,}000{,}000 \text{ Total}$$

6.1.9 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:

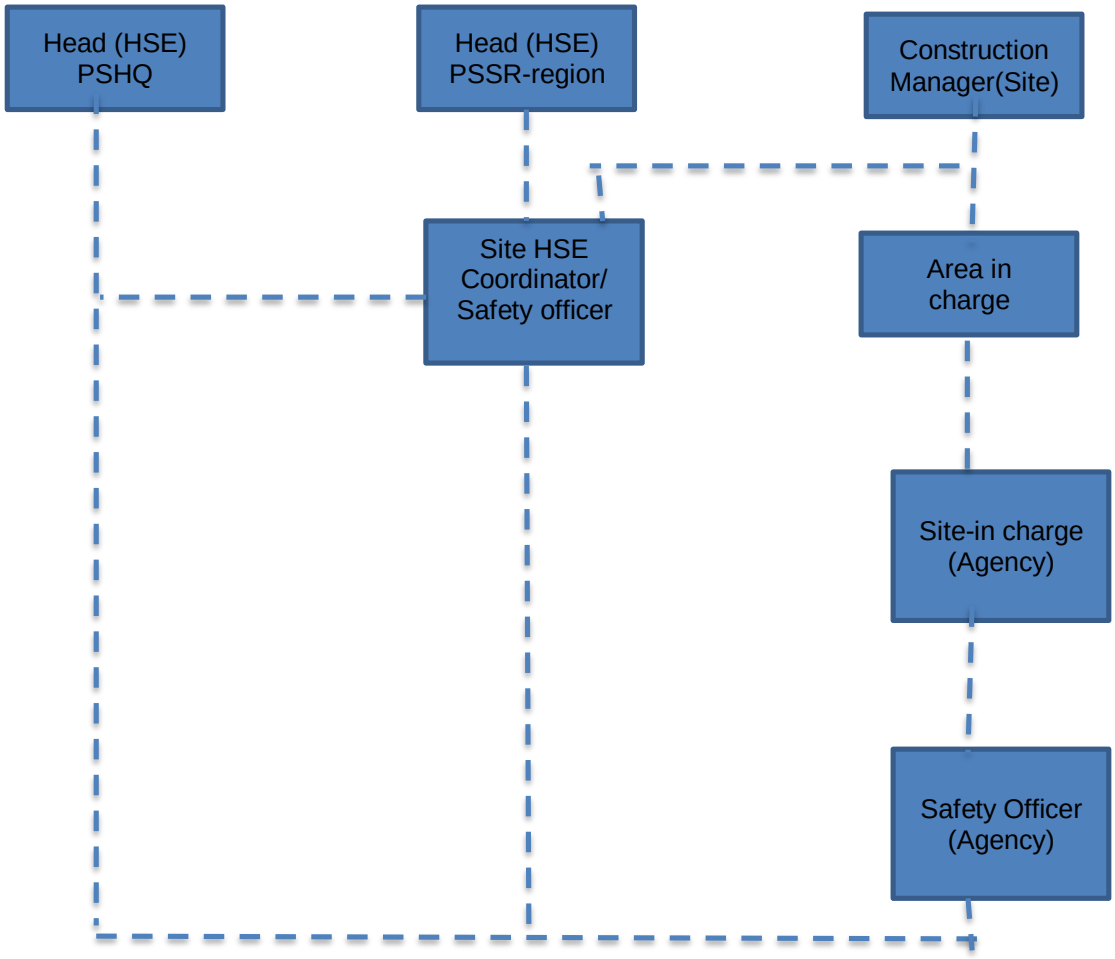
$$\frac{\text{Days lost due to LTI}}{\text{Total Man Hours Worked}} \times 1{,}000{,}000$$

6.1.10 INCIDENCE RATE

Incidence Rate is the Number of LTI per one thousand man power deployed. Mathematically, the formula reads as:

$$\frac{\text{Number of LTI}}{\text{Average number of manpower deployed}} \times 1000$$

7.0 HSE ORGANISATION



7.1 NUMBER OF SAFETY OFFICERS

The Sub-contractor must deploy one safety officer for every 500 workers or part thereof in each package. In addition, there must be one safety-steward/safety-supervisor for every 100 workers.

Deployment: The sub-contractor should deploy sufficient safety officers and safety-steward /Safety-supervisor, as per requirement given above, since very initial stage and add more in proportion to the added strength in work force. any delay in deployment will attract a penalty of Rs.30,000/ per man month for the delayed period.

7.2 QUALIFICATION FOR HSE PERSONNEL

Sl.no	Designation	Qualification	Experience
1.	Safety officer (Construction Agency)	Degree or Diploma in Engineering with full time diploma in Industrial Safety with construction safety as one of the subjects	Minimum two years for degree holder and five years for diploma holder in the field of Construction of power plant/ major industries
2.	Safety Supervisor (Construction Agency)	A recognized Degree in Science (with Physics & Chemistry) alternatively Degree or diploma in any branch of engineering / tech with full time diploma in Industrial Safety with construction safety as one of the Subjects.	Minimum two years
3.	Safety Steward (Construction Agency)	As a minimum, he shall preferably possess School-leaving Certificate (of Class XII with Physics & Chemistry etc.) and trained in fire fighting as well as in safety/ occupational health related subjects, and preferably have adequate knowledge of the language spoken by majority of the workers at the construction site.	Minimum two years

7.3 RESPONSIBILITIES

7.3.1 SITE IN-CHARGE OF SUB CONTRACTOR

- Shall sign Memorandum of Understanding (MOU) for compliance to BHEL's HSE Plan for Site Operations as per clause 5.0
- Shall engage qualified safety officer(s) and steward (s) as per clause7.0
- 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 coordinators.
- Shall screen all workers for health and competence requirement before engaging for the job and periodically thereafter as required.
- Shall not engage any employee below 18 years.
- Shall arrange for all necessary PPEs like safety helmets, belts, full body harness, shoes, face shield, hand gloves etc. before starting the job. Shall ensure that no working men/women carry excessive weight more than stipulated in Factory Rule RegulationR57.
- Shall ensure that all T&Ps engaged are tested for fitness and have valid certificates from competent person.
- Shall ensure that provisions stipulated in contract Labour Regulation Act 1970, Chapter V C.9, canteen, rest rooms/washing facilities to contracted employees at site.
- Shall adhere to the instructions laid down in Operation Control Procedures (OCPs) available with the site management.
- Shall ensure that person working above 1.8 meter should use Safety Harness tied to a lifeline/ stable structure.
- Shall ensure that materials are not thrown from height. Cautions to be exercised to prevent fall of material from height.
- Shall report all incidents (Fatal/Major/Minor/Near Miss) to the Site engineer/HSE officer of BHEL.
- Shall ensure that Horseplay is strictly forbidden.
- Shall ensure that adequate illumination is arranged during night work.
- Shall ensure that all personnel working under sub-contractor are working safely and don ot create any Hazard to self and to others.
- Shall ensure display of adequate signage/posters on HSE.
- Shall ensure that mobile phone is not used by workers while working.
- Shall ensure conductance of HSE audit, mock drill, medical camps, induction training and training on HSE at site.
- Shall ensure full co-operation during HQ/External /Customer HSE audits.

- Shall ensure submission of look-ahead plan for procurement of HSE equipment's and PPEs as per work schedule.
- Shall ensure good house keeping.
- Shall ensure adequate valid fire extinguishers are provided at the worksite.
- Shall ensure availability of sufficient number of toilets /restrooms and adequate drinking water at work site and labour colony.
- Shall ensure adequate emergency preparedness.
- Shall be member of site HSE committee and attend all meetings of the committee
- Power source for hand lamps shall be maximum of 24v.
- Temporary fencing should be done for open edges if handrails and–railings and toe guards are not available.

7.3.2 HEALTH, SAFETY AND ENVIRONMENT OFFICER OF SUB-CONTRACTOR

- Carry out safety inspection of Work Area, Work Method, Men, Machine & Material, P&M and other tools and tackles.
- Facilitate inclusion of safety elements into Work Method Statement.
- Highlight the requirements of safety through Toolbox / other meetings.
- Help concerned HOS to prepare Job Specific instructions for critical jobs.
- Conduct investigation of all incident/ dangerous occurrences & recommend appropriate safety measures.
- Advice & co-ordinate for implementation of HSE permit systems, OCPs & MPs.
- Convene HSE meeting & minute the proceeding for circulation & follow-up action.
- Plan procurement of PPE & Safety devices and inspect their healthy ness.
- Report to PS Region/HQ on all matters pertaining to status of safety and promotional program at site level.
- Facilitate administration of First Aid
- Facilitate screening of workmen and safety induction.
- Conduct fire Drill and facilitate emergency preparedness
- Design campaigns, competitions & other special emphasis programs to promote safety in the workplace.
    - Apprise PS– Region on safety related problems.
- Notify site personnel non-conformance to safety norms observed during site visits/site inspections.
- 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.
- To decline acceptance of such PPE/safety equipment that do not conform to specified requirements.
- Encourage raising Near Miss Report on safety along with, improvement initiatives on safety.
- Shall work as interface between various agencies such customer, package-in-charges, Sub-contractor on HSE matters

8.0 PLANNING BY SUB CONTRACTOR

Monthly planning and review of HSE activities shall be carried out by Sub-contractor as per format No. HSEP:14-F30 jointly along with BHEL.

8.1 MOBILISATION OF MACHINERY/ EQUIPMENT /TOOLS & TACKLES BY SUB CONTRACTOR

- As a measure to ensure that machinery, equipment and tools & tackles being mobilized to the construction site are fit for purpose and are maintained in safe operating condition and complies with legislative and owner requirement, inspection shall be arranged by in-house competent authority for acceptance as applicable.

- The machinery and equipment to be embraced for this purpose shall include but not limited to the following:

  - Mobile Cranes & Hydra.
  - Side Booms.
  - Forklifts.
  - Grinding machine.
  - Drilling machine.
  - Air compressors.
  - Welding machine.
  - Generator sets.
  - Dump Trucks.
  - Excavators.
  - Dozers
  - Grit Blasting Equipment.
  - Hand tools.

- Sub-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 Sub-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.

8.2 MOBILISATION OF MANPOWER BY SUB CONTRACTOR

- The Sub-contractor shall arrange induction and regular health check of their employees as per schedule VII of BOCW rules by a registered medical practitioner.
- The Sub-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.
- 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.
- Appropriate accommodation to be arranged for all workmen in hygienic condition.

8.3 PROVISION OF PPEs

- Personnel Protective Equipment (PPEs), inadequate numbers, will be made available at site & the irregular use by all concerned will be ensured
- The following matrix recommends usage of minimum PPEs against the respective job.

Sl. No	Type of work	PPEs
1	Concrete and asphalt mixing	Nose mask, hand glove, apron and gum boot
2	Welders/Grinders/ Gas cutters	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
3	Stone/ concrete breakers	Ear muffs, safety goggles, hand gloves
4	Electrical Work	Rubber hand glove, Electrical Resistance shoes
5	Insulation Work	Respiratory mask, Hand gloves, safety goggles
6	Work at height	Double lanyard full body harness, Fall arrestor (specific cases)
7	Grit/Sand blasting	Blast suit, blast helmet, respirator, leather gloves
8	Painting	Plastic gloves, Respirators (particularly for spray painting)
9	Radiography	As per BARC guidelines

- The PPEs shall conform to the relevant standards as below and bear ISI mark.

Relevant is-codes for personal protection

IS: 2925 – 1984	Industrial Safety Helmets.
IS: 4770 – 1968	Rubber gloves for electrical purposes.
IS: 6994 – 1973 (Part-I)	Industrial Safety Gloves (Leather &Cotton Gloves).
IS: 1989 – 1986 (Part-I-II)	Leather safety boots and shoes.
IS: 5557 – 1969	Industrial and Safety rubber knee boots.
IS: 6519 – 1971	Code of practice for selections care and repair of Safety footwear.
IS: 11226 – 1985	Leather Safety footwear having direct molding sole.
IS: 5983 – 1978	Eye protectors.
IS: 9167 – 1979	Ear protectors.
IS: 1179-1967	Eye & Face protection during welding
IS: 3521 – 1983	Industrial Safety Belts and Harness
IS:8519 -1977	Guide for selection of industrial Safety equipment for body protection
IS:9473-2002,14166-1994,14746-1999	Respiratory Protective Devices

The list is not exhaustive. The safety officer may demand additional PPEs based on specific requirement.

- Where workers are employed in sewers and manholes, which are in use, the sub-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
- 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.

Colour scheme for Helmets:

1. Workmen: Yellow
2. Safety staff: Green or white with green band
3. Electrician: Red
4. Others including visitors: White

- All the PPEs shall be checked for its quality before issue and the same shall be periodically checked. The users shall be advised to check the PPEs themselves for any defect before putting on. The defective ones shall be repaired / replaced.
- The issuing agency shall maintain register for issue and receipt of PPEs.
- The Helmets shall have logo or name (abbreviation of agency name permitted) affixed or printed on the front.
- The body harnesses shall be serial numbered.

8.4 ARRANGEMENT OF INFRASTRUCTURE

8.4.1 DRINKING WATER

- Drinking water shall be provided and maintained at suitable places at different elevations.
- Container should be labeled as " Drinking Water"
- Cleaning of the storage tanks shall been ensured at least once in 3 months indicating date of cleaning and next due date.
- Potability of water should be tested as per IS 10500 at least once in a year.

8.4.2 WASHING FACILITIES

- In every workplace, adequate and suitable facilities for washing shall be provided and maintained.
- 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.
- Overalls shall be supplied by the sub-contractor to the workmen and adequate facilities shall be provided to enable the painters and other workers to wash during the cessation of work.

8.4.3 LATRINES AND URINALS

- Latrines and urinals shall be provided in every workplace.
- Urinals shall also be provided at different elevations.
- They shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times, by appointing designated person.
- Separate facilities shall be provided for the use of male and female worker if any.

8.4.4 PROVISION OF SHELTER DURING REST

Proper Shed & Shelter shall be provided for rest during break

8.4.5 MEDICAL FACILITIES

8.4.5.1 MEDICAL CENTRE (As per Schedule V, X and XI of BOCW central Rules,1998)

- A medical Centre shall be ensured/ identified at site with basic facilities for handling medical emergencies. The medical center can be jointly developed on proportionate sharing basis with permission from BHEL
- A qualified medical professional, not less than MBBS, shall be deployed at the medical centre
- The medical Centre shall be equipped with one ambulance, with trained driver and oxygen cylinder.
- Medical waste shall be disposed as per prevailing legislation (Bio-Medical Waste –Management and Handling Rules,1998)

8.4.5.2 FIRST AIDER

- Ensure availability of Qualified First-aider throughout the working hours.
- Every injury shall be treated, recorded and reported.
- Refresher course on first aid shall be conducted as necessary.
- List of Qualified first aiders and their contact numbers should be displayed at conspicuous places.

8.4.5.3 FIRST AID BOX (as per schedule III of BOCW)

- The Sub-contractor shall provide necessary first aid facilities as per schedule III of BOCW. At every work place first aid facilities shall be provided and maintained.
- 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.
- The first aid boxes should be placed at various elevations so as to make them available within the reach and at the quickest possible time.
- The first aid box shall be distinctly marked with a Green Cross on white background.
- Details of contents of first aid box is given in Annexure No.01
- Monthly inspection of First Aid Box shall be carried out by the owner as per format no. HSEP:14-F01
- The Sub-contractor should conduct periodical first aid classes to keep his supervisor and Engineers properly trained for attending to any emergency.

8.4.5.4 HEALTH CHECK UP (As per schedule VII and Form XI)

The persons engaged at the site shall undergo health checkup as per the format no. HSEP:14-F02 before induction. The persons engaged in the following works shall undergo health checkup at least once in a year:

a. Height workers
b. Drivers/ Crane Operators/ Riggers

c. Confined space workers
d. Shot/sand blaster
e. Welding and NDE personnel

8.4.6 PROVISION OF CANTEEN FACILITY

- Canteen facilities shall be provided for the workmen of the project in side the project site.
- Proper cleaning and hygienic condition shall be maintained.
- Proper care should be taken to prevent biological contamination.
- Adequate drinking water should be available at canteen.
- Fire extinguisher shall be provided inside canteen.
- Regular health check-up and medication to the canteen workers shall be ensured.

8.4.7 PROVISION OF ACCOMODATION/ LABOUR COLONY

- The Sub-contractor shall arrange for the accommodation of workmen at nearby localities or by making a labour colony.
- Regular housekeeping of the labour colony shall be ensured.
- Proper sanitation and hygienic conditions to be maintained.
- Drinking water and electricity to be provided at the labour colony.
- Bathing/ washing bay
- Room ventilation and electrification.

8.4.8 PROVISION OF EMERGENCY VEHICLE

- Dedicated emergency vehicle shall be made available at workplace by each Sub-contractor to handle any emergency

8.4.9 INSECT AND PEST CONTROL

Regular insect//pest control (Mosquito, Snake, Honey bee should be carried out by sub- contractor at all of his site work area, offices, mainly
laboratories, canteen, labour colony and stores etc.

8.4.10 SCRAP YARD

- In consultation with customer, scrapyard shall be developed to store metal scrap, wooden scrap, waste, hazardous waste.
- Scrap/Waste shall be segregated as Bio-degradable and non-bio-degradable and stored separately.

8.4.11 ILLUMINATION

- The Sub-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.

- Adequate and suitable light shall be provided at all workplaces & their approaches including passage ways as per IS: 3646 (Part-II). Some recommended values are given below:

Sl. No.	Location	Illumination (Lux)
A.	**Construction Area**	
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.	rough measurements etc.	
8.	Fine work like precision assembly, precision measurements etc.	700
9.	Sheet metal works	200
10.	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

- Lamp (handheld) shall not be powered by mains supply but either by 24V or dry cells.
- Lamps shall be protected by suitable guards where necessary to prevent danger, incase of break age of lamp.
- Emergency lighting provision for night work shall be made to minimize danger in case of main supply failure.

If the Sub-contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instructions issued by the authorized BHEL official, BHEL shall have the right to take corrective steps at the risk and cost of the sub-contractor

9.0 HSE TRAINING & AWARENESS

9.1 HSE INDUCTION TRAINING

All persons entering into project site shall be given HSE induction training by the HSE officer of BHEL / Sub-contractor before being assigned to work.

In-house induction training subjects shall include but not limited to:

- Briefing of the Project details.
- Safety objectives and targets.
- Site HSE rules.
- Site HSE hazards and aspects.
- First aid facility.
- Emergency Contact No.
- Incident reporting.
- Fire prevention and emergency response.
- Rules to be followed in the labour colony (if applicable)

- 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.)
- They must arrive fully dressed in safety wear & gear to attend the induction.
- Any one failing to conform to this safety wear &gear requirement shall not qualify to attend.
- On completing attending sub 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. They may only then be qualified to be issued with a personal I.D. card, for access to the worksite.

9.2 HSE TOOL BOX TALK

- HSE tool Box talk shall be conducted by frontline foreman/supervisor of Sub-contractor to specific work groups prior to the start of work. The agenda shall consist of the followings:
- Details of the job being intended for immediate execution.
- The relevant hazards and risks involved in executing the job and their control and mitigating measures.
- Specific site condition to be considered while executing the job like high temperature, humidity, unfavorable weather etc.
- Recent non-compliances observed.
- Appreciation of good work done by any person.
- Any doubt clearing session at the end.
- Record of Tool box talk shall be maintained as per format no. HSEP:14-F04
- Tool box talk to be conducted at least once a week for the specific work.

9.3 TRAINING ON HEIGHT WORK

- Training on height work shall be imparted to all workers working at height by in-house/external faculty at least once in a year. The training shall include following topics:
- Use of PPEs
- Use of fall arrester, retractable fall arrester, life line, safety nets etc.
- Safe climbing through monkey ladders.
- Inspection of PPEs.
- Medical fitness requirements.
- Mock drill on rescue at height.
- Dos & Don'ts during height work.

9.4 HSE TRAINING DURING PROJECT EXECUTION

- Other HSE training shall be arranged by BHEL/ Sub-contractor as per the need of the project execution and recommendation of HSE committee of site.
- The topics of the HSE training shall be as follows but not limited to:
- Hazards identification and risk analysis(HIRA)
- Work Permit System
- Incident investigation and reporting
- Fire fighting
- First aid
- Fire-warden training
- EMS and OHSMS
- T & Ps fitness and operation

- Electrical safety
- Welding, NDE & Radiological safety
- Storage, preservation & material handling.
- A matrix shall be maintained to keep an up-to-date record of attendance of training sessions carried out.

9.5 HSE PROMOTION- SIGNAGE, POSTERS, COMPETITION, AWARDS ETC

9.5.1 DISPLAY OF HSE POSTERS AND BANNERS

- Site shall arrange appropriate posters, banners, slogans in local/ Hindi/English languages at work place

9.5.2 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

9.5.3 COMPETITION ON HSE AND AWARD

- Site will arrange different competition (slogan, poster, essay etc.) on HSE time to time (Safety day, BHEL day, World Environment Day etc.) and winners will be suitably awarded.

9.5.4 HSE AWARENESS PROGRAMME

- Sub-contractor shall arrange HSE awareness programme periodically on different topics including medical awareness for all personnel working at site

10. HSE COMMUNICATION

10.1 INCIDENT REPORTING

- The Sub-contractor shall submit report of all incidents, fires and property damage 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)
- In addition, periodic reports on safety shall also be submitted by the sub-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.
- 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 workplace and compliance shall be verified by BHEL HSE officer and until then, work shall be put on hold by Construction Manager.

10.2 HSE EVENT REPORTING

- Important HSE events like HSE training, Medical camp etc. organized at site shall be reported to BHEL site management in detail with photo graphs for publication in different in-house magazines
- Celebration of important days like National Safety Day, World Environment Day etc. shall also be reported as mentioned above.

10.3 MONTHLY, WEEKLY, DAILY, HSE ACTIVITY REPORTING

Monthly, Weekly & Daily HSE activities shall be reported by Sub-contractor to BHEL as per formats issued by BHEL from time to time (as for example refer to Format No. HSEP: 14-F31A).

10.4 ACCIDENT INVESTIGATION

- The sub-contractor should conduct a thorough, proper, unbiased & scientific accident investigation after Every accidents at site. The accident/ incident shall be investigated by a team of Contractor's senior Site personnel (involving Site-in-Charge or at least by his deputy) for establishing root-cause and recommending corrective & preventive actions. Findings shall be documented and suitable actions taken to avoid recurrences shall be communicated to BHEL/Owner.
- Sub-contractor should actively participate & co-operate (means provide manpower and other resources) in accident investigation committees, RCA (root case analysis) committee etc formed by BHEL/Owner.
- Sub-contractor should preserve documents/evidence related with accidents until an accident investigation is completed.
- BHEL shall have the liberty to independently investigate such occurrences and the sub-contractor shall extend all necessary help and cooperation in this regard. BHEL shall have the right to share the content of this report with the outside world.

10.5 HSE DOCMENTATION

- The sub-contractor shall evolve a comprehensive, planned and documented system covering the following as a minimum for implementation and monitoring of the HSE requirements and the same shall be submitted for approval by BHEL/Owner

  HSE Organizational chart
  Site Specific HSE Plan
  Safety Procedures, forms and Checklist. Indicative list of HSE procedures/Format is attached as Appendix
  Inspections and Test Plan
  Risk Assessment & Job Safety Analysis for critical works.

- The monitoring for implementation shall be done by sub-contractor after regular inspections and compliance of the observations thereof.

- However, compliance of HSE requirements shall be the responsibility of the Contractor. Any review/approval by BHEL / Owner shall not absolve sub-contractor of his responsibility/ liability in relation to fulfilling all HSE requirements.

10.6 OCCUPATIONAL HEALTH

- The contractor shall identify all operations that can adversely affect the health of its workers and issue & implement mitigation measures.
- For surface cleaning operations, sand blasting shall not be permitted even if not explicitly stated elsewhere in the contract.
- To eliminate radiation hazard, Tungsten electrodes used for Gas Tungsten Arc Welding shall not contain Thorium.
- Appropriate respiratory protective devices(hood with respiratory devices) shall be used to protect workmen from inhalation of air borne contaminants like silica, asbestos, gases, fumes, etc.
- Workmen shall be made aware of correct methods for lifting, carrying, pushing & pulling of heavy loads. Wherever possible, manual handling shall be replaced by mechanical lifting equipments.
- For jobs like drilling/demolishing/dismantling where noise pollution exceeds the specified limit of 85 decibels, ear muffs shall be provided to the workers
- To avoid work related upper limb disorders (WRULD) and backaches, Display Screen equipments workplace stations shall be carefully designed & used with proper sitting postures. Power driven hand-held tools shall be maintained in good working condition to minimize their vibrating effects and personnel using these tools shall be taught how to operate them safely & how to maintain good blood circulation in hands.

- The Contractor shall arrange health check up (by registered medical practitioner) for all the workers at the time of induction. Health check may have to be repeated if the nature of duty assigned to him is changed necessitating health check or doubt arises about his wellness.

- BHEL/Owner reserves the right to ask the contractor to submit medical test reports. Regular health check-ups are mandatory for the workers assigned with Welding, Radiography, Blasting, Painting, Heavy Lift and Height (>1.8m) jobs. All the health check-ups shall be conducted by registered Medical practitioner and records are to be maintained by the Contractor.

11.0 OPERATIONAL CONTROL PROCEDURES

All applicable OCPs (Operational control procedures) will be followed by sub-contractor as per BHEL instructions. This will be done as part of normal scope of work. List of such OCPs is given below. In case any other OCP is found to be applicable during the execution of work at site ,then sub-contractor will follow this as well, within quoted rate. These OCPs (applicable ones) will be made available to Sub-contractor during work execution at site. However for reference purpose, these are kept with Safety Officer of BHEL at the Power Sector Regional HQ, or available in downloadable format in the website, which may be refereed by sub-contractor, if they so desire.

LIST OF OCPs

Safe handling of chemicals	Safety in use of cranes	Hydraulic test
Electrical safety	Storage and handling of gas cylinders	Spray insulation
Energy conservation	Manual arc welding	Trial run of rotary equipment
Safe welding and gas cutting operation	Safe use of helmets	Stress relieving
Fire safety	Good house keeping	Material preservation
Safety in use of hand tools	Working at height	Cable laying/tray work
First aid	Safe excavation	Transformer charging
Food safety at canteen	Safe filling of hydrogen in cylinder	Electrical maintenance
Illumination	Vehicle maintenance	Safe handling of battery system
Handling and erection of heavy metals	Safe radiography	Computer operation
Safe acid cleaning	Waste disposal	Storage in open yard
Safe alkali boil out	Working at night	For sanitary maintenance
Safe oil flushing	Blasting	Batching
Steam blowing	DG set	Piling rig operation
Safe working in confined area	Handling & storage of mineral wool	Gas distribution test
Safe operation of passenger lift, material hoists & cages	Drilling, reaming and grinding(machining)	Cleaning of hotwell / deaerator
Electro-resistance heating	Compressor operation	O&M of control of AC plant & system
Air compressor	Passivation	Safe Loading of Unit
Safe EDTA Cleaning	Safe Chemical cleaning of Pre boiler system	Safe Boiler Light up
Safe Rolling and Synchronization		

11.1 HSE ACTIVITIES

HSE activities shall be conducted at site based on the HSEMSM developed by Power Sector and issued to site by Regions. While planning for any activity the following documents shall be referred for infrastructural requirements to establish control measures:

1) HSE Procedure for Register of OHS Hazards and Risks
2) HSE Procedure for Register of Environmental Aspects and Impacts
3) HSE Procedure for Register of Regulations

4) Operational Control Procedures
5) HSE Procedure for Emergency Preparedness and Response Plan
6) Contract documents

11.2 WORK PERMIT SYSTEM

The following activities shall come under Work Permit System
a. Height working above 1.8 meters
b. Hot working at height
c. Confined space
d. Radiography
e. Excavation more than 1.5 meter depth
f. Heavy lifting above 20 ton
Refer Annexure 05 for Work permit formats.

- "HSE Procedure for Work Permit System"shallbefollowedwhileimplementingpermitsystem.Wherecustomer is having separate Work Permit System the same shall be followed.
  - Permit applicant shall apply for work permit of particular work activity at particular location before starting of the work with Job Hazard Analysis.
  - Permit signatory shall check that all the control measures necessary for the activity are in place and issue the permit to the permit holder.
  - Permit holder shall implement and maintain all control measures during the period of permit .He will close the permitaftercompletionofthework.TheclosedpermitshallbearchivedinHSEDepartmentofsite.

11.3 SAFETY DURING WORK EXECUTION

Respective OCPS are to be followed and adherence to the same would be contractually binding

11.3.1 WELDING AND GAS CUTTING SAFETY

All safety precautions shall be taken for welding and cutting operations as per IS-818. All safety precautions shall be taken for foundation and other excavation marks as per IS-3764.

- Use trolleys and cradles of adequate strength, as far as possible, while moving the cylinders.
- Always keep LPG and other liquefiable gas cylinders in upright position and ensure that they are not knocked over
- Check that the valves of the gas cylinders are lightly shut when not in use.
- Do not release gas from the cylinder unless pressure regulator is fitted to its valve.
- Use gas hoses specially designed for the purpose with standard colour code
- Use proper clamps for hose connections, check leakage from hose connections before starting work. Never use steel wires for clamping.
- Take care that there are no kinks in the hoses and the hoses are laid such that nobody steps on the hoses and these do not get damaged due to activities in progress in the vicinity.
- Use flame flash back arrestors for both end such as torch and gas cylinder to avoid back firing in flammable gas cylinders.
- Open the valve of oxygen gas first and then flammable gas for lighting the torch
- Use friction gas lighters only for lighting the torch. Never use matches for smoldering manila ropes or rags for lighting the torch.
- Protect the gas cylinders and hoses from welding sparks or gas cutting sparks falling on them

- Ensure that the valve key is easily accessible to close the valve immediately in case of emergency.
- Never crimp the hose for temporary shutting of gas. Always shut the supply through pressure regulators.
- Check the hoses daily for any visible damage. Discard the hoses in which gas had backfired.
- Remove the leaking cylinder of flammable gas immediately to an open space where it is least dangerous to life and property. Intimate the supplier of the cylinder.
- Ensure use of aprons, gloves and other PPE as appropriate.

11.3.2 RIGGING SAFETY

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.

11.3.3 CYLINDERS STORAGE AND MOVEMENT

- All gas cylinders shall be stored in up right position.
- Suitable trolley shall be used.
- There shall be flash-back arrestors conforming to IS-11006 at both cylinder and burner ends.
- Damaged tube and regulators must be immediately replaced.
- No of cylinders shall not exceed the specified quantity as per OCP
- 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
- When cylinders are transported by powered vehicle they shall be secured in a vertical position.

11.3.4 DEMOLITION WORK

- Before any demolition work is commenced and also during the process of the work the following shall be ensured:
- All roads and open areas adjacent to the work site shall either be closed or suitably protected.
- 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.
- 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 over loaded with debris or materials as to render them unsafe.
- Before commencement of demolition work, permission/permit should be taken from Owner/Consultant.

11.3.5 T&Ps

All T&Ps/ MMEs should be of reputed brand/appropriate quality &must have valid test/calibration certificates bearing endorsement from competent authority (TPI) of BHEL. Sub-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.

11.3.6 CHEMICAL HANDLING

Displaying safe handling procedures for all chemicals such as lube oil, acid, alkali, sealing compounds etc, at workplace. Where it is necessary to provide and/or store petroleum products or petroleum mixture & explosives, the Sub-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 Sub-contractor shall be responsible for obtaining the same. MSDS should be displayed at site.

11.3.7 ELECTRICAL SAFETY

A. Providing adequate no. of 24V sources and ensure that no hand lamps are operating at voltage level above 24 Volts.

B. Fulfilling safety requirements at all power tapping points.

C. High/ Low pressure welders to be identified with separate colour clothing. No welders will be deployed without passing appropriate standard holding valid welding certificates. Approved welding procedure should be displayed at workplace.

D. The sub-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.

E. All portable electric tools used by the Sub-contractor shall have safe plugging system to source of power and be appropriately earthed.

F. Only experienced electricians with a valid license by appropriate statutory authority shall be employed by the Sub-contractor to carry out all types of electrical works.

G. Details of earth resource ad their test date to be given to BHEL safety officer as per the prescribed formats of BHEL

H. The Sub-contractor shall use only properly insulated and armored cables which conform to the requirement of Indian

I. Electricity Act and Rules for all wiring, electrical applications at site. BHEL reserves the right to replace any unsafe electrical installations, wiring, cabling etc. at the cost of the subcontractor.

J. All electrical appliances used in the work shall be in good working condition and shall be properly earthed.

K. No maintenance work shall be carried out on live equipment.

L. The Sub-contractor shall maintain adequate number of qualified electricians to maintain his temporary electrical installations.

M. 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

N. 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 place as to caused anger or in convenience to any person or the public

O. The Sub-contractor shall carefully follow the safety requirement of BHEL/ the purchaser with the regard to voltages used in critical are as.

11.3.8 SHOT BLASTING

Blasting is a specialized job involved a lot of hazards which often lead to accidents. There are many forms of risk associated with blasting work. Before beginning the work, employers should identify the hazards and assign a knowledgeable person who know the functioning of shot blasting machine trained to recognize hazards and with the authority to quick take corrective actions to remove them.

Safety measures should be taken before using shot blasting machine are:

A. Provide training to shot blasters and support personnel on blasting health and safety hazards how to use control, personal hygiene practices and safe work practices.

B. Safety Points Before Using Shot Blasting Machine

C. Shot blasting operation can create a high level of dust and noise. shot blasting material and the surface being blasted may contain toxic materials that are harmful to workers. So respirator masks/helmet and safety glasses should be used to protect against nuisance type dust. Also must cover the worker's head ,neck and shoulder to protect the worker from rebounding abrasive.

D. Review the blast area and security plan because the blast area is the area having the potential for flying material air overpressure can cause injury to a person. Review the communicating system used between blaster and blast area security personnel.

E. Ensure that Machine is in good condition, fuel system of the machine is free from leakage. Blaster should be experienced.

F. Use blast room or blast cabinet for smaller operations. Use restricted areas for non-enclosed blasting operations. Use exhaust ventilation system.

G. Acknowledge the shot is properly loaded and secured. Steel grit shot have less potential to cause lung damage. So always use less toxic shots blasting material. Always use blasting material that can be delivered with water to reduce dust.

H. Do not use compressed air to clean as this will create dust in the air. To prevent the spread of any hazardous material we should avoid blasting in windy conditions.

I. Compressor for shot blasting should have a valid TPI.

11.3.9 FIRE SAFETY

A. Providing appropriate firefighting equipment at designated workplace and nominate fire officer/ warden adequately trained for his job.

B. Sub-contractor shall provide enough fire protecting equipment of the types and numbers at his office, stores, temporary structure in labor colony etc. Such fire protection equipment shall be easy and kept open at all times.

C. 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.

D. 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.

E. Non-compliance of the above requirement under fire protection shall in no way relieve the Sub-contractor of any of his responsibility and liabilities to fire incident occurring either to h is materials or equipment or those of others.

F. Emergency contacts numbers must be displayed at prominent locations

G. 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.

H. Correct type & required quantity of fire extinguishers and sand bucket should be provided at appropriate locations.

I. Material storage area should have adequate fire fighting arrangement like fire extinguishers /sand buckets etc.

J. Material storage area should have some person designated as fire watcher.

11.3.10 OPERATIONAL CONTROL PROCEDURE OF RADAIOGARPHY

A. Exposure to penetrating radiation from Radioactive Isotopes and other source is becoming more and more pronounced in the construction field.

B. A couple of decades ago, radioactive sources, used, were comparatively 'mild' and less encountered. With the growing demand of weld joint inspection, metal thickness / flaw determination, liquid level measurement in High temperature / pressure process vessels etc., the use and application of the radioactive sources specially, Y-radiation, has increased considerably.

C. However, the protection and procedure for work safety and personnel protection have warranted very little basic changes

D. Atomic Energy authorities have been alert and alive to the situation Well organized and efficient monitoring, controlled operation and rescue / recovery system has been developed and enforced. Some of these are:-

E. Authorized person obtains all Radioactive Isotopes from BARC (Bhabha Atomic Research Centre, Mumbai) only

F. Transportation and storage specifications and standards are rigidly monitored and enforced by the authorities.

G. Any mishap, loss or damage is promptly attended to and rectified by the authorities, immediately on receipt of information.

H. They promptly and formally collect all isotopes reaching their Half-life stage.

Site requirements for the safe use of field personnel are as follows:

1. Isotope storage – a designated and certified location should be maintained properly with prescribed warning board and fencing.

2. Personnel using the Isotope must be medically checked before being permitted to handle and found fit.

3. They must have a valid BARC certificate for safe handling of Isotopes.

4. They must use a film Badge or Dosimeter as prescribed by the authorities while working with Isotopes.

5. Isotope attached to a metal pencil should be removed from storage only for the optimum period of work.

6. Isotope MUST not be taken out of the container lead pot till actual exposure stage is reached. The exposure time must be calculated beforehand.

7. Ensure radiation monitoring equipment is working, when exposure is in progress.

8. On expiry of the exposure time, the source must immediately be put back in the container.

9. All personnel working with radiation sources must maintain the prescribed safe distance at all stages of work.

10. Isotopes Pencil must be handled by a Collimator or monitoring rod of specified length, to avoid any unsafe proximity to the operator's body.

11. Isotopes or the pencil should never be touched by hand or allowed to come in contact with body.

12. The area of work must be cordoned for a minimum radius of 10m for a Y-ray Isotope of about 3 C (S.A) and more as the strength – "Specific Activity" of the source, demands. Specified warning Boards MUST be installed adequately around the cordoned area.

13. If an isotope is damaged or lost: a) Immediately seal the working / suspected areas for all traffic, pedestrian or vehicle. b) Do not remove any materials tools, containers, vehicles – anything from the suspected area. Inform BARC Authorities – Radiation Protection, Directorate of Atomic Energy.

14. Keep strict watch till the authorities arrive. The authorities will locate and dispose off the offending isotope. On no account site people or any other persons – except BARC designated personnel – should attempt to recover the lost isotope. Suspected over exposure of any personnel must be reported to medical Centre immediately.

15. On a routine basis: All personnel attached to the radiography / radiometer crew must have prescribed medical check-ups.

16. Dosimeter / film badges must be returned to BARC for processing. Safe exposure dosage for each individual over different time stages – fortnightly, monthly, annually are predetermined and compared against actual exposures. If a person is over exposed at any time he should be: a) Taken off Radiography / Radiometry work. b) Assigned other duties as advised by doctor. He has no cause for panic. A careful handling and strict observance of precautionary measures.

11.3.11 SCAFFOLDING

A. Suitable scaffolds shall be provided for workman 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.

B. When a ladder is used, it shall be of rigid construction made of steel. The steps shall have a minimum width of 45 cm and a maximum rise of 30 cm. Suitable handholds of good quality wood or steel shall be provided and the ladder shall be given an inclination not steeper then ¼ horizontal and 1 vertical.

C. Scaffolding or staging more than 3.6 m above the ground floor, swung or suspended from an overhead support or erected with stationery support shall have a guard rail properly bolted, braced or other wise secured, at least 90cm above the floor or platform of such scaffolding or staging and extending along the entire length of the out side and ends there of with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from saver, from swaying, from the building or structure.

Requirements for different types of Scaffolds:

Suspended Scaffold

D. Suspended scaffolds are platforms suspended by ropes, or other non-rigid means, from an overhead structure.

E. Requirements for use are to be pre approved by HSE Head, under a specific Permit to Work.

F. Rolling Scaffolds

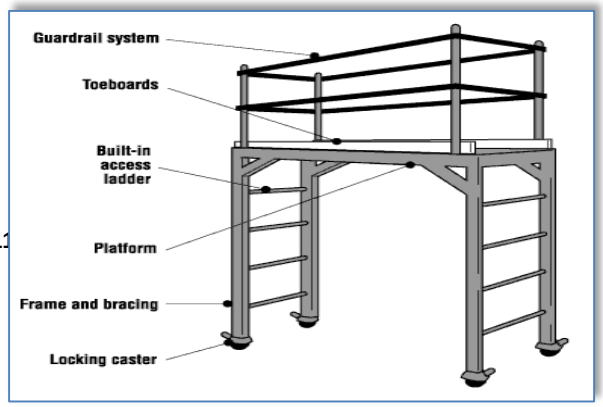
G. The height of rolling scaffolds shall not exceed three times the minimum base dimension.

H. The minimum base dimension of rolling scaffold will be 1.25 meters (4 feet).

I. Adequate help must be provided when moving a rolling scaffold.

J. Secure or remove all loose materials, equipment and tools before moving a rolling scaffold.

K. 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.



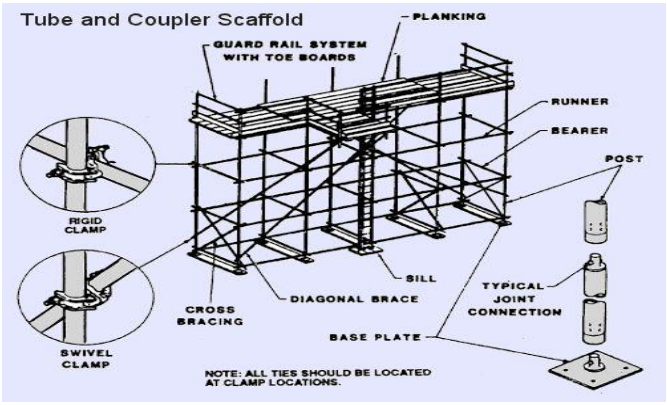


Fig. 13.2.1.3 Types of Scaffolds

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.

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 in some way defective and cannot be used or is still under erection.

Examples of scaffold tags

- Guard rails and toe-board/ barricades and sound platform conforming to IS:4912-1978 should be provided.
- All workers on job are medically fit for working at height (Person should not have vertigo)
- Where ever necessary, life-line (pp or metallic) and fall arrestor along with Poly amide rope or Retractable lifeline should be provided.
- Safety Net as per IS:11057: 1984 should be used extensively for prevention/ arrest of men and materials falling from height. The safety netsshallbefireresistant,dulytestedandshallbeofISImarkedandthenetsshallbelocatedasper site requirements to arrest or to reduce the consequence sofa possible fall of persons working at different heights.
- 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 short cut must be discouraged.
- Use of Rebar steel for making Jhoola and monkey-ladder (Rods welded to vertical or inclined structural members), temporary platform etc. must be avoided.
- Monkey Ladder should be properly made and fitted with cages.
- Jhoola should be made with angles and flats and tested like any lifting tools before use with valid TPI.
- Lanyard must be anchored always and in case of double lanyard, each should be anchored separately.
- In case of pipe-rack, persons should not walk on pipes and walk on plat forms only.
- In case of roof work, walking ladder/platform should be provided along with life line and /or fall arrestor.
- Empty drums must not be used.
- 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

11.3.12 SAFETY HARNESS, LANYARD, LIFELINE & LIFELINE POST

- 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.

LANYARD

- 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.

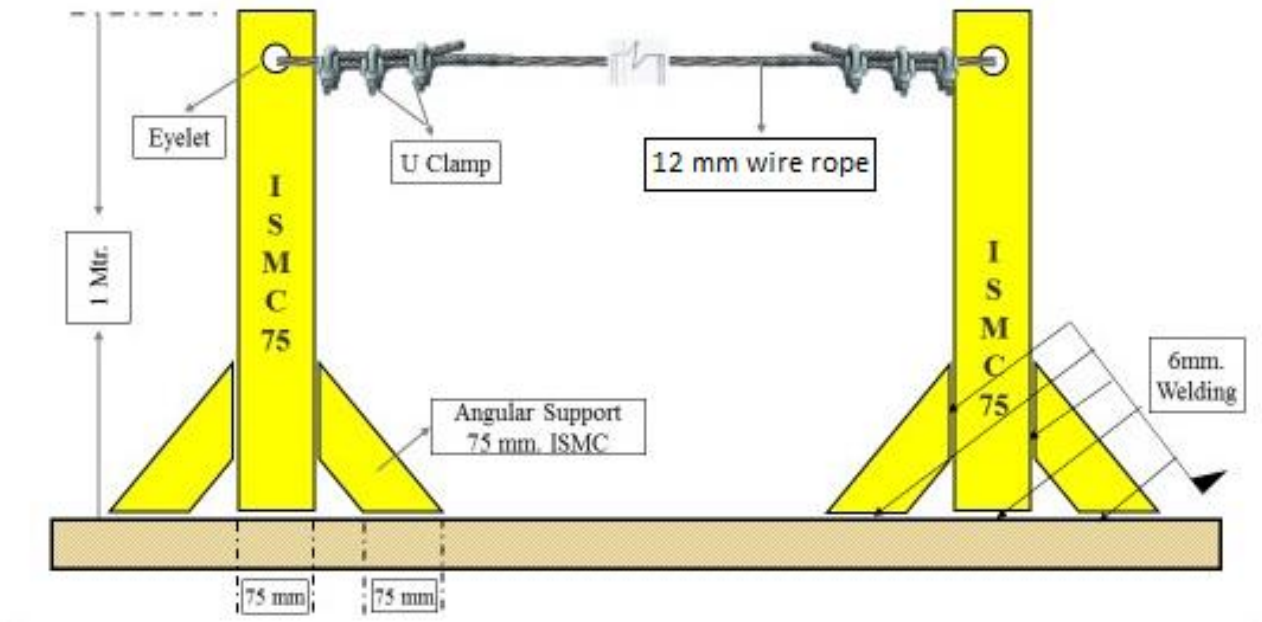
- Lanyards and lifelines must incorporate, or be used with, an appropriate deceleration (shock absorbing) device.
- Deceleration devices include rope grabs, rip-stitch lanyards, specially woven lanyards, tearing, or deforming lanyards, automatic self-retracting lifelines and lanyards which dissipate or limit the energy imposed on the employee during fall arrest.
- 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.

LIFELINE

- All lifelines in general are to be made of min 8/12 mm 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.

LIFELINE POST

DIAGRAM : LIFELINE POST



- The support at vertical post shall be fixed at end-to-end. The maximum length of one end to another end shall be 6 meters
- If the length of a lifeline is more than 6 meters, then intermediate vertical post(s) are to be used. Such intermediate post(s) will act as supports and the lifeline rope should simply pass through the eyelets (holes) of such supports without being anchored
- The lifeline need not be wrapped / clamped to any intermediate post
- Such intermediate posts must be used at an interval of every 6 meters
- The post(s) in which the original lifeline is to be installed should be capable of sustaining a tensile stress of 2268 Kgs.
- In a horizontal lifeline installation, maximum allowable sagging is 500-600 mm
- For a single spun lifeline, no more than 2 persons are allowed to work; for more than two workers, another lifeline should be installed
- Horizontal lifeline should be so installed that it does not impede safe movement of workers
- All the installation work must be carried out by competent person with adequate knowledge

11.3.13 WORKING PLATFORM

A. 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 above ground 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 as described above. 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.

11.3.14 EXCAVATION

- **A.** Where ever there are open excavation in ground, they shall be fenced off by suitable railing and danger signals installed at night so as to prevent persons slipping into the excavations.
- **B.** The following safety measures are to be ensured before and during excavation:
- **C.** All Excavation activities more than with depth of 1.5 meter or more shall require and Excavation Work Permit
- **D.** 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
- **E.** Proper and adequate slope is maintained while excavating
- **F.** Adequate shoring or sheeting is done wherever require to prevent soil sliding
- **G.** Safe access through ladder or steps for exit & entry to excavation
- **H.** No material /excavated soil is kept within one meter from the edge
- **I.** Safe way is planned and provided for movement of HEM /transport equipment near excavation
- **J.** Safety helmet and shoes/gum boots are provided and worn by the workmen at excavation works
- **K.** Dewatering arrangement is made where water seepage is prevailed.
- **L.** Stop blocks are provided to avoid vehicles reversing into the excavated trenches
- **M.** Danger signs /Caution boards are displayed at work spot
- **N.** Hard Barricading is provided at excavated pits.

11.3.15 LADDER SAFETY

- **A.** Safe means of access shall be provided to all working places. Every ladder shall be securely fixed. 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.
- **B.** 29.2 cm for ladder up to and including 3 m in length.
- **C.** For longer ladders this width shall be increased at least ¼'' for each additional foot of length.
- **D.** A sketch of the ladders and scaffolds proposed to be used shall be prepared and approval of the Engineer obtained prior to Construction.
- **E.** Ladder should be extended up to 01 meter

11.3.16 LIFTING SAFETY

- **A.** It will be the responsibility of the sub-contractor to ensure safe lifting of the equipment, taking due precaution to avoid any incident and damage to other equipment and personnel.
- **B.** All requisite tests and inspection of handling equipment, tools & tackle shall be periodically done by the sub-contractor by engaging only the Competent Persons as per law.
- **C.** Defective equipment or uncertified shall be removed from service.
- **D.** Any equipment shall not be loaded in excess of its recommended safe working load.

11.3.17 HOISTING APPLIANCES

- **A.** Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards.
- **B.** Hoisting appliance should be provided with such means as will reduce to the minimum the risk of any part of as suspended load becoming incidentally displaced.
- **C.** When workers employed on electrical installations which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boots as may be necessary should be provided.
- **D.** The worker should not wear any rings, watches and carry keys or other materials which are good conductor of electricity.

11.3.18 GRINDING SAFETY

- **A.** Grinders shall be equipped with the 'dead man switch'.
- **B.** All handheld grinding machines shall be complete with handle or commonly known as the 'T' bar. Removal of the handle during use is strictly prohibited.
- **C.** Each grinding machine shall be fitted with its correct guard as supplied by the manufacturer, to protect against flying particles.
- **D.** All pedestal/static grinding machines must have an efficient starting and stopping device, which is easily accessible.
- **E.** Each grinding machine shall be inspected regularly.
- **F.** Abrasive wheels, grinding or cutting discs without the manufacturer's maximum RPM marked shall not be used.
- **G.** Grinding and cutting discs are different in the manufacture and shall therefore only be used for its intended purpose.
- **H.** Cutting wheel is only allowed for cutting do not do grinding using cutting wheel, chances of breaking.
- **I.** They shall be stored separately and physically identified to avoid selection error.
- **J.** Proper PPE, including double eye protection such as the use of goggles underneath of a shatter-resistant face shield and an inhalation mask such as dust mask, Leather gloves shall be worn by all personnel operating grinding machines.
- **K.** Work areas around pedestal / static abrasive wheels equipment shall be kept clear of obstructions to reduce the risk of tripping hazards.
- **L.** Cables shall be run neatly in a manner and shall hang on insulated hangers that do not cause tripping hazards.
- **M.** When changing the grinding disc of the grinder, the power source shall be isolated and the plug physically removed.
- **N.** Expiry year of shall be visible on the disk. Do not use an expired grinding disk. & do not use a wheel without an expiry date.
- **O.** Subjected Work-pieces shall be secured using proper clamps. Holding the work piece onto one hand while performing grinding operations is strictly prohibited.
- **P.** Due to the possibility of a wheel dis integrating during start-up, employees shall be briefed not to stand directly in front of the wheel as it accelerates to full operating speed.
- **Q.** Worn out / damaged, grinding or cutting disc shall be replaced. When changing the disc, proper tools shall be use.
- **R.** All worn out / damaged, grinding or cutting disc shall be returned to the stores to ensure that they are dispose of properly.
- **S.** The power source shall be isolated and the plug physically removed while not in operation.

11.3.19 DRILLING SAFETY

- **A.** Run drill at correct RPM for diameter of drill bit and material. Ask shop personnel for the correct RPM.
- **B.** Always hold work in a vise or clamp to the drill table.
- **C.** Use a correctly ground drill bit for the material being drilled. Shop personnel can help select the correct bit.
- **D.** Use the proper cutting fluid for the material being drilled. Ask the shop staff about the appropriate fluid for the material you are machining.
- **E.** Remove chips with a brush, never by hand.
- **F.** Ease up on drilling pressure as the drill starts to break through the bottom of the material.
- **G.** Do not use a dull or cracked drill. Inspect the drill before using.
- **H.** Do not drill with too much pressure.

I. Always try to support part on parallels or a backing board when drilling thru material.
J. Never place taper shank tools such as large diameter drills or tapered shank reamers in a drill chuck. Only straight shank tools such as standard drills can be clamped in chucks.
K. Always clean drill shank and/or drill sleeve, and, spindle hole before mounting.
L. Remove taper shank tools from spindle or sleeve with a drill drift and hammer.
M. Never try to loosen the drill chuck while the power is on.
N. Lower the drill spindle close to the table when releasing the drill chuck or taper shank drill to reduce the chance of damage should they fall onto the table.
O. Never clean a machine while it is in motion!!
P. If the drill binds in a hole, stop the machine and turn the spindle backwards by hand to release the bit.
Q. When drilling a deep hole withdraw the drill bit frequently to clear chips and lubricate the bit.
R. Always remove the drill chuck key, or, the drill drift from the spindle immediately after using it.
S. Wear safety eye protection while drilling.
T. Let the spindle stop of its own accord after turning the power off. Never try to stop the spindle with your hand.

11.3.20 WEATHER PROTECTION

A. Contractor shall take appropriate measures to protect workers from severe storms, rain, solar radiations, poisonous gases, dust, etc. by ensuring proper usage of PPEs like Sun glasses, respirators, dust masks, etc. and rearranging/ planning the construction activities to suit the weather conditions. Effective arrangement (without creating inconvenience to project facilities & permanent installations) for protecting workmen from hailstorm, drizzle in the form of temporary shelter may be made at site.

11.3.21 WORKING AT HEIGHT

A. The Contractor shall issue permit for working (PFW) at height after verifying and certifying the checkpoints as specified in the relevant permit format. He shall also undertake to ensure compliance to the conditions of the permit during the currency of the permit including adherence of personal protective equipment(s). Contractor's Safety Officer shall verify compliance status of the items of permit document after implementation of action is completed by Contractor's execution / field engineers at work site.

B. All personnel shall be medically examined & certified by registered doctor, confirming their 'medical fitness for working at height. The fitness examination shall be done once in a year.

C. The Contractor shall arrange (at his cost) and ensure use of Fall Arrester Systems by his workers. Fall arresters are to be used while climbing/descending tall structures or vessels / columns etc. These arresters should lock automatically against the anchorage line, restricting free fall of the user. The device is to be provided with a double security opening system to ensure safe attachment or release of the user at any point of rope. In order to avoid shock, the system should be capable of keeping the person in vertical position in case of a fall.

D. The Contractor shall ensure that Full body harnesses conforming relevant IS standard is used by all personnel while working at height. The lanyards and life lines should have enough tensile strength to take the load of the worker in case of a fall.

E. One end of the lanyard shall be firmly tied with the harnesses and the other end with life line. The harness should be capable of keeping the workman vertical in case of a fall, enabling him to rescue himself.

F. The Contractor shall ensure that a proper Safety Net System is used wherever the hazard of fall from height is present. The safety net, preferably a knotted one with mesh ropes conforming to IS 5175/ISO 1140 shall have a border rope & tie cord of minimum 12 mm dia. The Safety Net shall be located not more than 6.0 meters below the working surface extending on either side up to sufficient margin to arrest fall of persons working at different heights.

G. In case of accidental fall of person on such Safety Net, the bottom most portion of Safety Net should not touch any structure, object or ground.

H. The Contractor shall ensure positive isolation while working at different levels like in the pipe rack areas. The working platforms with toe boards & hand rails shall be sufficiently strong & shall have sufficient space to hold the workmen and tools & tackles including the equipment required for executing the job. Such working platforms shall have mid-rails, to enable people work safely in sitting posture.

I. For steel wire rope type (plastic coated type) life line thickness should of Life lines should be minimum 12 mm or 8 mm (as per job requirement).

J. Lifelines should be tied to a standard / rigid post.

11.3.22 PROPER ACCESS / EGRESS (ACCESSIBILITY)

A. The Contractor shall provide safe means of access (in sufficient numbers) & efficient exit to any working place including provisions of suitable and sufficient scaffolding/ramps/steps/ ladders at various stages during all operations of the work for the safety of his workmen and owner/ client.

B. The Contractor shall implement use of all measures including use of "life line", "fall- arresters", "retractable fall arresters", "safety nets" etc. during the course of using all safe accesses & exits, so that in no case any individual remains at risk of slip & fall during their travel.

C. Safe access & egress arrangements (e.g. ladders, fall arresters, life-liners etc) should be satisfactorily incorporated

D. Access / egress to Electrical Distribution Boards / Panels should be clear from wires / cables / earth-strips etc.

E. The access to operating plant / project complex shall be strictly regulated. Any person or vehicle entering such complex shall undergo identification check, as per the procedures in force / requirement at project site.

F. Accessibility to 'confined space' shall be governed by specific system / regulation, as established at project site.

11.3.23 HEAVY LIFTINGS

A. The BHEL Sub-contractor shall submit detailed lifting plan for BHEL /Owner approval prior to lifting equipment which is 20 ton or more

B. Or any other lift which is of complex dimension (constraints of its dimensions, location of foundation height, approach & weight.) /shape/ or very expensive in nature.

C. Contractor shall obtain lifting permit before such lifting (e.g HSE-15 "Permit for heavy lift/critical erection")

D. Prior to actual lifting activities, contractor shall check the validity of the crane/T&P Third party inspection (TPI) certificate issued by statutory/ competent authority. This requirement shall also apply to all lifting equipment utilized for the job.

E. The Sub-contractor shall, at all times, be responsible for all lifting/rigging activities.

F. The Sub-Contractor shall ensure medical fitness of all workmen who are engaged/involved in erection of equipment, vessels etc. and such fitness checks shall be carried-out every six months interval with the help of a registered medical practitioner & record shall be maintained.

G. Adequate safety measures such as positive barricading, usage of appropriate PPEs, permit to work, etc. shall be taken during all heavy or critical lifts.

H. Crane operators should be experienced & medically fit. They should also posses valid driving license and eye test Report/ Certificate.

11.3.24 LIFTING TOOLS & TACKLES

A. Lifting tools/tackles, machinery, accessories etc. shall be inspected, tested and examined by competent people (approved by concerned State authorities-TPI) before being used at site and also at periodical interval (e.g. during replacement, extension, modification, elongation/ reduction of machine/parts, etc.) as per relevant statutes. Hydra, cranes, lifting machinery, mobile equipment / machinery / vehicles, etc. shall be inspected regularly by only competent / experienced personnel at site and requisite records for such inspections shall be maintained by every contractor. Contractor shall also maintain records of maintenance of

11.3.25 HEAVY VEHICLES

A. The sub-contractor should ensure all statutory compliance of heavy vehicles (e.g Dumper, Truck, Excavator, Crane , Hydra etc) used at construction site like valid RC, Insurance, PUC, etc

B. The vehicles shall be fitted with reverse warning alarms & flashing lights / fog-lights and usage of seat belts shall be ensured.

C. Vehicles shall be properly maintained and appropriate maintenance records should be kept.

D. For Cranes, Hydras Third Party inspections (TPI) by competent person should be done once a year.

E. In case of Cranes & hydras overload protection device (SLI) (mechanical or electronic) as per possibility should be ensured.

F. Presence of over hoist protection device should be ensured.

11.3.26 SAFETY DURING INSULATION WORK

A. Insulation job workers should be given proper PPEs (e.g. nose mask, goggles, hand globe) as per job requirement

B. Entry to insulation Area should be restricted

C. Area properly barricaded by the means of caution tapes

D. After finish of insulation work excess insulation wools should be properly disposed off.

11.3.27 SAFETY DURING HYDRAULIC/ PNEUMATIC PRESSURE TESTING WORK

A. Sub-contractor should follow appropriate safety guidelines / relevant BHEL OCPs during Hydraulic / Pneumatic Pressure Testing job.

B. No unauthorized persons should be present near to such work area.

11.4 ENVIRONMENTAL CONTROL

A. Environment protection has always been given prime importance by BHEL. Environmental damage is a major concern of the principal sub-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. Chloro fluoro carbons such as carbon tetra chloride and tri chloro ethylene shall not be used. Waste disposal shall be done in accordance with the guidelines laid down in the project specification.

B. 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).

C. 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 Sub-contractor shall use appropriate MSDS for clean-up technique

D. All Sub-contractor shall be responsible for the cleanliness of their own areas.

E. The Sub-contractor shall ensure that noise levels generated by plant or machinery are as low as reasonably practicable. Where the Sub-contractor anticipates the generation of excessive noise levels from his operations the Sub-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.

F. It is imperative on the part of the Sub-contractor to join and effectively contribute in joint measures such as tree plantation,

environment protection, contributing towards social up liftment, conversion of packing woods to school furniture, keeping good relation with local populace etc.

G. The Sub-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.

11.5 HOUSE KEEPING

E. Keeping the 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 sub-contractor. Such cleanings has to be done daily/weekly/ or as per site requirement by Sub-contractor within quoted rate, by an identified group.

F. If such activity is not carried out by sub-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 subcontractor

G. Proper house keeping to be maintained at work place and the following are to be taken care of on daily basis.

H. All surplus earth and debris are removed/ disposed off from the working areas to identified locations.

I. Unused/ Surplus cables, steel items and steel scrap lying scattered at different places/elevation within the working areas are removed to identified locations.

J. All wooden scrap, empty wooden cable drums and other combustible packing materials, shall be removed from workplace to identified locations. Sufficient waste bins shall be provided at

K. Different work places for easy collection of scrap/waste. Scrap chute shall be installed to remove scrap from high location.

L. Access and egress (staircase, gangways, ladders etc.) path should be free from all scrap and other hindrances.

M. Work men shall be educated through tool box talk about the importance of housekeeping and encourage not to litter.

N. Labour camp area shall be kept clear and materials like pipes, steel, sand, concrete, chips and bricks, etc. shall not be allowed in the camp to obstruct free movement of men and machineries.

O. Fabricated steel structures, pipes & piping materials shall be stacked properly.

P. 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.

Q. Utmost care shall be taken to ensure overall cleanliness and proper upkeep of the working areas

11.6 WASTE MANAGEMENT

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.

11.6.1 BINS AT WORKPLACE

- Sufficient rubbish bins shall be provided close to work places.
- Bins should be painted yellow and numbered.
- Sufficient nos. of drip trays shall be provided to collect oil and grease.
- Sufficient qty. of broomsticks with handle shall be provided.
- Adequate strength of employees should be deployed to ensure daily monitoring and service for waste management.

11.6.2 STORAGE AND COLLECTION

- Different types of rubbish/waste should be collected and stored separately.
- Paper, oily rags, smoking material, flammable, metal pieces should be collected in separate bins with close fitting lids.
- Rubbish should not be left or allowed to accumulate on construction and other work places.
- Do not burn construction rubbish near working site.

11.6.3 SEGREGATION

- Earmark the scrap area for different types of waste.
- Store wastes away from building.
- Oil spill absorbed by non-combustible absorbent should be kept in separate bin.
- Clinical and first aid waste stored and incinerated separately.

11.6.4 DISPOSAL

- Sufficient containers and scrap disposal area should be allocated.
- All scrap bin and containers should be conveniently located.
- Provide self-closing containers for flammable/spontaneously combustible material.
- Keep drainage channels free from choking.
- Make schedule for collection and disposal of waste.

11.6.5 WARNING AND SIGNS

- Appropriate sign to be displayed at scrap storage area
- No toxic, corrosive or flammable substance to be discarded to public sewage system.
- Waste disposal shall be in accordance with best practice.
- Comply with all the requirements of Pollution Control Board (PCB) for storage and disposal of hazardous waste.

11.7 TRAFFIC MANAGEMENT SYSTEM

11.7.1 SAFE WORK PLACE TRANSPORT SYSTEM (ROAD/ RAIL SAFETY)

- 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.
- 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.
- For internal traffic, lines marked on roads / access routes and between buildings shall clearly indicate where vehicles are to pass.
- Temporary obstacles shall be brought to the attention of drivers by warning signs or hazard cones.
- Speed limits shall be clearly displayed. Speed ramps preceded by a warning signs or marker are necessary.
- 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.
- Safest route shall be provided between places where vehicles have to call or deliver.
- Avoid vulnerable areas/items such as fuel or chemicals tanks or pipes, open or unprotected edges and structures likely to collapse

- Safe areas shall be provided for loading and unloading.
- Avoid sharp or blind bends. If this is not possible hazards should be indicated e.g. blind corner.
- Ensure road crossings are minimum and clearly signed.
- Entrance and gate ways shall be wide enough to accommodate a second vehicle without causing obstruction.
- Set sensible speed limits which are clearly sign posted.
- Where necessary ramps should be used to retard speed. This shall be preceded by a warning sign or mark on the road.
- Forklift trucks shall not pass over road hump unless of a type capable of doing so.
- Overhead electric cable, pipes containing flammable hazardous chemical shall be shielded by using goal posts height gauge posts or barriers.
- 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.
- For area where Rail lines also present at construction site, appropriate Rail safety guideline issued by BHEL/ Owner should be followed.

11.7.2 TRAFFIC ROUTE FOR PEDESTRIANS/ ROAD SAFETY

- Where traffic routes are used by both pedestrians and vehicles road shall be wide enough to allow vehicles and pedestrians safely.
- 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.
- Where pedestrian and vehicle routes cross, appropriate crossing shall be provided.
- Where crowd is likely to use road way e.g. at the end of shift, stop vehicles from using them at such times.
- Provide high visibility clothing for people permitted in delivery area.

11.7.3 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:

- A high level of stability.
- A safe means of access/egress.
- Suitable and effective service and parking brakes.
- Windscreens with wipers and external mirrors giving optimum all round visibility.
- Provision of horn, vehicle lights, reflectors, reversing lights, reversing alarms.
- Provision of seatbelts.
- Guards on dangerous parts.
- Driver protection to prevent injury from overturning and from falling objects /materials.
- Driver protection from adverse weather.
- No vehicle shall be parked below HT/ LT power lines.
- Valid Pollution Under Control certification for all vehicles

11.7.4 DAILY CHECK BY DRIVER

- There should also be daily safety checks containing below mentioned points by the driver before the vehicle is used.
  - Brakes.
  - Tires.
  - Steering.
  - Mirrors.
  - Windscreen waters.
  - Wipers.
  - Warning signals.
  - Specific safety system i.e. control inter locks
  - Sub contractor should ensure that drivers carry out these checks

11.7.5 STATUTORY COMPLIANCE OF TRANSPORTATION OF PERSONNEL AND MATERIALS BY VEHICLES

- All drivers shall hold a valid driving License for the class of vehicle to be driven and be registered as an authorized driver with the Administration Department.
- 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.
- All overhangs shall be made clearly visible and restricted to acceptable limits
- Load shall be checked before moving off and after traveling a suitable distance.
- On no account I construction site to be blocked by parked vehicles Drivers of vehicles shall only stop or park in the areas designate by the stringing fore man.
- Warning signs shall be displayed during transportation of material.
- All vehicles used shall be in worthy condition and in conformance to the Land Transport requirement.

11.7.6 MAINTENANCE OF VEHICLES

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.

11.8 EMERGENCY PREPAREDNESS AND RESPONSE

- Emergency preparedness and response capability of site shall be developed as per Emergency Preparedness and Response plan issued by Regional HQ
- Availability of adequate number of first aiders and fire warden shall be ensured with BHEL and its sub-contractors
- All the sub-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. Sub-contractor should nominate is supervisor to coordinate and implement the safety measures.
- Emergency assembly point shall be earmarked and access to the same from different location shall be shown
- Fire exit shall be identified and pathway shall be clear for emergency escape.

- Appropriate type and number of fire extinguisher shall be deployed as per Fire extinguisher deployment plan and validity shall be ensured periodically through inspection
- 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 it self who will have the responsibility to maintain the same.
- First aid center shall be developed at site with trained medical personnel and ambulance
- Emergency contact numbers (format given in EPRP) of the site shall be displayed at prominent locations.
- Tie up with fire brigade shall be done in case customer is not having fire station.
- Tie up with hospital shall be done in case customer is not having hospital.
- Disaster Management group shall be formed at site
- 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
- Mock drill shall be conducted on different emergencies periodically to find out gaps in emergency preparedness and taking necessary corrective action

12.0 HSE INSPECTION

Inspection on HSE for different activities being carried out at site shall be done to ensure compliance to HSE MS requirements. The Sub-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 with hold inspection, till such time the desired safety requirements are met.

12.1 DAILY HSE CHECKS

Both the Site Supervisors and safety officer of Sub-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:

- Personal Safety wears & gear compliance.
- Complying with site safety rules and permit-to-work (PTW).
- Positions and postures of workers.
- 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

- 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.
- The applicable PPEs for carrying out particular activities are listed below.

12.3 INSPECTION OF T&Ps

- A master list of T&Ps shall be maintained by each subcontractor.
- 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.
- 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.
- The validity of T&P shall be monitored as per "Status of T&Ps" format no.HSEP:14-F08

12.4 INSPECTION OF CRANES AND WINCHES

- 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.
- Cranes and Winches shall be inspected by HSE officer once in a month as per format no. HSEP:14-F09 for healthiness, maintenance and validity of third party inspection.
- The date of third party inspection and next due date shall be painted on cranes and winches.
- The operators /drivers shall be authorized by sub-contractor based on their competency and experience and shall carry the I-card.
- 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 checklist.

12.5 INSPECTION OF HEIGHT WORKING

- Inspection on height working shall be conducted daily by supervisors before start of work to ensure safe working condition including provision of
    - Fall arrestor
    - Lifelines
    - Safety nets
    - Fencing and barricading
    - Warning signage
    - Covering of opening
    - Proper scaffolding with access and egress.
    - Illumination
- Inspection on height working shall be conducted once in a week by HSE officer as per format no. HSEP:14-F10.
- Medical fitness and vertigo test of height worker shall be ensured.
- Height working shall not be allowed during adverse weather.

12.6 INSPECTION OF WELDING AND GAS CUTTING OPERATION

- Supervisor shall ensure that no flammable items are available in near vicinity during welding and gas cutting activity.
- Gas cylinders shall be kept up right.
- Use of Flash back arrestor shall be ensured at both ends.

- Inspection during welding and gas cutting operations shall be carried out by HSE officer once a month as per format no.HSEP:14-F11.
- Use of fire blanket to be ensured to avoid falling of splatters during welding or gas cutting operation at height.
- Availability of fire extinguisher at vicinity shall be ensured.

12.7 INSPECTION OF ELECTRICAL INSTALLATION / APPLIANCES

- Ensure proper earthing in electrical installation
- Use ELCB at electrical booth
- Electrical installation shall be properly covered at top where required
- Use appropriate PPEs while working
- Use portable electrical light <24V in confined space and potentially wet area.
- Monthly inspection shall be carried out as per format no.HSEP:14-F12.

12.8 INSPECTION OF ELEVATOR

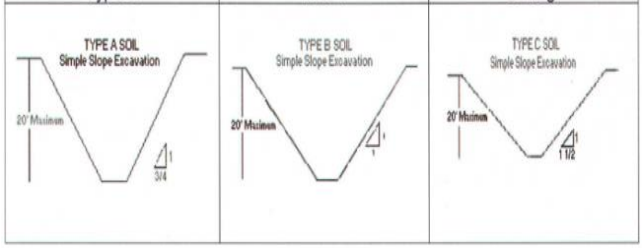
- Elevators shall be inspected by concerned supervisors once in a week as per format no. HSEP:14-F13.
- All elevators shall be inspected by competent person(TPI) and validity shall be ensured.
- The date of third party inspection and next due date shall be painted on elevator.

12.9 INSPECTION OF EXCAVATION

Excavation activities shall be inspected as per Format HSEP:14-F13A

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. Check for underground utilities like electrical / telephone cables, sewage, water lines and proper care has to be exercised to protect and prevent damage.
D. Proper and adequate slope is maintained while excavating
E. Adequate shoring or sheeting is done wherever require to prevent soil sliding
F. Safe access through ladder or steps for exit & entry to excavation
G. No material /excavated soil is kept within one meter from the edge
H. Safe way is planned and provided for movement of HEM /transport equipment near excavation
I. Safety helmet and shoes/gum boots are provided and worn by the workmen at excavation works
J. Dewatering arrangement is made where water seepage is prevailed.
K. Stop blocks are provided to avoid vehicles reversing into the excavated trenches
L. Danger signs /Caution boards are displayed at work spot
M. Hard Barricading is provided at excavated pits. It should be made of scaffolding pipe and clamp with reflective nets.
N. Trial Trench if required. Cable/Metal detector required for under ground services.

Soil Type	Height/Depth ratio	Slope Angle
Stable Rock	Vertical	90 deg.
Type A	¾ : 1	53 deg.
Type B	1 : 1	45 deg.
Type C	1½ : 1	34 deg.



Determining Soil Type		
Type	Description	Examples
A	Cohesive soils with an unconfined compressive strength of 1.5 tons per square foot or greater.	Clay, silty clay, sandy clay, clay loam and in some cases: silty clay loam and sandy clay loam.
B	Cohesive soils with unconfined compressive strength greater than 0.5 tsf but less than 1.5 tsf.	Angular gravel (similar to crushed rock), silt, silt loam, sandy loam and, in some cases silty clay loam and sandy clay loam.
C	Cohesive soils with unconfined compressive strength greater than 0.5 tsf or less.	Granular soils such as gravel, sand and loamy sand; submerged soil or soil from which water is freely seeping; submerged rock that is not stable.

12.10 LIFTING & RIGGING SAFETY

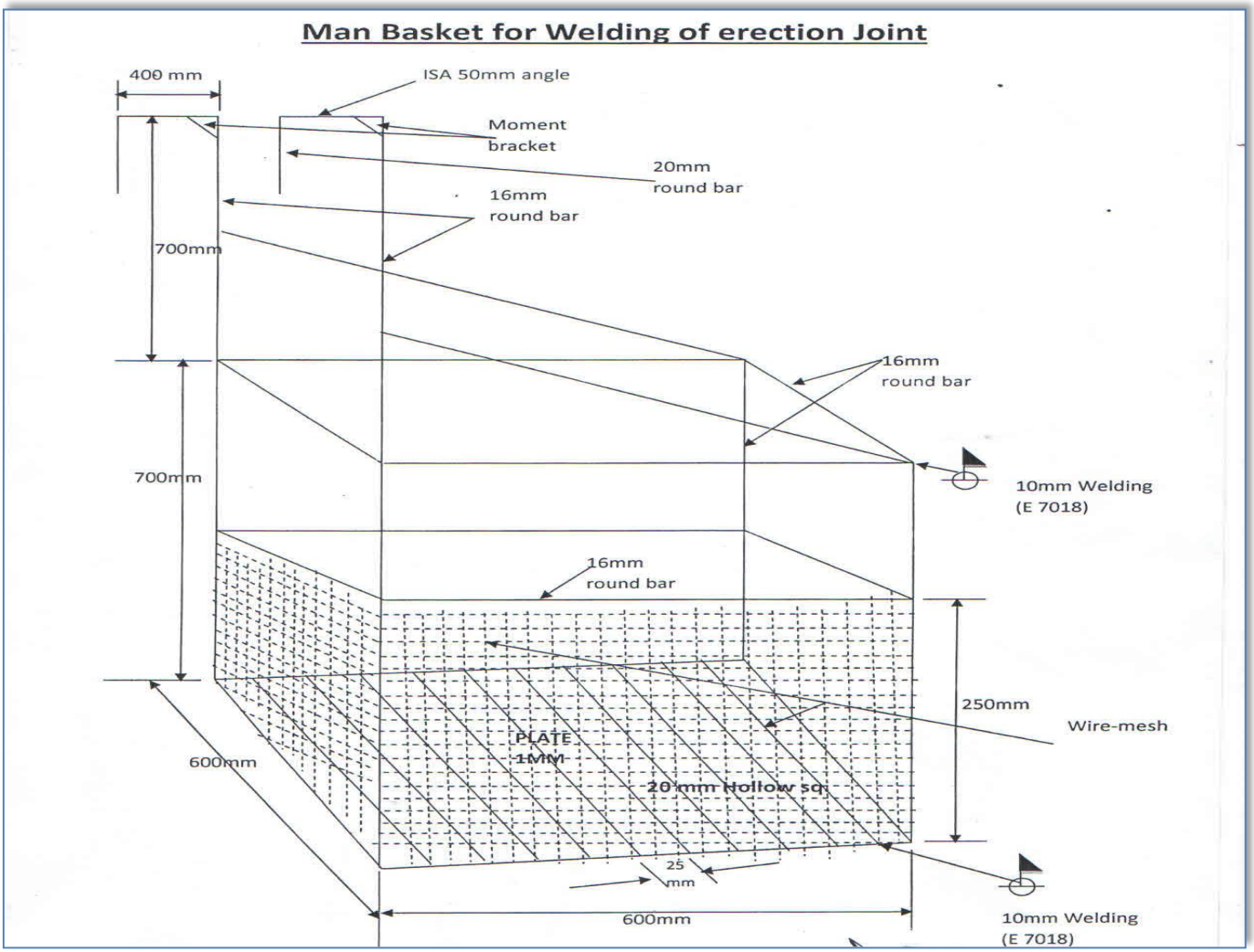
A. All Heavy / Complex Lifting operations as defined in Clause 6.12 shall require a Lifting Work Permit. A written rigging procedure and plan must be prepared for all individual heavy/ complex lifting operations.
B. All the cranes and lifting tools & tackles shall be inspected on daily / weekly basis 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.

Following requirements shall be mandatorily followed, wherever applicable:

E. The manufacturer's instruction for maintenance shall also be followed. All safety measures shall be followed.
F. All tools tackles, lifting appliances; material-handling equipment etc. used by the Sub-contractor shall be of safe design and construction.
G. The operators, slingers and signalers shall be qualified as per IS 13367 (part-1):2003 "Safe use of cranes- code of practices".
H. 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.
I. Mobile phone should be banned for crane operator and lifting operation. Only walkie talkie shall be allowed in rigging/Lifting purpose.
J. 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.

LIFTS/ MOVEMENTS LESS THAN 5 TONS:

K. An equipment rigging plan is not required for lifts less than 5 tons, safety measures are covered in the JSA.
Personnel Lifts (Man-Basket / Jhoola):
L. 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.
M. 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.
N. Man-basket shall be used where access through ladders or scaffolding is not feasible.
O. 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.
P. 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%.
Q. It shall have a door with double latches and shall open inside. Anchor points shall be identified within the man-basket.
R. The man-basket shall be thoroughly inspected and load tested and a trial run performed without personnel before being put to job.
S. It shall be treated as a lifting tool (T&P Item) and shall undergo same certification cycle and inspection as other lifting equipment.
T. An additional sling of required lifting capacity shall be fixed the man-basket main lifting point and attached to the crane above the ball or block.
U. While lifting man-basket, the crane shall maintain a uniform speed of lift without any swing.
V. Once man-basket reaches the destination, the lift brakes shall be locked as long as the basket remains at that point. The same care shall be taken in its descent. As for hanging man-basket, the same shall be hung off a rigid structure with help U-shaped handle welded to man-basket. This shall be tested once in a year by a competent person.
W. Use of Rebar steel for making and monkey-ladder must be avoided.



13.0 HSE PERFORMANCE

- Contractor shall be assessed on monthly basis for HSE Compliance by BHEL Safety In-charge at site. The HSE compliance shall be based on Online HSE Evaluation System of BHEL as per Format No. HSEP: 14-F33.
- BHEL shall reserve the right to use this assessment for evaluating bidder's capacity for future tenders
- Suitable HSE reward system shall be developed at site level to promote HSE compliance amongst workmen by the sub-contractor. To decide HSE reward, performance towards HSE shall be evaluated for workmen and it shall be awarded regularly in public gathering.
- If safety record of the sub-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 sub contractor may be considered by BHEL after completion of the job.

13.1 SAFETY DURING START UP, COMMISSIONING AND TESTING

- There are various activities involved prior to commissioning- the major ones are -Hydraulic Test, Steam Blowing, Transformers Charging, Boiler Light Up, Rolling and Synchronization and Full loading of unit.
- These activities shall be personally supervised by the site executive along with the commissioning engineer.
- Appropriate Work Permits shall be taken as applicable
- 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, first aid center and Fire station shall be intimated about the plan well in advance.
- Tag-in/ 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
- Siren/Hooter for alerting workers during steam blowing should be ensured.

14.0 HSE PENALTIES

A. As per contractual provision HSE penalties shall be imposed on Sub-contractor for non-compliance on HSE requirement as per format no. HSEP: 14-F14.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.

B. **If principal customer/ statutory and regulatory bodies impose some penalty on HSE due to the non-compliance of the sub-contractor the same shall be passed on to them**.

C. The penalty amount shall be recovered by Site Finance department from sub-contractor's RA / Final bill.

D. The Contractor shall adhere consistently to all provisions of HSE requirements. In case of non-compliances and also for repeated failure in implementation of any of the HSE provisions, DASTUR/Owner may impose stoppage of work without any cost & time implication to the Owner and/or impose a suitable penalty. The amount of penalty to be levied against defaulted Contractor shall be up to a cumulative limit of:

E. This penalty shall be in addition to all other penalties specified elsewhere in the contract. The decision of imposing stop-work-instruction and imposition of penalty shall rest with Owner. The same shall be binding on the BHEL sub contractor. Imposition of penalty does not make the Contractor eligible to continue the work in unsafe manner.

F. The amount of penalty applicable for (penalty by OWNER/CONSULTANT) on the Contractor on different types of HSE Violations is specified below:

Sl. No.	Violation of HSE Norms	Penalty Amount
1	For not using personal protective equipment (Helmet, Shoes, Goggles, Gloves, Full body harness, Face shield, Boiler suit, etc.)	Rs. 500/- per day/Item / Person.
2	Working without Work Permit/Clearance	Rs. 20000/- per occasion
3	Execution of work without deployment of requisite field engineer / supervisor at work spot	Rs. 5000/- per violation per day
4	Unsafe electrical practices (not installing ELCB, using poor joints of cables, using naked wire without top plug into socket, laying wire/cables on the roads, electrical jobs by incompetent person, etc.)	Rs. 10000/- per item per day.
5	Working at height without full body harness, using day. non-standard/ rejected scaffolding and not arranging fall protection arrangement as required, like hand- rails, life-lines, Safety Nets etc.	Rs. 10000/- per case per
6	Unsafe handling of compressed gas cylinders trolley, jubilee clips double gauge regulator, and not keeping cylinders vertical during storage/handling, not using safety cap of cylinder).	Rs. 500/- per item per day.
7	Use of domestic LPG for cutting purpose / not using flash back arresters on both the hoses/tubes on both ends.	Rs. 3000/- per occasion.
8	No fencing/barricading of excavated areas /trenches.	Rs. 3000/- per occasion.

9	Not providing shoring/strutting/proper slope and not keeping the excavated earth at least 1 .5M away from excavated area.	Rs. 5,000/- per occasion
10	Non display of scaffold tags, caution boards, list of hospitals, emergency services available at work locations.	Rs. l000/- per occasion per day

15.0 OTHER HSE REQUIREMENTS

- In case of any delay in completion of a job due to mishaps attributable to lapses by the subcontractor, BHEL shall have the right to recover cost of such delay from the payments due to the subcontractor, after notifying the sub-contractor suitably.
- If the Sub-contractor fails to improve the standard s of safety in its operation to the satisfaction of BHEL after being given reasonable opportunity to do so and/or if the sub-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 sub-contractor after giving a notice of not less than 7 days indicating the steps that would be taken by BHEL.
- If the Sub-contractor succeeds in carrying out its job in time without any fatal or disabling injury incident and with out any damage to property BHEL may, at its sole discretion, favorably consider to reward the sub-contractor suitably for the performance.
- In case of any damage to property due to lapses by the subcontractor, BHEL shall have the right to recover the cost of such damages from the sub-contractor after holding an appropriate enquiry.
- The su-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 Sub-contractor be paid to compromise any claim by any such person, should such claim proceeding be filed against BHEL, the Sub-contractor hereby agrees to indemnify BHEL against the same.
- The Sub-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 Sub-contractor to the workmen and adequate facilities shall be provided to enable the working painters to wash during the cessation of work.
- The sub contractor shall notify BHEL of his intention to bring to site any equipment or material which may create hazard.
- BHEL shall have the right to prescribe the conditions under which such equipment or materials may be handled and the sub-contractor shall adhere to such instructions.

15.1 BEHAVIOUR BASED SAFETY

The contractor shall develop a system to implement Behaviour-Based Safety (BBS) through which work groups can identify measure and change the behaviours of employees and workers. **The BBS process shall include the following:**

A. Identify the behaviours critical to obtaining required safety performance.

B. Communicate the behaviours and how they are performed correctly to all.

C. Observe the work force and record safe/at risk behaviours. Intervene with workers to give positive reinforcement when safe behaviours are observed. Provide coaching/correction when risky behaviors are observed.

D. Collect and record observation data.

E. Summarize and analyze observation data.

F. Communicate observation data and analysis results to all employees.

G. Provide recognition or celebrate when safe behaviour improvements occur.

H. Change behaviours to be observed or change activators or change consequences as appropriate.

I. Communicate any changes to workforce

Contractor through its own HSE committee shall implement the above process. The necessary procedures and reporting formats shall be developed by the contractor for approval by Owner. The HSE committee of contractor shall observe individual's behavior for safe practices adapted for utilization/execution of work for following as a minimum:

- PPE
- Tools & equipment
- Hazard Identification & control
- House keeping
- Confined space entry
- Hot works
- Excavation
- Loading & unloading
- Work at height
- Stacking & storage
- Ergonomics
- Procedures

15.2 SLIPS, TRIPS & FALLS

The contractor shall establish a regular cleaning and basic housekeeping programme that covers all aspects of the workplace to help minimize the risk of slips, trips & falls. The contractor shall take positive measures like keeping the work area tidy, storing waste in suitable containers & harmful items separately, keeping passages, stairways, entrances & exits especially emergency ones clear, cleaning up spillages immediately and replacing damaged carpet/floor tiles, mats & rugs at once to avoid slips, trips & falls.

15.3 RADIATION EXPOSURE

- All personnel exposed to physical agents such as ionizing & non-ionizing radiation, including ultraviolet rays or similar other physical agents shall be provided with adequate shielding or protection commensurate with the type of exposure involved.

- For Open Field Radiography works, requirements of Bhabha Atomic Research Centre (BARC)/Atomic Energy Regulatory Board (AERB) shall be followed.

- The Contractor shall implement an effective system of control (as described in the AFRB regulations) at site for handling radiography-sources & for avoiding its misuse & theft.
- The contractor shall generate the Format No: HSE-8 "Permit for radiation work" before start of work.
- In case the radiography work has to be carried out at day time, suitable methodology to be used so that other works, people are not affected

15.4 DEMOLITION/ DISMANTLING

- The contractor shall adhere to safe demolishing/dismantling practices at all stages of work to guard against unsafe working practices.
- The contractor shall disconnect service lines (power, gas supply, water, etc.)/make alternate arrangements prior to start of work and restore them, if required as directed by DASTUR/Owner at no extra cost.
- Before carrying out any demolition/dismantling work, the contractor shall take prior approval of Owner and generate the Format No.HSE-9. For revamp jobs in operating plants where location of underground utilities is not known with certainty, the contractor shall depute an experienced engineer for supervision and shall make adequate arrangements for Fire fighting & First-Aid during the execution of these activities.
- The Contractor shall arrange approved Job Safety Analysis (JSA) / Method Statement for the specific demolition / dismantling task. In no case any activity related to demolition/dismantling shall be carried out by the Contractor without engaging own supervision / field engineer.

15.5 HSE AWARENESS AND MOTIVATION

- The Contractor shall promote and develop awareness on Health, Safety and Environment protection among all personnel working for the Contractor.
- Regular awareness programs and fabrication shop / work site meetings at least on monthly basis shall be arranged on HSE activities to cover hazards/risks involved in various operations during construction.
- Contractor to motivate & encourage the workmen & supervisory staff by issuing / awarding them with tokens/gifts/mementos/monetary incentives/certificates, etc.

15.6 INTOXICATING DRINKS & DRUGS AND SMOKING

- The Contractor shall not allow any workman to commence any work at any locations of project activity who is/ are influenced / effected with the intake of alcohol, drugs or any other intoxicating items being consumed prior to start of work or working day.
- Awareness about local laws on this issue shall form part of the Induction Training and compulsory work-site discipline.
- The Contractor shall ensure that all personnel working for him comply with "No-Smoking" requirements of the Owner a notified from time to time. Cigarettes, lighters, auto ignition tools or appliances as well as intoxicating drugs, dry tobacco powder, etc. shall not be allowed inside the project/plant complex.
- Smoking shall be permitted only inside smoking area exclusively designated for.

15.7 ADDITIONAL SAFETY REQUIREMENTS FOR WORKING INSIDE A RUNNING PLANT

As a minimum, the contractor shall ensure adherence to following safety requirements while working in or in the close vicinity of an operating plant. Contractor shall obtain permits for Hot work, Cold work, Excavation and Confined Space from Owner in the prescribed format.

A. The contractor shall monitor record and compile list of his workers entering the operational plant/unit each day and ensure & record their return after completing the job.

B. Contractor's workers and staff members shall use designated entrances and proceed by designated routes to work areas only assigned to them. The workers shall not be allowed to enter units' area, tanks area, pump rooms, etc. without work authorization permit.

C. Work activities shall be planned in such a way so as to minimize the disruption of other activities being carried out in an operational plant/unit and activities of other contractors.

D. The contractor shall submit a list of all chemicals/toxic substances that are intended to be used at site and shall take prior approval of the Owner.

E. Specific training on working in a hydrocarbon plant shall be imparted to the work force and mock drills shall be carried out for Rescue operations/First-Aid measures.

F. Proper barricading/cordoning of the operational units/plants shall be done before starting the construction activities. No unauthorized person shall be allowed to trespass. The height and overall design of the barricading structure shall be finalized in consultation with the Owner and shall be got approved from the Owner.

G. Care shall be taken to prevent hitting underground facilities such as electrical cables, hydrocarbon piping during execution of work.

H. Barricading with water curtain shall be arranged in specific/critical areas where hydrocarbon vapors are likely to be present such as near horton spheres or tanks. Positioning of fire tenders (from owner) shall also be ensured during execution of critical activities.

I. Emergency evacuation plan shall be worked out and all workmen shall be apprised about evacuation routes. Mock drill operations may also be conducted.

J. Flammable gas test shall be conducted prior to any hot work using appropriate measuring instruments. Sewers, drains, vents or any other gas escaping points shall be covered with flame retardant tarpaulin.

K. Respiratory devices shall be kept handy while working in confined zones where there is a danger of inhalation of poisonous gases. Constant monitoring of presence of Gas/ Hydrocarbon shall be done.

L. Clearance shall be obtained from all parties before starting hot tapping, patchwork on live lines and work on corroded tank roof.

M. Positive isolation of line/equipment by blinding for welding/cutting/grinding shall be done. Closing of valve will not be considered sufficient for isolation.

N. Welding spatters shall be contained properly and in no case shall be allowed to fall on the ground containing oil. Similar care shall be taken during cutting operations.

O. The vehicles, cranes, engines, etc. shall be fitted with spark arresters on the exhaust pipe and got it approved from Safety Department of the Owner.

P. Plant air should not be used to clean any part of the body or clothing or use to blow off dirt on the floor.

Q. Gas detectors should be installed in gas leakage prone areas as per requirement of Owner's plant operation personnel.

R. Experienced full time safety personnel shall be exclusively deployed to monitor safety aspects in running plants.

15.8 CONFINED SPACE ENTRY

The sub-contractor shall generate a work before entering a confined space. People, who are permitted to enter into confine space, must be medically examined & certified by registered doctor, confirming their 'medical fitness for working in confined space. All necessary precautions mentioned therein shall be adhered to. An attendant shall be positioned outside a confined space for extending help during an emergency. All appropriate PPEs and air quality parameters shall be checked before entering a confined space. It shall be ensured that the piping of the equipment which has to be opened is pressure-free by checking that blinds are in place, vents are open and volume is drained. Inside confined space works, only electrical facilities / installations of 24V shall be permitted. Contactor shall ensure usage of safe & suitable arrangement of oxygen supply for individual workmen (during the course of work in confined space), if oxygen concentration is found to be less than 19.5% (v/v) there.

15.9 SCAFFOLDINGS & BARRICADING

Suitable scaffoldings shall be provided to workmen for all works that cannot be safely done from the ground or from solid construction except such short period work that can be safely done using ladders or certified (by 3rd

party competent person) man-basket. When a ladder is used, an extra workman shall always be engaged for holding the ladder.

The Contractor shall ensure that the scaffolds used during construction activities shall be strong enough to take the designed load. All scaffolds shall be inspected by a competent Scaffolding Inspector of the Contractor. He shall paste a GREEN tag (duly signed by competent Scaffolding Inspector) on each scaffold found safe aid a RED tag (duly signed by competent Scaffolding Inspector) on each scaffold found unsafe. Scaffolds with GREEN tag only shall be permitted to be used and Scaffolds with RED ones shall immediately be made inaccessible. Work being found continuing on scaffolds with RED tag shall be considered unauthorized work by Contractor and may invite penalization from BHEL/Owner. For every 120-125 m2 /m3 area / volume or its parts thereof minimum one TAG shall be provided.

The Contractor shall ensure positive barricading (indicative as well as protective) of the excavated, radiography, heavy lift, high pressure hydrostatic & pneumatic testing and other such areas. Sufficient warning signs shall be displayed along the barricading areas.

Scaffolding shall be constructed using foot seals or base plates only.

15.10 ELECTRICAL INSTALLATIONS

- All electrical installations/ connections shall be carried out as per the provisions of latest revision of following codes/standards, in addition to the requirements of Statutory Authorities and IE/applicable international rules & regulations:
- O1SD STD 173:- Fire prevention & protection system for electrical installations
- SP 30 (BIS):- National Electric Code
- All electrical installations shall be approved by the concerned statutory authorities.
- All temporary electrical installations / facilities shall be regularly checked by the licensed/competent electricians of the Contractor and appropriate records shall be maintained in format no: HSE-12" Inspection of temporary electrical booth/installation at project construction site". Such inspection records are to be made available to BHEL/Owner, whenever asked for.

15.11 WELDING/ GAS CUTTING

- Contractor shall ensure that flash back arrestors conforming to BS: 6158 or equivalent are installed on all gas cylinders as well as at the torch end of the gas hose, while in use.
- All cylinders shall be mounted on trolleys and provided with a closing key. Empty & filled-up gas cylinders shall be stored separately with TAG, protecting them from direct sun or rain. Minimum 2 nos. of Portable DCP type fire extinguishers (10 kg) shall be maintained at the gas cylinder stores. Stacking & storing of compressed gas cylinders shall be arranged away from DG set, hot works, Elect. Panels / Elec. boards, etc
- The burner and the hose placed downstream of pressure reducer shall be equipped with Flash Back Arrester/Non Return Valve device.
- The hoses for acetylene and oxygen cylinders must be of different colours. Their connections to cylinders and burners shall be made with a safety collar.
- At end of work, the cylinders in use shall be closed and hoses depressurized.
- Cutting of metals using gases, other than oxygen & acetylene, shall require written concurrence from Owner.
- All welding machines shall have effective earthing at least at distinctly isolated two points.
- In order to help maintain good housekeeping, and to reduce fire hazard, live electrode bits shall be contained safely and shall not be thrown directly on the ground.
- The hoses of Acetylene and Oxygen shall be kept free from entanglement & away from common pathways / walkways and preferably be hanged overhead in such a manner which can avoid contact with cranes, hydra or other mobile

construction machinery.

- Hot spatters shall be contained / restricted appropriately (by making use of effective fire- retardant cloth/fabric) and their flying-off as well as chance of contact with near-by flammable materials shall be stopped.
- The Contractor shall arrange adequate systems & practices for accumulation / collection of metal & other scraps and remnant electrodes and their safe disposal at regular interval so as to maintain the fabrication and other areas satisfactorily clean & tidy.
- All gas cylinders must have a cylinder cap on at all times when not in use.

15.12 ERGONOMICS OF TOOLS & TACKLES

A. The Contractor shall assign to his workmen, tasks commensurate with their qualification, experience and state of health.

B. All lifting tools, tackles, equipment, accessories including cranes shall be tested periodically by statutory/competent authority(TPI) for their condition and load carrying capacity. Valid test & fitness certificates from the applicable authority shall be submitted to Owner/DASTUR for their review/acceptance before the lifting tools, tackles, equipment, accessories and cranes arc used.

C. The contractor shall not be allowed to use defective equipment or tools not adhering to safety norms.

D. Contractor shall arrange non-sparking tools for project construction works in operating plant areas / hydrocarbon prone areas.

E. Wherever required the Contractor shall make use of Elevated Work Platforms (EWP) or Aerial Work Platforms (mobile or stationary) to avoid ergonomical risks and workmen shall be debarred to board such elevated platform during the course of their shifting / transportation.

F. Contractor shall ensure installation of Safe Load Indicator (SLI) on all cranes (while in use) to minimize overloading risk. SLI shall have capability to continuously monitor and display the load on the hook, and automatically compare it with the rated crane capacity at the operating condition of the crane. The system shall also provide visual and audible warnings at set capacity levels to alert the operator in case of violations.

G. The contractor shall be responsible for safe operations of different equipments mobilized and used by him at the workplace like transport vehicles, engines, cranes, mobile ladders, scaffoldings, work tools, etc.

H. The Contractor shall arrange periodical training for the operators of hydra, crane, excavator, mobile machinery, etc. at site by utilizing services from renowned manufacturers.

15.13 HSE IMPLEMENTATION, INSPECTION AND MONITORING

A. The Contractor shall be fully responsible for planning, reporting, implementing and monitoring all HSE requirements and compliance of all laws & statutory requirements.

B. The Contractor shall also ensure that the HSE requirements are clearly understood & implemented conscientiously by their site personnel at all levels at site.

C. The Contractor shall ensure physical presence of their field engineers, supervisors, during the continuation of their contract works/site activities including all material transportation activities. Physical absence of experienced field engineers/supervisors of Contractor at critical work spot during the course of work, may invite severe penalization as per the discretion of EIC, including halting /stoppage of work.

D. The Contractor shall regularly review inspection report internally and implement all practical steps / actions for improving the status continuously.

E. The Contractor shall ensure important safety checks right from beginning of works at every work site locations and to this effect format No: HSE-.10 “Daily Safety Check List” shall be prepared by field engineer & duly checked by safety personnel for conformance.

F. The Contractor shall carry out inspection to identify various unsafe conditions of work sites/machinery/equipments as well as unsafe acts on the part of workmen/supervisor/ engineer while carrying out different project related works.

G. Adequate records for all inspections shall be maintained by the Contractor and the same shall be furnished to, whenever sought.

H. The Contractor shall not carry-out work by engaging single worker anywhere without any supervisor anytime during day or night.

I. As a general practice lifting tools/tackles, machinery, accessories etc. shall be inspected, tested and examined by competent people (approved by concerned State authorities-TPI) before being used at site and also at periodical interval (e.g. during replacement, extension, modification, elongation/ reduction of machine/parts, etc.) as per relevant statutes. Hydra, cranes, lifting machinery, mobile equipments / machinery / vehicles, etc. shall be inspected regularly by only competent / experienced personnel at site and requisite records for such inspections shall be maintained by every contractor. Contractor shall also maintain records of maintenance of all other site machinery (e.g. generators, rectifiers, compressors, cutters, etc.) & portable tools/equipments being used at project related works (e.g. drills, abrasive wheels, punches, chisels, spanners, etc.). The Contractor shall not make use of arbitrarily fabricated 'derricks' at project site for lifting / lowering of construction materials.

J. Site facilities /temporary. installations, e.g. batching plant, cement godown, DG-room, temporary electrical panels/distribution boards, shot-blasting booth, fabrication yards, etc. and site welfare facilities, like labour colonies, canteen/pantry, rest-shelters, motor cycle/bicycle-shed, site washing facilities, First-aid centers, urinals/toilets, etc. should be periodically inspected by Contractor (preferably utilizing HR/Admin. personnel to inspect site welfare facilities) and records to be maintained.

15.14 LOTO (HAZARDOUS ENERGY CONTROL) PROCEDURES

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. Locks should be used as per requirement or job.

MINIMUM REQUIREMENTS:

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

Inspection of equipment by a trained individual who is thoroughly familiar with the equipment operation and associated hazards. 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.

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:

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

- 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.
- After completion of the work, accomplish the following:
- Inspect repair work before removing the lock and activating the equipment.
- Make sure that only the worker that installed the lock removes his/her assigned lock.
- Make sure that all workers are clear of danger points before re-energizing the system.

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 Sub-contractor working on the Nalco 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.

LOTO RESPONSIBILITIES

A. The Engineers in Charge is responsible for implementing and enforcing this procedure and approving lockouts /tag outs that impact the operation of the project.

B. The Engineer in Charges responsible for authorizing Lockout /Tag out Requests.

C. The Lockout / Tag out Coordinator is responsible for maintaining the Lockout / Tag out Log. Each shift should have a designated Lockout / Tag out Coordinator.

D. 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 may be 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.

E. 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 OF LOTO RELATED TERMS

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 lock out/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 advertent 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 any one 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 FOR REQUESTING A LOCK OUT / TAG OUT PERMIT

A. 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 requestor 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 requestor 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 requestor 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.

B. 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.

C. The Safety Manager or Engineer in Charge shall review the Lockout / Tagout 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 / Tagout, the request shall be forwarded to the Engineer in Charge for approval. 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 / Tagout 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 / Tagout 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.

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.

D. Testing shall be performed by person(s) knowledgeable of the energy source(s) being isolated (e.g., an electrician should meter electrical circuits). 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

WORKING UNDER A LOCK OUT / TAG OUT REQUEST

- 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.
- 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",
- 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.

REMOVAL OF LOCKS AND TAGS

- 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 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 may be repositioned 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.
- The Lockout / Tag out Coordinator shall discard the tags and maintain the completed Lockout / Tag out Request Permit for future reference.
- In the event that an employee leaves the job site without removing the personal lock I tag, the following measures shall be taken and documented. The measures listed below are a 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, (see Attachment 5), which has been completed by the Area Supervisor.

Employee shall be notified upon returning to the site, prior to beginning any work.

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 / Tagout 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

A. 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.

B. 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.

C. If more than one Lockout / Tagout 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

A. isolating device. If the energy isolating device will not accept multiple locks or tags, a hasp (a multiple 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

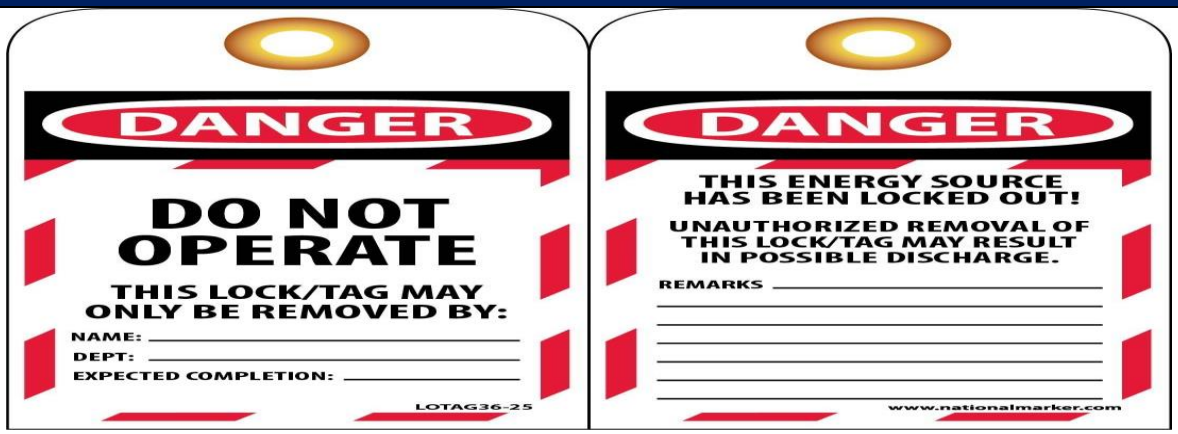
B. device, may be used. The locks or tags must be placed in such a way that energy cannot be restored to the machinery or equipment until every lock or tag is removed. As each employee involved no longer needs to maintain lockout / tag out protection that employee removes his - her lock and/or tag. The employee attaching the lock or tag is the only person authorized to remove the lock or tag.

LOTO 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.

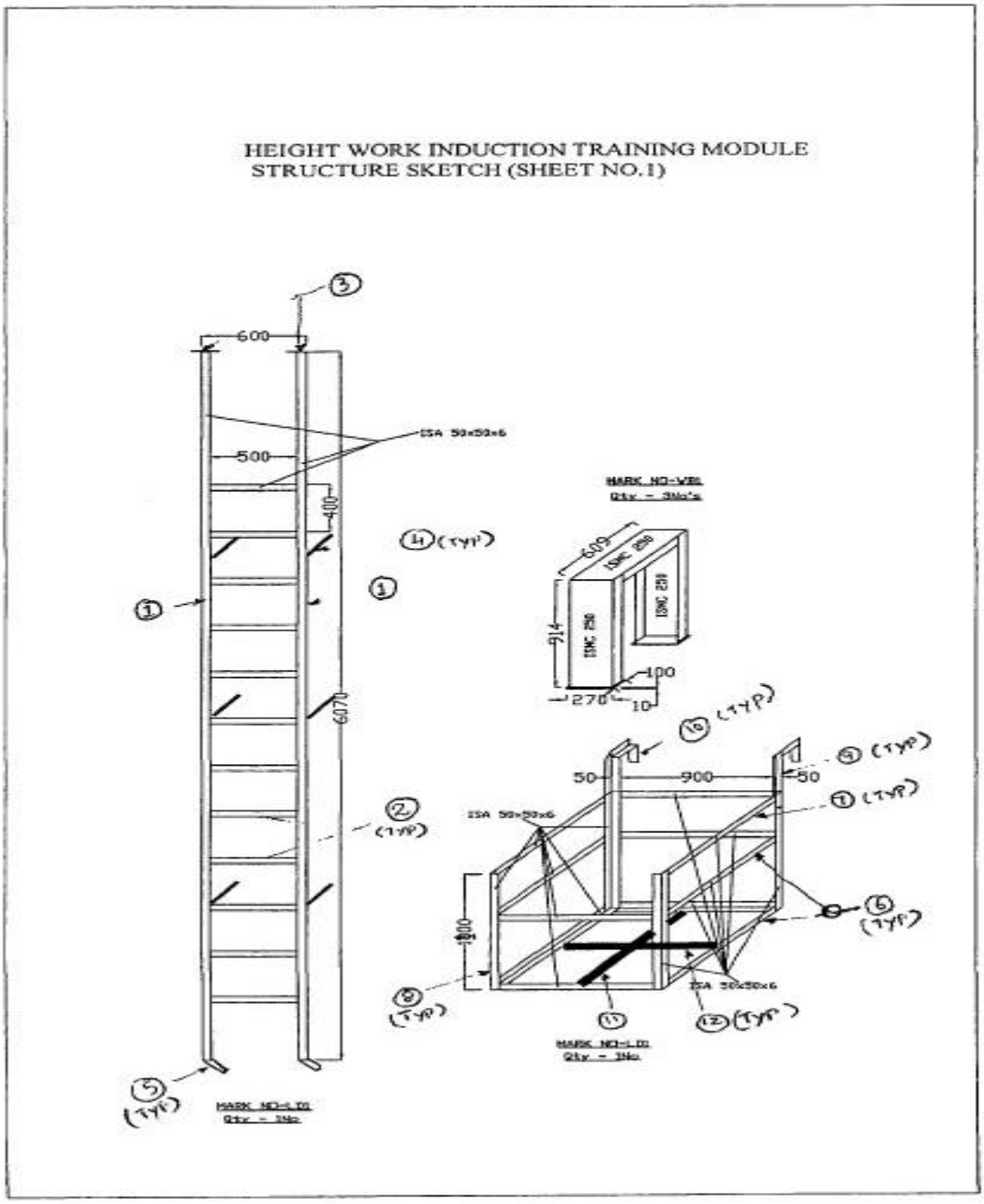
ATTACHMENTS

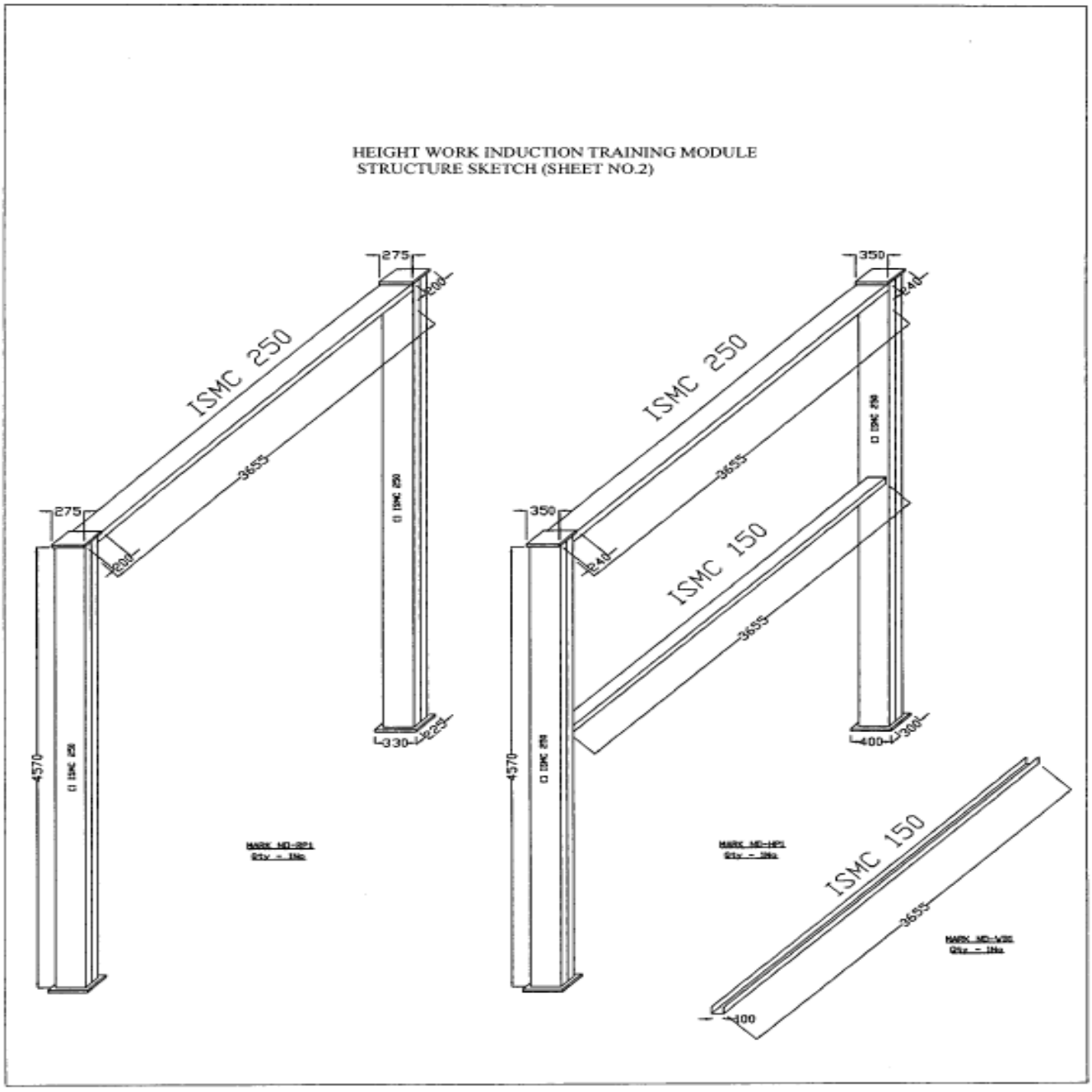
1. Danger (DO NOT OPERATE) Tags
2. Device & Personal Locks and Multi Lock Hasp:


DANGER
DO NOT OPERATE
THIS LOCK/TAG MAY ONLY BE REMOVED BY:
NAME:
DEPT:
EXPECTED COMPLETION:
LOTAG36-25
DANGER
THIS ENERGY SOURCE HAS BEEN LOCKED OUT!
UNAUTHORIZED REMOVAL OF THIS LOCK/TAG MAY RESULT IN POSSIBLE DISCHARGE.
REMARKS
www.nationalmarker.com


DANGER
LOCKED OUT
DO NOT REMOVE
Master
DANGER
LOCKED OUT
DO NOT REMOVE
Master

15.15 VERTIGO TRANING STRUCTURE FOR HEIGHT WORK




HEIGHT WORK INDUCTION TRAINING MODULE
STRUCTURE SKETCH (SHEET NO.2)
ISMC 250
ISMC 250
ISMC 150
ISMC 150
275
350
3655
4570
330
400
100

BOM FOR HEIGHT WORK INDUCTION TRAINING MODULE

Sl. No.	Description	Width (mm)	Legth (mm)	Qty(No's)	Unit Wt(Kgs).	Total Wt.(Kgs)
MKD NO. WB1						
1	ISMC250		609	3	34.20	62.483
2	ISMC250		914	6	34.20	187.553
3	ISMC100		3655	1	9.56	34.942
4	PL10	100	270	6	78.50	12.717
				Total weight(Kgs)		**297.695**
MKD NO. RP1						
1	ISMC250		4570	4	34.20	625.176
2	ISMC250		3655	1	34.20	125.001
3	PL25	225	330	2	196.25	29.143
4	PL25	200	275	2	196.25	21.588
				Total weight(Kgs)		**800.908**
MKD NO. HP1						
1	ISMC250		4570	4	34.20	625.176
2	ISMC250		3655	1	34.20	125.001
3	ISMC150		3655	1	16.80	61.404
4	PL25	300	400	2	196.25	47.100
5	PL25	240	350	2	196.25	32.970
						891.651
MKD NO. LD1						
1	ISA50X50X6		6070	2	4.50	54.630
2	ISA50X50X6		500	12	4.50	27.000
3	PL12	75	75	2	94.20	1.060
4	ISA50X50X6		300	6	4.50	8.100
5	ISA50X50X6		255	2	4.50	2.295
6	ISA50X50X6		1000	8	4.50	36.000
7	ISA50X50X6		910	3	4.50	12.285
8	ISA50X50X6		1100	4	4.50	19.800
9	ISA50X50X6		650	2	4.50	5.850
10	ISA50X50X6		350	2	4.50	3.150
11	PL8	75	900	1	62.80	4.239
12	PL8	75	410	2	62.80	3.862
						178.271
				Total weight(Kgs)		**2168.525**

Guidelines for conducting the Height work Induction Training:

1. **Walking Bench Training:**
   - Person should walk over the channel. He should maintain balance & walk without much problem.
   - If the person has problem to balance himself on repeated chances, he may be having flat foot 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 start 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:
     a) Usage of vertical fall arrestor.
     b) Usage of two lanyards of a safety harness.
     c) Ensure 3(three) 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 life line. With this safe arrangement, He can walk to chair.
   - Sits in the chair safely, comes out & walks back to the vertical ladder & come down from vertical ladder.

Those who pass the above training are fit for height work.

- 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 byBHEL.

16.0 NON COMPLIANCE (HSE PENALTY BY BHEL)

Non-conformity of safety rules and safety appliances will be viewed seriously and BHEL has right to impose fines on the sub-contractor as under for every instance of violation noticed:

SL.NO	Violation of Safety Norms	Fine (in Rs)
01	Not Wearing Safety Helmet	200/- *
02.	Not wearing Safety Belt or not anchoring life line	500/-*
03	Not wearing safety shoe	200/-*
04	Not keeping gas cylinders vertically	200/-
05	Not using flash back arrestors	100/-
06	Not wearing gloves	50/- *
07.	Grinding Without Goggles	50/- *
08.	Not using 24 V Supply For Internal Work	500/-
09.	Electrical Plugs Not used for hand Machine	100/-
10.	Not Slinging properly	200/-
11.	Using Damaged Sling	200/-
12.	Lifting Cylinders Without Cage	500/-
13.	Not Using Proper Welding Cable With Lot of Joints And Not Insulated Property.	200/-
14.	Not Removing Small Scrap From Platforms	500/-
15.	Gas Cutting Without Taking Proper Precaution or Not Using Sheet Below Gas Cutting	500/-
16.	Not Maintaining Electric Winches Which are Operated Dangerously	500/-
17.	Improper Earthing Of Electrical T&P	500/-
18	No or improper barricading	500/-
19.	Activity carried out without Safety work permit (Height work, Lifting activity, Hot work-each person/case)	1000/-
20.	Incident Resulting in Partial Loss in Earning Capacity	25,000/- per victim
21.	Fatal Incident Resulting in total loss in Earning Capacity	1,00,000/- per victim for first instance #

- **Legend:-**

  *: per head. For repeated violation by the same person, the penalty would be double of the previous penalty. Date of "Repeated violation" will be counted from subsequent days.

  #: or as deducted by customer, whichever is higher. For repeated fatal incident in the same Unit incremental penalty to be imposed. The Sub-contractor will pay 2 times the penalty compared to previously paid in case there are repeated cases of fatal incidents under the same Sub-contractor for the same package in the same unit.

- Any other 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. The amount will be deducted from running bills (RA) of the sub contractor.

- 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.

17.0 HSE AUDIT/ INSPECTION

- Regular HSE Audit shall be carried out by Sub contractor as per Site audit calender.
- HSE checklist **(Annexure 02)** shall be used for carrying out audit/inspection and report shall be submitted to BHEL site management
- All non-conformities and observations on HSE identified during internal or external HSE audit shall be disposed off by site in a time bound manner and reported back the implementation status
- Corrective action and Preventive action on HSE issues raised by certification body issued by Regional HQs shall be implemented by site and reported to Site management.
- Regular HSE inspection shall be carried out by Sub contractor on daily basis.

18.0 MONTHLY/ WEEKLY / HSE COMMITEE REVIEW MEETING

- Site shall hold HSE review meeting every week/ 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 and Preventive action. The agenda is given below:
- Implementation of earlier MOM
- HSE performance
- HSE inspection
- HSE audit and CAPA
- HSE training
- Health check-up camp
- HSE planning for the erection and commissioning and installation activities in the coming month
- HSE reward and promotional activities
- The meeting shall be chaired by Construction Manager, convened by HSE coordinator and attended by all HOS, Site In-charge of Sub-contractors and HSE officer of Sub-contractors.
- MOM on the discussion will be circulated to the concerned for implementation.

- The Contractor shall ensure participation of his top most executive at site (viz. Resident Construction Manager/Resident Engineer/ Project Manager / Site-in-Charge) in Safety Committee / HSE Committee meetings arranged by BHEL/Owner usually on monthly basis or as and when called for. In case Contractor's top most executive at site is not in a position to attend such meeting, he shall inform BHEL/Owner in writing before the commencement of such meeting indicating reasons of his absence and nominate his representative failure to do so may invite very stringent penalization against the specific Contractor, as deemed fit in Contract. The obligation of compliance of any observations during the meeting shall be always time bound. The Contractor shall always assist BHEL/Owner to achieve the targets set by them on HSE management during the project implementation.

- In addition, the Contractor shall also arrange internal HSE meetings chaired by his top most executive at site on weekly basis and maintain records. Such internal HSE meetings shall essentially he attended by field engineers/ supervisors (& not by safety personnel only) of the Contractor and its associates.
- Records of such internal HSE meetings shall be maintained by the Contractor for review by BHEL/Owner or for any HSE Audits.

AGENDA OF INTERNAL HSE MEETING SHOULD BROADLY COVER:

A. Confirmation of record notes / minutes of previous meeting
B. Discussion on outstanding subjects of previous points /subjects, if any
C. Incidents / Accidents (of all types) at project site, if any
D. Current topics related to site activities/subjects of discussion
E. House keeping
F. Behavioral Safety
G. Information / views / deliberations of members / site sub Contractors

H. Report from Owner /Client
I. Status of Safety awareness, Induction programs & Training programs
J. The time frame for such HSE meeting shall be religiously maintained by one and all.

19.0 FORMATS USED (DETAILS AVAILABLE IN ANNEXURE - 04)

SL. No.	Format Name	Format No.	Rev No.
01	Inspection of First Aid Box	HSEP:14-F01	00
02	Health Check Up	HSEP:14-F02	00
03	HSE Induction Training	HSEP:14-F03	00
04	Tool Box Talk	HSEP:14-F04	00
05	Monthly Site HSE Report	As specified by BHEL	00
06	Inspection of PPE	HSEP:14-F06	00

07	Inspection of T&Ps	HSEP:14-F07	00
08	Status of T&Ps	HSEP:14-F08	00
09	Inspection of Cranes and Winches	HSEP:14-F09	00
10	Inspection on Height Working	HSEP:14-F10	00
11	Inspection on Welding & Gas Cutting	HSEP:14-F11	00
12	Inspection on Electrical Installation	HSEP:14-F12	00
13	Inspection on Elevator	HSEP:14-F13	00
14	HSE Penalty	HSEP:14-F14	00
15	Accident /incident / property damage /fire incident report	HSEP:14-F15	00

20.0 ANNEXURES

ANNEXURE 01

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 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.
(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.

ANNEXURE 02

HSE AUDIT/ INSPECTION CHECKLIST CUM COMPLIANCE REPORT

PROJECT:_____ SUBCONTRACTOR:

DATE: _____ OWNER :

_____INSPECTIONBY:

Note : write 'NA' wherever the items is not applicable

Item	Yes	No	Remarks	Action
HOUSEKEEPING				
Waste containers provided and used				
Passageways and walkways clear				
General neatness of working area				
Other				
PERSONNELPROTECTIVEEQUIPTMENTS				
Goggles; shields				
Face protection				
Hearing protection				
Respiratory masks etc.				
Safety belts				
Other				
EXCAVATIONS / OPENINGS				
Openings properly covered or barricaded				
Excavations shored				
Excavations barricaded				
Overnight lighting provided				
Other				
WELDING, CUTTING				
Gas cylinders chained upright				
Cable and hoses not obstructing				
Fire extinguisher (s) accessible				
Others				
SCAFFOLDING				
Fully decked platforms				
Guard and intermediate rails in place				
Toe boards in place				
Adequate shoring				
Adequate access				
Others				
LADDER				
Extension side rails 1 m above				
Top of landing				
Properly secured				

Angle + 70^0 from horizontal				
Other				
HOISTS, CRANES AND DERRICKS				
Condition of cables and sheaf OK				
Condition of slings, chains, hooks OK				
Inspection & maintenance log maintained				
Outriggers used				
Signals observed and understood				
Qualified operators				
Others				
MACHINERY, TOOLS & EQUIPMENT				
Proper instruction				
Safety devices				
Proper cords				
Inspection and maintenance				
Other				
VEHICLE AND TRAFFIC				
Rules and regulations observed				
Inspection and maintenance				
Licensed drivers				
Other				
TEMPORARY FACILITIES				
Emergency instructions posted				
Fire extinguishers provided				
Fire-aid equipment available				
General neatness				
Others				
FIRE PREVENTION				
Personnel instructed				
Fire extinguishers checked				
No smoking in prohibited areas.				
Hydrants				
Clearance				
Others				
ELECTRICAL				
Proper wiring				
ELCB's provided				
Ground fault circuit interrupters				
Protection against damage				
Prevention of tripping hazards				
Other				
HANDLING & STORAGE OF MATERIALS				
Properly stored or stacked				
Passageways clear				
Other				
FLAMMABLE GASES AND LIQUIDS				
Containers clearly identified				
Proper storage				
Fire extinguisher nearby				

Other				
WORKING AT HEIGHT				
Safety nets				
Safety belts				
Safety helmets				
Anchoring of safety belt to the life line rope				
ENVIRONMENT				
Lubricant waste/engine oils properly dispose.				
Waste from Canteen, offices, sanitation etc. disposed properly.				
Disposal of surplus earth, stripping materials, expired batteries, oily rags and combustible materials done properly.				
HEALTH CHECKS				
Hygienic conditions at labor camps O.K.				
Availability of first-aid facilities				
Proper sanitation at site, office & labor camps.				
Arrangement of medical facilities.				
Measures for dealing with illness.				
Availability of potable drinking water for workmen & staff.				
Provision of crèches for children.				

ANNEXURE 03

REFERENCES

- Contract documents
- Relevant legislations
- HSE MSM
- Relevant Indian standards as listed below (illustrative only):

SL NO	CODE NAME	TITLE
(1)	IS : 818-1888 (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)	Specification for Leather Safety Boots & Shoes
(4)	IS:2925 – 1984 (Reaffirmed 2010)	Specification for Industrial Safety Helmets
(5)	IS:3521 : 1999 (Reaffirmed 2002)	Industrial Safety Belts & Harnesses-Specification
(6)	IS:3646(Part II) – 1966 (Reaffirmed 2003)	Code of Practice for Interior Illumination
(7)	IS:3696 (Part I) – 1987 (Reaffirmed 2002)	Safety Code for Scaffolds and Ladders
(8)	IS: 3696(Part 2) : 1991 (Reaffirmed 2002)	Scaffolds and Ladders-Code of Safety
(9)	IS:3786 – 1983 (Reaffirmed 2002)	Method for Computation of Frequency and Severity Rates for Industrial Injuries and Classification of Industrial Incidents
(10)	IS:4770 : 1991 (Reaffirmed 2006)	Rubber Gloves – Electricals purposes-Specification
(11)	IS:4912 : 1978 (Reaffirmed 2002)	Safety Requirements for Floor and Wall Openings, Railings and Toe Boards
(12)	IS: 5983 – 1980 (Reaffirmed 2002)	Specification for Eye-Protectors
(13)	IS:6519 – 1971 (Reaffirmed 1997)	Code of Practice for Selection, Care and Repair of Safety Footwear
(14)	IS:9167:1979	Specification for Ear-Protectors
(15)	IS:6994(Part I)-1973 (Re affirmed 1996)	Specification for Industrial Safety Gloves Leather and Cotton Gloves
(16)	IS:8519 – 1977 (Reaffirmed 1983)	Guide for Selection of Industrial Safety Equipment for Body Protection.
(17)	IS 11006 : 2011	Flash Back(Flame Arrestor) Specification

(18)	IS:8520 – 1977 (Reaffirmed 2002)	Guide for Selection of Industrial Safety Equipment for Eye, Face and Ear Protection.
(19)	IS:9473:2002	Respiratory Protective Devices-Filtering Half Masks to protect against Particles-Specification.
(20)	IS:9944:1992 (Reaffirmed 2003)	Natural and Man-made Fiber Rope Slings-Recommendations on Safe working loads.
(21)	IS:11057 – 1884 (Reaffirmed 2001)	Specification for Industrial Safety Nets
(22)	IS:12254:1993 (Reaffirmed 2002)	Polyvinyl Chloride (PVC) Industrial Boots-Specification
(23)	IS:13367(Part 1):1992 (Reaffirmed 20030	Safe Use of Cranes-Code of Practice
(24)	IS:14166:1994 (Reaffirmed 2002)	Respiratory Protective Devices-Full Face Masks Specification
(25)	IS:14746 : 1999 (Reaffirmed 2003)	Respiratory Protective Devices-Half Masks and Quarter Masks - Specification
(26)	IS : 15397 :2003 (Reaffirmed 2008)	Portable Extinguisher Mechanical Foam Type(Stored Pressure)-Specification
(27)	IS: 19011:2002	Guidelines for Quality and/or Environmental Management Systems Auditing

ANNEXURE 04: SAFETY FORMATS

&

ANNEXURE 05: WORK PERMIT FORMATS

	POWER SECTOR	FORMAT NO: HSEP:14-F01 REV NO.: 00 PAGE NO. 01 OF 02
	INSPECTION OF FIRST AID BOX	

Name of Site :	
Name of Sub-Contractor :	
Inspected by :	
Date of Inspection :	

Number of employees on the site: -

Sl. 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 by carbonate 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.		

Sl. No.	Item	No. Available	Remarks
17	Whether 120 ml bottle containing Sal volatile having the dose and mode of administration indicated on the label, available.		
18	Whether roll of adhesive plaster (6 cmX1 meter)available		
19	No of rolls of adhesive plaster (2 cmX1 meter)		
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 labour 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		

Signature of Sub contractor's Site I/C:

	POWER SECTOR	FORMAT NO: HSEP:14-F02 REV NO.: 00
	HEALTH CHECK UP	

Name of Site :	
Name of Sub-Contractor:	
Name of Employee :	

NAME:

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	:		
Ear, Nose, Throat	:		
Ear	:		
Nose	:		
Throat	:		

	POWER SECTOR	FORMAT NO: HSEP:14-F02
	HEALTH CHECK UP	REV NO.: 00

EXAMINATION		OBSERVATION
Cardiovascular System Examination :		
Inspection	:	
Palpation	:	Pulse BP
Auscultation (Heart Sounds)	:	
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

	POWER SECTOR **HSE INDUCTION TRAINING**	FORMAT NO: HSEP:14-F03 REV NO.: 00 PAGE NO. 01 OF 01

Name of Site :	
Name of Sub-Contractor :	
Date :	
Name of Training Co -ordinator	

Sl No.	**Name**	**Designation**	**Organization**	**Signature**

Signature of Training coordinator :

	POWER SECTOR	FORMAT NO: HSEP:14-F04 REV NO.: 00 PAGE NO. 01 OF 01
	TOOL-BOX TALK	

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 Sub-contractor :

	POWER SECTOR **PERSONAL PROTECTIVE EQUIPMENTS**	FORMAT NO: HSEP:14-F06 REV NO.: 00 PAGE NO. 01 OF 01

Name of Site :	
Name of Sub-Contractor :	
Inspected by :	
Date 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 Site I/C of Sub-contractor :

	POWER SECTOR **INSPECTION OF T&Ps**	FORMAT NO: HSEP:14-F07 REV NO.: 00 PAGE NO. 01 OF 01

Name of Site :	
Name of Sub-Contractor :	
Date 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-Site Safety Officer (BHEL)	**Signature-Subcontractor/ Subcontractor's Safety Officer**

	POWER SECTOR	FORMAT NO: HSEP:14-F08 REV NO.: 00 PAGE NO. 01 OF 01
	STATUS OF T&Ps	

Name of Site	
Name of Sub-Contractor	
Date of Inspection	

Item	**Nos. Deployed**	**Identification No.**	**Nos. Tested by competent person**	**Validity of Test Certificate**
Winches				
Chain Blocks				
Wire Rope Slings				
Man Cages				
D-Shackles				
Air Compressors				
Crawler Cranes				
Mobile Cranes				
Hydra Cranes				
Others				

Signature of Site I/C of subcontractor:

	POWER SECTOR	FORMAT NO: HSEP:14-F09
	INSPECTION OF CRANES AND WINCHES	REV NO.: 00

Name of Site :	
Name of Sub-Contractor :	
Inspected by :	
Date 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, Overload and SLI of crane/Hydra		
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 filly extendable		
20	Tyre pressure		
21	Condition of Battery And Lamps		

Sl.no.	Description	Observation	Measures
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		

WINCH

Sl. No.	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?				

Sl. No.	Description	YES	NO	NA	Remarks
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 Number of NO:				
	Total Number of NA:				
	% Compliance :				

Signature of Site I/C of Sub-contractor :

	POWER SECTOR	FORMAT NO: HSEP:14-F10 REV NO.: 00 PAGE NO. 01 OF 02
	INSPECTION OF HEIGHT WORKING	

Name of Site :	
Name of Sub-Contractor :	
Inspected by :	
Date of Inspection:	

Sl. No.	**Descriptions**	**Observation (Yes/No)**	**Remarks**
1	All the workers have been explained safe work method?		
2	An established communication system has been established and explained to the workers.		
3	Adequate illumination has been ensured.		
4	Work area inspected prior to the start of the work.		
5	Area below the work place barricaded, particularly below hot work.		
6	Workers provided with bags /box to carry bolts, nuts and hand tools		
7	Arrangement for fastening hand tools made.		
8	All work platforms ensured to be of adequate strength and ergonomically suitable.		
9	Fabricated makeshift arrangements are checked for quality and type of material welding, anchoring etc.		
10.	Work at more than one elevation at the same segment is restricted.		
	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?		

Sl. No.	Descriptions	Observation (Yes/ No)	Remarks
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.		
	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.		
	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	Safety nets are use wherever required.		
5	Proper fall arrest system is deployed at critical workplaces.		
6	Crawler boards/Safety system or works on fragile roof are used.		

Signature of Site I/C of Sub-contractor :

	POWER SECTOR **INSPECTION OF WELDING AND GAS CUTTING**	FORMAT NO: HSEP:14-F11 REV NO.: 00

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

Welding				
Sl.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 is 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 shall not be used)			
	Total No of NO			
	Total No of YES			

	POWER SECTOR **INSPECTION OF WELDING AND GAS CUTTING**	FORMAT NO: HSEP:14-F11 REV NO.: 00

Gas Cutting				
Sl. 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 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 torch both for O2 and LPG cylinder?			
8	Is nozzle of the torch cleaned?			
	Total Number of NO			
	Total No of YES			
	% Compliance			

Signature of Site I/C of Sub-contractor :

	POWER SECTOR **INSPECTION OF ELECTRICAL INSTALLATION**	FORMAT NO: HSEP:14-F12 REV NO.: 00 PAGE NO. 01 OF 02

Name of Site	
Name of Sub-Contractor	
Inspected by	
Date of Inspection:	

Sr. No.	**Contents**	**Yes/No**	**Remarks**
A	**Cable**		
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 main boards 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?		
2.	Is ELCB sensitivity maintained at 30 mA?		

Sr. No.	Contents	Yes/No	Remarks
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 information:		

Signature of Site I/C of Sub-contractor :

	POWER SECTOR **INSPECTION OF ELEVATOR**	FORMAT NO: HSEP:14-F13 REV NO.: 00 PAGE NO. 01 OF 01

Name of Site	
Name of Sub-Contractor	
Inspected by	
Date 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-Subcontractor/Subcontractor's Safety Officer	**Signature-Site Safety Officer (BHEL)**

	POWER SECTOR **Inspection of Excavation**	FORMAT NO: HSEP:14-F13E REV NO.: 00 PAGE NO. 01 OF 01

Name of Site :	
Name of Sub-Contractor :	
Inspected by :	
Date 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-Subcontractor/ Subcontractor's Safety Officer **Signature-Site Safety Officer (BHEL)**

Sub: MEMO for Penalty for non-compliances in Safety

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

Safety Area

SN	Violation of Safety Norms	Fine (in Rs)
01	Not Wearing Safety Helmet	200/- *
02.	Not wearing Safety Belt or not anchoring life line	500/-*
03	Not wearing safety shoe	200/-*
04	Not keeping gas cylinders vertically	200/-
05	Not using flash back arrestors	100/-
06	Not wearing gloves	50/- *
07.	Grinding Without Goggles	50/- *
08.	Not using 24 V Supply For Internal Work	500/-
09.	Electrical Plugs Not used for hand Machine	100/-
10.	Not Slinging properly	200/-
11.	Using Damaged Sling	200/-
12.	Lifting Cylinders Without Cage	500/-
13.	Not Using Proper Welding Cable With Lot of Joints And Not Insulated Property.	200/-
14.	Not Removing Small Scrap From Platforms	500/-
15.	Gas Cutting Without Taking Proper Precaution or Not Using Sheet Below Gas Cutting	500/-
16.	Not Maintaining Electric Winches Which are Operated Dangerously	500/-
17.	Improper Earthing Of Electrical T&P	500/-
18	No or improper barricading	500/-
19.	Activity carried out without Safety work permit (Height work, Lifting activity, Hot work-each person/case)	1000/-
20.	Incident Resulting in Partial Loss in Earning Capacity	25,000/- per victim
21.	Fatal Incident Resulting in total loss in Earning Capacity	1,00,000/- per victim for first instance #

Legend: -

*: per head. For repeated violation by the same person, the penalty would be double of the previous penalty. Date of "Repeated violation" will be counted from subsequent days.

#: or as deducted by customer, whichever is higher. For repeated fatal incident in the same Unit incremental penalty tobe imposed. The Sub-contractor will pay 2 times the penalty compared to previously paid in case there are repeated cases of fatal incidents under the same Sub-contractor for the same package in the same unit.

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/labour

3. Total Penalty= 1. X 2.=

Signature:

Witnessed by: (Sub- Contractor representative) (BHEL Personnel)

Name_____

Distribution: 1 Copy: to Sub- contractor,
1 Copy to Site Construction Manager (BHEL)

बी एच ई एल BHEL	**POWER SECTOR- HQ** **Incident Report** (To be submitted within 24 hours of time of incident)	FORMAT NO: HSEP:14-F15 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 BODYINJURED					
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 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 Subcontractor**	
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	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. …**	

SN.	Description of HSE Activity& Formats	Plan & Targets for the month	Review
14	Job Safety Analysis as per Format F32B	**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 …**	

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 Ambulance (individual/ joint) in each shift	Ambulance No.	
30	Availability of emergency vehicle in each shift	Emergency vehicle	
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: Sign: Date:	**BHEL** Name: Sign: Date:	**Agency** Name: Sign: Date:	**BHEL** Name: Sign: Date:

	POWER SECTOR **Format for Daily HSE Reporting**	FORMAT NO: **HSEP:14-F31**A REV NO.: 00 PAGE NO. 01 OF 1

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

Site									**Subcontractor**																			
Year									**Month**															**Day**				
SHIFT	Submitted By	Work Area(s)	Staff	Man-Power	Safety Officers	Safety Stewards	Tool Box (Topics and No. of Participants)	Induction Training (No. of Participants)	Vertigo Test (Numbers Tested)	On-the-Job Training (Topic & participants)	Work Permits	Job Safety Analyses conducted	Height Work Inspection	Other Hazardous Activities Inspection	T&P Inspection (Names & Nos. Inspected)	Safety Walk (Designation, Areas)	HSE Meeting	Safety Reward (Details)	Housekeeping/ Dust Suppression/ Tree	Lost time Accident	Restricted Work Case	Medical Treatment Case	First Aid Case	Near miss	Property Damage/ Fire	Non-Compliances Submitted by BHEL	Complied by Agency		Any other Remarks/ Inputs
Day																												
Night															NA		NA	NA	NA									

	POWER SECTOR **Job Safety Analysis Format**	FORMAT NO: **HSEP:14-F32B** REV NO.: 00 PAGE NO. 01 OF 1

Name of the Site	
Name of the Subcontractor	
Activity, Area	

HAZARDS	**PRECAUTIONS**

(Name)	**Submitted By (Agency HSE)**		**Reviewed By (BHEL Execution)**		**Approved By (BHEL HSE)**	
(Sign)						
(Date)						

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 complied 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 labour)	M	2	Safety Officer qualification & experience records
2c	Availability of Qualified safety supervisor (1 for every 100 labour)	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, Hydras		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
2l.6	Availability of Tags & Inspection Certificates, colour coding for Wire rope slings etc.		1	Master T&P List with internal & external test details
2l.7	Availability of Tags & Inspection Certificates for Batching plants		1	Master T&P List with internal & external test details

SL	Parameter for Measurement	M/ O	Wt	Supporting Documents
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, with MBBS doctor(Own or Sharing basis)	**M**	2	Attendance records
9c	Availability of Ambulance facility 24 hours (Own or sharing basis)	**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.

BURNING/ WELDING / HOT WORK PERMIT

Area:_____ Date:_____ Time:_____

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

Name of Work Performing Contractor:_____

Name of Package In-charge:_____ Sign:_____ Date:_____

Description of Work:

_____

Work Execution Date:_____ Time Valid from:_____ to

The above signing person(s) will be responsible to ensure that the above described work will be done under all the safety precautions mentioned on the permit to work.

The following precautions are to be taken:

No.	Item	Yes	Not required
1.	Proper Access/Exit available		
2.	Proper ventilation and /or lighting provided.		
3.	Proper and safe scaffolding, platform, ladder provided.		
4.	Welding machine located in a clean and dry area.		
5.	Welding machine grounded at the equipment and proper leakage current protection device (ELCB) provided for welding machine.		
6.	Emergency STOP buttons are in working condition. Welder /Helper knows how to operate it.		
7.	Welding machine input/output cables, welding holder and weld return clamp (Holder) are insulated and in good condition.		
8.	Welder & Fitter trained to connect ground/work return clamps (Holder) to work place prior to energization of welding machine.		
9.	Gas cylinders are stacked vertically and not below the welding / cutting area. Regulator key is available with cylinder.		
10.	Pressure gauges/Flash back arrestor provided and in working condition.		
11.	Personal Protective equipment Minimum applicable: safety helmet, safety goggles, welding helmet, safety shoes, leather gloves, long sleeve and nose mask -provided		
12.	In case of pits, water removed from the pit and wood/rubber insulation provided.		
13.	Safety signboards are in place.		
14.	Adequate and Suitable nos. of fire fighting extinguisher provided.		
15.	Nearby combustible material removed. Housekeeping done.		
16.	Other		

Name of Contractor Safety Officer:_____ Sign:_____ Date:_____ Time:

Reviewed and approved by BHEL Site Engineer (Permit Issuing Authority):

Name:_____ Sign:_____ Date:_____ Time:_____

Name of BHEL Safety Representative:_____ Sign:

I understand the precaution to be taken as described above and as per project requirement and hereby confirm that work will be executed under my supervision by following all precaution and Safety Rules.

Name of Work Performing Authority:_____ Sign:_____ Date:_____ Time:_____

Permit Cancellation:

I hereby declare that the work is complete, all workers under my control have been withdrawn and the site restored to safe tidy condition. Name of Work performing Authority:_____ Sign:_____ Date:_____ Time:_____

Name of Site Engr. (Permit Requesting Authority):_____ Sign:_____ Date:_____ Time:_____

Name of BHEL Site Engr. (Permit Issuing Authority):_____ Sign:_____ Date:_____ Time:

(This permit is valid only for the date it is issued)

Original at BHEL site **Second Copy –BHEL SAFETY** **Third Copy :Contractor**

LIFTING ACTIVITY PERMIT

Area :_____ Date:_____ Time:_____

Name of Site Engineer (Permit Requesting Authority):_____ Sign: Name of Work Performing Contractor: _____

Name of Package In-charge:_____ Sign:_____ Date:_____

Description of Work:

_____

Work Execution Date:_____ Time Valid from:_____ to

The above signing person(s) will be responsible to ensure that the above described work will be done under all the safety precautions mentioned on the permit to work.

The following precautions are to be taken:

No.	Item	Yes	Not required
1.	Crane used for lifting activity tested, certified and approved for rated lifting		
2.	All lifting tackles, gears/appliances are tested and certified for lifting works.		
3.	Crane operator is trained and competent for lifting operation.		
4.	Lifting sling/ belt is protected against sharp edge of the jobs to be lifted.		
5.	Access and exit marked and without obstruction.		
6.	Lifting arrangement adequate.		
7.	Unwanted rubbish material removed from work platform.		
8.	Minimum 2 guidelines have been provided for balancing and guiding jobs to be lifted.		
9.	Periphery area of crane booms as well as lifting job is barricaded and unauthorized/no-entry sign board posted.		
10.	Rigger and signal man is trained and competent for lifting work.		
11.	No lifting activity to be carried out during lightening, heavy wind/rain.		
12.	If scaffolding to be used during lift, scaffolding with valid tag available for use.		
13.	Double lanyards safety harness/belt checked an in working condition.		
14.	Safety shoes (non-slip), helmet with chin strap available with employees.		
15.	Others.		

Name of Contractor Safety Officer:_____ Sign:_____ Date:_____ Time:

Reviewed and approved by BHEL Site Engineer (Permit Issuing Authority):

Name:_____ Sign:_____ Date:Time:_____ Name of BHEL Safety Representative:_____ Sign:

I understand the precaution to be taken as described above and as per project requirement and hereby confirm that work will be executed under my supervision by following all precaution and Safety Rules.

Name of Work Performing Authority:_____ Sign:_____ Date:_____ Time:_____

Permit Cancellation:

I hereby declare that the work is complete, all workers under my control have been withdrawn and the site restored to safe tidy condition.

Name of Work performing Authority:_____ Sign:_____ Date:_____ Time:_____

Name of Site Engr. (Permit Requesting Authority):_____ Sign:_____ Date:_____ Time:_____

Name of BHEL Site Engr. (Permit Issuing Authority):_____ Sign:_____ Date:_____ Time:

(This permit is valid only for the date it is issued)

Original at BHEL site **Second Copy –BHEL SAFETY** **Third Copy :Contractor**

WORKING AT HEIGHT PERMIT

Area :_____ Date:_____ Time:_____

Name of Site Engineer (Permit Requesting Authority):_____ Sign: Name of Work Performing Contractor: _____

Name of Package In charge:_____ Sign:_____ Date:_____

Description of Work:

_____

Work Execution Date:_____ Time Valid from:_____ to

The above signing person(s) will be responsible to ensure that the above described work will be done under all the safety precautions mentioned on the permit to work.

The following precautions are to be taken:

No.	Item	Yes	Not required
1.	All workers on job are medically fit for working at height (Person should not have vertigo)		
2.	Scaffolding with valid tag available for use		
3.	Safety harness with life line support/ fall arrester are checked and in working condition		
4.	Safety shoes (non-slip), Helmet with chin strip available with employees		
5.	Safety nets are provided as per design and provided 25 ft. below working area & extending 8 ft beyond.		
6.	Horizontal life lines are provided to cater to design specification of 2300kg per person.		
7.	Ladders have been inspected and provided as per BHEL standard/contract.		
8.	All lifting / tightening tools, hand tools/equipment checked and in good condition		
9.	Access and exit marked and without obstruction.		
10.	Lighting arrangement adequate.		
11.	Unwanted and rubbish material removed from working platform.		
12.	Electrical cable, welding Hose/Compressed air hose properly secured and lay down without obstruction.		
13.	Signboards provided on working platforms		
14.	Hazards in the vicinity are identified and communicated to the worker.		
15.	Other		

Name of Contractor Safety Officer:_____ Sign:_____ Date:_____ Time:

Reviewed and approved by BHEL Site Engineer (Permit Issuing Authority):

Name:_____ Sign:_____ Date:Time:_____ Name of BHEL Safety Representative:_____ Sign:

I understand the precaution to be taken as described above and as per project requirement and hereby confirm that work will be executed under my supervision by following all precaution and Safety Rules.

Name of Work Performing Authority:_____ Sign:_____ Date:_____ Time:_____

Permit Cancellation:

I hereby declare that the work is complete, all workers under my control have been withdrawn and the site restored to safe tidy condition.

Name of Work performing Authority:_____ Sign:_____ Date:_____ Time:_____

Name of Site Engr. (Permit Requesting Authority):_____ Sign:_____ Date:_____ Time:_____

Name of BHEL Site Engr. (Permit Issuing Authority):_____ Sign:_____ Date:_____ Time:

(This permit is valid only for the date it is issue

Original at BHEL site **Second Copy – BHEL SAFETY** **Third Copy : Contractor**

CONFINED AREA WORK PERMIT

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):		

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:	**Site HSE Officer:**
Signature:	Signature:
Name: Designation:	Name: Designation:

B. Permit Issuer (BHEL):

Site HSE Officer/ Authorized Representative:	**Site Engineer/ Authorized Representative:**
Signature:	Signature:
Name: Designation:	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. HOS** **3rd Copy: BHEL Site HSE**

P.T.O.

(To be printed on both sides of an A4 Sheet)

LOCKOUT TAGOUT WORK PERMIT

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		TagI 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):		

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.

D. Permit Requester/ Receiver (Agency):

Site Engineer:	
Signature:	
Name:	Designation:

Site HSE Officer:	
Signature:	
Name:	Designation:

E. Permit Issuer (BHEL):

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

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

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

(* Permit valid for 14 days as per overleaf format)

Original: Permittee	2nd Copy: Agency Deptt. HOS	3rd Copy: BHEL Site HSE

(To be printed on both sides of an A4

DEMOLISHING/ DISMANTLING WORK PERMIT

Project : Sr. No. :

Name of the work : Date :

Name of contractor : Job No. :

Name of sub-contractor (List enclosed with name & gate pass numbers) : No. of workers to be engaged:

Line No./Equipment No./Structure to be dismantled:

Location details of dismantling/demolition with sketch: (clearly indicate the area)

The following items have been checked & compliance shall be ensured during currency of the permit:

Sl. No.	Item Description	Done	Not Applicable
1.	Services like power, gas supply, water, etc disconnected		
2.	Dismantling/Demolishing method reviewed & approved		
3.	Usage of appropriate PPEs ensured		
4.	Precautions taken for neighbouring structures		
5.	First-Aid arrangements made		
6.	Fire fighting arrangements ensured		
7.	Precautions taken for blasting		

(Contractor's Supervisor) (Contractor's Safety Officer)

Permission is granted.

(Permit issuing authority)

Name :

Date:

Completion report:

Dismantling/Demolishing is completed on …… Date at …….. Hrs.

Materials/debris transported to identified location (as applicable) ☐ Tagging completed ☐

Services like power, gas supply, water, etc restored ☐

(Permit issuing authority)

CONTRACTOR's NAME

SAFETY WALK-THROUGH REPORT

(Name & signature of walk through performer to be inserted at the bottom of each page)

Project : _____ Report no. : _____

Date : _____ Contractor : _____

Inspection by : _____ Owner : _____

Frequency : Monthly Job no. : _____

Note: Write 'NA' wherever the item is not applicable.

Sl. No.	Item	Satis-factory/Yes	Non- satis-factory/No	Remarks	Action
1.	Housing Keeping				
a)	Waste containers provided and used				
b)	Sanitary facilities adequate and clean				
c)	Passageways and walkways clear				
d)	General neatness of working areas				
e)	Other				
2.	Personnel Protective Equipment				
a)	Goggles; Shields				
b)	Face protection				
c)	Hearing protection				
d)	Foot protection				
e)	Hand protection				
f)	Respiratory masks etc.				
g)	Full body harness conforming to CC, EN 361				
h)	Hard hat (HDPE)				
i)	Other				
3.	Excavations/Openings				
a)	Openings properly covered or barricaded				
b)	Excavations shored				
c)	Excavations barricaded				
d)	Overnight lighting provided				
e)	Other				

Safety walk-through performer (Name & Signature).....

(continued)

Sl. No.	Item	Satis-factory/Yes	Non- satis-factory/No	Remarks	Action
4.	Welding & Gas Cutting				
a)	Gas cylinders chained upright				
b)	Cables and hoses not obstructing				
c)	Screens or shields used				
d)	Flammable materials protected				
e)	Live electrode bits contained properly				
f)	Fire extinguisher (s) accessible				
g)	Other				
5.	Scaffolding & Barricading				
a)	Fully decked platforms				
b)	Guard and intermediate rails in place				
c)	Toe boards in place				
d)	Adequate shoring				
e)	Adequate access				
f)	Positive barricading for critical activities				
g)	Installation of warning signs				
h)	Other				
6.	Ladders				
a)	Extension side rails 1 m above				
b)	Top of landing				
c)	Properly secured				
d)	Angle ±70^0 from horizontal				
e)	Other				
7.	Hoists, Cranes and Derricks				
a)	Condition of cables and sheaves OK				
b)	Condition of slings, chains, hooks and eyes OK				
c)	Inspection and maintenance log-books maintained				
d)	Outriggers used				
e)	Reverse horn installed/ active/coupled with gear				

Safety walk-through performer (Name & Signature) ……

(continued)

Sl. No.	Item	Satisfactory / Yes	Non satisfactory / No	Remarks	Action
f)	Signs/barricades provided				
g)	Signals observed and understood				
h)	Qualified operators				
i)	Other				
8.	**Machinery, Tools and Equipment**				
a)	Proper instruction				
b)	Safety devices				
c)	Proper cords				
d)	Inspection and maintenance				
e)	Other				
9.	**Vehicle and Traffic**				
a)	Rules and regulations observed				
b)	Inspection and maintenance				
c)	Licensed drivers				
d)	Other				
10.	**Temporary Facilities**				
a)	Emergency instructions posted				
b)	Fire extinguishers provided				
c)	Fire-aid equipment available				
d)	Secured against storm damage				
e)	General neatness				
f)	In accordance with electrical requirements				
g)	Other				
11.	**Fire Prevention**				
a)	Personnel trained & instructed to make use of facility				
b)	Fire extinguishers checked periodically & record maintained				
c)	No smoking in Prohibited areas				
d)	Fire Hydrants not obstructed				
e)	Regular fire drill conducted				

(continued)

Sl. No.	Item	Satisfactory / Yes	Non-satis-factory/ No	Remarks	Action
12.	**Electrical**				
a)	Use of 3-core armored cables everywhere				
b)	Usage of 'All insulated' or 'double-insulated' electrical tools				
c)	All electrical connection are routed through ELCB				
d)	Natural Earthing at the source of power (Main DB)				
e)	Continuity and tightness of earth conductor				
f)	Effective covering of junction boxes, panels and other energized wiring places				
g)	Ground fault circuit interrupters provided				
h)	Prevention of tripping hazards maintained				
i)	DCP extinguishers arranged & licensed electrician engaged at site				
13.	**Handling and Storage of Materials**				
a)	Safely stored or stacked				
b)	Passageways clear/free from obstructions				
c)	Fire fighting facility in place				
14.	**Flammable Gases and Liquids**				
a)	Containers clearly identified/protected from fire				
b)	Safe storage & transportation arrangement made				
c)	Fire extinguishers positioned nearby				
d)	Facilities kept away from electric spark, hot spatters & ignition source				

(continued)

Sl. No.	Item	Satisfactory /Yes	Non-satis-factory/ No	Remarks	Action
15.	**Working at Height**				
a)	Approved Erection plan and work permit in place				
b)	Safe access, Safe work platform & Safety nets provided				
c)	Life lines, Fall arrester, Full body harness with double lanyards used				
d)	Health Check record available for workers going up?				
e)	Protective handrails arranged around floor openings				
16.	**Confined Space**				
a)	Work Permit obtained from requisite authority				
b)	Test for toxic gas and sufficient availability of oxygen conducted & status				
c)	Supervisor present at site & at least one person outside the confined space for monitoring deputed				
d)	Availability of safe means of entry, exit and ventilation (register for entry & exit maintained)				
e)	Fire extinguisher and first-aid facility ensured				
f)	Lighting provision made by using 24V Lamp				
g)	Proper usage of PPEs ensured				
17.	**Radiography**				
a)	Proper storage and handling of source as per BARC/AERB guidelines (authorized radiographer available)				
b)	Work permit obtained				
c)	Cordoning of the area done				

(continued)

Sl. No.	Item	Satis-factory/Yes	Non- satis-factory/No	Remarks	Action
d)	Use of appropriate PPE's ensured				
e)	HSE training to workers/supervisors imparted during the fortnight (indicate topic)				
f)	Minimum occupancy of workplace ensured				
18.	**Health Checks**				
a)	All Workers medically examined and found be fit for working at heights (slinging, rigging, painting etc.) in confined space in excavation/trenching in shot blasting				
b)	Availability of First Aid box with contents				
c)	Proper sanitation at site, office and labour camps				
d)	Arrangement of medical facilities				
e)	Measures for dealing with illness at site &labour camps				
f)	Availability of Potable drinking water for workmen & staff				
g)	Provision of crèches for children				
h)	Stand by vehicle / ambulance available for evacuation of injured				
19.	**Environment**				
a)	Chemical and Other Effluents properly disposed				
b)	Cleaning liquid of pipes disposed off properly				
c)	Sea water used for hydro-testing disposed off as per agreed procedure				
d)	Lubricant Waste/Engine oils properly disposed				

(continued)

Sl. No.	Item	Satis-factory/Yes	Non- satis-factory/No	Remarks	Action
e)	Waste from Canteen, offices, sanitation etc disposed properly				
f)	Disposal of surplus earth, stripping materials, Oily rags and combustible materials done properly				
g)	Green belt protection				

ACCIDENT/INCIDENT REPORT

(To be submitted by Contractor after every Incident/Accident within 24 hours to DASTUR/Owner)

Report No. : _____ Date : _____

Project site : _____ Name of work : _____

Contractor's name :_____ Contractor's Job Engineer (Name) : _____

Non-disabling injury (Non-LTA)	Hospitalized but resumed duty before end of 48 hrs	
Disabling injury (other LTA)	Hospitalized & failed to resume duty within next 48 hrs	
Fatal (LTA)	Death/Expiry	
First Aid case (non LTA)	Resume duty after first aid	

Name of the injured: ..... Father's name of victim: .....

Sub-contractor's Name: .....

Gate Pass No.: ..... Age: ..... Yrs.

Victim's medical fitness exam. (Pre-empl.) date: .....

Date & time of Accident/Incident: .....

Name of Witness: (1) ..... (2) ..... (3) .....

Profession of victim:

Bar Bender		Carpenter		Meson	
Fitter		Helper		Gas Cutter	
Grinder		Welder		Electrician	
Driver		Rigger		M/c. Operator	
Engineer		Manager		Others (specify)	

Qualification:

No formal education		Non-Matriculate		Matriculate	
Graduate		Post-graduate		Others (specify)	

(continued)

Job Experience:

NIL		Less than 2 yrs		2-5 yrs	
5-10 yrs		11-15 yrs		15 years and above	

Location where the incident happened: .....

Activity/works that was continuing during incident/accident:

Excavation		Demolition		Concrete carrying	
Concrete pouring		Transportation of materials (manually)		Transportation of materials (mechanically)	
Work on or adjacent to water		Work at height (+2.0mts)		Scaffold preparation	
Scaffold dismantling		Piling works		Welding	
Grinding		Gas cutting		Pipe fit-ups & fabrication	
Structural fabrications		Machine works		Hydro-testing works	
Electrical works		Erection activities		Others (specify)	

What exactly the victim was doing just before the incident/accident ?.....
.....
.....

Nature of Injury:

Bruise or Contusion		Abrasion (superficial wound)		Sprains or strains	
Cut or Laceration		Puncture or Open wound		Burn	
Inhalation of toxic or Poisonous fumes or gases		Absorption		Amputation	
Fracture		Others (specify)			

Parts of body involved in incident/accident:

Head		Face		Eyes	
Throat		Arm (above wrist)		Hand (including wrist)	
Fingers		Truck (Abdomen/ Back/ Chest/ Shoulder)		Throat	
Leg (above ankle)		Foot (incl. ankle)		Toes	
Multiple				Others (specify)	

(continued)

Accident type:

Struck against		Struck by		Fall from elevation	
Fall on same level		Caught in		Caught under	
Caught in between		Rubbed or abraded		Contact with (Electricity)	
Contact with (Temp./Extremes)		Contact with chemicals or oils		Vehicle accident	
Others (specify)					

Medical Aid provided (indicate specific aids/treatment etc): .....
.....
.....
.....

Actions taken to prevent recurrence of similar incident/accident:
.....
.....
.....
.....
.....

Intimation to local authorities (Dist. Collector/Local Police Station/ESI Authority) : Yes/No/NA. If yes, to whom .....
.....
.....

Safety Officer
(Signature and Name)
Stamp of Contractor

Site Head/Resident Construction Manager
(Signature and Name)

To: Owner
RCM/Site-in-Charge DASTUR (3 copies)

Divisional Head (Construction) through RCM

Project Manager, DASTUR, through RCM

SUPPLEMENTARY INCIDENT/ACCIDENT INVESTIGATION REPORT
TICK THE APPROPRIATE ONE AS APPLICABLE (Furnish within 72 hours)

Supplementary to Incident/Accident Report No. ..... (Copy enclosed)

Report No.: _____ Date: _____

Project site: _____ Name of work: _____

Contractor's name :_____ Contractor's Job Engineer (Name): ----------

Non-disabling injury (Non-LTA)	Hospitalized but resumed duty before end of 48 hrs	
Disabling injury (other LTA)	Hospitalized & failed to resume duty within next 48 hrs	
Fatal (LTA)	Death/Expiry	
First Aid case (non LTA)	Resume duty after first aid	

Name of the injured: ..... Father's name of victim: .....

Sub-contractor's Name: .....

Gate Pass No.: ..... Age: ..... Yrs.

Victim's medical fitness exam. (Pre-empl.) date: .....

Date & time of Accident/Incident: .....

Name of Witness: (1) ..... (2) ..... (3) .....

Profession of victim:

Bar Bender		Carpenter		Meson	
Fitter		Helper		Gas Cutter	
Grinder		Welder		Electrician	
Driver		Rigger		M/c. Operator	
Engineer		Manager		Others (specify)	

Qualification:

No formal education		Non-Matriculate		Matriculate	
Graduate		Post-graduate		Others (specify)	

Job Experience:

NIL		Less than 2 yrs		2-5 yrs	
5-10 yrs		11-15 yrs		15 years and above	

Location where the incident happened: .....

(continued)

Activity/Works that was continuing during incident/accident:

Excavation		Demolition		Concrete carrying	
Concreting pouring		Transportation of materials (manually)		Transportation of materials (mechanically)	
Work on or adjacent to water		Work at height (+2.0 mts)		Scaffold preparation	
Scaffold dismantling		Piling works		Welding	
Grinding		Gas cutting		Pipe fit-ups & fabrication	
Structural fabrications		Machine works		Hydro-testing works	
Electrical works		Erection activities		Others (specify)	

What exactly the victim was doing just before the incident/accident ?……
……
……

Particular of tools & tackles being used and condition of the same after incident/accident: ……
……

Description of incident/accident (how the incident was caused): ……
……
……

Nature of Injury:

Bruise or Contusion		Abrasion (superficial wound)		Sprains or strains	
Cut or Laceration		Puncture or Open wound		Burn	
Inhalation of toxic or Poisonous fumes or gases		Absorption		Amputation	
Fracture		Others (specify)			

Parts of body involved in incident/accident:

Head		Face		Eyes	
Throat		Arm (above wrist)		Hand (including wrist)	
Fingers		Truck (Abdomen/Back/ Chest/Shoulder)		Throat	

Leg (above ankle)		Foot (incl. ankle)		Toes	
Multiple				Others (specify)	

(continued)

Accident type:

Struck against		Struck by		Fall from elevation	
Fall on same level		Caught in		Caught under	
Caught in between		Rubbed or abraded		Contact with (Electricity)	
Contact with (Temp./Extremes)		Contact with chemicals or oils		Vehicle accident	
Others (specify)					

Name & Designation of person who provided First-Aid to the victim: .....
.....

Name & Telephone number of Hospital where the victim was treated: .....
.....

Mode of transport used for transporting victim – Ambulance/Private car/Tempo/Truck/Others: .....

How much time taken to shift the injured person to Hospital: .....

In case of FATAL incident, indicate clearly the BOCW Registration No. of the Victim/Company: .....

Comments of Medical Practitioner, who treated/attended the victim/injured (attached/described here): .....

What actions are taken for investigation of the incident, please indicate clearly – (Video film/Photography/Measurements taken etc: .....
.....)

Immediate cause (Please tick the right applicable)**:**

Hazardous methods or procedures inadequately guarded		Poor housekeeping		Inadequate or improper PPE	
Environmental hazards (excess noise/space constraint/inadequate ventilation)		Improper illumination/moving on oval surface		Working on dangerous equipment	
Failure to secure		Horse-play		Failure to use PPE	
Inattention to surroundings		Improper use of hands & body parts		By-passing safety devices	

Unsafe mixing or placement of tools & tackles		By-passing standard procedures		Failure in communication	
Operating without authority		Improper use of equipment or tools & tackles		Drug or alcoholic influence	
Excessive haste		Others (specify)			

(continued)

Basic cause:

Over confidence		Impulsiveness		Over exertion	
Faulty Judgment or poor understanding		Failing to keep attention constantly		Nervousness & fear	
Fatigue		Defective vision		Ill health or sickness	
Slow reaction		Others (specify)			

Root cause:

Inadequate Engg		Improper Design		Inadequate planning & organization	
Inadequate knowledge		Inadequate skill		Inadequate training	
Inadequate supervision		Improper work procedure		Inadequate compliance with standard	
Substandard performance		Inadequate maintenance		Improper inspection	
Others (specify)					

Loss of man days and impact on site works, (if any):

Remarks from Contractor(s) Safety Officer/Engineer:

- Was the victim performing relevant tasks for which he was engaged/employed ? .. Yes / No

- Was the Supervisor present on work-site during the incident .. Yes / No

- Have the causes of incident rightly identified ? .. Yes / No

Cause of Accident was .....

Remedial measures recommended by **Safety Officer of Contractor** for avoiding similar incident in future: .....
.....
.....

Intimation to local authorities (District Collector/Local Police Station/ESI authority): Yes / No / NA. If Yes, to whom .....

Safety Officer
(Signature and Name)
Stamp of Contractor

Site Head/Resident Construction Manager
(Signature and Name)

To:
Owner
RCM/Site-in-Charge DASTUR (3 copies)
Divisional Head (Construction) through RCM
Project Manager, DASTUR, through RCM

NEAR MISS INCIDENT/DANGEROUS OCCURRENCE SUGGESTED PROFORMA (To be submitted within 24 hours)

- **Near Miss:** Human injury escaped and no damage to property, equipment or interruption to work.
- **Dangerous Occurrence:** Damage to property, equipment or interruption of work, but not resulting in personal injury/illness, e.g. fire incident, collapse of structure, crane failure, etc.

Report No.: .....

Name of Site: ..... Date: .....

Name of Work: ..... Contractor: .....

Incident reported by :

Date & Time of incident :

Location :

Brief description of incident:

Probable cause of incident:

Suggested corrective action:

Steps taken to avoid recurrence: Yes ☐ No. ☐

To: Owner
- RCM/Site-in-Charge DASTUR (3 copies)
- Divisional Head (Construction) through RCM
- Project Manager, DASTUR, through RCM

MONTHLY HEALTH, SAFETY & ENVIRONMENT (HSE) REPORT

(To be submitted by each Contractor)

Actual work start Date:..... For the Month of: .....
Project: ..... Report No.: .....
Name of Contractor: ..... Status as on: .....
Name of Work: ..... Job No.: .....

Item		Upto Previous Month	This Month	Cumulative
1.	Average no. of Staff & Workmen (average daily headcount, not man days)			
2.	Man-hours worked			
3.	No. of induction programmes conducted			
4.	No. of HSE meetings organized at site			
5.	No. of HSE awareness programmes conducted at site			
6.	No. of Tool Box Talks conducted			
7.	No. of Lost Time Accidents (LTA):			
-	Fatal			
-	Other LTA			
8.	No. of Loss Time Injuries (LTI):			
-	Facilities			
-	Other LTI			
9.	No. of Non-Loss Time Accidents			
10.	No. of First Aid Cases			
11.	No. of Near Miss Incidents			
12.	No. of unsafe acts/practices detected			
13.	No. of disciplinary actions taken against staff/workmen			
14.	Man-days lost due to accidents			
15.	LTA Free man-hours i.e. LTA free man-hours counted from last LTA (enter date: ……)			
16.	Frequency Rate (No. of LTA per 2 lakhs man-hours worked)			
17.	Se verity Rate (No. of man-days lost per 2 lakhs man-hours worked)			
18.	Loss Time Injury Frequency (No. of LTI per 2 lakhs man-hours worked)			
19.	No. of activities for which Job Safety Analysis (JSA) completed			
20.	No. of incentives/awards given			
21.	No. of occasions on which penalty imposed by DASTUR/Owner			
22.	No. of Audits conducted			
23.	No. of pending NCs in above Audits			
24.	Compensation cases raised with Insurance			
25.	Compensation cases resolved and paid to workmen			
26.	Whether workmen compensation policy taken		Yes	No
27.	Whether workmen compensation policy is valid		Yes	No
28.	Whether workmen registered under ESI Act, as applicable		Yes	No
Remarks, if any:				

Date: ……..

Prepared by Safety Officer
(Signature and Name)

Approved by Site Head/Resident Construction Manager
(Signature and Name)

To: - Owner
- RCM DASTUR (2 copies)

DAILY SAFETY CHECKLIST
(To make use of before start of day's work)

Project	:	Sr. No.	:
Name of the work	:	Date	:
Name of contractor	:	Job No.	:

Description of Job decided to perform:

- **Use of PPE/Safety Gadgets**

Sl. No.	PPEs	Compliance (Yes/No)	Sl. No.	PPEs	Compliance (Yes/No)
1	Safety Helmets		6	Face Shield	
2	Safety Shoes		7	Full body harness	
3	Hand Gloves		8	Fall Arrest System	
4	Dust Musk		9	Safety Net	
5	Safety Goggles		10	Horizontal life-line made of steel wire (dia not less than 8.0 mm)	

(Sl. No. 1 & 2 are compulsory for everyone. Specify and ensure use of other safety gadgets as required for the job).

- **Identify following important unsafe conditions:**

Sl. No.	Conditions	Yes/No
1	Access to work site/emergency escape clear	
2	Soil/Loose earth kept away from excavated pit/slope/ladder provided	
3	Electrical wire/welding lead lying entangled on ground/welding m/c. booth accessible	
4	Elevated Work platform/open ends are protected	
5	Ground area cordoned-off before lifting works ore erection at height/ground area checked and cordoned-off before start of height works	
6	Structural members/erected pipes/wooden boards/pieces etc are safely anchored at heights and are not likely to fall down on people when working beneath	
7	Rope ladders tied-up on tall steel structures, long before are removed to get rid of their use	
8	Any other	

- Indicate actions taken, if status of any of the above items is found …… No ☐
……

- Specific Safety Guidelines/Precautions, if any (communicated through TBT) ……
……

- Above conditions and PPE compliances are checked by undersigned and correct status are indicated after verification.

*******END OF DOCUMENT*******