

# **TENDER SPECIFICATION**

**No : BHE/PW/PUR/SLT-INS/577**

FOR

HANDLING & COLLECTION OF MATERIALS AT BHEL/CLIENT'S STORAGE YARD/ STORES, TRANSPORTATION TO SITE, APPLICATION OF LINING & INSULATION MATERIALS INCLUDING ERECTION OF FIXING & SUPPORTING COMPONENTS, SHEET CLADDING, OUTER CASING, ETC ON CFBC BOILER AND ITS AUXILIARIES, TG AUXILIARIES, TG PIPING, POWER CYCLE PIPING & LP PIPING AND OTHER EQUIPMENTS INCLUDING BOIs AND HANDING OVER OF 2x125 MW UNIT # 3 & 4

AT

**GUJARAT INDUSTRIAL POWER COMPANY LIMITED  
EXPANSION OF SURAT LIGNITE POWER PLANT (SLPP)  
NANI NAROLI, TALUKA-MANGROL  
DISTT: SURAT, GUJARAT**

**PART I - TECHNICAL BID**

BOOK NO.:



**BHARAT HEAVY ELECTRICALS LIMITED**

*(A GOVERNMENT OF INDIA UNDERTAKING)*

POWER SECTOR : WESTERN REGION

345, KINGSWAY : NAGPUR 440 001

BHARAT HEAVY ELECTRICALS LIMITED:PSWR:NAGPUR  
TENDER SPECIFICATION NO. – BHE/PW/PUR/SLT-INS/577

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\$: Included in Tender Specifications Part-I. Hosted in BHEL web page ([www.bhel.com](http://www.bhel.com)) as file titled **"NIT+GCC-577"**.

@: Issued as separate hard copy booklet 'Tender Specifications Part-II (Price Bid)'. Hosted in BHEL web page ([www.bhel.com](http://www.bhel.com)) as file titled **"PRICE BID-577"**

**Note:**

Rest of the tender documents are included in Tender Specifications Part-I. Hosted in BHEL web page ([www.bhel.com](http://www.bhel.com)) as file titled **"TECH BID-577"**

# **BHARAT HEAVY ELECTRICALS LIMITED**

(A GOVERNMENT OF INDIA UNDERTAKING)

POWER SECTOR - WESTERN REGION

SHREEMOHINI COMPLEX

345, KINGS WAY - NAGPUR 440 001

**No. - BHE/PW/PUR/SLT-INS/577**

FOR

HANDLING & COLLECTION OF MATERIALS AT BHEL/CLIENT'S STORAGE YARD/ STORES, TRANSPORTATION TO SITE, APPLICATION OF LINING & INSULATION MATERIALS INCLUDING ERECTION OF FIXING & SUPPORTING COMPONENTS, SHEET CLADDING, OUTER CASING, ETC ON CFBC BOILER AND ITS AUXILIARIES, TG AUXILIARIES, TG PIPING, POWER CYCLE PIPING & LP PIPING AND OTHER EQUIPMENTS INCLUDING BOI's AND HANDING OVER OF 2x125 MW UNIT # 3 & 4

AT

**GUJARAT INDUSTRIAL POWER COMPANY LIMITED**

EXPANSION OF SURAT LIGNITE POWER PLANT (SLPP)

NANI NAROLI, TALUKA-MANGROL

DISTT: SURAT, GUJARAT

EARNEST MONEY DEPOSIT : Rs. 2,00,000/- (RS. TWO LAKH ONLY)

BIDDERS WHO HAVE DEPOSITED 'ONE TIME EMD' OF Rs. 2.0 LAKH WITH BHEL:PSWR: NAGPUR WILL BE EXEMPTED FROM SUBMISSION OF EMD WITH THIS TENDER. SUCH BIDDER SHALL INDICATE THE DETAILS LIKE DD No. / CASH RECEIPT No. OF SUCH 'ONE TIME EMD'.

LAST DATE AND TIME FOR  
RECEIPT OF OFFERS

THESE TENDER DOCUMENTS CONTAINING **PART-I** TECHNICAL BID AND **PART- II** PRICE BID, ARE ISSUED TO:

M/S.

(THESE TENDER DOCUMENTS ARE NOT TRANSFERABLE)

FOR BHARAT HEAVY ELECTRICALS LIMITED

Addl. GEN MANAGER (SMX)

PLACE: NAGPUR

DATE :

BHARAT HEAVY ELECTRICALS LIMITED:PSWR:NAGPUR  
TENDER SPECIFICATION NO. - BHE/PW/PUR/SLT-INS/577

Part-I: Technical Bid specifications

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BHARAT HEAVY ELECTRICALS LIMITED  
(A Government of India Undertaking)  
POWER SECTOR - WESTERN REGION  
345, KINGS WAY - NAGPUR 440 001

PROCEDURE FOR SUBMISSION OF SEALED TENDERS

THE TENDERER MUST SUBMIT THEIR TENDERS AS REQUIRED IN TWO PARTS IN SEPARATE SEALED COVERS PROMINENTLY SUPERSCRIBED AS PART-I TECHNICAL BID AND PART-II PRICE BID AND ALSO INDICATING ON EACH OF THE COVERS THE TENDER SPECIFICATION NUMBER AND DUE DATE AND TIME AS MENTIONED IN THE TENDER NOTICE.

PART-I (TECHNICAL BID) COVER-I

EXCEPTING RATE SCHEDULE, ALL OTHER SCHEDULES, DATA SHEETS AND DETAILS CALLED FOR IN THE SPECIFICATION SHALL BE ENCLOSED IN PART-I "TECHNICAL BID" ONLY.

PART-II (PRICE BID) COVER-II

ALL INDICATIONS OF PRICE SHALL BE GIVEN IN THIS PART-II "PRICE BID". **EMD SHALL NOT BE INCLUDED IN THIS COVER.**

THESE TWO SEPARATE COVERS -I AND II (PART-I AND PART-II) SHALL TOGETHER BE ENCLOSED IN A THIRD ENVELOPE (COVER-III) ALONGWITH REQUISITE EMD AS INDICATED EARLIER AND THIS SEALED COVER SHALL BE SUPERSCRIBED AND SUBMITTED TO ADDL. GEN MANAGER (PURCHASE) AT THE ABOVE MENTIONED ADDRESS ON OR BEFORE THE DUE DATE AS INDICATED.

THE QUALIFIED TENDERER WILL BE INTIMATED SEPARATELY ABOUT THE STATUS OF THEIR OFFER.

TENDERER ARE REQUESTED TO MAKE SPECIFIC NOTE OF THE FOLLOWING CONDITIONS:

CONTRACTOR SHOULD HAVE ADEQUATE RESOURCES INCLUDING MAJOR T&PS AT HIS DISPOSAL FOR THIS JOB.

CONTRACTOR SHOULD HAVE SOUND FINANCIAL STABILITY.

TENDERER SHOULD MEET QUALITY REQUIREMENT REGARDING WORKMANSHIP, DEPLOYMENT OF PERSONNEL, ERECTION TOOLS AND NECESSARY INSPECTION, MEASUREMENT & TESTING INSTRUMENTS.

ALL INFORMATION AS CALLED FOR IN VARIOUS APPENDICES AND CLAUSES OF TENDER SPECIFICATION, SHOULD BE FURNISHED IN COMPLETENESS. PLEASE REFER THE CHECKLIST.

CLARIFICATION ON TENDER IF ANY SHALL BE OBTAINED BY THE TENDERER BEFORE SUBMITTING THEIR OFFER.

OFFERS MUST BE SUBMITTED WITHOUT ANY DEVIATION.

OFFERS RECEIVED WITH ANY DEVIATION OR WITHOUT RELEVANT INFORMATION AS DESCRIBED ABOVE ARE LIABLE TO BE REJECTED. PRICE BIDS RECEIVED IN THE FORM OTHER THAN SPECIFIED IN PART-II (PRICE BID) ARE LIABLE TO BE REJECTED.

**TENDERER SHALL NOTE THAT THEIR OFFER WILL BE CONSIDERED SUBJECT TO THE APPROVAL OF BHEL'S CUSTOMER.**

## PROJECT INFORMATION

### INTRODUCTION

**Gujarat Industries Power Company Limited (GIPCL)**, as part of expansion plan is installing the two units each of 125 MW under “2x125 MW, Expansion project (Phase II)- Unit-3 & 4” plan in their existing 2x125 MW phase-I premise at Surat Lignite Power Plant (SLPP), Nani Naroli, P.O. Nani Naroli-394110, Taluka- Mangrol, Dist.- Surat.

The site is located at a distance of approximately 28 kms from Kosamba, Village Nani Naroli, Taluk Mangrol, District Surat, Gujarat State,

**The further informations are as given below:**

- |     |                            |   |   |
|-----|----------------------------|---|---|
| 1.0 | CUSTOMER                   | : | Gujarat Industries Power Co. Ltd.<br>P. O. Petrochemicals – 391 346<br>District Baroda, India   |
| 2.0 | CONSULTANT                 | : | TCE Consulting Engineers Limited<br>73/1, St. Mark's Road<br>Bangalore – 560 001.   |
| 3.0 | PROJECT                    | : | Surat Lignite Power Plant<br>2 x 125MW – Phase II (Expansion<br>Project) Unit Nos. 3 & 4  |
| 4.0 | LOCATION                   | : | At a distance of 28 kms from Kosamba,<br>Village Nani Naroli, Taluk Mangrol,<br>District Surat, Gujarat State, India.   |
| 5.0 | NEAREST AIRPORT            | : | Baroda, Gujarat State   |
| 6.0 | ROAD APPROACH              | : | Accessible by road from two points Kim<br>and Kosamba which are on Mumbai-<br>Ahmedabad highway. From Kim, the site<br>is around 23 kms and from Kosamba, the<br>site is around 28 kms. |
| 7.0 | NEAREST RAILWAY<br>STATION | : | Kim/Kosamba is on Mumbai-Ahmedabad<br>broad gauge line. Same is at a distance<br>of 32 kms from the proposed power<br>project site .  |
| 8.0 | NEAREST PORT               | : | Mumbai  |
| 9.0 | ALTITUDE                   | : | About 50 m above mean sea level.  |

- 10.0 SEISMIC ZONE : Zone – III as per Indian Standard IS:1893 (Current Issue).
- 11.0 RAINFALL(ANNUAL TOTAL R.O.MEAN) : 1800 mm (Maximum rainfall occurs during June to September)
- 12.0 AMBIENT AIR EMPEPERATURE
- (a) Maximum dry bulb : 45.6 Deg. C.
  - (b) Minimum dry bulb : 4.4 Deg. C.
  - (c) Maximum daily average dry bulb : 37.3 Deg. C
  - (d) Reference Temperature for design of electrical equipment / devices : (+) 50 Deg. C
- 13.0 RELATIVE HUMIDITY
- (a) Maximum : 87%
  - (b) Minimum : 33%
  - (c) Average : 71%
  - (d) Relative humidity for design of equipment / devices : (+) 100%
- 14.0 CLIMATIC CONDITION : Hot, humid and dusty.
- 15.0 WIND DATA
- 15.1 (a) Wind load as per IS 875 (Part-3) 1987
- (i) Basic wind speed : 44 m/sec.
  - (ii) Factor KI : 1.07
  - (iii) Terrain category 1 & the corresponding value of K2 : 1.09

**Above information furnished are for general guidance of Contractor. Contractor is advised to visit the site and appraise himself about the conditions of site and infrastructure available in the area for fulfilling their commitments under the contract.**

### Check List

(Vide Para 1.3 of Section-I of General Conditions of Contract)

1.	Name of the bidder with address		
2.	Nature of the firm		
3.	EMD details (by DD Only)		
4.	Validity of offer		
5.	Mobilization time	Not exceeding 1 month from Tele LOI	
6.	Whether any conditions stipulated?	Yes	No
7.	Bidder has visited the project site and acquainted with the site conditions	Yes	No
8.	Details of concurrent jobs are furnished( as per appendix -IX )	Yes	No
9.	Head quarter's organization is furnished	Yes	No
10.	Proposed site organization is furnished	Yes	No
11.	Names and particulars of directors/partners are furnished	Yes	No
12.	Financial status of the company (annexure 'A' of gcc) is furnished	Yes	No
13.	Profit & loss account for preceding three years is furnished	Yes	No
14.	Solvency certificate from the banker is furnished (Issued by Nationalized Bank, Not older Than 6 Months )	Yes	No
15.	Latest income tax clearance certificate is furnished	Yes	No
16.	Manpower deployment plan (Appendix – VII) is furnished	Yes	No
17.	Analysis of unit rates quoted (Appendix -V) is furnished	Yes	No
18.	Month wise deployment plan for major T&Ps (Appendix-VIII) is furnished	Yes	No
19.	Whether all the pages of the tender documents are read, understood and signed	Yes	No



20.	Power of Attorney Enclosed in Favour of Person Making Offer	Yes	No
21.	Bidder Has familiarized himself with all Relevant Local Laws & Conditions	Yes	No
22.	Safety Requirement of This work in A Running plant Premises has been understood.	Yes	No
23.	Erection and Commissioning programme	Yes	No
24.	Whether bidder has furnished details of his Banker/Bank Account (as per 12.0.5) to facilitate Funds transfer through Electronic Clearing System ECS/RTGS	YES	NO

Note : Strike off yes or no, as applicable

## DECLARATION SHEET

I.....HEREBY CERTIFY THAT ALL THE INFORMATION AND DATA FURNISHED BY ME WITH REGARD TO THE TENDER SPECIFICATION NO.BHE/PW/PUR/SLT-INS/577 ARE TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE. I HAVE GONE THROUGH THE SPECIFICATIONS, CONDITIONS AND STIPULATIONS IN DETAIL AND AGREE TO COMPLY WITH THE REQUIREMENTS AND INTENT OF THE SPECIFICATION. I FURTHER CERTIFY THAT I AM DULY AUTHORIZED REPRESENTATIVE OF THE UNDER-MENTIONED TENDERER AND A VALID POWER OF ATTORNEY TO THIS EFFECT IS ALSO ENCLOSED.

AUTHORISED REPRESENTATIVE'S SIGNATURE WITH  
NAME AND ADDRESS

DATE:

TENDERER'S NAME AND ADDRESS

## **CERTIFICATE OF NO DEVIATION**

**TENDER SPECIFICATION No. - BHE/PW/PUR/SLT-INS/577**

**I/WE, M/s .....**

**HEREBY CERTIFY THAT IN OUR OFFER I/WE HAVE NEITHER SET ANY  
TERMS AND CONDITIONS NOR THERE ANY DEVIATION TAKEN FROM THE  
TENDER CONDITIONS EITHER TECHNICAL OR COMMERCIAL AND I/WE  
AGREE TO ALL THE TERMS AND CONDITIONS MENTIONED IN THE TENDER  
SPECIFICATION.**

SIGNATURE OF THE TENDERER  
DATE:

**SECTION-3  
OFFER OF THE CONTRACTOR**

TO,

AGM (SMX)  
BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR - WESTERN REGION  
SHREEMOHINI COMPLEX  
345, KINGS WAY  
NAGPUR 440 001

DEAR SIR,

I/WE HEREBY OFFER TO CARRY OUT THE WORK DETAILED IN TENDER SPECIFICATION NO. BHE/PW/PUR/SLT-INS/577 FOR UNITS 9 & 10 ISSUED BY BHARAT HEAVY ELECTRICALS LIMITED, POWER SECTOR-WESTERN REGION, NAGPUR, IN ACCORDANCE WITH THE TERMS AND CONDITIONS THEREOF.

I/WE HAVE CAREFULLY PERUSED THE FOLLOWING DOCUMENTS CONNECTED WITH THE ABOVE WORK AND AGREE TO ABIDE BY THE SAME.

1. INSTRUCTIONS TO TENDERERS
2. GENERAL CONDITIONS OF CONTRACT
3. SPECIAL CONDITIONS OF CONTRACT
4. OTHER SECTIONS, APPENDICES, SCHEDULES AND DRAWINGS.

I/WE HAVE DEPOSITED / FORWARDED HERewith THE EARNEST MONEY DEPOSIT FOR A SUM OF RS.2,00,000/- (RUPEES TWO LAKHS ONLY) DETAILS OF EMD PAYMENT ARE FURNISHED IN THE CHECK LIST.

EMD SHALL BE REFUNDED SHOULD OUR OFFER NOT BE ACCEPTED /EMD **NEED NOT BE REFUNDED AND THE AMOUNT MAY BE TREATED AS "ONE TIME EMD" FOR ERECTION AND COMMISSIONING TENDERS OF BHEL –PSWR NAGPUR** SHOULD OUR OFFER BE ACCEPTED, I/WE FURNTHUR AGREE TO DEPOSIT SECURITY DEPOSIT FOR THE WORK AS PROVIDED FOR IN THE TENDER SPECIFICATION WITHIN THE STIPULATED TIME AS MAY BE INDICATED BY BHEL, POWER SECTOR –WESTERN REGION, NAGPUR.

I/WE FURTHER AGREE TO EXECUTE ALL THE WORKS REFERRED TO IN THE SAID DOCUMENTS UPON THE TERMS AND CONDITIONS CONTAINED OR REFERRED TO THEREIN AND AS DETAILED IN THE APPENDICES ANNEXED THERETO.

PLACE:  
DATE :

SIGNATURE OF TENDERER:  
ADDRESS:

WITNESSES WITH THEIR ADDRESS

SIGNATURE	NAME	ADDRESS
1.		
2.		

BHARAT HEAVY ELECTRICALS LIMITED:PSWR:NAGPUR  
TENDER SPECIFICATION NO. – BHE/PW/PUR/SLT-INS/577

## **SECTION -4**

### **SPECIAL CONDITIONS OF CONTRACT**

#### **4.1 SCOPE OF WORK**

##### **4.1.1**

THE WORK TO BE CARRIED OUT UNDER SCOPE OF THIS SPECIFICATION COVERS THE COMPLETE WORK OF HANDLING, LOADING OF MATERIALS AT BHEL/CUSTOMER STORES/ STORAGE YARD, TRANSPORTION TO AND UNLOADING AT SITE, APPLICATION OF INSULATION, FINISHING, CLADDING AND OUTER CASING ETC OF THE FOLLOWING:

1. MAIN CFBC BOILER
2. BOILER AUXILIARIES INCLUDING, BUT NOT LIMITED TO, ESP, DUCTS, FUEL OIL EQUIPMENTS, FANS ETC
3. BOILER INTEGRAL PIPING AND TANKS & VESSELS
4. POWER CYCLE PIPING AND CRITICAL PIPING INCLUDING VESSELS AND TANKS & OTHER EQUIPMENTS
5. LP PIPING AND OTHER EQUIPMENTS
6. ST-TG AUXILIARIES INCLUDING, BUT NOT LIMITED, TO HEAT EXCHANGERS, PUMPS, TANKS AND VESSELS AND OTHER EQUIPMENTS
7. TG INTEGRAL & CYCLE PIPING INCLUDING CONDENSATE AND EXTRACTION SYSTEM PIPING
8. OTHER EQUIPMENTS INCLUDING BOIs, THOUGH NOT LISTED ABOVE BUT REQUIRED FOR COMPLETION

THE WORK SHALL CONFORM TO DIMENSION AND TOLERANCES SPECIFIED IN THE VARIOUS DRAWING AND DOCUMENTS THAT WILL BE PROVIDED DURING THE EXECUTION. IF ANY PORTION OF THE WORK IS FOUND TO BE DEFECTIVE IN WORKMANSHIP OR NOT CONFORMING TO DRAWINGS OR OTHER SPECIFICATIONS, THE CONTRACTOR SHALL DISMANTLE AND RE-DO THE WORK DULY REPLACING THE DEFECTIVE MATERIALS AT HIS COST. FAILING WHICH THE WORK WILL BE GOT DONE BY ENGAGING OTHER AGENCIES OR DEPARTMENTALLY AND RECOVERIES WILL BE DEDEDCTED FROM CONTRACTOR'S BILLS TOWARDS EXPENDITURE INCURRED INCLUDING 30% DEPARTMENTAL CHARGES.

##### **4.1.2**

THE TERMINAL POINTS AS DECIDED BY BHEL SHALL BE FINAL AND BINDING ON THE CONTRACTOR.

##### **4.1.3**

THE ESTIMATED WEIGHTS GIVEN IN THE PART-II: PRICE BID, RATE SCHEDULE ARE APPROXIMATE AND ARE MEANT FOR GENERAL IDEA TO THE TENDERER ABOUT THE MAGNITUDE OF THE WORK INVOLVED. THESE ARE SUBJECT TO CHANGE AS PER SITE CONDITIONS.

##### **4.1.4**

THE WORK COVERED UNDER THIS SPECIFICATION IS OF HIGHLY SOPHISTICATED NATURE REQUIRING THE BEST QUALITY OF WORKMANSHIP, ENGINEERING AND CONSTRUCTION MANAGEMENT. THE CONTRACTOR SHOULD ENSURE TIMELY COMPLETION OF THE WORK. THE CONTRACTOR MUST HAVE THE ADEQUATE QUANTITY OF TOOLS, CONSTRUCTION AIDS,

EQUIPMENTS, ETC IN THIS POSSESSION. HE MUST ALSO HAVE ON HIS ROLLS ADEQUATE TRAINED, QUALIFIED AND EXPERIENCED SUPERVISORY STAFF AND SKILLED PERSONNEL.

#### 4.1.5

THE WORK SHALL BE EXECUTED UNDER THE USUAL CONDITION AFFECTING MAJOR POWER PLANT CONSTRUCTION AND IN CONJUNCTION WITH NUMEROUS OTHER OPERATIONS 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.

#### 4.1.6

CONTRACTOR SHALL EXECUTE THE WORK AS PER SEQUENCE AND PROCEDURE PRESCRIBED BY BHEL AT SITE. BHEL ENGINEER, DEPENDING UPON THE AVAILABILITY OF MATERIALS, FRONTS ETC, WILL DECIDE THE SEQUENCE OF ERECTION AND METHODOLOGY. NO CLAIMS FOR EXTRA PAYMENT FROM THE CONTRACTOR WILL BE ENTERTAINED ON THE GROUNDS OF DEVIATION FROM THE METHODS OF ERECTION ADOPTED IN ERECTION OF SIMILAR JOBS OR FOR ANY REASONS WHATSOEVER.

#### 4.1.7

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 MILESTONE EVENTS LIKE BOILER LIGHT UP, STEAM BLOWING, ROLLING ETC ARE ACHIEVED AS PER SCHEDULE/ PLANS. CONTRACTOR SHALL ARRANGE & AUGMENT THE RESOURCES ACCORDINGLY.

#### 4.1.8

DURING THE COURSE OF EXECUTION OF WORK, CERTAIN REWORK/MODIFICATION/ RECTIFICATION/ REPAIRS/FABRICATION ETC WILL BE NECESSARY ON ACCOUNT OF FEED BACK FROM VARIOUS RELEVANT SOURCE, AND ALSO ON ACCOUNT OF DESIGN DISCREPANCIES/ ALTERATIONS, MANUFACTURING DEFECTS, SITE OPERATIONS/ MAINTENANCE REQUIREMENTS. CONTRACTOR SHALL CARRY OUT SUCH REWORK/ MODIFICATION/ RECTIFICATION/ FABRICATION/ REPAIRS ETC PROMPTLY AND EXPEDITIOUSLY DAILY LOG SHEETS INDICATING THE DETAILS OF WORK CARRIED OUT, MAN-HOURS ETC SHALL BE MAINTAINED BY THE CONTRACTOR AND GOT SIGNED BY BHEL ENGINEER EVERY DAY. CLAIMS OF CONTRACTOR, IF ANY, FOR SUCH WORKS WILL BE DEALT AS PER CLAUSES 13.1 TO 13.8.

#### 4.1.9

ALL TOOLS, TACKLES, FIXTURES, EQUIPMENTS, MATERIALS, MANPOWER SUPERVISORS/ENGINEERS, CONSUMABLE ETC REQUIRED FOR THE CONTRACTOR SHALL PROVIDE THIS SCOPE OF WORK. ALL THE EXPENDITURE INCLUDING TAXES AND INCIDENTALS IN THIS CONNECTION WILL HAVE TO BE BORN BY HIM UNLESS OTHERWISE SPECIFIED IN THE RELEVANT CLAUSE. THE CONTRACTORS QUOTED RATES SHOULD BE INCLUSIVE OF ALL SUCH CONTINGENCIES.

#### 4.1.10

IT SHALL BE SPECIALLY NOTED THAT THE CONTRACTOR'S LABOUR AND STAFF MAY HAVE TO WORK ROUND THE CLOCK TO MEET THE COMPLETION SCHEDULES/ PLANS WHICH MAY INVOLVE PAYMENT OF CONSIDERABLE OVERTIME. THE CONTRACTORS QUOTED RATES SHOULD BE INCLUSIVE OF ALL SUCH CONTINGENCIES.

#### 4.1.11

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.

#### 4.1.12

NO MEMBER OF THE ALREADY ERECTED STRUCTURE/ PLATFORM, PIPES, GRILLS; PLATFORM, OTHER COMPONENT AND AUXILIARIES SHOULD TO CUT WITHOUT SPECIFIC APPROVAL OF BHEL ENGINEER.

THE CONTRACTOR'S SCOPE OF WORK IS FURTHER DESCRIBED IN THE CLAUSES HERE AFTER.

### 4.2 COLLECTION OF MATERIALS

#### 4.2.1

THE CONTRACTOR SHALL TAKE DELIVERY OF EQUIPMENTS, ON STANDARD INDENT FORM, FROM THE STORAGE YARD/STORES/SHEDS OF BHEL/CUSTOMER. THE CONTRACTOR SHOULD NOTE THAT THE TRANSPORT OF EQUIPMENT TO ERECTION SITE, ASSEMBLY YARDS ETC SHOULD BE DONE TO AVOID THE SITE CONGESTION AND BY THE PRESCRIBED ROUTE WITHOUT DISTURBING THE OTHER WORKS AND CONTRACTORS AND IN THE MOST PROFESSIONAL MANNER. SPECIAL EQUIPMENT SUCH AS CLADDING SHEETS, POURABLE REFRACTORY, AND MINERAL WOOL ETC SHALL BE STORED WHEN TAKEN OVER BY THE CONTRACTOR IN APPROPRIATE MANNER AS PER BHEL'S INSTRUCTIONS. RELOCATION/SHIFTING IF NECESSARY, OF MATERIAL, T&P ETC DUE TO SITE CONDITIONS/ CUSTOMER REQUIREMENT SHALL BE DONE EXPEDITIOUSLY AS INCIDENTAL TO WORK.

#### 4.2.2

THE CONTRACTOR SHALL HANDOVER ALL PARTS/ MATERIALS REMAINING EXTRA OVER THE NORMAL REQUIREMENT WITH PROPER IDENTIFICATION TAGS IN A PACKED CONDITION IF SO SPECIFIED, TO BHEL STORES. IN CASE OF ANY MISUSE OR EXCESS USE OVER DESIGN REQUIREMENTS, BHEL RESERVE THE RIGHT TO RECOVER THE COST OF PARTS /MATERIAL USED IN EXCESS OR MISUSED. DECISION OF BHEL ENGINEER IN THE REGARD WILL BE FINAL AND BINDING ON THE CONTRACTOR.

#### 4.2.4

THE CONTRACTOR SHALL HAVE TOTAL RESPONSIBILITY FOR ALL BHEL/CUSTOMER'S EQUIPMENT AND MATERIALS IN HIS CUSTODY WHETHER AT HIS STORES OR AT SITE IN LOOSE, SEMI-ASSEMBLED OR ERECTED CONDITION. HE SHALL EFFECTIVELY PROTECT THE FINISHED WORKS FROM ACTION OF WEATHER AND FROM DAMAGES OR DEFACEMENT AND SHALL ALSO COVER THE FINISHED PARTS IMMEDIATELY ON COMPLETION AS PER BHEL ENGINEER'S INSTRUCTIONS. THE CONTRACTOR SHALL MAKE ADEQUATE ARRANGEMENTS INCLUDING EMPLOYMENT OF SECURITY PERSONNEL AND INSURANCE EQUIPMENTS ISSUED TO HIM FOR THE WORK.

#### 4.2.5

ALL MATERIALS SHALL BE HANDLED VERY CAREFULLY TO PREVENT ANY DAMAGE OR LOSS. PROPER WIRE ROPES, SLINGS ETC SHALL BE USED FOR UNLOADING AND /OR HANDLING OF THE EQUIPMENTS

#### 4.2.6

CONTRACTOR SHALL REMOVE PERIODICALLY ALL SCRAP MATERIALS AND OTHER SCRAP GENERATED FROM ALL THE WORK AREA DURING EXECUTION OF THIS WORK. IN CASE OF CONTRACTOR'S FAILURE TO CARRYOUT THIS WORK TO THE SATISFACTION OF BHEL, BHEL RESERVES THE RIGHT TO REMOVE THE RIGHT AT CONTRACTOR'S RISK AND COST.

#### 4.2.7

ALL THE POURABLE AND CASTABLE INSULATION BAGS ISSUED TO THE CONTRACTOR HAVE TO BE PROPERLY STORED AND THE SAME SHOULD BE IN A COVERED STORAGE WITHOUT EXPOSING TO ATMOSPHERIC CONDITIONS. FOR THIS PURPOSE, CONTRACTOR SHOULD ARRANGE SUFFICIENT QUANTITY OF FIRE RETARDANT TARPULINS OR TEMPORARY COVERED SHED.

### 4.3 WELDING ELECTRODES AND WELDING

#### 4.3.1 WELDING ELECTRODES

#### 4.3.1.1

THE SELECTION AND USE OF ELECTRODES WILL BE AS PER THE STANDARDS AND SPECIFICATION OF BHEL /CUSTOMER. CONTRACTOR SHALL USE ONLY THE TYPE OF ELECTRODE SPECIFIED BY BHEL/CUSTOMER ENGINEER.

#### 4.3.1.2

THE ELECTRODES TO BE USED SHALL BE ACCOMPANIED BY PROPER TEST CERTIFICATE AND THESE CERTIFICATES SHOULD BE SUBMITTED REGULARLY FOR THE SCRUTINY OF BHEL ENGINEER'S PRIOR TO USE THE ELECTRODES.

#### 4.3.1.3

ALL WELDING ELECTRODES WILL HAVE TO BE STORED IN SEPARATE ENCLOSURE SPECIALLY MADE FOR THE PURPOSE, WHICH SHALL CONFORM TO BHEL'S SPECIFICATION IN THIS REGARD. HEATING ARRANGEMENTS FOR THIS ENCLOSURE WILL HAVE TO BE MADE TO KEEP THE ENCLOSURE'S TEMPERATURE ABOVE THAT OF AMBIENT. CONTINUOUS MONITORING OF TEMPERATURE AND HUMIDITY HAS TO BE ENSURED. CONFORMANCE TO BHEL'S PRESCRIPTIONS IN THIS REGARD ARE ESSENTIAL.

#### 4.3.1.4

ALL RACKS AND OTHER ITEMS USED FOR STORAGE OF ELECTRODES SHALL BE MADE OF MOISTURE ABSORPTION RESISTANT MATERIAL.

4.3.1.5 SUFFICIENT NUMBER OF ELECTRODE BAKING AND PORTABLE DRYING OVENS SHALL BE DEPLOYED FOR USE. ALL THE LOW HYDROGEN ELECTRODES SHALL BE BAKED MINIMUM FOR ONE HOUR AT 375-425 DEGREE CENTIGRADE IN ELECTRODE BAKING OVEN AND THEN HELD IN HOLDING OVENS AT AROUND 100 DEGREE CENTIGRADE UNIT USE. ALL RUTILE ELECTRODES IF SPECIFIED OR PRESCRIBED, SHALL BE DRIED FOR A MINIMUM OF ONE HOUR FOR 100-150 DEGREE CENTIGRADE BEFORE USE.

### 4.3.2 WELDING

#### 4.3.2.1

ALL WELDERS SHALL BE TESTED AND APPROVED BY BHEL ENGINEER/CUSTOMER BEFORE THEY ARE ACTUALLY ENGAGED IN WORK THOUGH THEY MAY POSSES THE REQUISITE CERTIFICATE. BHEL RESERVES THE RIGHT TO REJECT ANY WELDER WITHOUT ASSIGNING ANY REASONS.

#### 4.3.2.2

ALL CHARGES FOR TESTING OF CONTRACTOR'S WELDERS INCLUDING DESTRUCTIVE AND NON-DESTRUCTIVE TEST CONDUCTED BY BHEL AT SITE SHALL HAVE TO BE BORNE BY THE CONTRACTOR ONLY (ALSO REFER TO CLAUSE 5.4.3)

#### 4.3.2.3

BHEL ENGINEER IS ENTITLED TO STOP ANY WELDER FROM HIS WORK IF HIS WORK IS UNSATISFACTORY FOR ANY TECHNICAL REASON OR IF THERE IS A HIGHLY PERCENTAGE OF REJECTION BY HIM, WHICH IN THE OPINION OF BHEL ENGINEER, WILL ADVERSELY AFFECT THE QUALITY OF WELDING THOUGH THE WELDERS HAVE PASSED THE TESTS PRESCRIBED. THE FACT THAT THE WELDERS HAVE PASSED THE TESTS, DOSE NOT RELIEVE THE CONTRACTOR FROM HIS CONTRACTUAL OBLIGATIONS TO CHECKS THE PERFORMANCE OF THE WELDERS.

#### 4.3.2.4

ALL WELDS SHALL BE SUBJECTED TO ACCEPTANCE BY BHEL ENGINEER/CUSTOMER WHOSE DECISION WILL BE FINAL AND BINDING.

#### 4.3.2.5

ALL WELDED JOINTS SHOULD BE PAINTED WITH ANTICORROSIVE PAINT IMMEDIATELY ON COMPLETION OF WELDING SUPPLY OF PAINT FOR THIS IS CONTRACTOR'S SCOPE.



#### 4.4 LINING AND INSULATION WORKS

##### 4.4.1

ALL INSULATION AND REFRACTORY MATERIALS INCLUDING IRON COMPONENTS AND OUTER SHEET CASING MATERIALS, CLADDING SHEETS ETC REQUIRED WILL BE SUPPLIED BY BHEL AND THE SAME HAVE TO BE ERECTED/ APPLIED AS PER THE DRAWINGS AND SPECIFICATIONS OF BHEL BY THE CONTRACTOR.

##### 4.4.2

THE CONTRACTOR SHALL PROVIDE THE REQUIRED QUANTITY OF WIRE, NAILS, AND PLANKS FOR FORMWORK AND OTHER MATERIALS FOR SHUTTERING AND CURING WORKS.

##### 4.4.3

CONTRACTOR SHALL OBSERVE ALL PRECAUTION FOR LAYING, CURING ETC OF POURABLE INSULATION. THE CONTRACTOR AT HIS OWN COST SHALL REDO ANY DEFECTIVE WORKS FOUND.

##### 4.4.4

WOOL INSULATION IS RECEIVED AT SITE AS LOOSE BONDED MATTRESSES IN STANDARD SIZES. THESE ARE TO BE DRESSED/CUT TO SUITE THE EQUIPMENTS. MULTIPLE LAYERS OF WOOL HAVE TO BE APPLIED AS DIRECTED AND AS PER DRAWINGS AND SPECIFICATIONS FOR ALL EQUIPMENTS/ SYSTEMS COVERED UNDER THE SCOPE OF WORK.

##### 4.4.5

CUTTING & DRESSING OF INSULATION BRICKS TO SUIT THE SITE AREA OF APPLICATION IS INCIDENTAL TO WORK.

##### 4.4.6

REMOVABLE TYPE OF INSULATION HAS TO BE PROVIDED FOR VALVES FITTINGS, EXPANSION JOINTS ETC AS PER DRAWING OR AS DIRECTED BY BHEL ENGINEER.

##### 4.4.7

THE CLADDING AND OUTER CASING ARE ALUMINIUM SHEETS. ALL RELEVANT SPECIFICATIONS AND PROCEDURES WITH REGARDS TO BEADING, SEALING ETC FOR ALUMINIUM SHEETS HAVE TO BE ADHERED TO.

##### 4.4.8

CLADDING/OUTER CASING SHALL BE FIXED EXPEDITIOUSLY, SO AS TO AVOID DAMAGE TO THE INSULATION FROM THE WEATHER.

##### 4.4.9

THE OVERLAPPING SURFACE OF OUTER CASING/CLADDING SHEET SHALL BE COATED WITH SEALING COMPOUND, WHICH WILL BE SUPPLIED BY BHEL FREE OF COST.

##### 4.4.10

TO TAKE CARE OF BIMETAL CORROSION DUE TO VARIETY OF METALS IN CONTACT OF EACH OTHER VIZ RETAINER TO SUPPORT, SUPPORT TO OUTER CASING/CLADDING, CLADDING-TO-CLADDING ETC, SUITABLE PAINTS SPECIFIED BY BHEL, TO BE APPLIED AND/OR NEOPRENE RUBBER PACKING/STRIPS OR ANY OTHER INSERT MAY HAVE TO BE FIXED AS REQUIRED.

##### 4.4.11

THE CONTRACTOR SHOULD ENSURE THAT THE FINISHED WORK CONFORMS TO THE DIMENSION AND TOLERANCE GIVEN IN THE DRAWINGS.

##### 4.4.12

THE CONTRACTOR SHALL LEAVE CERTAIN GAPS AND OPENINGS WHILE DOING THE WORK AS PER THE INSTRUCTIONS OF BHEL ENGINEER TO FACILITATE INSPECTION BY BOILER INSPECTOR OR

DURING COMMISSIONING TO FIX GAUGES, FITTINGS, INSTRUMENTS ETC. THESE GAPS WILL HAVE TO BE FINISHED AS PER DRAWINGS AT LATER DATE BY THE CONTRACTOR AT HIS COST. CONTRACTOR SHALL CUT OPEN WORKS IN NEEDED AS PER BHEL ENGINEER'S INSTRUCTIONS DURING COMMISSIONING FOR INSPECTION, CHECKING AND MAKE GOOD THE WORKS AFTER INSPECTION IS OVER WITHOUT ANY EXTRA PAYMENT.

#### 4.4.13

A LOG BOOK SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE CLEARANCE OF THE AREA FOR APPLICATION OF REFRACTORY AND INSULATION. WHERE THE CONTRACTOR DOSE THE WORK ON HIS OWN ACCORD WITHOUT PRIOR PERMISSION. THE WORK SHOULD BE RE-DONE, AT HIS OWN COST, WHERE NECESSITATED.

#### 4.4.14

WASTAGE ALLOWANCE FOR THE MATERIAL ISSUED IS ENVISAGED AS FOLLOWS:

A	CASTABLE AND POURABLE INSULATION	-	2%
B	INSULATION BRICKS AND MOTOR	-	2%
C	WOOL MATTRESSES	-	2%
D	CLADDING SHEETS	-	2%

THE WASTAGE ALLOWANCE WILL BE APPLICABLE ON THE NET ISSUED QUANTITY i.e. TOTAL QUANTITY ISSUED REDUCED BY THE QUANTITY RETURNED TO STORES AS UNUSED/FRESH ITEM. CONTRACTOR SHALL RECONCILE THE MATERIAL ISSUES PERIODICALLY AS PRESCRIBED BY BHEL SITE. PAYMENT FOR THE DONE WILL BE REGULATED AS PER PROVISION OF SECTION -12.

#### 4.4.16

THE FOLLOWING WORKS ARE ALSO INCLUDED IN THE SCOPE OF THIS CONTRACT.

- (i) CUTTING OF CLADDING SHEETS AS PER THE PROFILE OF THE EQUIPMENT AND PAINTING ON INNER SURFACE TWO COATS OF BITUMINOUS PAINT. PAINT WILL BE SUPPLIED BY BHEL.
- (ii) CUTTING OF THE WOOL MATTRESSES TO THE REQUIRED SHAPE AND APPLICATION OF FINISHING CEMENT OF REQUIRED THICKNESS WHEREVER REQUIRED.

#### 4.4.17

INSULATION WORK OF TEMPORARY PIPING FOR ALKALI BOIL OUT, STEAM BLOWING AND CHEMICAL CLEANING HAS TO BE CARRIED OUT AT SITE. THE SAME HAVE TO BE REMOVED AND RETURNED TO THE BHEL STORES AFTER THE COMPLETION OF ACTIVITY. RATES QUOTED FOR APPLICATION OF WOOL FOR BOILER AND AUXILIARIES WILL BE APPLICABLE FOR THIS WORK ALSO. NO SEPARATE PAYMENT WILL BE MADE FOR REMOVAL OF TEMPORARY INSULATION AND RETURN OF THE SAME TO BHEL STORES/YARD.

#### 4.4.18

IN CERTAIN INSTANCES, CO-ORDINATED/PHASED APPLICATION OF CASTABLE REFRACTORY/ INSULATION ON PRESSURE PARTS ETC MAY BE NECESSITATED IN CONSIDERATION OF SEQUENCE OF ACTIVITIES OF OTHER ERECTION AGENCIES. CONTRACTOR SHALL DO SUCH PHASED WORK AS MAY BE DIRECTED BY BHEL.

#### 4.4.19

PRIOR TO APPLICATION OF REFRACTORY BITUMINOUS PAINTING ON THE PRESSURE PARTS AND OTHER AREA IS UNDER CONTRACTOR SCOPE. ONLY THE BITUMINOUS PAINT WILL BE SUPPLIED BY BHEL FREE OF CO ST. NO SEPARATE PAYMENT WILL BE MADE FOR APPLICATION OF PAINT.

#### 4.4.20

WELDING OF FIXING, SUPPORTING AND RETAINING COMPONENTS ETC IS IN THE SCOPE OF WORK.

#### 4.5.0 EXCLUSIONS

FOLLOWING JOBS ARE SPECIALLY EXCLUDED FROM THE CONTRACTOR'S SCOPE UNDER THIS TENDER SPECIFICATION.

1. APPLICATION OF SPRAY INSULATION ON STEAM TURBINE & ITS CONTROL CUM STOP VALVES
2. WELDING OF ALL COMPONENTS FORMING ATTACHMENT BY WELDING DIRECTLY WITH PRESSURE PARTS OF BOILER AND HIGH PESSURE PIPING. HOWEVER, THIS EXCLUSION DOES NOT COVER TG PIPING AND OTHER TG AUXILIARIES AND EQUIPMENTS/VESSELS ETC.
3. APPLICATION OF REFRACTORY LINING ON INSIDE WALLS OF COMBUSTOR, CYCLONE INCLUDING IT'S INLET & OUTLET DUCTS, RETURN LEG TO COMBUSTOR ETC. WELDING OF HOOKS/ ANCHORS, PINS, RETAINERS ETC FOR THE ABOVE TOO ARE EXCLUDED FROM THE SCOPE OF THIS SPECIFICATIONS.

## SECTION-5

### SPECIAL CONDITIONS OF CONTRACT

#### 5.0 OBLIGATIONS OF THE CONTRACTOR (TOOLS, TACKLES, CONSUMABLES ETC)

##### 5.1 ACCOMMODATION, DRINKING WATER & LOCAL TRANSPORTATION FOR THE LABOUR OTHER EMPLOYEES

a) CLIENT/ BHEL WILL PROVIDE, FREE OF CHARGE, ONLY THE OPEN LAND FOR THE PURPOSE OF LABOUR CAMP. DEVELOPMENT OF THE LAND AND COSTRUCTION OF LABOUR COLONY, WITH ARRANGEMENTS OF LIGHTING, DRINKING WATER, AND SANITATION ETC IS IN CONTRACTOR'S SCOPE. THATCHED CONSTRUCTION SHALL NOT BE PERMITTED, STEEL AND BRICK & MORTAR CONSTRUCTION ONLY SHALL BE USED FOR ACCOMMODATION QUARTERS

b) ELECTRICITY FOR LABUOR COLONY: CONTRACTOR SHALL MAKE COMPLETE ARRANGEMENT ON HIS OWN FOR DRAWING AND FURTHER DISTRIBUTION CONFORMING TO THE STATUTORY & SAFETY REQUIREMENTS.

c) FOR DRINKING WATER CONTRACTOR AT SITE HAS TO MAKE HIS OWN ARRANGEMENT INCLUDING DIGGING OF BORE -WELL IF REQUIRED

d) THE CONTRACTOR HAS TO MAKE HIS OWN ARRANGEMENT FOR TRANSPORTATION OF HIS WORKMEN AND OTHER EMPLOYEES. BHEL/CLIENT SHALL NOT PROVIDE ANY FACILITY IN THIS REGARD.

##### 5.2 TOOLS AND TACKLES

###### 5.2.1

THE CONTRACTOR IS REQUIRED TO PROVIDE ALL NECESSARY TOOLS AND PLANTS INCLUDING LIFTING AND TRANSPORTING EQUIPMENTS, MEASURING INSTRUMENTS, HANDLING EQUIPMENTS ETC FOR COMPLETE SCOPE OF WORK

###### 5.2.2

WHEREVER CALLED FOR, TOOLS AND TACKLES TO BE USED FOR THE WORK SHALL HAVE THE PRIOR APPROVAL OF BHEL ENGINEER IN REGARD TO THEIR SPEFCIFICATIONS & SUITABILITY.

###### 5.2.3 SCAFFOLDING MATERIALS

(A) THE CONTRACTOR SHALL PROVIDE ALL THE NECESSARY SCAFFOLDING MATERIALS, TEMPORARY STRUCTURES AND NECESSARY SAFETY DEVICES ETC, DURING ALL STAGES TILL COMPLETION OF WORK. SCAFFOLDING MATERIALS (MS PIPES, GRATINGS ETC) SHALL BE OF LIGHT WEIGHT CONSTRUCTION. CONTRACTOR SHALL ARRANGE STEEL PIPES & CLAMPS WITH ACCESSORIES LIKE BASE PLATE ATTACHMENT, FIXING PINS, STRUTS ETC FOR SCAFFOLDING REQUIRED FOR THIS WORK. IT IS TO BE SPECIFICALLY NOTED THAT NO WOOD OR ANY SUCH OTHER INFLAMMABLE MATERIAL WILL BE PERMITTED TO BE USED FOR ABOVE APPLICATIONS. ANY SUCH USE ON EACH OCCASSION SHALL INVITE LEVY OF PENALTY AS DEEMED FIT BY BHEL ENGINEER.

(B) (i) CONTRACTOR SHALL DEPLOY A MINIMUM OF 4000 NOS OF SCAFFOLDING MS PIPES (SIZE NOMINAL BORE – 40 mm, LENGTH : 6M EACH) IN EACH UNIT WITH NECESSARY CLAMPS (AT LEAST ONE PAIR OF CLAMPS PER PIPE i.e. 8000 NOS. OF CLAMPS PER UNIT) AND FITTINGS.

(ii) IN EACH UNIT THESE SHOULD BE DEPLOYED OVER A PERIOD OF 2 MONTHS FROM THE START OF WORK OUT OF WHICH 1500 PIPES WITH ASSOCIATED CLAMPS AND OTHER FITTINGS/ FASTENERS SHALL BE DEPLOYED WITHIN THE FIRST MONTH SINCE START OF WORK. THE WORK OF UNIT#4 IS EXPECTED TO START WITH A PHASE SHIFT OF 4 MONTH WRT START OF UNIT -3, AND SIMILAR INDUCTION SCHEDULE AS ABOVE SHALL BE APPLICABLE WITH RESPECT TO START OF WORK IN UNIT # 4.

(iii) BHEL WILL IMPOSE PENALTY FOR ANY SHORTFALL IN QUANTITY, OF PIPE AND ASSOCIATED PAIR OF CLAMPS, FROM THE END OF MONTH IN WHICH THE SPECIFIED QUANTITY IS SCHEDULED TO BE FULLY INDUCTED IN RESPECTIVE UNIT. THE RECOVERY WILL CONTINUE TILL THE SHORTFALL IS MADE GOOD. THIS PROVISION WILL BE APPLICABLE TILL THE COMPLETION OF WORK. PENALTY WILL BE IMPOSED AT THE RATE OF Rs.15/- PER PIPE AND ASSOCIATED PAIR OF CLAMPS PER MONTH ON PRO -RATA BASIS.

(iv) IN CASE ADDITIONAL INDUCTION OF SCAFFOLDING PIPES WITH ASSOCIATED PAIR OF CLAMPS IS NECESSITATED OVER AND ABOVE THE TOTAL QUANTITY SPECIFIED FOR ALL THE THREE UNITS PUT TOGETHER THEN, BHEL WILL MAKE ADDITIONAL PAYMENT @ Rs. 15/ PER PIPE WITH ASSOCIATED PAIR OF CLAMPS PER MONTH OF INDUCTION. ANY SUCH ADDITIONAL INDUCTION SHALL BE DONE BASED ON WRITTEN INSTRUCTIONS FROM BHEL. SIMILARLY THESE SHOULD BE DEMOBILIZED ON WRITTEN ADVICE FROM BHEL.

(C) WHEN ADDITIONAL INDUCTION OF SCAFFOLDING PIPES AND CLAMPS IS REQUIRED DURING EXTENDED PERIOD OF CONTRACT, FOLLOWING METHOD SHALL BE APPLICABLE:

(i) DURING EXTENSION ATTRIBUTABLE TO THE CONTRACTOR NO ADDITIONAL PAYMENT WILL BE MADE.

(ii) DURING EXTENSION ATTRIBUTABLE TO BHEL ADDITIONAL PAYMENT WILL BE MADE AS STIPULATED AT B(iv) ABOVE.

(D) FOR WORKING IN OVERHEAD POSITION AT HIGH ELEVATIONS CONTRACTOR SHALL ARRANGE NON-COMBUSTIBLE LIGHT -WEIGHT AND STURDY PLATFORM MATERIALS.

#### 5.2.4

CONTRACTOR SHALL MAINTAIN AND OPERATE HIS TOOLS AND PLANTS IN SUCH A WAY THAT MAJOR BREAKDOWNS ARE AVOIDED. IN THE EVENT OF MAJOR BREAKDOWN, CONTRACTOR SHALL MAKE ALTERNATE ARRANGEMENTS EXPEDITIOUSLY SO THAT THE PROGRESS OF THE WORK IS NOT HAMPERED.

#### 5.2.5

IN THE EVENT OF CONTRACTOR FAILING TO ARRANGE THE REQUIRED TOOLS, PLANTS, MACHINERY, AND NON- AVAILABILITY OF THE SAME OWING TO BREAKDOWN, BHEL WILL MAKE THE ALTERNATE ARRANGEMENT AT COST AND RISK OF THE CONTRACTOR. THIS IS OVER AND ABOVE THE IMPOSITION OF PENALTY AS PROVIDED ELSEWHERE IN THESE SPECIFICATIONS.

#### 5.2.6

THE T&P TO BE ARRANGED BY THE CONTRACTOR SHALL BE IN PROPER WORKING CONDITION. THE OPERATION SHALL NOT LEAD TO UNSAFE CONDITIONS. THE MOVEMENT OF CRANES AND OTHER EQUIPMENT SHOULD BE SUCH THAT NO DAMAGE/ BREAKAGE OCCURE TO THE EXISTING FOUNDATIONS, EQUIPMENT, MATERIAL AND MEN.

#### 5.2.7

THE CONTRACTOR AT HIS COST WILL CARRY OUT PERIODICAL TESTING OF LIFTING EQUIPMENTS, WHERE CALLED FOR, OTHERWISE, BHEL WILL ARRANGE FOR THE SAME AND THE ACTUAL COST WITH BHEL'S OVERHEAD CHARGES WILL BE RECOVERED FROM THE CONTRACTOR'S BILLS.

#### 5.3.0 CONSUMABLES

##### 5.3.1

THE CONTRACTOR SHALL PROVIDE ALL CONSUMABLES INCLUDING PAINT FOR APPLICATION ON WELD JOINTS REQUIRED FOR CARRYING OUT THE WORK COVERED UNDER THIS SCOPE OF WORK EXCEPTING THOSE WHICH ARE SPECIFICALLY INDICATED AS BHEL SUPPLY.

#### 5.3.2

ALL CONSUMABLES, TO BE USED FOR THE WORK SHALL, WHEREVER SPECIFIED, HAVE PRIOR APPROVAL OF BHEL ENGINEER IN REGARD TO QUALITY SPECIFICATIONS.

#### 5.4.0 ELECTRODES AND GASES

##### 5.4.1

ALL WELDING ELECTRODES TO BE SUPPLIED BY THE CONTRACTOR AND SHALL BE OF RECOMMENDED SPECIFICATIONS OF BHEL.

##### 5.4.2

THE CONTRACTOR AT HIS COST SHALL PROVIDE ALL THE REQUIRED GASES LIKE OXYGEN, ACETYLENE ETC.

##### 5.4.3

SUFFICIENT QUANTITY OF PLATES AND TEST PIECES AS REQUIRED FOR QUALIFICATION OF WELDERS SHALL BE ARRANGED BY THE CONTRACTOR AND ALL EXPENSES IN CONDUCTING THE TEST SHALL BE BORNE BY THE CONTRACTOR.

##### 5.4.4

ALL SMALL FIXTURES, CLAMPS, JIGS ETC REQUIRED SHALL BE FABRICATED BY THE CONTRACTOR AT SITE AS PER INSTRUCTIONS OF BHEL ENGINEER. THE MATERIAL REQUIRED FOR THE ABOVE TO BE ARRANGED BY THE CONTRACTOR.

#### 5.5.0 FIELD OFFICE

##### 5.5.1

THE CONTRACTOR SHALL MAKE HIS OWN ARRANGEMENTS FOR FIELD OFFICE AND STORES FOR ACCOMMODATING NECESSARY EQUIPMENTS, TOOLS ROOM FOR EXECUTION OF THE WORK. ONLY OPEN SPACE WILL BE PROVIDED BY BHEL CUSTOMER FREE OF CHARGES WITHIN THE PROJECT PREMISES AS PER THE AVAILABILITY OF SPACE.

#### 5.6.0 AREA LIGHTING

##### 5.6.1

CONTRACTOR SHALL ARRANGE ADEQUATE FLOODLIGHTS, HAND LAMPS AND AREA LIGHTING. PROVISION OF DISTRIBUTION LINES FOR BOTH ELECTRICAL POWER AND WATER FROM THE CENTRAL POINTS TO THE REQUIRED PLACE WITH PROPER DISTRIBUTION BOARDS, OBSERVING THE SAFETY RULES LAID DOWN BY THE ELECTRICAL INSPECTORATE OF THE STATE SHALL BE DONE BY THE CONTRACTOR. ALL THE MATERIALS LIKE CABLES, FUSES, SWITCHBOARDS, ELCBs ETC FOR THIS PURPOSE SHALL BE ARRANGED BY THE CONTRACTOR.

##### 5.6.2

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE, MAINTAIN THE COMPLETE INSTALLATION ON THE LOAD SIDE OF THE SUPPLY WITH DUE REGARD TO THE SAFETY REQUIREMENTS AT SITE. ALL CABLING AND INSTALLATIONS SHALL COMPLY IN ALL RESPECTS WITH THE APPROPRIATE STATUTORY REQUIREMENTS.

##### 5.6.3

ON COMPLETION OF WORK, ALL HIS TEMPORARY INSTALLATIONS LIKE BUILDINGS, STRUCTURES, PIPELINES, CABLES ETC SHALL BE DISMANTLED AND GROUND LEVELLED AND THE CONTRACTOR AT HIS COST SHALL REMOVE DEBRIS AS PER INSTRUCTIONS OF BHEL. IN THE EVENT OF HIS FAILURE TO DO SO, THE EXPENDITURE TOWARDS THE CLEARANCE OF THE SAME WILL BE RECOVERED FROM THE CONTRACTOR. THE DECISION OF BHEL ENGINEER IN THIS REGARD IS FINAL.

#### 5.7.0 CONSTRUCTION POWER & WATER

#### 5.7.1

CONSTRUCTION POWER (THREE PHASE, 415V / 440V, 200 AMPS, 4-WIRE) WILL BE PROVIDED FREE OF CHARGE AT ONE POINT NEAR THE SITE APPROXIMATELY 500 METER FROM ERECTION SITE, HOWEVER ALL TAXES, DUTIES, LEVIES, CHARGES ETC SHALL ALSO BE BORNE BY THE CONTRACTOR. REQUIRED ENERGY METER, ALL CABLES, FUSES, DISTRIBUTION BOARDS, SWITCHES, SWITCHBOARDS, BUS BARS, EARTHING ARRANGEMENTS, PROTECTION DEVICES E.G. ELCB, IF ANY, AND ANY OTHER INSTALLATION AS SPECIFIED BY STATUTORY AUTHORITY, CLIENT IN THIS REGARD, FOR DRAWL OF CONSTRUCTION POWER SHALL BE ARRANGED BY THE CONTRACTOR. OBTAINING APPROVALS, PAYMENT OF NECESSARY FEES, DUTIES ETC TOWARDS THE CLEARANCE OF SUCH INSTALLATIONS, PRIOR TO THESE BEING PUT TO USE OR AS MAY BE SPECIFIED, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

#### 5.7.2

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE, MAINTAIN THE COMPLETE INSTALLATION ON THE LOAD SIDE OF THE SUPPLY WITH DUE REGARD TO THE SAFETY REQUIREMENTS AT SITE. ALL CABLING AND INSTALLATIONS SHALL COMPLY IN ALL RESPECTS WITH THE APPROPRIATE STATUTORY REQUIREMENTS. INSTALLATION AND MAINTENANCE OF THIS SHALL BE DONE BY LICENSED AND EXPERIENCED ELECTRICIAN.

#### 5.7.3

THE CONTRACTOR AT HIS OWN COST SHALL ARRANGE WATER FOR CONSTRUCTION PURPOSE AS WELL AS DRINKING WATER. CUSTOMER/ BHEL SHALL NOT PROVIDE ANY FACILITY IN THIS REGARD.

#### 5.7.4

CONTRACTOR SHALL BE WELL EQUIPPED WITH BACK-UP ARRANGEMENT TO TACKLE SITUATIONS ARISING DUE TO FAILURE OF CUSTOMER SUPPLIED POWER, SO AS TO ENSURE CONTINUITY AND COMPLETION OF CRITICAL PROCESSES AND ACTIVITIES THAT ARE UNDERWAY AT THE TIME OF POWER FAILURE OR IMPORTANT ACTIVITIES PLANNED IN IMMEDIATE FUTURE.

#### 5.7.5

BHEL IS NOT RESPONSIBLE FOR ANY LOSS OR DAMAGE TO THE CONTRACTOR'S EQUIPMENT AS A RESULT OF VARIATIONS IN VOLTAGE OR FREQUENCY OR INTERRUPTIONS IN POWER SUPPLY.

### 5.8.0 INDUSTRIAL RELATIONS AND LABOUR LAWS

#### 5.8.1

AN INDUSTRIAL RELATIONS SUPERVISOR SHALL COORDINATE FOR THE IMPLEMENTATION OF LOCAL LABOUR LAWS, MAINTENANCE OF RECORDS AS REQUIRED BY CONTRACT LABOUR (REGULATION AND ABOLITION) ACT AND ALSO COORDINATE WITH THE LOCAL LABOUR AUTHORITIES.

#### 5.8.2

THE CONTRACTOR IN THE EVENT OF HIS ENGAGING 10 OR MORE WORKMEN, WILL OBTAIN INDEPENDENT LICENSE UNDER THE CONTRACT LABOUR (REGULATIONS AND ABOLITION) ACT 1970 FROM THE CONCERNED AUTHORITIES BASED ON THE CERTIFICATE (FORM-V) ISSUED BY THE PRINCIPAL EMPLOYER/CUSTOMER.

#### 5.8.3

CONTRACTOR SHALL ADHERE TO THE RELEVANT LAW & PROCEDURES WITH REGARD TO DEDUCTIONS TOWARDS PROVIDENT FUND IN RESPECT OF ALL THE EMPLOYEE AND LABOUR ENGAGED FOR THIS WORK. NECESSARY DETAILS SHALL BE FURNISHED TO BHEL SITE IN -CHARGE.

### 5.9.0 TAXES, DUTIES, LEVIES

#### 5.9.1

REFER TO CLAUSE 2.8.5 OF GENERAL CONDITIONS OF CONTRACT WHEREIN IT HAS BEEN MENTIONED AS BELOW:

"THE CONTRACTOR SHALL PAY ALL TAXES, FEES, LICENSE CHARGES, DEPOSITS, DUTIES, ROYALTIES, COMMISSIONS OR OTHER CHARGES WHICH MAY BE LEVIABLE ON ACCOUNT OF HIS OPERATIONS IN EXECUTING THE CONTRACT. IN CASE BHEL IS FORCED TO PAY ANY SUCH TAXES, BHEL SHALL HAVE THE RIGHT TO RECOVER FROM HIS BILLS OR OTHERWISE AS DEEMED FIT". IT IS CLARIFIED THAT ABOVE CLAUSE SHALL INCLUDE SALES TAX, IF ANY, ON TRANSFER OF PROPERTY IN GOODS INVOLVED IN WORKS CONTRACT, CHARGED AS PER RELEVANT LAW AND RULES OF STATE OF UTTAR PRADESH, SERVICE TAX IF APPLICABLE ETC AS APPLICABLE AT PRESENT.

5.9.2

PRIOR TO START OF WORK CONTRACTOR SHALL REGISTER HIMSELF WITH SALES TAX AUTHORITY HAVING JURISDICTION OVER THE SITE.

5.9.3 NEW LEVIES / TAXES

IN CASE THE GOVERNMENT IMPOSES ANY NEW LEVY/TAX AFTER SUBMISSION OF OFFER, THE SAME SHALL BE REIMBURSED BY BHEL AT ACTUAL. NO REIMBURSEMENT ON ACCOUNT OF INCREASE IN THE RATE OF EXISTING LEVIES SHALL BE MADE.

5.9.4 SERVICE TAX

SERVICE TAX, IF APPLICABLE FOR THIS CONTRACT, WILL BE RE-IMBURSED TO THE CONTRACTOR ON ACTUALS ON PRODUCTION OF NECESSARY SUPPORTING DOCUMENTS TO THE SATISFACTION OF BHEL.

5.10

IF AT ANY TIME DURING THE EXECUTION OF WORK, IT IS NOTICED THAT THE WORK IS SUFFERING ON ACCOUNT OF NONAVAILABILITY OF CONSUMABLES, TOOLS AND PLANTS ETC, FROM THE CONTRACTOR'S SIDE THEN BHEL WILL MAKE ALTERNATE ARRANGEMENTS. THE NECESSARY COSTS WITH OVERHEADS OF 30% WILL BE RECOVERED FROM THE BILLS OF THE CONTRACTOR.



## **SECTION-6**

### **SPECIAL CONDITIONS OF CONTRACT**

#### **6.0 CONTRACTOR'S OBLIGATION WITH REGARD TO EMPLOYMENT OF SUPERVISORY STAFF AND WORKMEN**

##### **6.1**

THE CONTRACTOR SHALL DEPLOY ALL THE SKILLED/SEMISKILLED/ UNSKILLED LABOUR INCLUDING HIGHLY SKILLED WORKMEN. THESE WORKMEN SHOULD HAVE PREVIOUS EXPERIENCE ON SIMILAR JOB. THEY SHALL HOLD VALID CERTIFICATES WHEREVER NECESSARY. BHEL RESERVES THE RIGHT TO INSIST ON REMOVAL OF ANY EMPLOYEE OF THE CONTRACTOR AT ANY TIME IF HE IS FOUND TO BE UNSUITABLE AND THE CONTRACTOR SHALL FORTHWITH REMOVE HIM. CONTRACTOR SHOULD FURNISH A TENTATIVE DEPLOYMENT PLAN OF HIS MANPOWER AS REQUIRED VIDE RELAENVAT APPENDIX. ALSO THE ACTUAL DEPLOYMENT WILL BE SO AS TO SATISFY THE ERECTION AND COMMISSIONING TARGETS SET BY BHEL.

##### **6.2**

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENGAGE HIS WORKMEN IN SHIFTS AND OR ON OVERTIME BASIS FOR ACHIEVING THE TARGETS SET BY BHEL. THIS TARGET MAY BE SET TO SUIT BHEL'S COMMITMENTS TO ITS CUSTOMER OR TO ADVANCE DATE OF COMPLETION OF EVENTS OR DUE TO OTHER REASONS. THE DECISION OF BHEL IN REGARD TO SETTING THE ERECTION AND COMMISSIONING TARGETS WILL BE FINAL AND BINDING ON THE CONTRACTOR.

##### **6.3**

CONTRACTOR SHALL DEPLOY ONLY QUALIFIED AND EXPERIENCED ENGINEERS/ SUPERVISORS. THEY SHALL HAVE PROFESSIONAL APPROACH IN EXECUTING THE WORK.

##### **6.4**

THE CONTRACTOR'S SUPERVISORY STAFF SHALL EXECUTE THE WORK IN THE MOST PROFESSIONAL MANNER IN THE STIPULATED TIME. ACCURACY OF WORK AND AESTHETIC FINISH ARE ESSENTIAL PART OF THIS CONTRACT. THEY SHALL BE RESPONSIBLE TO ENSURE THAT THE ASSEMBLY AND WORKMANSHIP CONFORM TO DIMENSIONS AND TOLERANCES GIVEN IN THE DRAWINGS/INSTRUCTIONS GIVEN BY BHEL ENGINEER FROM TIME TO TIME.

##### **6.5**

THE SUPERVISORY STAFF EMPLOYED BY THE CONTRACTOR SHALL ENSURE PROPER OUTTURN OF WORK AND DISCIPLINE ON THE PART OF THE LABOUR PUT ON THE JOB BY THE CONTRACTOR. ALSO IN GENERAL THEY SHOULD SEE THAT THE WORKS ARE CARRIED OUT IN A SAFE AND PROPER MANNER AND IN COORDINATION WITH OTHER LABOUR AND STAFF EMPLOYED DIRECTLY BY BHEL OR OTHER CONTRACTORS OF BHEL /CUSTOMER.

#### **6.6 INDUSTRIAL RELATIONS AND LABOUR LAWS**

AN INDUSTRIAL RELATIONS SUPERVISOR SHALL COORDINATE FOR THE IMPLEMENTATION OF LOCAL LABOUR LAWS, MAINTENANCE OF RECORDS AS REQUIRED BY CONTRACT LABOUR (REGULATION AND ABOLITION) ACT AND ALSO COORDINATE WITH THE LOCAL LABOUR AUTHORITIES AND ANY OTHER SUCH AUTHORITIES UNDER WHOM THIS WORK FALLS.

##### **6.7**

IF AT ANY TIME, IT IS FOUND THAT THE CONTRACTOR IS NOT IN A POSITION TO DEPLOY THE REQUIRED ENGINEERS/SUPERVISORS/WORKMEN DUE TO ANY REASON; BHEL SHALL HAVE THE OPTION TO MAKE ALTERNATE ARRANGEMENTS AT THE CONTRACTOR'S RISK AND COST.

#### 6.8 SITE ORGANIZATION

THE CONTRACTOR SHALL DEPLOY ADEQUATE LABOURERS AND SUPERVISORY STAFF IN ALL THE KEY AREAS OF WORK COVERED UNDER THESE SPECIFICATIONS.

CONTRACTOR SHALL FURNISH AN ORGANIZATION CHART INDICATING THE STAFFING PATTERN FOR THE KEY FUNCTIONS. CONTRACTOR SHALL PROVIDE THE NAMES AND DETAILS OF ENGINEER/ SUPERVISORS AT THE TIME OF MOBILIZATION TO BHEL AS PER THE PROPOSED ORGANIZATION CHART.

## **SECTION-7**

### **SPECIAL CONDITIONS OF CONTRACT**

7.0 OBLIGATIONS OF BHEL

7.1 FACILITIES PROVIDED BY BHEL

7.1.1 SPACE FOR FIELD OFFICE  
REFER SECTION-5 IN THIS REGARD.

7.1.2 CONSTRUCTION WATER  
REFER SECTION-5 IN THIS REGARD.

7.1.3 CONSTRUCTION POWER  
REFER SECTION-5 IN THIS REGARD.

7.1.4 OTHER MATERIALS AND CONSUMABLES:

BHEL SHALL NOT PROVIDE ANY MATERIAL/CONSUMABLES EXCEPT THOSE SPECIFICALLY MENTIONED IN THIS TENDER SPECIFICATION.

7.2 EQUIPMENTS – TOOLS & PLANTS

BHEL SHALL MAKE AVAILABLE ITS HYDRA CRANE FOR CONTRACTOR'S USE ON SHARING BASIS FOR LOADING AT STORAGE YARD AND UNLOADING AT SITE OF ROLLS OF ALUMINIUM CLADDING SHEETS, OUTER CASING AND SUCH OTHER HEAVY COMPONENTS/ EQUIPMENTS. CONTRACTOR SHALL ARRANGE / SHARE THE COST OF CRANE OPERATOR AND CONSUMPTION OF FUEL FOR HIS USE INCLUDING MARCHING ETC. SHARING ARRANGEMENT SHALL BE AS PER THE INSTRUCTIONS OF BHEL ENGINEER WHICH SHALL BE FINAL AND BINDING ON THE CONTRACTOR.

## **SECTION-7**

### **Special Conditions of Contract**

#### **8.0 Inspection/Quality Assurance/Quality Control/ Statutory Inspection**

8.1 Various inspection/quality control/quality assurance procedures/methods at various stages of erection and commissioning will be as per BHEL/customer quality control procedure/codes and other statutory provisions and as per BHEL engineer's instructions.

8.2 Preparation of quality assurance log sheets and protocols with customer/consultants/statutory authority, welding logs, NDE records, testing & calibration records and other quality control and quality assurance documentation as per BHEL engineer's instructions, is within the scope of work/specification. These records shall be submitted to BHEL/customer for approval from time to time.

8.3 A daily logbook of all measurements and testing/calibration should be maintained by contractor on the job for detailing inspection details of various equipments.

8.4 The performance of welders will be reviewed from time to time as per the BHEL standards. Welders' performance record shall be furnished periodically. Corrective action as informed by BHEL shall be taken in respect of those welders not conforming to these standards. This may include removal/ discontinuance of concerned welder(s). Contractor shall arrange for the alternate welders immediately.

8.5 All the welders shall carry identity cards as per the proforma prescribed by BHEL only welders duly authorized by BHEL/customer/consultant shall be engaged on the work.

8.6 Contractor shall provide all the measuring monitoring devices (MMDs) required for completion of the work satisfactorily. These MMDs shall conform to job requirement in respect of measurement range, accuracy level & any other specification. The indicative list of MMDs required for this work and to be made available by the contractor is given in appendix-III. The list will be reviewed by BHEL and the contractor shall meet any augmentation needed.

8.7 The MMDs deployed by the contractor shall, at all stages of work, have valid and current calibration. BHEL shall be done the calibration of these MMDs from the agencies accredited/ approved. Copy of calibration certificates in respect of these MMDs has to be submitted to BHEL. Periodical status report regarding validity of calibration has to be submitted to BHEL. Re-calibration/ re-validation shall be done periodically as per BHEL specifications. Contractor shall conform to the specifications of BHEL regarding storage of the MMDs.

8.8 Re-work necessitated on account of use of invalid MMDs shall be entirely to the contractor's account. He shall be responsible to take all corrective actions, including resource augmentation if any, as specified by BHEL to make-up for the loss of time.

8.9 In the course of work BHEL may counter/ finally check the measurements with their own MMDs. Contractor shall render all assistance in conduct of such counter/final measurements.

8.10 Total quality is the watchword of the work and contractor shall strive to achieve the quality standards, procedures laid down by BHEL. He shall follow all the instructions as per BHEL drawings and quality standards. Contractor shall provide for the services of quality assurance engineer.

#### 8.11 Stage Inspection By FES/QA Engineers

Apart from day-to-day inspection by BHEL engineers stationed at site and also by customer's engineers, stage inspection of equipments under erection and commissioning at various stages of erection and commissioning by teams of engineers from field engineering services of BHEL's manufacturing units and quality assurance teams from field quality assurance factory quality assurance and commissioning engineers from technical services of BHEL will also be conducted. Contractor shall arrange all labour, tools and tackles etc, for such stage inspections as part of work.

#### 8.12 Statutory Inspection of Work:

#### 8.13 Statutory Inspection of Work

##### 8.13.1

The work to be executed under these specifications has to be offered for inspection, at appropriate stages of work completion, to various statutory authorities for compliance with applicable regulations.

##### 8.13.2

The work related statutory inspections, though not limited to, are as under:

- 1) Inspectorate of the Chief Electrical Inspector of Madhya Pradesh OR Central Electricity Authority as per statute.
- 2) Any other authority connected to this work.

The scope includes getting the approval of the installations from the statutory authorities, which includes arranging for inspection visits of statutory authority

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periodically as per BHEL engineer's instructions, submitting documents, radiographs etc. and following up the matter with them. Contractor shall also make all arrangements for offering the products/systems for inspection, as applicable, to the concerned authority.

#### 8.13.3

It shall be contractor's responsibility to obtain approval of statutory authorities, whenever applicable, for conducting any work which comes under the purview of these authorities.

#### 8.13.4

BHEL will pay fees for visits, inspection fees etc. of these statutory authorities. Please refer Section-5 for working arrangement for payment of fees in this regard. All other expenses shall be borne by the contractor. In case these inspections have to be repeated due to reasons attributable to the contractor and fees have to be paid again, the contractor has to pay such additional charges.

#### 8.13.5

It shall be the responsibility of contractor to obtain license from chief electrical inspector, Maharashtra for carrying out high voltage work. Contractor shall also comply with the provisions of the latest Electricity Act, including the amendments thereof.

#### 8.13.6

The contractors shall pay all fees connected with testing of his welders/workers and testing, inspection & calibration of his MMD and T&P.

#### 8.14.0

The quality management system of BHEL, Power Sector – Western Region (PSWR) has already been certified and accredited under ISO 9002 standards in this regard. The basic philosophy of the quality management system is to define the organizational responsibility, work as per documented procedures, verify the output with respect to acceptance norms, identify the non-conforming product/ procedure and take corrective action for removal of non-conformance specifying the steps for avoiding recurrence of such non-conformities, & maintain the relevant quality records. The non-conformities are to be identified through the conduct of periodical audit of implementation of quality systems at various locations/stages of work. Suppliers/vendors of

various products/services contributing in the work are also considered as part of the quality management system. .as such the contractor is expected not only to conform to the quality management system of BHEL but also it is desirable that they themselves are accredited under any quality management system standard.

#### 8.15.0 Field Quality Assurance

Contractor shall carry out all activities conforming to the approved Field Quality Plan (FQP) as revised from time to time. Total quality shall be the watchword of the work and contractor shall strive to achieve the quality standards, procedures laid down by BHEL. He shall follow all the instructions as per BHEL drawings and quality standards. Contractor shall provide the services of quality assurance engineer as per the relevant clauses.

## **SECTION-9**

### **SPECIAL CONDITIONS OF CONTRACT**

#### **SAFETY, OCCUPATIONAL HEALTH AND ENVIRONMENTAL MANAGEMENT**

BHEL PSWR has been certified for Environmental Management under ISO 14001:1996 standard and Occupational Health & Safety under OHSAS 18001 by DNV. In order to comply with the above standards, it shall be the endeavour of BHEL and all its subcontractors to meet and implement the requirements by following the guidelines issued under Environmental, Occupational Health and Safety Management (EHS) manual a copy of which will be available with the BHEL Site-in-charge.

Contractor shall also enter into a "Memorandum of Understanding" as given in clause 9.9 in case of award of contract.

#### **9.0 RESPONSIBILITY OF THE CONTRACTOR IN RESPECT OF SAFETY OF MEN, EQUIPMENT, MATERIAL AND ENVIRONMENT.**

##### **9.1 The Contractor shall:**

###### **9.1.1**

Abide by the Safety Regulations applicable for the Site/Project and in particular as mentioned in the booklet "Safe Work Practices" issued by BHEL. Contractors are also to ensure that their employees and workmen use safety equipments as stipulated in the Factories Act (Latest Revision) during the execution of the work. Failure to use safety equipment as required by BHEL Engineer will be a sufficient reason for issuance of memo, which shall become part of Safety evaluation of the contractor at the end of the Project. Also all site work may be suspended if it is found that the workmen are employing unsafe working practice and all the costs/losses incurred due to suspension of work shall be borne by contractor. A comprehensive list of National Standards from which the contractor can draw references for complying with various requirements under this section is given under 9.10

###### **9.1.2**

Hold BHEL harmless and indemnified from and against all claims, cost and charges under Workmen's Compensation Act 1923 and 1933 and any amendment thereof and the contractor shall be solely responsible for the same.

###### **9.1.3**

Abide by the Procedure governing entry/exit of the contractor's personnel within the Customer/Client premises. All the contractors' employees shall be permitted to enter only on displaying of authorized Photo passes or any other documents as authorized by the Customer/Client.

###### **9.1.4**

Be fully responsible for the identity, conduct and integrity of the personnel/workers engaged by them for carrying out the contract work and ensure that none of them are ever engaged in any anti national activity



#### 9.1.5

Prepare a signboard giving the following information and display it near work site:

- i) Name of Contractor
- ii) Name of Contractor Site-in-charge & Telephone number
- iii) Job Description in short
- iv) Date of start of job
- v) Date of expected completion
- vi) Name of BHEL Site-in-charge.

#### 9.1.6

Abide by the rules and regulations existing during the contract period as applicable for the contractors at the Project premises.

#### 9.1.7

Observe the timings of work as advised by BHEL Engineer-in-charge for carrying out the contract work.

### 9.2 **SPECIAL CONDITIONS**

#### 9.2.1 **Safety**

##### 9.2.1.1 **Safety Plan**

Before commencing the work, contractor shall submit a “safety plan” to the authorized BHEL official. The safety plan shall indicate in detail the measures that would be taken by the contractor to ensure safety to men, equipment, material and environment during execution of the work. The plan shall take care to satisfy all requirements specified hereunder.

The contractor shall submit “safety plan” before start of work. During negotiations, before placing of work order and during execution of the contract, BHEL shall have right to review and suggest modifications in the safety plan. Contractor shall abide by BHEL’s decision in this respect.

##### 9.2.1.2

The contractor shall take all necessary safety precautions and arrange for appropriate appliances and/or as per direction of BHEL or it’s authorized person to prevent loss of human lives, injuries to men engaged and damage to property and environment.

##### 9.2.1.3

The contractor shall provide to his work force and also ensure the use of Personnel Protection Equipment (PPE) as found necessary and/or as directed and advised by BHEL officials without which permission is liable to be denied.

- Safety helmets conforming to IS 2925/1984 (1990)
- Safety belts conforming to IS 3521/1989
- Safety shoes conforming to IS 1989 part-II /1986(1992)
- Eye and face protection devices conforming to IS 2573/1986(1991), IS 6994 (1973), part-I (1991), IS 8807/1978 (1991), IS 8519/1977(1991).

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- Other job specific PPEs of standard ISI make as may be prescribed

#### 9.2.1.4

All tools, tackles, lifting appliances, material handling equipment, scaffolds, cradles, cages, safety nets, ladders, equipment, etc used by the contractor shall be of safe design and construction. These shall be tested and certificate of fitness obtained before putting them to use and from time to time as instructed by authorized BHEL official who shall have the right to ban the use of any item found to be unsafe.

#### 9.2.1.5

All electrical equipment, connections and wiring for construction power, its distribution and use shall conform to the requirements of Indian Electricity Act and Rules. Only electricians licensed by the appropriate statutory authority shall be employed by the contractor to carryout all types of electrical works. All electrical appliances including portable electric tools used by the contractor shall have safe plugging system to source of power and be appropriately earthed.

#### 9.2.1.6

The contractor shall not use any hand lamp energized by electric power with supply voltage of more than 24 volts. For work in confined spaces, lighting shall be arranged with power source of not more than 24 volts.

#### 9.2.1.7

The contractor shall adopt all fire safety measures as per relevant Indian Standards

#### 9.2.1.8

Where it becomes necessary to provide and/or store petroleum products, explosives, chemicals and liquid or gaseous fuel or any other substance that may cause fire or explosion, the contractor shall be responsible for carrying out such provisions and/or storage in accordance with the rules and regulations laid down by the relevant government acts, such as petroleum act, explosives act, petroleum and carbides of calcium manual of the chief controller of explosives, Government of India etc. The contractor in all such matters shall also take prior approval of the authorized BHEL official at the site.

#### 9.2.1.9

Proper means of access must be used e.g. ladders, scaffolds, platforms etc. No makeshift access such as oil drums or pallets shall be used. Design of these will be in accordance with relevant standards and certified by competent persons before use.

#### 9.2.1.10

Temporary arrangements made at Site for lifting, platforms, approach access etc should be properly designed and approved before being put to use.

#### 9.2.1.11

All excavations and openings must be securely and adequately fenced/barricaded and warning signs erected when considered necessary as per relevant code of practice.

9.2.1.12

No persons shall remove guardrails, covers or protective devices unless authorized by a responsible supervisor and alternative precautions have been taken

9.2.1.13

Access ways, means of escape and fire exits shall be clearly marked, kept clear and unobstructed at all times

9.2.1.14

Only authorized persons holding relevant license will drive and operate site plant and equipments e.g. cranes, dumpers, excavators, transport vehicles etc

9.2.1.15

Only authorized personnel are allowed to repair, commission electrical equipments.

9.2.1.16

Gas Cylinders shall be handled and stored as per Gas Cylinders Rules and relevant safe working practices

9.2.1.17

All wastes generated at Site shall be segregated and collected in a designated place so as to prevent spillage/contamination/scattering at Site, until the waste is lifted for disposal to designated disposal area as advised by BHEL official.

9.2.1.18

The contractor shall arrange at his cost (wherever not specified) appropriate illumination at all work spots for safe working when natural day light is not adequate for clear visibility.

The contractor shall train adequate number of workers/supervisors for administering "FIRST AID". List of competent first aid administrators should be prominently displayed.

9.2.1.19

The contractor shall display at strategic places and in adequate numbers the following in fluorescent markings

- Emergency telephone numbers
- Exit, Walkways
- Safe working load charts for wire ropes, slings, D shackles etc
- Warning signs

9.2.1.20

The contractor shall be held responsible for any violation of statutory regulations (local, state or central) and BHEL instructions that may endanger safety of men,

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equipment, material and environment in his scope of work or other contractors or agencies. Cost of damage, if any, to life and property arising out of such violation of statutory regulations and BHEL instructions shall be borne by the contractor.

#### 9.2.1.21

In case of a fatal or disabling injury/accident to any person at construction sites due to lapses by the contractor, the victim and/or his/her dependents shall be compensated by the contractor as per statutory requirements. However, if considered necessary, BHEL shall have the right to impose appropriate financial penalty on the contractor and recover the same from payments due to the contractor for suitably compensating the victim and/or his/her dependents. Before imposing any such penalty, appropriate enquiry shall be held by BHEL giving opportunity to the contractor to present his case.

#### 9.2.1.22

In case of any damage to property due to lapses by the contractor, BHEL shall have the right to recover cost of such damages from payments due to the contractor after holding an appropriate enquiry.

#### 9.2.1.23

In case of any delay in the completion of a job due to mishaps attributable to lapses by the contractor, BHEL shall have the right to recover cost of such delay from payments due to the contractor after notifying the contractor suitably and giving him opportunity to present his case.

#### 9.2.1.24

If the contractor fails to improve the standards of safety in its operation to the satisfaction of BHEL after being given a reasonable opportunity to do so, and/or if the contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipment or to carry out instructions regarding safety issued by the authorized BHEL official, BHEL shall have the right to take corrective steps at the risk and cost of the contractor after giving a notice of not less than seven days indicating the steps that would be taken by BHEL.

#### 9.2.1.25 **EMERGENCY RESPONSE**

BHEL will have an Emergency Response Plan for each Project Site in consultation with the Owner as the case may be, detailing the procedure for mobilization of personnel and equipment, and defining the responsibilities of the personnel indicated, in order to prepare for any emergency that may arise in order to ensure the priorities of

- Safeguard of life
- Protect assets under construction or neighbouring
- Protect environment
- Resumption of normal operations as soon as the emergency condition is called off

All Contractors shall also be part of the Emergency response Plan and the personnel so nominated shall be aware of their duties and responsibilities in an emergency response situation.

#### 9.2.1.27

At least 5% Contractors supervisors and workmen shall undergo training in administering 'First Aid'. The trained persons should represent for all categories of work and for all areas of work. Adequate number of trained persons should be available for each shift. These first aides shall be included in the emergency response team. Contractor employees and workmen are encouraged to participate in first aid training programmes whenever organized by BHEL.

### **9.2.2 OCCUPATIONAL HEALTH**

#### 9.2.2.1

Specific occupational health hazards will be identified through the hazard evaluation processes in consultation with BHEL engineers and the necessary prevention/ reduction/ elimination methods implemented.

#### 9.2.2.2

All personnel working in an activity with a potential risk to health shall be made aware of all those risks and the actions they must take to reduce/control/eliminate the risk

#### 9.2.2.3

Safety coordinator shall conduct periodic checks to ensure that every group of workers engaged in similar activities are aware of potential risks to health and the actions required to be taken to mitigate the risk

#### 9.2.2.4

In order to protect personnel from associated health hazards, the following main areas will be focused

- Issue of approved Personnel Protective Equipment
- Verification that the PPE are adequate/maintained and worn by all staff involved in operations that are potentially hazardous to their health
- Ensure that the personnel deployed are physically fit for the operation/work concerned
- Provide hygienic and sanitary working conditions

#### 9.2.2.5

Contractor workers employees engaged in noise risk areas shall be issued with hearing protection aids and the use of the same will be enforced. Further, these workers will be educated on the hazards of noise

#### 9.2.2.6

Contractor workers engaged in dust environment shall be issued with necessary dust protection aids and the use of the same shall be enforced

#### 9.2.2.7

Workers engaged in exposure to bright light/rays as in welding or radiation shall be issued with eye protection devices and the use of the same shall be enforced

#### 9.2.2.8

Adequate arrangements shall be made to provide safe drinking water

#### 9.2.2.9

Health monitoring records on at least sample basis for contractor employees & workmen shall be maintained for persons engaged in specified categories of work. These shall include

- Noise induced hearing loss
- Lung Function test
- Ergonomic Test
- Eye Test for Welders, Grinders, Drivers etc

### 9.2.3.0 HYGIENE and HOUSEKEEPING

#### 9.2.3.1

Good house keeping and proper hygiene is one of the key requirements of Occupational Health Safety and Environment management. Towards this the contractor shall encourage his workers and supervisors to maintain cleanliness in their area of work.

#### 9.2.3.2

The Contractor shall arrange to place waste bins/chutes at convenient locations for the collection of scrap and other wastes. The bins shall be clearly marked and segregated for metal, non-metal, hazardous and non hazardous wastes.

#### 9.2.3.3

BHEL may take up appropriate remedial measures at the cost of the contractors if the contractors fail in good house keeping and if there is an imminent risk of pollution

### 9.2.4 ENVIRONMENT MANAGEMENT

#### 9.2.4.1

BHEL has a sound environmental management system, which is to be maintained and implemented by all the contractors. The system allows for project specific objectives to be set and developed sensitive to client requirements, applicable environmental legislation and BHEL's own objectives and policy. BHEL engineers will assess and monitor the environmental impact of their work and lay out objectives for their minimization. The contractors shall implement the objectives for

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continual improvement of environmental performance. BHEL shall regularly audit environmental impacts and their improvements.

#### **9.2.4.2 WASTE MANAGEMENT**

##### **9.2.4.3.1**

The objective of waste management is to ensure the safe and responsible disposal of waste, ensuring that it is correctly disposed of and being able to audit the process to ensure compliance.

##### **9.2.4.3.2**

Chemical wastes if any shall be collected separately and disposed of to BHEL designated refuse yard as per BHEL advice.

##### **9.2.4.3.3**

No dangerous chemicals, noxious waste products or materials will be disposed off on or off site without approval obtained through BHEL.

##### **9.2.4.3.4**

All disposal of wastes generated during construction shall be in accordance with all relevant legislation.

Acid and alkali cleaning wastes shall be neutralized to acceptable norms before disposal to the designated area.

##### **9.2.4.3.5**

All necessary measures shall be taken to ensure safe collection and disposal of waste oils. In particular to ensure the prevention of their discharge into surface waters, ground waters, coastal waters or drainages

#### **9.3 SUPERVISION**

##### **9.3.1**

Contractor must provide at least one full time on site safety coordinator when the manpower engaged is in excess of 50 for the contract activities in the premises. If the manpower is less than 50, the on site safety coordination responsibilities shall be assumed by any one of the contractor's other supervisory staff; however in both the cases, the contractor must specify in writing the name of such persons to the BHEL Engineer in Charge.

##### **9.3.2**

Contractor's safety coordinator or his supervisor responsible for safety as the case may be shall conduct at his work site, and document formal safety inspection and audits at least once in a week. Such documents are to be submitted to BHEL Engineer in Charge for his review and record.

Contractor, supervisor must attend all schedule safety meetings as would be intimated to him by the BHEL Engineer in Charge.

#### 9.3.3

Before starting work under any contract, the contractor must ensure that a job specific safety procedures/field practices as required over and above the safety permit conditions are prepared and followed .He should also ensure that all supervisors and workers involved understand and follow this procedures /field practices.

#### 9.3.4

Contractor must ensure that in his work site appropriate display boards are put displaying signs for site safety, potential hazards and precautions required.

### 9.4.0 **TRAINING & AWARENESS**

#### 9.4.1

Contractor shall deploy experienced supervisors and other manpower who are well conversant with the safety and environment regulations of the Project. The electricians to be deployed on the job should have wireman license.

#### 9.4.2

All Supervisors & Workmen of the Contractor shall undergo Fire safety training/ demonstration whenever arranged by BHEL with the help of either Customer's Fire and Safety department or outside faculty so as to acquire knowledge of fire prevention and also to be able to make use of appropriate fire extinguishers.

#### 9.4.3

Contractor must familiarize himself from BHEL Engineer in Charge about all known potential fire, explosion or toxic release hazards related to the contract. He in turn will ensure that same information has been passed to the supervisors and workmen.

#### 9.4.4

Contractor must ensure that all his supervisors are properly trained and each employee has received and understood from his supervisor necessary training and briefing about the safety requirement. Necessary document as a means to verify that employees have understood the training is to be maintained.

#### 9.4.5

The contractor supervisors shall also give a small safety briefing to all the workmen under his charge before undertaking any new work and specially understand the safety requirements that are mandatory

### 9.5.0 **REPORTING**

#### 9.5.1

The contractor shall submit report of all accidents, fires and property damage, dangerous occurrences to the authorized BHEL official immediately after such



occurrence but in any case not later than twelve hours of the occurrence. Such report shall be furnished in the manner prescribed by BHEL and also to meet statutory requirement.

#### 9.5.2

Any injury sustained by any of the contractor's employees within the Project premises must be reported to BHEL supervisor and FIRST AID should be immediately administered. The Contractor shall be responsible for keeping and maintaining proper records of Accidents to his personnel.

#### 9.5.3

Contractor must arrange to immediately investigate, properly document and report any injury, accident or near miss involving any of his employees and take appropriate follow up action. He must furnish within 12 hours of the incident a written report to BHEL Engineer in charge and the Safety Section.

#### 9.5.4

According to the Factory Act and the Employees state Insurance Act & regulation, any person sustaining any injury within the project premises and absenting himself from work for more than 46 hours, his accident report has to be sent to the respective Government Authorities. Therefore contractor shall inform the owner's representative such matter immediately for their needful action.

#### 9.5.5

In addition, contractor shall submit periodic reports on safety to the authorised BHEL official from time to time as prescribed.

#### 9.5.6

Before commencing the work, the contractor shall appoint/nominate a responsible officer to supervise implementation of all safety measures and liaison with his counterpart of BHEL.

### 9.6 **AUDIT REVIEW AND INSPECTION**

#### 9.6.1

BHEL shall conduct audit on the contractor performance and compliance with the project specific requirements of the Environment and Occupational Health & Safety Management systems. The programme of audit shall cover all activities under the contract but will focus particularly on high-risk activities. The Construction Manager shall decide the schedule of audit. The audit findings shall be communicated to the contractors and necessary remedial action as advised by BHEL Engineers shall be under taken within the stipulated time.

#### 9.6.2

Inspections shall be carried out regularly by the contractors and by BHEL Engineers on activities, facilities, equipment, and documentation, to cover the following aspects.

- Compliance with procedures and systems
- Availability, condition and use of PPE
- Condition of maintenance tools, equipments, facilities

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- Availability of fire fighting equipments and its condition
- Use of fire fighting equipments and first aid kit
- Awareness of occupational health hazard
- Awareness of safe working practices
- Presence of quality supervision
- Housekeeping

The Safety coordinator shall visit and inspect work sites daily. All unsafe acts, unsafe conditions that have imminent potential for causing harm/injury/damage will be immediately corrected. He shall maintain a daily logbook giving details of unsafe acts or conditions observed and the corrective action taken and recommendations for preventing recurrence. Adequacy of corrective actions will be verified

The contractor shall take remedial measures as per the findings of each inspection. Besides the above, the contractor shall be required to carry out the following inspections

<b>SN</b>	<b>Equipment</b>	<b>Scope of inspection</b>	<b>Inspection by</b>	<b>Schedule</b>
1	Hand tools	To identify unsafe/defective tool	User	Daily
2	Power tools	To identify unsafe/defective tool	User	Daily
3	Fire Extinguishers	To check pressure and any defect	User / Safety Coordinator	Daily Every month
4	Lifting equipment/ tackles	To check for defects and efficacy of brakes	User Third party	Daily Every Year
5	PPE	To check for defects	User	Daily

## 9.7 **NON COMPLIANCE**:-

### 9.7.1

NONCONFORMITY OF SAFETY RULES AND SAFETY APPLIANCES WILL BE VIEWED SERIOUSLY AND THE BHEL HAS RIGHT TO IMPOSE FINES ON THE CONTRACTOR AS UNDER **for every instance of violation noticed**:

Sl. No	Instance of Violation	Fine (in Rs)
01	Not Wearing Safety Helmet	50/-
02.	Not wearing Safety Belt	100/-
03.	Grinding Without Goggles	50/-
04.	Not using 24 V Supply For Internal Work	500/-
05.	Electrical Plugs Not used for hand Machine	100/-
06.	Not Slinging property	200/-
07.	Using Damaged Sling	200/-
08.	Lifting Cylinders Without Cage	500/-
09.	Not Using Proper Welding Cable With Lot of Joints And Not Insulated Property.	200/-
10.	Not Removing Small Scrap From Platforms	200/-
11.	Gas Cutting Without Taking Proper Precaution or Not Using Sheet Below Gas Cutting	200/-
12.	Not Maintaining Electric Winches Which are Operated Dangerously	500/-
13.	Improper Earthing Of Electrical T&P	500/-
	Major Accident or Accidents causing partial loss of earning to the victim	50,000/- per victim
14	Fatal Accident or Accidents causing permanent loss of earning to the victim	1,00,000/- per victim

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 of the contractor. The amount collected above will be utilised for giving award to the employees who could avoid accident by following safety rules. Also the amount will be spent for purchasing the safety appliances and supporting the safety activity at site.

## 9.8

**CITATION**:-If safety record of the contractor in execution of the awarded job is to the satisfaction of safety department of BHEL, issue of an appropriate certificate to

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recognize the safety performance of the contractor may be considered by BHEL after completion of the job

## 9.9 Memorandum of Understanding

After Award Of Work, Contractors Are Required To Enter Into A Memorandum Of Understanding As Given Below:

### 12 Memorandum of Understanding

**BHEL, PSWR is committed to Health, Safety and Environment Policy (EHS Policy) as given in the booklet titled “Safe Working Practices” issued to all contractors.**

M/s \_\_\_\_\_ do hereby also commit to the same EHS Policy while executing the Contract Number \_\_\_\_\_

**M/s \_\_\_\_\_ shall ensure that safe work practices not limited to the above booklet are followed by all construction workers and supervisors. Spirit and content therein shall be reached to all workers and supervisors for compliance.**

BHEL will be carrying out EHS audits twice a year and M/s \_\_\_\_\_ shall ensure to close any non-conformity observed/reported within fifteen days.

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

Name :

Place & Date:

## 9.10

Comprehensive list of National Standards for reference and use wherever applicable in the execution of Civil, Erection and Commissioning Contracts.

IS No	YEAR	Amd upto	DESCRIPTION
IS 10204	1982		PORTABLE FIRE EXTINGUISHERS MECHANICAL FOAM TYPE
IS 10245	1994		SPECIFICATION FOR BREATHING APPARATUS
IS 10291	1982		SAFETY CODE FOR DRESS DRIVERS IN CIVIL ENGINEERING WORKS
IS 10658	1983		HIGHER CAPACITY DRY POWDER FIRE EXTINGUISHERS (TROLLEY MOUNTED)
IS 10662	1992		COLOUR TELEVISION

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IS No	YEAR	Amd upto	DESCRIPTION
IS 10667	1983		GUIDE FOR SELECTION OF INDUSTRIAL SAFETY EQUIPMENT FOR PROTECTION OF FOOT AND LEG
IS 11037	1984		ELECTRONIC FAN REGULATORS
IS 11057	1984		INDUSTRIAL SAFETY NETS
IS 11451	1998		RECOMMENDATION FOR SAFETY AND HEALTH REQUIREMENT RELATING TO OCCUPATION EXPOSURE TO ASBESTOS
IS 1169	1967		PEDESTAL FANS
IS 1179	1967		SPECIFICATION FOR EQUIPMENT FOR EYE AND FACE PROTECTION DURING WELDING
IS 11833	1986		DRY POWDER FIRE EXTINGUISHERS FOR METAL FIRES
IS 11972	1987		CODE OF PRACTICE FOR SAFETY PRECAUTION TO BE TAKEN WHEN ENTERING A SEWAGE SYSTEM
IS 1287	1986		ELECTRIC TOASTER
IS 13063	1991		STRUCTURAL SAFETY OF BUILDINGS ON SHALLOW FOUNDATIONS ON ROCKS
IS 13385	1992		SPECIFICATIONS FOR FIRE EXTINGUISHERS 50 LITRE WHEEL MOUNTED WATER TYPE (GAS CARTRIDGES)
IS 13386	1992		SPECIFICATIONS FOR FIRE EXTINGUISHERS 50 LITRE MECHANICAL FOAM TYPE
IS 13415	1992		CODE OF SAFETY FOR PROTECTIVE BARRIERS IN AND AROUND BUILDINGS
IS 13416	1992		RECOMMENDATIONS FOR PREVENTIVE MEASURES AGAINST HAZARDS AT WORKING PLACE PART 1 TO PART 5
IS 13430	1992		CODE OF PRACTICE FOR SAFETY DURING ADDITIONAL CONSTRUCTION AND ALTERATION TO EXISTING BUILDINGS
IS 13849	1993		PORTABLE FIRE EXTINGUISHERS DRY POWDER TYPE ( CONSTANT PRESSURE)
IS 1446	1985		CLASSIFICATION OF DANGEROUS GOODS (FIRST REVISION)
IS 1476	1979		REFRIGERATORS
IS 1641	1988		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): GENERAL PRINCIPLES OF FIRE GRADING AND CLASSIFICATION
IS 1642	1989		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS- DETAILS OF CONSTRUCTION
IS 1643	1988		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): EXPOSURE HAZARD
IS 1646	1997		CODE OF PRACTICE FOR FIRE SAFETY OF BUILDINGS (GENERAL): ELECTRICAL INSTALLATIONS
IS 1904	1986		CODE OF PRACTICE FOR DESIGN AND CONSTRUCTION OF FOUNDATIONS IN SOIL
IS 1905	1987		STRUCTURAL SAFETY OF BUILDINGS MASONARY WALLS
IS 2082	1985		ELECTRICAL GEYSERS
IS 2171	1985		PORTABLE FIRE EXTINGUISHERS DRY POWDER TYPE (CARTRIDGE)
IS 2309	1989		PRACTICE FOR THE PROTECTION OF BUILDINGS AND ALLIED BUILDINGS AGAINST LIGHTENING
IS 2312	1967		EXHAUST FANS

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IS No	YEAR	Amd upto	DESCRIPTION
IS 2361	1994		SPECIFICATION FOR BUILDING GRIPS - FIRST REVISION
IS 2418	1977		TUBULAR FLUORSCENT LAMPS IS 2418 (FT-1)
IS 2750	1964		STEEL SCAFFOLDINGS
IS 2762	1964		SAFE WORKING LOADS IN KGS FOR WIRE ROPE SLINGS
IS 2878	1986		



