

# **TENDER SPECIFICATION**

**BHEL:PSSR:SCT: 1283**

**FOR**

Handling at Site Stores / Storage yard, Transportation to Site of Work, Erection, Testing and Commissioning of Electrostatic Precipitator and its Auxiliaries including Supply and Application of Final Painting for Unit – 3 of 2 x 500 MW sets

at

**NTPC Simhadri Super Thermal power Project  
Stage II Visakhapatnam, AP.**

**PART – I TECHNICAL BID**

**BOOK NO :**



**BHARAT HEAVY ELECTRICALS LIMITED**

(A Government of India Undertaking)

Power Sector – Southern Region

690, Anna Salai, Nandanam, Chennai – 600 035.

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**BHEL : PSSR : SCT : 1283**

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**BHARAT HEAVY ELECTRICALS LIMITED  
(A Government of India Undertaking)  
Power Sector, Southern Region  
690, Anna Salai, Nandanam, Chennai – 35**

Tender Specification No. BHEL:PSSR:SCT: 1283

Messrs

Date :

Dear Sir,

SUB: Handling at Site Stores / Storage yard, Transportation to Site of Work, Erection, Testing and Commissioning of Electrostatic Precipitator and its Auxiliaries including Supply and Application of Final Painting for Unit – 3 of 2x 500 MW sets at NTPC- Simhadri Superpower Project –Stage II Visskhapatnam, AP.

Please find enclosed one set of non-transferable tender documents containing - 78 - pages of Tender Specification Booklet for the above work.

You are requested to go through the tender documents and offer your most competitive rate and submit the tender documents duly filled in as per procedure indicated in the tender specification along with requisite EMD of Rs.2,00,000/- (Rupees Two Lakh only) in the form of Demand Draft drawn in favour of M/s.Bharat Heavy Electrical Limited Chennai - 35. Bids with Deviations from the tender conditions will be rejected.

A SEPARATE LETTER SHALL BE FURNISHED INDICATING THAT THERE ARE NO DEVIATIONS FROM THE TENDER CONDITIONS( As in Page 8.)

The completed quotations shall reach the office of the under signed on or before **21.04.2008** at **14.30** Hrs. The Technical bids, will be opened on the same day at **15.00** hrs. We shall separately intimate the date for opening the price bids only to those parties who are technically qualified. You are requested to depute your authorized representative at the time of opening.

**ANY REVISION OF RATES / PRICES WHATSOEVER AFTER THE TIME AND DATE MENTIONED IN TENDER SPECIFICATION FOR SUBMISSION OF COMPLETED QUOTATIONS SHALL NOT BE ENTERTAINED UNLESS CALLED FOR SPECIFICALLY BY BHEL.**

Kindly acknowledge the receipt of the tender documents and confirm your participation.

Kindly note that BHEL reserves the right to reject any or all tenders without assigning any reason.

Thanking you,

Yours faithfully,  
For and on behalf of  
BHARAT HEAVY ELECTRICALS LIMITED

ADDITIONAL GENERAL MANAGER / CONTRACTS

This Tender document is not transferable.

Place : Chennai -35

Encl: One set of Tender documents.



## **Bharat Heavy Electricals Limited**

(A Govt. of India Undertaking)

Power Sector – Southern Region

EVR Periyar Building

690 , Anna Salai, Nandanam, Chennai – 600 035.

### **SPECIAL INSTRUCTIONS TO BIDDERS**

The Bidder must submit their bids as requested in a sealed cover prominently super scribing the Tender Specification number, due date and time of submission as mentioned in the **TENDER NOTICE**.

The following information shall be furnished by the Bidder along with their offer (Technical Bid cover)

01. Details of previous experience during the last five years indicating contract value, duration, completion period and present engagement as per G.C.C.
02. Organisation structure of the Company as per GCC.
03. Financial status of the firm enclosing balance sheet and profit and loss account for the past 3 years and certificate from the Company's Banker as per G.C.C
04. Turnover of the Company in last 3 financial years pertaining to this scope of work only.
05. Latest Income Tax clearance certificate.
06. **BIO DATA** of key personnel presently in the Rolls of the company and proposed site organization for carrying out the work including deployment of Engineers and Supervisors.
07. Declaration sheets as per Appendix of Tender Specification.
08. Checklist and Schedule of General particulars as per Appendix in GCC.
09. T & P owned/deployment details as per G.C.C.
10. Technical manpower deployment details as per G.C.C
11. Other relevant details as per GCC and checklist.
12. These terms and conditions will be read and construed along with General Conditions of contract and in case of any conflict or inconsistency between the General conditions and the Terms and conditions of the tender specification, the provisions contained in the Term and conditions (NIT, Rate Schedule, Common conditions, Special Conditions including Appendices) shall prevail.

**13. THE BIDDERS ARE REQUESTED TO FURNISH THE DOCUMENTS LIKE COPIES OF LOI'S, WORK ORDER'S ETC PERTAINING TO THE EXPERIENCE INDICATED IN QUALIFYING REQUIREMENT, AS GIVEN BELOW.**

**14 . QUALIFICATION REQUIREMENT**

- a) The bidder should possess the experience of having executed Erection, testing and commissioning of electrostatic precipitator work of minimum one unit of 200 MW or above capacity in thermal power plant in the last seven years.
- b) The Bidder should have an average financial turnover of Rs. 3.48 crores for the last three years ending on 31.3.2007.

The bidder should have earned profit in any one of the last three financial years ending on 31.3.2007 and should have positive net worth as on 31.3.2007.

The bidder should submit audited Balance Sheet and Profit and Loss Account of the Company for the last three years ending on 31.3.2007 in support of the above requirement.

- c). Notwithstanding the above, BHEL reserves the right to reject any tender or all the tenders for the reasons whatsoever beyond our control and the decision of BHEL is final.
- d) Approval of the party by customer

LD / Penalty shall be leviable as per the applicable clauses of GCC.

15. TENDERERS HAVE TO FURNISH A DECLARATION SHEET INDICATING THAT THERE IS NO DEVIATION FROM THE TENDER DOCUMENTS (AS IN PAGE 8). TENDERERS MAY FURTHER NOTE THAT THIS DECLARATION IS A PREREQUISITE FOR BHEL TO CONSIDER THEIR BIDS. BIDS SUBMITTED WITHOUT "**NO DEVIATION DECLARATION**" WILL BE REJECTED BY BHEL.

**16. SAFETY PLAN**

Bidder may further note that the submission of safety plan is a prerequisite for BHEL to consider their bids.



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Power Sector – Southern Region

EVR Periyar Building

690 , Anna Salai, Nandanam, Chennai – 600 035.

### **PROCEDURE FOR SUBMISSION OF SEALED BIDS**

The Tenderers must submit their bids as required in two parts in separate sealed covers prominently super scribed 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.

Tenderers are requested to quote their rates, only in the price bid (part II) provided by BHEL. Quoting of rates in any other form / formats will not be entertained.

These two separate cover I & II (Part I and Part II) shall together be enclosed in a third envelope (Cover III) along with requisite EMD as indicated and this sealed cover shall be super scribed and submitted to Additional General Manager / Contracts at the above mentioned address before the due date as indicated. The Tenderers will be intimated separately in case any clarifications are required.

#### NOTE:

Tenderers are issued with 2 Nos. of Technical Bids, 2 Nos. of Price Bids , out of which one set of each document shall be retained by them for their reference. Balance one set shall be submitted along with their offer as per procedure indicated above.

EMD amount for this Tender is Rs.2,00,000/- (Rupees Two Lakh only). This EMD amount shall be submitted in the form of demand draft only drawn in favour of M/s. Bharat Heavy Electricals Limited, Chennai – 35.

**EMD amount in the form of Bank Guarantee / fixed deposit receipt or in any other form will not be accepted.**

**ANY REVISION OF RATES / PRICES WHATSOEVER AFTER THE TIME AND DATE MENTIONED IN TENDER SPECIFICATION FOR SUBMISSION OF COMPLETED QUOTATIONS SHALL NOT BE ENTERTAINED UNLESS CALLED FOR SPECIFICALLY BY BHEL.**

Additional General Manager/Contracts.



## **Bharat Heavy Electricals Limited**

(A Govt. of India Undertaking)

Power Sector – Southern Region

EVR Periyar Building

690 , Anna Salai, Nandanam, Chennai – 600 035.

### **TENDER NOTICE**

Sealed Tenders are invited from reputed contractors with sufficient previous experience in the under mentioned similar nature of work:

Tender Specification No. BHEL:PSSR:SCT: 1283

Description	EMD
Handling at Site Stores / Storage yard, Transportation to Site of Work, Erection, Testing and Commissioning of Electrostatic Precipitator and its Auxiliaries including Supply and Application of Final Painting for Unit – 3 of 2x 500 MW sets at NTPC- Simhadri Super Thermal Power Project – Stage II Visskhapatnam, AP.	Rs.2,00,000/- (Rupees Two Lakh only)

Cost of Tender Documents (Including all Taxes)	:	Rs.1040/-	
Sale Starts on	:	01.04.2008	
Sale closes on	:	19.04.2008	
Due date and Time for Submission	:	21.04.2008	14.30 Hrs.
Date and time for opening Of Technical Bids	:	21.04.2008	15.00 Hrs.

## 15 QUALIFICATION REQUIREMENT

- a) The bidder should possess the experience of having executed erection, testing and commissioning of electrostatic precipitator work of minimum one unit of 200 MW or above capacity in thermal power plant in the last seven years.
- b) The Bidder should have an average financial turnover of Rs. 3.48 crores for the last three years ending on 31.3.2007.

The bidder should have earned profit in any one of the last three financial years ending on 31.3.2007 and should have positive net worth as on 31.3.2007.

The bidder should submit audited Balance Sheet and Profit and Loss Account of the Company for the last three years ending on 31.3.2007 in support of the above requirement.

- c). Notwithstanding the above, BHEL reserves the right to reject any tender or all the tenders for the reasons whatsoever beyond our control and the decision of BHEL is final.
- d) Approval of the party by customer

LD / Penalty shall be leviable as per the applicable clauses of GCC.

Interested parties can get the Tender documents from the office of the Additional General Manager / Contracts on all working days by remitting the cost of tender documents either by Cash or A/c Payee Demand Draft drawn in favour of M/s. Bharat Heavy Electricals Limited, Chennai – 600 035. Money order, Cheques and Postal Orders will not be accepted.

Bharat Heavy Electricals Limited takes no responsibility for any delay, loss or non-receipt of tender documents sent by post and also reserves the right to reject any or all the tender without assigning any reason therefor. **TENDER NOT ACCOMPANIED BY THE PRESCRIBED EARNEST MONEY DEPOSIT IS LIABLE TO BE SUMMARILY REJECTED.**

Additional General Manager /Contracts

**TENDER SPECIFICATION : BHEL:PSSR:SCT:1283**

**CERTIFICATE FOR NO DEVIATION**

I, \_\_\_\_\_ Of

M/s \_\_\_\_\_

hereby certify that there is no deviation from the Tender conditions either technical or commercial and I am agreeing to all the terms and conditions mentioned in the Tender Specification.

SIGNATURE OF THE TENDERER

## OFFER OF CONTRACTOR

Additional General Manager/Contracts  
Bharat Heavy Electricals Limited,  
Power Sector : Southern Region  
690, Anna Salai,  
Nandanam,  
Chennai – 600 035.

Sir,

I/We hereby offer to carry out the work detailed in Tender Specification No.BHEL:PSSR:SCT:1283 issued by Bharat Heavy Electricals Limited, Power Sector : Southern Region, 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 Tenderer
2. General Conditions of Contract
3. Special conditions of Contract
4. Other Section, Appendices and Schedules

I/We have deposited/forwarded herewith the Earnest Money Deposit/a sum of Rs.2,00,000/- (Rupee Two Lakhs only) vide DD.No. .  
Dt. which shall be refunded should our offer not be accepted.  
Should our offer be accepted, I/We further agree to deposit such additional sum which along with the sum of Rs.2,00,000/- ( Rupee Two Lakhs only) mentioned above, make up the Security Deposit for the work as provided for in the Tender Specification within the stipulated time as may be indicated by BHEL, Power Sector : Southern Region, Chennai – 600 035.

I/We further agree to execute all the works referred to in the said documents upon the terms and conditions obtained or referred to therein and as detailed in the appendices annexed thereto.

DATE:

CONTRACTOR:

PLACE:

ADDRESS:

Witness with their address

Signature

Name

Address

## SIMHADRI STAGE-II 2 X 500 MW TPS (NTPC)

### PROJECT INFORMATION

1. Project Name : Simhadri Super Thermal Power Project ( Stage-II )
2. Project Stage : Stage- II
3. No. of Units x Capacity : 2 x 500 MW
4. Project setting up by : National Thermal Power Corporation Ltd. (NTPC Ltd.)
5. LOCATION AND APPROACH : (i) NTPC Simhadri (Parawada Mandal)  
(ii) District: Vishakapattinam  
(iii) State : Andhra Pradesh
6. Latitude and Longitude of project location : North :17. 35° to 17.37° ( North)  
East :83.05° to 83.08° (East)
7. Nearest Railway Station : i) Vishaka pattinam 45 Kms  
ii) Anakapally 35 Kms
8. Nearest Major Town & Distance From Project site : Vishaka pattinam 45 Kms.
9. Nearest Airport : Vishakapattinam
10. Distance from the Airport to Project site : 35 Kms
11. Nearest Highway : Lankela Palam- NH-5
12. Distance from nearest highway Point to the site : 16 Kms.
13. Temperature : (Dry bulb )  
Maximum : 45 Degree  
Minimum : 15 Degree  
Average : 36 Degree

14. Relative Humidity  
Maximum : 95 %  
Minimum : 17 %  
Average : 51 %
15. Rainfall : Annual average Rainfall is 1090 mm max/min  
rainfall is 293 mm.
16. Wind Load : Basic Wind Speed 50 mm/sec.
17. Transport:
- a) By Rail : Broad Gauge Railway line of South Eastern Railway
  - b) Road : State High way
18. Seismic Data : As per Indian Standard criterion. IS :1893 (part-) 2002  
Aone –II

## **SECTION III**

### **COMMON CONDITIONS**

#### **3.1 SCOPE OF CONTRACT**

- 3.1.1 The Intent of this specification is to provide services for executing the projects according to most modern and proven techniques and codes. The omission of specific reference to any method and equipment or materials necessary for the proper and efficient services towards installation shall not relieve the contractor of the responsibility of providing such services, / facilities to complete the work or portion of work awarded to him. The quoted rate shall deem to be inclusive of all such contingencies.
- 3.1.2 The contractor shall carryout the work in accordance with instructions/ drawings / specification(s) / check list / standard practices supplied by BHEL from time to time.
- 3.1.3 Provisions of all types of labour, supervisors, watch and ward as required, tools and tackles as specified, consumables as specified under various clauses of tender specification for handling, transportation, erection, testing and commissioning.
- 3.1.4 Proper out-turn as per BHEL plan and commitment.
- 3.1.5 Completion of work in time.
- 3.1.6 Good quality and accurate workmanship for proper performance of equipment / systems.
- 3.1.7 Preservation of all components at all stages of pre-assembly/ erection / testing and commissioning till unit is handed over, as specified In detail in clause 3.10.5

#### **3.2 FACILITIES PROVIDED BY BHEL:**

##### **3.2.1 OPEN SPACE:**

Open space for building of temporary office shed and contractor's stores shed(s) will be provided free of charges. Contractor has to make his own arrangements for labour colony.

##### **3.2.2 ELECTRICITY:**

For construction purpose, and for contractors office and stores shed electricity will be provided free of charge at one single point. Further distribution shall be arranged by the contractor at his cost.

**3.2.3 WATER:**

Water for construction purpose and for drinking shall be arranged by the contractor at his cost .

**3.2.4 TOOLS & TACKLES:**

All the tools and tackles required for the complete erection, testing and commissioning of components/equipments shall be arranged by the contractor at his cost, except the tools and plants provided by BHEL as indicated in Appendix III.

**3.2.5 CONSUMABLES:**

All consumables and electrodes including special electrodes if any are to be arranged by the Contractor at his cost. These are governed by clause 3.4 and 3.5 of Tender Specification.

**3.3 FACILITIES TO BE PROVIDED AND DEVELOPED BY THE TENDERER AT HIS COST.**

**3.3.1 CRANES:**

The following minimum number of cranes shall be arranged by the contractor with experienced operator, fuel, lubricants etc for execution of this contract within the Quoted rate.

SI.No	Description	Qty
1.	100 T Crane	1 No.
2.	18 T Crawler Crane	1 No.
3.	8 T Mobile Crane	1 No.

**3.3.2 CIVIL CONSTRUCTION:**

It shall be the responsibility of the contractor to construct his own office shed, stores shed, with all facilities like electricity, water supply, sanitary arrangements in the area allotted to him for the purpose.

**3.3.3 WATER DISTRIBUTION:**

Distribution of water for construction purposes and as well as drinking purposes to various work-fronts shall be contractor's responsibility and at his cost.

### **3.3.4 ELECTRICITY DISTRIBUTION:**

Provision of distribution of electrical power from the given single central point to the required places with proper distribution boards, cables etc., observing the safety rules laid down by electrical authority of the State / BHEL / their customer with appropriate statutory requirements shall be the responsibility of the tenderer / contractor.

### **3.3.5 POSSESSION OF GENERATORS**

As there are bound to be interruptions in regular power supply, power cut/ load shedding in any construction sites, suitable extension of time, if found necessary only be given and contractor is not entitled for any compensation. It shall be the responsibility of the tenderer / contractor to provide, and maintain the complete installation on the load side of the supply with due regard to safety requirements at site. It shall be responsibility of the contractor to have atleast (2 to 4) diesel operated welding generator sets to get urgent and important work to go on without interruptions. The consumables required to operate the generators are to be provided by tenderers. This may also be noted while quoting.

### **3.3.6 LIGHTING FACILITY:**

Adequate lighting facilities such as flood lamps, hand lamps and area lighting shall be arranged by the contractor at the site of construction, pre assembly yard and contractors material storage area etc. at his cost.

### **3.3.7 POWER REQUIREMENT:**

For the purpose of planning, contractor shall furnish along with tender the estimated requirement of power (month wise) for execution of work in terms of maximum KW demand.

### **3.3.8 CONTRACTOR'S OBLIGATION ON COMPLETION:**

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.

## **3.4 GASES:**

3.4.1 All the required gases like Oxygen/ Acetylene/ argon/ Nitrogen required for work shall be supplied by the Contractor at his cost. It shall be the responsibility of the contractor to plan the activities and store sufficient quantity of these gases. Non availability of gases cannot be considered as reason for not attaining the required progress.

- 3.4.2 BHEL reserves the right to reject the use of any gas in case required purity is not maintained.
- 3.4.3 The contractor shall submit weekly / fortnightly / monthly statement report regarding consumption of all consumables for cost analysis purposes.
- 3.4.4 The contractor shall ensure safe keeping of the inflammable cylinder at a separate place away from normal habit with proper security etc.

### **3.5 ELECTRODES**

- 3.5.1 All the required electrodes including special electrodes if any like E7018 required shall be arranged by contractor at his cost. It shall be the responsibility of the contractor to obtain prior approval of BHEL, before procurement regarding, suppliers, type of electrodes etc. On receipt of the electrodes at site, it shall be subject to inspection and approval by BHEL. The contractor shall inform BHEL details regarding type of electrodes, batch number and date of expiry etc.
- 3.5.2 Shortage of any of the above electrodes or the equivalent suggested by BHEL shall not be quoted as reason for deficiency in progress or for additional rate.
- 3.5.3 Storage of electrodes shall be done in an air conditioned / controlled humidity room as per requirement, at his own cost by the contractor.
- 3.5.4 All low hydrogen electrodes shall be baked/dried in the electrode drying oven (range 375 deg. C - 425 deg. C) to the temperature and period specified by the BHEL Engineer before they are used in erection work and each welder should be provided with one portable electrode drying oven at the work spot. Electrode drying oven and portable drying ovens shall be provided by contractor at his cost.
- 3.5.5 In case of improper arrangement of procurement of above electrodes BHEL reserves the right to procure the same from any source and recover the cost from the contractor's first subsequent bills at market value plus departmental charges of BHEL communicated from time to time. Postponement of such recovery is not permitted.
- 3.5.6 BHEL reserves the right to reject the use of any electrodes at any stage, if found defective because of bad quality, improper storage, date expiry, unapproved type of electrodes etc. It shall be the responsibility of the contractor to replace at his cost without loss of time.

### **3.6 TOOLS & TACKLES**

- 3.6.1 BHEL will provide free of hire charges on sharing basis the tools and plants indicated in Appendix III only. It may be noted that distribution of these equipments will be done by BHEL Engineers and the decision of the Engineer shall be final in this regard.
- 3.6.2 The Contractor shall be responsible for the safe and proper use of the above equipments issued to him. Day-to-day maintenance and operation of the equipments shall be the contractor's responsibility and shall be as per instructions/standard practice of BHEL Engineer. Any consumables / Lubricants required for operation and application of the same shall be done by the contractor with his skilled labour at his cost.
- 3.6.3 Any loss/damage to any or part of the above equipments shall be to contractor's account and the expenditure on these account will be recovered from contractor's bills in case contractor fails to make good the loss.
- 3.6.4 Necessary electrical / water / air connection required for operation of any of the above equipments shall be to contractor's account.
- 3.6.5 Non-availability of any of the above equipment either due to breakdown/ routine maintenance or due to distribution pattern of BHEL shall not be quoted as reason for delay of work.
- 3.6.6 Monthly utilisation report of the above equipment shall be furnished by contractor for cost analysis purpose.
- 3.6.7 The contractor shall return the T & P issued to him by BHEL in good working condition as and when so desired by BHEL. (on completion or reduction in work load) for diversion for other work. If such return is delayed by contractor due to his fault without written consent of BHEL, hire charges as applicable according to BHEL policy will be levied from such time it was requisitioned by BHEL to the time of actual return and the amount so decided and arrived at, will be recovered from the contractor's bill.
- 3.6.8 All other T & P required for the satisfactory execution of work shall be arranged by contractor at his cost.
- 3.6.9 All the T & P arranged by contractor including electrical connections wherein required shall be reliable / proven / tested with necessary test certificate.
- 3.6.10 All instruments, measuring tools etc. are to be calibrated periodically as per the requirement of BHEL and necessary calibration certificates are to be submitted to BHEL before use.

- 3.6.11 The contractor has to return the T & P in good working condition and cost of any replacement required has to be borne by the contractor.
- 3.6.12 Contractor shall have at all times experienced operators and technicians, for routine and breakdown maintenance of the equipment. Any delay in rectification of defects will warrant BHEL rectifying the defect and charging the cost to the contractor.
- 3.6.13 If at any time, it is noticed that contractor is not using any of the T & P or equipments properly according to the instructions of BHEL, BHEL will have the right to withdraw any and all such equipments and any cost due to this shall be to contractor's account.
- 3.6.14 All the T & P indicated in Appendix III would be Issued only in BHEL stores and it shall be the responsibility of the contractor to take delivery from BHEL stores, transport the same to site and return the same to BHEL stores in good condition after use.
- 3.6.15 All the T & P, lifting tackles including wire ropes, slings, shackles and electrically operated equipments shall be got approved by BHEL Engineer before they are actually put on use. Test certificates should be submitted before their usage.
- 3.6.16 The list of major T & P required to be deployed by the contractor is indicated in APPENDIX I. The list is minimum and not exhaustive but anything required over and above these to suit the site condition/rate of progress/nature of work shall be arranged by contractor at his own cost
- 3.6.17 Contractor shall take into consideration the above clause and quote the rates as called for in the Rate Schedule.
- 3.6.18 During the execution of the work, it becomes necessary for the contractor to deploy his manpower for reduction/increasing the boom length of the crane to suit the erection condition. It shall be the indenting contractor's responsibility to arrange for necessary manpower / hand tools / illumination / supports / consumables, etc. and the quoted rate shall include such services. Similarly, all assistance required during preventive maintenance shall be provided by the contractor.
- 3.6.19 For movement of crane, etc. It may become necessary to lay sleeper bed for obtaining levelled safe approach for usage of equipment It shall be the responsibility of the contractor to lay necessary sleeper's. The required sleepers shall be arranged by the contractor at their cost. BHEL will not provide any sleepers for this work.

3.6.20 Contractor shall make good any loss or damage to the equipments supplied to him and day to day maintenance and operations of equipments shall be borne by the contractor including all consumables like oil and air filters etc.

3.6.21 BHEL will provide 150T Sumitomo or equivalent crane – 1 No and 75T crawler crane 1 No free of charge on sharing basis, for this scope of work.

For 150T crane, Operator will be provided by BHEL and contractor has to provide two helpers to assist BHEL operator at his cost.

For 75T crane experienced operator shall be arranged by the contractor at his cost.

Fuel, lubricants etc. for the above cranes shall be arranged by the contractor within the Quoted rate.

If the contractor fails to provide experienced crane operators, helpers and mechanics, BHEL reserves the right to engage them at the cost of contractor. If the fuel, lubricants etc are not provided by the contractor it will be provided by BHEL at the cost of the contractor.

3.6.22 As the cranes available with BHEL are likely to be deployed for various contractors, the decision of BHEL Engineers will be final with regard to allotment of cranes for day to day use.

3.6.23 The availability of cranes are likely to be hampered from time to time due to routine, preventive maintenance or breakdown maintenance. Contractor has to make alternative arrangements or plan/amend/alter his activities with the consent of BHEL Engineer to suit the above conditions and the contractor will not be liable for any compensation due to this.

3.6.24 The contractor has to keep and maintain a log book every day which will be provided by BHEL and this has to be countersigned by BHEL Engineer every day.

### **3.7 SUPERVISORY STAFF AND WORKMEN**

3.7.1 The Contractor shall supply all the skilled workmen like welders, gas cutters, electricians, riggers, serangs, erectors, carpenters, fitters, masons, ladders, tin-smiths etc., in addition to other skilled, semi-skilled and unskilled workmen required for all the works of handling and transportation from the site stores to erection site, erection, testing and commissioning contemplated under this specification. Only fully trained and competent men with previous experience on the job shall be employed. They shall also hold valid certificates wherever necessary. BHEL reserves the right to decide

on the suitability of the workers and other personnel who will be employed by the contractor, BHEL reserves the right to insist on removal of any employee of the contractor at any time, if they find him unsuitable and the contractor shall forthwith remove him.

- 3.7.2 The supervisory staff employed by the contractor shall be qualified (Engineers - Graduates in Engineering and Supervisors - Diploma Holders) and experienced In the area of work. They shall ensure proper out-turn of work and discipline on the part of labour put on the job by the contractor and in general see that the works are carried out in safe and proper manner and in coordination with other labour and staff employed directly by BHEL or BHEL's client.
- 3.7.3 The Contractor shall also furnish daily labour report showing by classification the number of employees engaged in various categories of work and a progress report of work as required by BHEL Engineer. The contractor shall also give a summary report at the end of the month and plan of deployment for the consequent month as per the plan of activities as required by BHEL, to meet the overall contract requirement.
- 3.7.4 The work shall be executed under the usual conditions existing in major power plant construction and in conjunction with numerous other operations at site. The contractor and his personnel shall co-operate with other personnel, other contractor coordinating his work with others and proceed in a manner that shall not delay or hinder the progress of work as a whole.
- 3.7.5 The contractor's supervisory staff shall execute the work in the most substantial and workman like manner in the stipulated time. Accuracy of work, good workmanship and aesthetic finish are essential part of this contract. The contractor shall be responsible to ensure that assembly and workmanship confirm to the dimensions and tolerances given in the drawings/instructions given by BHEL Engineers from time to time. Wherever finish or tolerances are not specified in drawings/documents, BHEL Engineers instruction are taken as final.
- 3.7.6 The contractor shall employ the necessary number of qualified and approved full time electricians at his cost to maintain his temporary electrical installation till the completion of work.
- 3.7.7 It is the responsibility of the contractor to engage his workmen in shifts or on overtime basis for achieving the target set by BHEL and also during erection, commissioning and testing period. The contractor's quoted rate shall include all these contingencies.
- 3.7.8 If the contractor or his workmen or employees shall break-deface, injure or destroy any part of a building, road, kerb, fence, enclosure, water pipes, cables, drains, electric or telephone posts or wires, trees or any other property or to any part of the erected components etc., the contractor shall make the same good at his

own expense or in default, BHEL may cause the same to be made good by other workmen or by other means and deduct the expenses (of which BHEL's decision is final) from any money due to the contractor.

### **3.8 CIVIL WORKS**

3.8.1 Column foundation and foundation of other plants and necessary civil works shall be provided by the clients of BHEL. The dimension of the foundation and anchor bolt pits shall be checked by the contractor for their correctness as per drawings. Further, top elevation of foundations shall be checked with respect to bench mark etc. All adjustments of foundation surfaces, enlarging the pockets in foundations etc. as may be required for the erection of equipment, plants shall be carried out by the contractor. All the materials like cements, sand, etc. shall also be arranged by the contractor wherever necessary.

3.8.2 The contractor at his cost shall arrange for grouting of foundation bolt holes of column and Equipment as specified in the drawings / specification or as advised by the Engineer of BHEL after preparing the foundation top surface for grouting, All the materials for grouting including special cement (sand, gravel and cement) shall be arranged by the contractor. The grouting has to be done upto basement level. The required consumables like Portland cement, gravel, sand, including special cement like conbextra or its equivalent are to be provided by the contractor at his cost.

3.8.3 The contractor at his cost shall arrange for grouting of anchor points of T & P issued to him and also grouting of winches or any other supports required for T & Ps Necessary grout materials are to be arranged by the contractor at his cost

### **3.9 SCOPE OF MATERIAL HANDLING AND SITE STORAGE AND OTHER RESPONSIBILITIES**

3.9.1 While BHEL will endeavour to store/stock/identify materials properly in their open/closed storage yard/shed it shall be contractor's responsibility to assist BHEL in identifying materials well in time for erection, taking delivery of the same in time following the procedure indicated by BHEL and transport the material safely to pre-assembly yard/erection site in time according to programme.

3.9.2 The contractor shall identify necessary supervisors/labour force for the above work in sufficient number as may be needed by BHEL for areas covering their scope.

- 3.9.3 It shall be contractor's responsibility to arrange for necessary crane/tractors, trailers / trucks / slings / tools and tackles / labour including operators, for loading the materials / equipments from stores / storage yard, move it to erection site / pre-assembly yard and unload the same at pre-assembly yard / erection site and the quoted rate shall include the same.
- 3.9.4 All equipment so used by contractor shall be of proven quality and safe in operation as approved by BHEL site Engineers from time to time.
- 3.9.5 Any loss/damage to materials issued to contractor shall be made good by him or BHEL will arrange for replacement at cost recovery basis and decision of BHEL shall be final.
- 3.9.6 All welding filler wires if issued to contractor shall be preserved by him carefully to prevent deterioration of their properties. Special care shall be taken to preserve alloy steel and other special electrodes / filler wires. Contractors shall exercise maximum care in using these electrodes, filler wires to minimise wastage by maintaining a record of all usages.
- 3.9.7 All pipe and tube ends shall be covered with plastic caps or will be closed with wooden plugs as the case may be.
- 3.9.8 All the surplus damaged, unused materials, package materials / containers / special transporting frames, gunny bags etc. supplied by BHEL shall be returned to the BHEL stores by the contractor and maintain records.
- 3.9.9 The contractor shall take delivery of the components and equipments and special consumables from the storage area after getting the approval of the BHEL Engineer on standard indent forms to be specified by BHEL. At periodic intervals of work, complete and detailed account of the equipment as erected and electrodes used shall be submitted to the BHEL Engineer.
- 3.9.10 The contractor shall follow monthly plan for erection and the same will be mutually agreed upon after discussion. The contractor shall arrange for Engineers, Supervisors and labour force and tools and plants and consumables to suit the above plan and execute the work accordingly.
- 3.9.11 The contractor shall have total responsibility for all equipment and materials in his custody, stores, loose, semi-assembled, assembled or erected by him at site.
- 3.9.12 The contractor shall make suitable security arrangement including employment of security personnel to ensure the protection of all materials/equipments and works from theft, fire, pilferage and any other damage and loss.

- 3.9.13 The contractor shall ensure that the packing materials and protection devices used for the various equipments during transit and storage are removed before these equipments are installed.
- 3.9.14 All equipments shall be handled very carefully to prevent any damage or loss. No bare wire ropes, slings etc. shall be used for unloading and / or handling of the equipments without the specific written permission of the Engineer. The equipments from the storage yard shall be moved to the actual site of erection / location at the appropriate time as per the direction of BHEL Engineer so as to avoid damage for such equipments at site.
- 3.9.15 The work covered under this scope of work is of highly sophisticated nature requiring best quality / precision workmanship engineering and construction management. He should also ensure successful and timely commercial operation of equipment installed. The contractor must have adequate quantity of precision tools, construction aids in possession. Contractor must also have adequate trained qualified and experienced supervisory staff and skilled personnel.
- 3.9.16 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.
- 3.9.17 The contractor shall take all reasonable care to protect the materials and work till such time the erected equipment has been taken over by BHEL/their client. Wherever necessary suitable temporary fencing and lighting shall have to be provided by the contractor as a safety measure against accident and damage of property of BHEL. Suitable caution notices shall be displayed where access to any part may be deemed to be unsafe and hazardous.
- 3.9.18 The contractor shall be responsible for taking all safety precautions during the construction and keeping the site safe at all times and the end of each working day. When the work is temporarily suspended he shall protect all construction materials, equipments and facilities from causing damage to existing property interfering with the operations of the station when it goes into services. The contractor shall comply with all applicable provisions of the safety regulations, clean-up programme and other precautionary measures which the BHEL has in effect at the site.
- 3.9.19 All lifting tackles including wire ropes, slings, shackles etc. used by the contractor shall be got approved by BHEL Engineer at site before they are actually put on the work. It will be the responsibility of the contractor to ensure safe lifting of the equipment taking due precautions to avoid any accidents and damage to other equipments and personnel. AH piping shall be adequately supported and protected to prevent damage during handling and erection. The history cards for major equipments to be maintained by the contractor.

- 3.9.20 The contractor shall take delivery of equipment from storage yard/stores/sheds. He shall also make arrangements for verification of equipment, scrupulously, maintain records and keep safe custody watch and ward of equipment after It has been handed over to him till these are fully erected, tested and commissioned and taken over by BHEL's client. The stolen/lost/damaged goods shall have to be made good by the contractor at his own cost.
- 3.9.21 Sometimes it may become necessary for the contractor to handle certain unrequired components in order to take out the required materials. The contractor has to take this contingency also Into account. No extra payment is payable for such contingencies.

### **3.10.0 WELDING**

- 3.10.1 All structural welders shall be tested and approved by BHEL Engineer before they are actually engaged on work though they may possess the required certificate. BHEL reserves the right to reject any welders without assigning any reason. The welder Identification code as approved by the BHEL Engineer shall be stamped by the welder on each joint done by them. The contractor will be responsible for the periodic renewal, retesting of the welders as demanded by BHEL.
- 3.10.2 BHEL Engineer is entitled to stop any Welder from the work if his work is unsatisfactory for any technical reasons or there is a high percentage of rejection of joints welded by him, which in opinion of the BHEL Engineer will adversely affect the quality of the welding though the Welders has earlier passed the tests prescribed by BHEL Engineers. The welders having passed qualification tests does not relieve the contractor of a contractual obligation to check the welders performance.
- 3.10.3 All charges towards testing of Welders for destructive and non destructive test, testing and approval of welders for engaging in the erection work shall be borne by the contractor.
- 3.10.4 All welded joints shall be subjected to acceptance by BHEL Engineer.

### **3.10.5 PRESERVATION OF COMPONENTS**

It shall be the responsibility of the contractor to apply preservative painting on all equipments before erection. It shall be contractor's responsibility to arrange for required labour, brush and other consumables like cotton waste, cloth etc., for carrying out preservative painting. The quoted rates shall be inclusive of above work. The required paint and thinner shall be supplied by BHEL free of cost.

The contractor shall effectively protect the finished work from action of weather and from damage or defacement and shall cover the finished parts, then and there for their protection.

Any failure on the part of contractor to carryout work according to above clauses will entail BHEL to carry out the job from any other party and recover the cost from contractor.

Due to atmospheric conditions erected materials are likely to get rusted. It is the responsibility of the contractor to preserve the erection materials drawn from stores for erection till these are commissioned and handed over to customer. The required paint and thinner shall be supplied by BHEL free of cost. All other consumables like painting brush, emery paper, cotton waste, cloth etc. have to be procured by the contractor at his cost. The contractor should ensure that the materials are not rusted on any account till they are handed over to customer. The decision of the BHEL Engineer is final with regard to frequency of application of paint.

### **3.11.0 DRAWINGS AND DOCUMENTS**

- 3.11.1 The detailed drawings / specifications available with BHEL Engineer will form part of this tender specification. These documents will be made available to the contractor during execution of work at site.
- 3.11.2 One set of necessary drawings to carry out the erection work will be furnished to the contractor by BHEL on loan which shall be returned to BHEL Engineer at site after completion of work. Contractor's personnel shall take care of these documents given to them. Contractor shall maintain complete records of drawings and documents given to them time to time and maintain the latest drawings / documents in their custody. Contractor shall refrain from defacing the drawing / documents available with them.
- 3.11.3 The data furnished in various appendices with this Tender Specification, describes the equipment to be installed, tested and commissioned under this specification briefly. However, the changes in the design and in the quantity may be expected to occur as is usual in any such large scales of work.
- 3.11.4 Should any error or ambiguity be discovered in the specification, or information, the contractor shall forthwith bring the same to the notice of BHEL before commencement of work. BHEL's interpretation in such cases shall be final and binding on the contractor.
- 3.11.5 Deviation from design dimensions should not exceed permissible limit. The contractor shall not correct or alter any dimensions/details without specific approval of BHEL.

### 3.12 SAFETY AND CLEANLINESS

3.12.1 Contractor shall strictly follow all safety regulations/conditions as per clause 2.15 and its subclauses of general conditions of contract booklet enclosed with this tender.

3.12.2 Non-conformity of safety rules and safety appliances will be viewed seriously and the BHEL has right to impose fines on the contractor as under:

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Sl.No.	Safety measures	Fine (Rs.)
1	Not wearing safety helmet	50/-
2	Not wearing safety belt	100/-
3	Grinding without goggles	50/-
4	Not using 24V supply for internal work	500/-
5	Electrical plugs not used for hand machines	100/-
6	Not slinging properly	200/-
7	Using damaged sling	200/-
8	Lifting cylinders without cage	500/-
9	Not using proper welding cable with lot of joints and not insulated properly	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 elec. Winches which are being operated dangerously	500/-
13	Improper earthing of electrical T & Ps	500/-

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3.12.3 Contractor shall necessarily fill up the safety plan format available in general conditions of contract booklet enclosed with this tender and submit along with their offer.

3.12.4 CONTRACTOR SHALL DEPLOY A SAFETY OFFICER EXCLUSIVELY TO HANDLE SAFETY REQUIREMENT.

## **SPECIFIC REQUIREMENTS FOR ISO 9001 - 2000**

### **3.13.0 IMPORTANT NOTE**

Contractors shall ensure that all their Staff/Employees are exposed to periodical training programme conducted by qualified agencies/ personnel on ISO 9001 - 2000 Standards.

Contractors shall ensure that the Quality is maintained in all the works connected with this contract at all stages of the requirement of BHEL.

Contractor shall ensure that all Inspection, Measuring and Testing equipment that are used, whether owned by the contractor or used on loan, are calibrated by the authorized agencies and the valid calibration certificate will be available with them for verification by BHEL. A list of such instruments possessed by contractor at site with its calibration status Is to be submitted to BHEL Engineer for control.

Contractors shall arrange for the inspection of the works at various stages as required by BHEL. Immediate corrective action shall be taken by the contractor for the non-conformances if any, observed and pointed out by BHEL.

### **3.14.0 INSPECTION / QUALITY ASSURANCE / QUALITY CONTROL STATUTORY INSPECTION**

- 3.14.1 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/IBR and' other statutory provisions and as per BHEL Engineer's instructions.
- 3.14.2 Preparation of quality assurance log sheets and protocols with customer's Engineers, welding logs and other quality control and quality assurance documentation as per BHEL Engineer's Instructions, is within the scope of work / specification.
- 3.14.3 The protocols between contractor and customer/BHEL shall be made prior to installation for correctness of foundations, materials, procedures, at each stage of Installation, generally as per the requirement of Customer/BHEL. This is necessary to ensure elimination of errors or keeping them within tolerable limits and to avoid accumulation and multiplication of errors.
- 3.14.4 A Daily log book should be maintained by every supervisor/Engineer of contractor on the job in Duplicate (One for BHEL and one for Contractor) for detailing and incorporating Alignment/clearance/ centering/ Levelling Readings and Inspection details.

- 3.14.5 All the important Measurements shall be recorded in the Daily Log Book with sketches based on BHEL Drawings indicating Readings / Measurements actually Taken and Signed by BHEL/Customer / Contractor Representatives.
- 3.14.6 Approval given by Customer/BHEL for welding, test results etc., shall also be recorded in the log book.
- 3.14.7 Welding details like number of joints, Welder's Name, Date of welding, Details of Repair, Heat Treatment, Etc. will be documented in welding Logs as per BHEL Engineer's Instructions.
- 3.14.8 Heat Treatment details of Welds indicating minimum, Temperature Recorded, Heating Rate, Cooling Rate, soaking Time, Etc., shall also be Recorded and Documented by Contractor as per BHEL Engineer's Instructions. Welder's Performance Record shall be furnished every month. The performance Report of Welders shall indicate the percentage of Repair for each welder.
- 3.14.9 All the Electrical/Technical Measuring and Testing Instruments/Gauges, Feeler Gauges, Height Gauges, Dial Gauges, Micrometers, Levels, Spirit Levels, Surface plates, straight Edges, vernier calipers and all measuring Instruments shall be provided by the Contractor for checking, Levelling, Alignment, Centering etc of Erected Equipments at various stages. The Instruments / gauges / Tools etc. provided should be of Brand, Quality and Accuracy, Specified by BHEL Engineer and should have necessary Calibration and other Certificates as per the Requirements of BHEL Engineer.
- 3.14.10 Total Quality is the Watch Ward of the work and standards, Procedures laid down by BHEL. Contractor shall follow all the Instructions as per BHEL Drawings and Quality / Standards. Contractor shall provide for the services of quality Assurance Engineer.
- 3.14.11 The welders performance will be reviewed from time to time as per BHEL / IBR standards and any welder not performing the standards set by BHEL / IBR standards will be removed from working, Contractor shall arrange for the alternate welders immediately.
- 3.14.12 All the welders shall carry identity cards as per the proforma prescribed by BHEL. Only Welders duly authorised by BHEL / Boiler Inspector / Consultant shall be engaged on the work.
- 3.14.13 Contractor shall ensure speedy alignment and welding of all equipment erected by him after placement. Also all alignments, welding, NDT Tests required for stage Inspection shall be completed as per Quality Assurance procedures. All the Quality Assurance Procedures have to be complied with before effecting column erection, ceiling beams erection, further structural work, Air

leak test, trial run of equipment, Pre-commissioning and post commissioning any other tests required to be conducted for completing erection and commissioning.

### **3.15.0 STAGE INSPECTION BY FES / QA ENGINEERS**

- 3.15.1 Apart from Day-to-Day Inspection by BHEL Engineers Stationed at site and also by Customer's Engineers, Stage Inspection of Equipment 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 Unit / Factory Quality Assurance and commissioning Engineers Contractor shall arrange all labour, tools and tackles, etc. for such stage inspections free of cost.
- 3.15.2 Any modifications suggested by FES and QA Engineers Team shall be carried out. Claims of Contractor, if any shall be dealt as applicable.
- 3.15.3 Any minor rectifications or minor repairs of defective work found out during stage Inspection shall be rectified free of cost, by the contractor.
- 3.15.4 Any major Rectification or Major Repair / Major Rework of Defective work found out during stage Inspection verification / checking, But not attributable to contractor shall also be carried out. Claims of contractor if any, shall be dealt as applicable.

### **3.16.0 STATUTORY INSPECTION**

- 3.16.1 The Scope Includes Getting the Approvals from the Statutory Authorities (Like Boiler Inspector and Labour Officers). This includes Arranging for Inspection Visits of Boiler Inspector Periodically as per BHEL Engineer's Instructions, Submitting Documents, Radiographs, Etc. And following up the matter with them.
- 3.16.2 All fees connected with the Contractors for Testing His Welders / Men / Workers and Testing, Inspection, calibrating of his instruments and equipments, shall be paid by the contractor. It shall be contractor's responsibility to obtain approval of Statutory Authorities, Wherever Applicable, for the Conducting of Any Work which comes under the Purview of these Authorities. Any cost arising from this shall the Contractor's Account. However, BHEL shall pay all other fees (FEES FOR VISITS, INSPECTION FEES, REGISTRATION FEES, ETC.) In case these Inspection have to be Repeated due to Default /Fault of the Contractor and Fees have to be paid again, the Contractor shall have to Bear the charges. These would be Deducted from his Bills.

**HSE REQUIREMENTS TO BE FULFILLED BY THE SUB – CONTRACTOR  
(INTEGRATION OF ISO 14001 FOR ENVIRONMENTAL MANAGEMENT  
SYSTEM AND OHSAS 18001 FOR OCCUPATIONAL HEALTH & SAFETY  
MANAGEMENT SYSTEM)**

**SUB CONTRACTOR TO ENSURE COMPLIANCE OF THE FOLLOWING  
HEALTH RELATED POINTS**

01. Sub-contractor to identify nearest hospital for Health check up of his staff and workers and intimate BHEL site office & PSSR HQ including the telephone numbers.
02. Pre employment medical screening / periodical medical screening conducted analysed and records maintained.
03. The above medical screening are to be conducted for all contractor's staff and workers engaged in sub contracting activities. In this, category of workmen such as Welders, Gas cutters, Grinders, Radiographers, Machinists, operators of crane and mixers, pneumatic tool handlers, Key civil employees exposed to dust and heat and drivers are to be given exclusive attention in respect of health screening.
04. Sub – Contractor to arrange an ambulance vehicle or emergency vehicle on a continuous basis to meet any emergency situation arising at site work in which his staff and workers are engaged.
5. To provide first aid centre facilities for prompt first aid treatment of injuries and illness at work. One first aider for each sub contractor to be provided. First aider should undergo training on first aid from a recognized body. In case, separate first aid centre is not arranged by the sub contractor, then a common first aid centre is not arranged by the sub contractor, then a common first aid center will be arranged through BHEL co ordination and sub contractors to share proportionately (in proportion to the contract value) establishment and running cost of first aid center.
06. To provide filtered drinking water at selected place in a clean container.
07. To comply with all applicable legislations / regulations in respect of health management and in line with HSE policy of PSSR (list of applicable legislation / regulations and HSE policy to be obtained from BHEL.

SUB CONTRACTOR TO ENSURE COMPLIANCE OF THE FOLLOWING SAFETY RELATED POINTS

01. **PERSONNEL PROTECTIVE EQUIPMENT (PPES):** REQUIRED NUMBER OF FOLLOWING PPEs (CONFIRMING TO RELEVANT IS STANDARDS ) TO BE MADE AVAILABLE TO WORKMEN AT SITE AND ENSURED THAT THEY ARE USED .
  - ❑ HELMET
  - ❑ SAFETY GOGGLES AND FACE SHIELDS
  - ❑ WELDING FACE SHIELDS
  - ❑ SAFETY BELTS FOR WORKING AT HEIGHTS
  - ❑ SAFETY SHOES
  - ❑ EAR PLUGS AND EAR MUFFS
  - ❑ RUBBER GLOVES AND MATS FOR LT / HT ELECTRICAL WORKS
  - ❑ GUM BOOTS & APRONS
  - ❑ DUST AND FUME MASKS
  - ❑ OTHER ITEMS AS REQUIRED BY BHEL SITE
02. Sub contractor to liase with nearest fire station and inform contact telephone number and contact person to meet any emergency.
03. To provide appropriate fire fighting equipment at designated work place and to provide fire fighting training to selected persons in his group of workmen to meet emergencies.
04. To provide adequate number of 24 V power supply points to work in a constrained and enclosed space.
05. All power tapping points / switch boards /power & control cabling should fulfill required electrical safety aspects as per relevant is standard and Indian electricity rule..
06. ELCB's (Earth leak circuit breakers) at all electrical distribution points to be provided and all the electrical appliances shall be connected to them.
07. Red and white caution tape of proper width ( 1.5 to 2 inch ) to be used for cordoning unsafe area such as open trench, excavated area, temporary electrical installations etc.
08. To provide sub-contractors company logo or clothing to all staff and workers for identification including identity cards with photographs approved by BHEL. Electrician shall posses required license and wear red helmet.
09. High pressure and structural welders to be identified with colour clothing and to display copy of welders certificate with photographs of welder at the work place. They also should be in possosion of valid welding procedure.

10. To display safe handling procedure for all chemicals such as lube oil, grease, sealing compound, kerosene, diesel etc. At stores & respective work place.
11. Contractor should authorise a person at site to stop work if there is a unsafe work noticed as per his knowledge.
12. Fitness for use of erected scaffolding to be certified by the contractors approved scaffolder and the certificate should be displayed on the scaffolding itself. If the scaffolding is unsafe, the same will not be used. the certificate to be updated daily. The scaffolding to be made as per the relevant is standard.
13. For making platform on the scaffolding, proper thickness and size of the plank of required quality wood to be used. The safe working load of the platform to be displayed on the scaffolding itself. Proper use of platform to be explained to the user. Wherever fire hazard exists, use of wooden planks and coir ropes shall be avoided.
14. All plant equipment should have inspection / test report before put in to use.
15. All T&Ps should be of reputed brand and having quality certificates..
16. All IMTE's should have valid calibration certificate from recommended institution / testing lab and these should be in place.
17. All lifting tackle and plant equipment should have safe working load certificate issued by competent person.
18. The right worker should be deployed for right job and the resume of site incharge, supervisors, and key workers to be submitted before commencement of work..
19. Sub-contractor should submit inspection / testing matrix of all T&Ps and to be approved by BHEL.
20. Sub-contractor to display safety slogan, safety board, caution boards wherever required in consultation with BHEL.
21. Sub-contractor to provide gas detectors of reputed make at desired locations as per the directions of BHEL.
22. Sub-contractor to conduct emergency mock drills in respect of first aid / fire accident / artificial respiration / human being evacuation under emergency situations etc. One set of drill per 6 month to be conducted & and report submitted to BHEL.

23. Safe handling and storing of all equipment with adequate space to be ensured.
24. Sub contractor should deploy a qualified safety officer till the completion of the project. All safety officers and safety co-ordinators shall wear green helmet and green shirts.
25. Sub contractor to comply the safety reporting procedure of BHEL. This includes reporting of accidents / incidents, first aid injuries, property damages, man days lost due to lost time injury, fatal, non – fatal and computation of safety indices such as frequency rate, severity rate & incident rate. Sub contractor also should follow additional safety requirements that may arise in future as a result of improvements in the safety management system.
26. Sub contractor to identify probable emergency situations such as electric shocks to workmen , caving in of shored earth , fall from height, collapse of scaffolding fire etc., and should have clear emergency action plan to overcome them. Sub contractor to take required guidance from BHEL in this regard.
27. Sub contractor to identify hazardous activities which he may carryout and should train his workmen in those activities with the relevant operation control procedures. Sub contractor to take required guidance from BHEL in this regard.
28. Safe work permit system to be followed while working in confined space / near electric systems.
29. To comply with all applicable legislations / regulations in respect of safety management and in line with HSE police of PSSR (list to be obtained from BHEL)
30. While removal of existing arrangements, such as removal of hand rails and floor grills, there shall be prior approval / intimation from main plant contractor / BHEL.
31. LPG gas cylinders should not be used for construction activities.

SUB CONTRACTOR TO ENSURE COMPLIANCE OF THE FOLLOWING ENVIRONMENT RELATED POINTS

1. HOUSE KEEPING : Sub contractor to carry out daily house keeping of work areas / stores through a check list prepared in consultation with BHEL.
2. Sub contractor shall adopt pollution prevention / reduce /control approach in all his site activities. this shall include:
  - a. Transporting of oil / chemicals from stores to site safely without causing spillage. in case of any spillage, the area shall be cleaned and the remanant spilled oil disposed off to a safe place, identified for such disposal.
  - b. To use required containers / cans / safety gadgets /appliances for transporting and for usage of oil / chemicals at site.
  - c. To use required number of scrap / Waste collection bins.
3. Sub contractor shall arrange for segregation / collection of scraps and dispose off to the identified place meant for scrap collection.
4. Sub contractor to adopt good erection practices / procedures with the objective of reduction of waste generation / rework / resource and energy conservation.
5. To Comply with all applicable legislation / Regulations in respect of environment and in line HSE policy of PSSR (list to be obtained from BHEL)

## **OTHER HSE REQUIREMENTS TO BE COMPLIED BY SUB CONTRACTOR**

1. Sub contractor to clearly understand and accept the HSE policy of PSSR with a commitment to comply the requirements of the policy.
2. Sub contractors to arrange for daily meeting of their supervisors and work force before they disperse for their daily planned activities where in the relevant health , safety and environment aspects of the job and use of PPES are explained
3. Sub contractor to conduct monthly HSE meeting ( internal ) and submit the report to BHEL. They also should attend the monthly HSE meeting conducted by BHEL and comply to all points raised by BHEL.
4. HSE slogans to be displayed in a proper board – hoarding at designated places in consultation with BHEL.
5. Sub contractor to submit a structured programme for HSE training & occupational Health Screening of their work force before the commencement of the work at site.
6. To comply all the statutory requirements as applicable while implementing HSE management system.
7. Sub contractor to complete the management programmes (improvement activities ) and follow all the relevant operation control procedures while executing the sub contracted works.

## **SECTION VI**

### **SPECIAL CONDITION**

#### **6.1 SCOPE OF WORK**

The work to be carried out at quoted/accepted rates by the contractor under the scope of these specifications covers the complete work of handling, loading and transporting of materials from project stores sheds / storage yards to site of erection or preassembly yard and unloading at pre-assembly area/erection site, checking, cleaning chipping and leveling of foundations, providing packers and shims/pre-assembling of equipments at the pre-assembly yard, inspection, minor rectification, touch up painting , erection, leveling, alignment, and other adjustments, cutting, edge/surface preparation, welding, grinding, RT/LPI/MPI testing wherever needed, heat treatment, carrying out air tightness test by soap solution / kerosene (with air blower arrangement), pre-commissioning, commissioning, testing and trial run of the ESP and connected auxiliaries, supply and application of final painting covered under the tender specifications and providing assistance during commissioning and unit trial operations for Unit – III of 2x 500 MW sets at NTPC- Simhadri Superpower Project –Stage II Viskhatnam, AP.

- 6.1.1 The work shall conform to dimensions and tolerances given in various drawings and quality manuals provided by BHEL. If any portion of work is found to be defective in workmanship not conforming to drawings or other stipulations, the contractor shall dismantle and redo the work duly replacing the defective materials at his cost, failing which the job will be carried out by BHEL by engaging other agencies / departmentally and recoveries will be effected from contractor's bill towards expenditure incurred including BHEL's overhead charges.

#### **6.2 FOUNDATION DRESSING AND GROUTING**

- 6.2.1 It shall be contractor's responsibility to check the various equipment foundations for their correctness with respect to level, orientation, dimensions etc., and ascertained dimensions shall be measured and submitted to BHEL for approval before erection. Also minor chipping, dressing of foundations up to 30mm for obtaining proper face for packer plates/shims, as may be required for the erection of the equipment/plants will have to be carried out by the contractor without extra cost.
- 6.2.2 The surface of foundations shall be dressed to bring the surface of the foundations to the required level and smoothness prior to placement of equipment/equipments based on the foundation.

6.2.3 All equipment bases and structural steel bases and foundations pockets shall be grouted and finished as per these specifications after surface preparation unless otherwise recommended by the equipment manufacturers. The surface preparation includes soda washing of the foundations to remove oil, grease etc. to ensure proper grouting. The required materials like sand, gravel, cement etc and cleaning consumables shall be arranged by the contractor at his cost.

6.2.4 The concrete foundation, surfaces shall be properly prepared by chipping, grinding, as required to bring the top of such foundation to the required level to provide the necessary roughness for bondage and to ensure enough bearing strength. All laitance and surface film shall be removed and cleaned and the packers placed with suitable mortar prior to erection of the equipment. The contractor shall ensure perfect matching of the packer plates with foundations by dressing the foundation and between the packer plates and the base plates of structural columns to the satisfaction of BHEL Engineer.

6.2.5 Total grouting of the columns / equipments including pocket grouting, grouting at the gap between foundation and base plates top surface of column / equipments is in the scope of the contractor.

All the grouting materials required for grouting like conbextra GPI, ACC – Shrinkkomp – N20 Sika Anckor, NSG/NSG – 1 and CICO Excem GP and other materials like Portland cement, sand etc., are to be arranged by the contractor at his cost.

6.2.6 Contractor has to carryout the grouting as per the work instructions for grouting available at site.

### **6.3 SCOPE OF ERECTION**

The scope of the work will comprise of but not limited to the following

6.3.1 Loading at storage yard after identification, transporting to site or pre-assembly yard / erection site, unloading at pre-assembly yard / erection site pre-assembling of equipments wherever required for inspection or checking, erecting the material, aligning, welding, fastening, supporting, grouting, carrying out the necessary non-destructive testing as may be required, carrying out statutory tests arranged, providing services for trial operation, pre-commissioning activities upto the time of completion of commissioning activities and supply and application of final painting. The contractor should erect and assemble the components as per the drawings issued and the no of components supplied to him will be on the basis of

shipping list / completion schedules. Complete pre assembling of components are in the scope of the contractor.

- 6.3.2 Any fixtures, concrete block supports, steel structures required for temporary supporting for pre-assembly or checking and welding for lifting and handling during pre-assembly and erection shall be arranged by the contractor.
- 6.3.3 The scope of equipments to be erected under this contract are detailed in Tender Specification. The schedule of weights given wherein are approximate and are meant only to give a general idea to the tenderer about the magnitude of the work involved.
- 6.3.4 All the works such as cleaning, checking, leveling blue matching, aligning, assembling, temporary erection for alignment, opening, dismantling of certain equipments for checking and cleaning, surface preparation, edge preparation, fabrication of tubes and pipes as per general engineering practices at site, cutting, grinding, straightening, chamfering, filing, chipping, and rectification of foundation upto 30 mm, drilling, reaming, scrapping, shaping, fitting up etc. as may be applicable in such erection works are to be treated as incidental to erection and necessary to complete the work satisfactorily shall be carried out by the contractor as part of the work and at his quoted rates.
- 6.3.5 It shall be the responsibility of the contractor to provide ladders on column for initial works till such time stairways are completed. For this the ladder should not be welded on the column and should be pre-fabricated clamping type ladders. No temporary welding on any structural member is permitted except under special circumstances with the approval of BHEL.
- 6.3.6 No members of the structure / platform should be cut without specific approval of BHEL.
- 6.3.7 Fixing, welding of necessary instrumentation tapping points, to be provided on auxiliaries covered within the scope of this specification will also be the responsibility of the contractor and will be done as per the instructions of BHEL Engineer. The fixing / welding of all the above items will be contractor's responsibility even if the
  - i) Product groups under which these items are not specifically indicated in the Tender Specification.
  - ii) Items are supplied by an agency other than BHEL

- 6.3.8 In case any class of work for which there is no such specification as laid down in the contract such as welding of stainless steel parts, etc. works shall be carried out in accordance with the instructions and requirements of the Engineer at the quoted rates only.
- 6.3.9 Contractor is strictly prohibited in using the erection components like angles, channels, hand rails for any temporary supporting or scaffolding works. In case of such misuse, a sum as determined by BHEL Engineer will be recovered from contractor's bills.
- 6.3.10 Suspension for pipes / ducting will be supplied in running lengths which shall be cut to size and adjusted as required. Ducts / expansion bellows are dispatched to site in loose wall plates and these are to be assembled and welded at site before erection. All joints connecting ducts, expansion pieces shall be seal welded on inside and as well outside. Also it may sometime become necessary to remove any of the erected members to facilitate erection of bigger / pre-assembled equipment. In such as the removal and re-erection of such members, which are essential will have to be carried out by the contractor without any extra payment.
- 6.3.11 All the dampers, valves, lifting equipments, etc. shall be serviced and lubricated to the satisfaction of BHEL Engineer before erecting the same and also during pre-commissioning. The bearings shall be properly cleaned, serviced and lubricated before commissioning at no extra cost. Even after commissioning the equipments, if there are problems in the operation they have to be attended to by the contractor during the tenure of the contract. Welding or joining of extension spindle for valves to suit the site conditions and operational facility shall be part of erection work within the quoted rate.
- 6.3.12 In the case of structural members/ducts, in certain cases, the raw material will be supplied in random lengths and the contractor will have to make up the length/prepared the edges to suit the matching profile weld/bolt connect the joints at no extra cost.
- 6.3.13 Normally, the matching profile will be cut out for the structural members but the contractor will have to carry out suitable alterations / adjustments at site, without any extra payment, in case it becomes necessary.
- 6.3.14 Contractor shall carryout chipping and blue-matching of foundation concrete with the packer plates. The packer plates shall be supplied by BHEL. Necessary machining wherever required and blue-matching of packer plates shall be carried out by the contractor within the quoted rates.

- 6.3.15 The contractor shall take all reasonable care to protect the materials and equipment during erection. Preventive painting required to be done on any equipment or part during the course of erection will have to be done by the contractor at no extra cost to BHEL.
- 6.3.16 Paints for preservative painting & thinner required for preservation shall be supplied by BHEL free of cost. All other consumables like wire brush, emery sheets etc. shall be arranged by the contractor at his cost.
- 6.3.17 Attachment, welding of necessary instrumentation tapping points, both for regular measurements and performance testing to be provided on E.S.P / its auxiliaries or pipelines covered within the scope of this tender will also be the responsibility of the contractor and the same will be done as per the instruction of BHEL Engineer.
- 6.3.18 Spring suspensions / constant load hangers have to be pre-assembled and adjusted for the required loading and erected as per the instructions of BHEL Engineer. Any adjustments, removal of temporary arrestors / lockers etc. have to be carried out as and when required.
- 6.3.19 The contractor shall take all reasonable care to protect the materials and equipment during erection. Touch up painting required to be done on any equipment or part during the course of erection will have to be done by the contractor.
- 6.3.20 Contractor shall carryout necessary touch up painting PERIODIC application of preservation on all components and other equipment during erection / after erection until completion of work. Necessary preservations / paints thinner will be provided by BHEL free of cost.
- 6.3.21 Contractor has to arrange required fire proof tarpaulins to protect the machined components / assembled parts drawn from BHEL before and after erection at their cost.
- 6.3.22 Contractor shall provide necessary crew with all items like wire brushes, paint brushes, emery paper, cotton waste, scaffolding materials etc.
- 6.3.23 It is the responsibility of the contractor to do the alignment, checking, etc. if necessary, repeatedly to satisfy BHEL Engineer / Customer Engineers with all the necessary tools and tackles, manpower etc. without any extra cost. The alignment will be completed only when jointly certified so, by the BHEL Engineer & Customer. Also the contractor should ensure that the alignment is not disturbed afterwards.

- 6.3.24 Works such as minor rectification of foundation bolts, reaming of holes, drilling of dowels, matching of bolts and nuts, making new dowel pin etc. are covered in the scope of work.
- 6.3.25 Certain extra lengths of various tubes / pipes are provided as erection allowance and the same have to be cut / adjusted to suit the site conditions and layouts or certain small lengths may have to be added for adjustments to suit the site conditions. For any mismatch while matching the joints in tubes, the cutting adjusting rewelding, addition spool pieces should be done by the contractor to match site conditions without any extra payment.
- 6.3.26 Contractor shall engage separate gangs throughout the contract period, exclusively for proper house keeping of the site. The contractor has to make necessary arrangements for collection and for bring down the scrap from various locations as indicated by BHEL Engineer. The housekeeping must be a routine and continuous activity in the various work fronts. If the contractor does not do this job satisfactory, BHEL will arrange for the same at the cost of the contractor. Periodical payments to the contractor for the work done will be considered only if the housekeeping is certified as satisfactory by the customer.
- 6.3.27 It is the responsibility of the contractor to engage his workmen in shifts or on overtime basis for achieving the desired progress and target set by BHEL. The contractor's quoted rate shall include all these contingencies.
- 6.3.28 The contractor is strictly prohibited in using any of the E.S.P components like angles, channels, hand-rails for any temporary supporting or scaffolding work. In case of such misuse, a sum as determined by BHEL shall be recovered from contractor's bills. Also the contractor will be responsible for the safe custody and proper accounting of all materials issued in connection with the work. If the contractor has drawn materials in excess of design requirements, recoveries will be effected for such excess drawals at the rate prescribed by manufacturing units.
- 6.3.29 EP collecting Electrodes may require straightening and repair due to minor transport damages before erection and spot heating in position to get correct alignment which shall be done by contractor with in quoted rate.
- 6.3.30 Additional platforms of permanent nature for approaching different equipments, as per site requirement which may not be indicated in drawings shall be fabricated and installed by the contractor. However the contractor will be paid for this work on accepted tonnage rate for erection. The material required for platform will be supplied by BHEL free of cost.

### **6.3.31 ROOF INSULATION**

One layer of insulation mattress on roof top of E.S.P roof (inner) shall be applied before outer roof is placed. The scope shall also include the above work even though the materials are supplied under some other product group and the erected materials shall be paid at the accepted tonnage rate for ESP.

### **6.3.32 WELDING / HT & NDT (RT, MPI, LPI, etc.,)**

All welders shall be tested and approved by BHEL Engineer before they are actually engaged on the work even though they may possess the requisite certificates. BHEL reserves the right to reject any welder without assigning any reasons. The welder identification code as approved by the BHEL Engineer shall be stamped by the welder on each joint done by them. The contractor will be responsible for the periodic renewal, re-testing of the welders as demanded by BHEL.

6.3.33 All welded joints shall be subjected to acceptance by BHEL Engineer.

6.3.34 All the welded joints shall be subjected to Non Destructive testing as per the drawings / standards / procedures and as per the site requirement contractor's quoted rate shall inclusive of the same.

### **6.4.0 TESTING, PRE-COMMISSIONING, COMMISSIONING & POST COMMISSIONING**

(All the works mentioned hereunder shall be carried out within the quoted and accepted rate)

6.4.1 The contractor shall carry out all the required tests on the equipments erected such as gas tightness test for ducts by kerosene, clean air flow test, etc., using contractor's own consumables, labour and scaffoldings. Necessary smoke bombs will be provided by BHEL.

6.4.2 All the above tests should be repeated till all the equipments satisfy the requirement / obligation of BHEL to their customer. All the repairs (shop welded or site welded) arising out of the failures during testing shall be done by the contractor as part of the work.

6.4.3 For conducting gas tightness test, it may be required to erect the blowers and connecting ducts and commission the same for tightness test. It is the responsibility of the contractor to erect the blowers & dismantle once the test is over. Contractor shall carry out the work with in the quoted rate and BHEL will provide only the required materials, like flowers and dummies free of cost for conducting the test.

- 6.4.4 Fixing dummy plates at required locations for conducting tightness test and normalising after the test is over, is also covered in the scope of contract and shall be carried out within the quoted rate. BHEL will provide raw materials for the dummy plates.
- 6.4.5 It shall be the responsibility of the contractor to preserve the cleaned surfaces as per BHEL's requirement.
- 6.4.6 Commissioning of the equipments will involve, trial runs of all the equipments erected, blowing through the lines, flushing of all the lines by air, oil or steam as the case may be, trial run of the equipment and any other works incidental to commissioning. Contractor shall supply skilled technicians / workmen round the clock and materials for all equipment erected by them which shall form part of the scope of work.
- 6.4.7 In case any defect is noticed during test, trial runs, such as loose components, undue noise or vibration, strain on connected equipment, etc. THE CONTRACTOR SHALL IMMEDIATELY ATTEND TO THESE DEFECTS AND TAKE NECESSARY CORRECTIVE MEASURES. If any readjustment and realignment are necessary the same shall be done as per BHEL Engineer's instructions. If any part of the equipment needs repair, rectification and replacement, the same shall be done by the contractor at his cost. The parts to be replaced shall be provided by BHEL.
- 6.4.8 During this period, though the BHEL's / Client's staff will also be associated in the work, the contractor's responsibility will be to arrange for the complete requirement of men and required tools and plants till such time the commissioned units are taken over by the BHEL's Customer.
- 6.4.9 The commissioning activities will continue up to handing over of the units. It shall be the responsibility of the contractor to provide following category of workers in sufficient numbers along with supervisors including necessary equipment, consumables, hand tools, etc. during this period. The rate quoted shall include all these contingencies also.
- a. Fitters
  - b. Structural Welders
  - c. Riggers
  - d. Unskilled workers
  - e. Electricians
  - f. Any other category of workers as may be required.
  - g. Supervisor

Further in addition to the above contractor has to arrange the following manpower exclusively for assisting BHEL commissioning engineers during stabilization and trial operation period. These manpower will be directly controlled by BHEL commissioning engineers only.

1. One Electrician per shift for three shifts
2. One helper per shift for three shifts.

- 6.4.10 It shall be specifically noted that the above employees of the contractor may have to work round the clock along with BHEL commissioning Engineers and hence overtime payment may be involved. The contractor's quoted rate shall be inclusive of all these factors also.
- 6.4.11 During commissioning, opening of valves, removal of certain gaskets and re-erection, realigning of rotating and other equipment, attending to leakage, filling of oil to the meters / equipment may arise. The quoted rate shall include the same.
- 6.4.12 If, during commissioning, any improvement of rectification due to design requirement is involved and if the contractor is asked to carryout the job, the same shall be paid at man day rates or at the rates to be settled at that time. For this purpose, daily labour report indicating there in nature of work carried out, consumables used, etc. shall be maintained by contractor and get signed by BHEL Engineer, every day. It is not obligatory on the part of BHEL to get the work done by the contractor. They can employ any other agency, if they so desired at that time.
- 6.4.13 The ESP rectifier transformers are to be only erected by the contractor. Testing, commissioning and oil filtering is not in the scope of this contract.
- 6.4.14 In case any rework is required because of contractors' faulty erection which is noticed during commissioning the same has to be rectified by the contractor at his cost. If any equipment / part is required to be inspected during commissioning the contractor will dismantle / open up the equipment / part and re – assemble / redo the work without any extra claim.
- 6.4.15 It is the responsibility of the contractor to provide electricians round the clock during pre-commissioning and post-commissioning activities. Further removal and reconnection of power for HT and LT motors are to be carried out as part of commissioning activities. Contractor's quoted rate shall include all these contingencies.

- 6.4.16 All the bearings, gear boxes etc. of the equipments and electrical motors to be erected are provided with protective greases only. Contractor shall arrange as and when required by the Engineer for cleaning the bearings, gears etc. with kerosene or some other agent, if necessary by dismantling some of the parts of the equipment during erection and shall arrange for re-greasing / lubricating them with the recommended lubricants and for assembling back the dismantled parts. Lubricants will however be supplied free of cost of BHEL.
- 6.4.17 The monthly programme of erection and targets shall be worked out prior to start of erection in consultation with BHEL site Management. It is the responsibility of the contractor to engage their workmen in shifts or on overtime for achieving the desired progress / targets set.
- 6.4.18 Loading of Emitting / electrodes should be done only just before commissioning of boiler. The contractor has to carry out this work after getting clearance from BHEL Engineer whose decision shall be final and binding in this regard.

#### **6.5.0 PROGRESS OF WORK**

During the course of erection, if the progress is found unsatisfactory or if the target dates fixed from time to time for every milestone are to be advanced, or in the opinion of BHEL, if it is found that the skilled workman like fitters, operators, technicians, etc., employed are not sufficient, BHEL will induct required additional workmen to improve the progress and recover from the contractors bills, all charges incurred on this account including all expenses together with BHEL overheads.

The progress reports shall indicate the progress achieved against planned with reasons indicating delays if any, shall also furnish in detail the reason for the same and shall give remedial action which the contractor intends to take to make good the slippage on lost time, so that further works can proceed as per the original programme and the slippage do not accumulate and affect the overall programme.

The contractor shall submit daily, weekly and monthly progress reports, manpower reports, material reports, consumables report and other reports considered necessary by the engineer.

The manpower reports shall clearly indicate the manpower deployed category-wise daily, specifying also the activities in which they are engaged. The periodicity of the reports will be decided by BHEL engineer at site.

The contractor shall arrange for weekly progress review meetings with engineer at site during which actual progress during the week vis-a-vis scheduled programme shall be discussed for action to be taken for achieving targets. The programme for subsequent week shall also be presented by contractor for discussions. The contractor shall constantly update/revise his work programme to meet the overall requirement and suit the material availability.

The contractor shall submit detailed monthly plan after discussion with BHEL Engineer and the same has to be forwarded by the first week of the month (working month or calendar month).

#### **6.6.0 FIELD QUALITY ASSURANCE FORMATS**

It is the responsibility of the contractor to collect and fill up the relevant FQA Log Sheets of BHEL and present the same to BHEL after carrying out the necessary checks as per the log sheets and obtaining the signature of BHEL/Customer in token of their acceptance.

#### **6.7.0 SCOPE OF WORK FINAL PAINTING**

- 6.7.1 The scope of work shall also including supply and application of final painting as required and specified for the components of ESP and its auxiliaries
- 6.7.2 The scope of work includes supply and application of paints as per the approved colour code for the components of ESP and its auxiliaries.
- 6.7.3 All exposed metal parts of equipments including structures handling etc. Wherever applicable after installation unless otherwise surface protected, be first cleaned for dust, rust, scales, grease, oil and other foreign materials by wire brushing, scrapping and chemical cleaning the same being inspected and approved by BHEL / Customer engineers for painting. Afterwards the above parts shall be painted as per the instruction of BHEL /Customer official and as per painting specification enclosed. Before applying the subsequent coats, the thickness of each coat shall be measured and should be informed to BHEL. The instrument for checking the thickness of coat is to be procured by contractor and should be calibrated after periodical intervals.
- 6.7.4 The quality of the finish paint shall be as per the standards of ISI or equivalent and the colour is as approved by BHEL / Customer.

6.7.5 The actual colour to be applied is indicated in the enclosed painting specification in Appendix – IV. The quoted rate shall include final painting also. The scope of painting includes application of colour bands, lettering the names of the systems, equipment, tag nos of valves, marketing the directions of flow and other datas required by Customer / BHEL within the quoted rates at the appropriate place as identified by BHEL / Customer.

6.7.6 No of finish coats shall be as indicated in the painting specification enclosed in this tender. The painting specification which is forming part of this tender as enclosed shall be strictly followed.

#### **6.8.0 TIME SCHEDULE.**

6.8.1 The contractor shall have to mobilise in all respects within two weeks from the date of issue Fax Letter of Intent to commence the work.

6.8.2 The entire work of erection testing and commissioning of Unit – III as detailed in the Tender Specification shall be completed within **Twenty Four (24)** months from the date of commencement of work at site. Any advancement required completing the project in the course of execution, contractor shall carry out the work with out any extra cost.

6.8.3 During the total period of contract the contractor has to carryout the activities in a phased manner as required by BHEL Engineer and as per the programme of events / targets fixed by BHEL / Customer.

6.8.4 The work under this scope of contract is deemed to be completed in all respects only when all the testing and commissioning of all the equipments are completed. The decision of BHEL in this respect shall be final and binding on the contractor.

6.8.5 During the tenure of contract, if BHEL is not satisfied with the progress of work, BHEL have the right to with draw any portion of work/ balance work and get the same done either directly employing their own men or through other agency at your risk and cost. You shall not be entitled for any compensation whatsoever in this regard.

## **6.9 PAYMENTS FOR WORK COMPLETED**

6.9.1 The Tenderer shall quote separate rates as per the Rate schedule appended. The contractor shall submit his running bills once in a month at the end of each month.

6.9.2 BHEL Engineer shall take measurement and certify regarding the actual work executed in the measurement books and bills for erection work.

6.9.3 Subject to any deduction which BHEL may be authorised to make under the contract, the contractor shall on the certificate of Engineer at site be entitled for payment as explained hereunder:

### **6.9.4 PAYMENT TERMS**

#### **6.9.4.1 For PG 39 and PG 89**

- i) **22%** of the tonnage rate on pro-rata basis of wherever pre-assembly is involved
  - ii) **18%** of the tonnage rate on pro-rata basis after erection and alignment.
- (OR)
- iii) **40%** of the tonnage rate on pro-rata basis after erection and alignment.
  - iv) **43%** of the tonnage rate on pro-rata basis on completion of welding, fastening, grouting supports if any.
  - v) **7%** of the tonnage rate on prorata basis on completion of PGMA, Hand Rails and Toe Guard Plates as applicable.

#### **6.9.4.2 For PG 48 : DUCTS (PART)**

- i) **30%** of the rate on prorata basis on completion of Pre Assembly
- ii) **30%** of the rate on prorata basis on erection alignment and completion of welding.
- iii) **20%** of the rate on prorata basis will be paid on completion of supports in all respects in the respective Zones.
- iv) **10%** payment on prorata basis on completion of manhole doors, instrumentation tapping points, performance test points..

#### 6.9.4.3 PG 79

- i) 22% of the rate on prorated basis on completion of Pre Assembly wherever applicable.
- ii) 18 % of the rate on prorated basis on completion of erection alignment for the items wherever pre-assembly is involved.

OR

- iii) 40% of the tonnage rate on prorated basis on completion of erection, alignment for the items wherever pre-assembly is NOT involved.
- iv) 34% payment on prorated basis on completion of fastening, welding, grouting along with supports etc.
- v) 6% on prorated basis (for the erected tonnage) will be paid after completion of Hopper Upper part middle and lower parts inspection doors, heating elements, poking doors etc.,.
- vi) 5% on prorated basis (for the erected tonnage) will be released after completion of inner roof, outer roof, outer roof, insulator, housing, rectifier transformer, pent house and their connected works in the roof, like mono rails and hoist etc.
- vii) 5% prorated basis (for the erected tonnage ) will be released after completion of Gas Distribution of gas Distribution path and completion of rapping mechanism with the drives in all respects.

6.9.4.5 Further 10% applicable for PGs covered under the scope of contract shall be released as detailed below :

- i) 1% of the Contract value for the erected tonnage will be paid after completion of final painting.
- ii) 1% of the contract value for the erected tonnage will be paid on charging of all ESP fields.
- iii) 1% of the Contract value for the erected tonnage will be paid on completion of Gas Distribution test.
- iv) 2% of the Contract value for the erected tonnage will be paid on submission and acceptance of final bill.

The balance amount of 5% of the paid after the guarantee period of 12 months is over. The guarantee period shall commence from the date of handing over of the set to customer or 6 months from the date of first synchronization of the set whichever is earlier. However, this 5% payment can be released against submission of a matching Bank Guarantee from a nationalized / scheduled bank in the prescribed proforma of BHEL valid for one year.

**CONTRACTOR SHALL NOTE THAT THE FINAL BILL BE RELEASED ONLY ON PRODUCTION OF A CERTIFICATE ISSUED BY SITE IN CHARGE THAT THE CONTRACTOR HAS FULFILLED ALL THE CONTRACTUAL / STATUTORY REQUIREMENT.**

#### **6.10.0 EXTRA CHARGES FOR MODIFICATION AND RECTIFICATION WORK**

- a) BHEL may consider payment for extra works on man day basis for such of those works which require major revamping / rework/rectification/modification which is totally unusual to normal erection or commissioning work which are not due to contractor's faulty erection.
- b) The decision of BHEL in this regard shall be final and binding on the contractor. The contractor may submit his work claim bills (Specifically agreed by BHEL Engineer) along with the labour sheet duly certified by BHEL Engineer at site. But BHEL also got the option to get these work done through other agencies if they so desire.

6.10.1 All the extra work, if any, carried out should be done by a separate gang which should be identified prior to start of work for certification, of man hours. Daily labour sheets should be maintained and should be signed by contractor's representative and BHEL Engineer. Signing of the labour sheets does not necessarily mean the acceptance of extra works. Only those works which are identified as not usual to normal erection and certified so by the Project Manager, and accepted by designer/supplier or competent authority only will be considered for payment.

6.10.2 The decision of BHEL in this regard shall be final and binding on the contractor.

6.10.3 The following man hour rates will be applicable for modification/rectification work.

6.10.4 Average single man hour rate including overtime if any, supervision, use of tools and tackles and other site expenses and incidentals, including consumables for carrying out any rework, re-vamping as may arise during the course of erection **Rs.40/- man hour.**

6.10.5 Average single man hour rate including overtime if any, supervision, use of tools and tackles and other site expenses and incidentals excluding consumables for carrying out any rework/revamping as may arise during the course of erection **Rs.25/- per man hour.**

#### **6.11.0 EXTRA WORK DOES NOT INCLUDE**

6.11.1 Nominal dressing of foundations, holes, bases, nuts and bolts, in case of abnormal conditions, this can be mutually discussed before starting of such work.

#### **6.12.0 Extra works are broadly defined as below:**

Design changes which will be intimated to the contractor after the start of erection and same refers to dismantling of erected components rectification of components which have been received in damaged conditions during transit, rectification of components wrongly manufactured at work, any other works which do not fall in the scope of this contract.

6.12.1 The decision of BHEL in this regard shall be final and binding on the contractor.

#### **6.13.0 OVER RUN CHARGES**

6.13.1 Incase due to reasons not attributable to the contractor, the work gets delayed and completion time gets extended beyond **Twenty Four month (24) months** from the date of commencement of the work, the contractor shall not be entitled for any over run compensation (ORC) for a period of first **Four (4) month** after the expiry of **Twenty Four(24) months**. Incase of ORC arise the same will apply at **Rs.50,000/- (Rupees Fifty Thousand only)** per month for extension to the completion period beyond **28(24+4)** months as stated above duly taking into account the balance work at the end of that period.

6.13.2 The period of overrun will have to be ascertained before the commencement of grace period.

6.13.3 During the period of over run targets will be fixed on month to month basis, which have to be adhered. In case of any shortfall due to the reasons attributable to the contractor, ORC amount will be proportionately reduced.

### 6.14.0 PRICE ESCALATION

6.14.1 The following P.V.C. is applicable from the date of commencement of work.

$$P1 = \frac{0.75 \times P0(F1-F0)}{F0}$$

Applicable even if F1 is lesser than FO (Price reduction as applicable)

F0 = New all India average consumer price index published by Labour Bureau, Simla, Government of India for Industrial workers (Base 2001 = 100) applicable for the month of commencement of work.

F1 = All India average consumer price Index published by labour Bureau, Simla, Government of India, for Industrial workers (Base 2001 = 100) applicable for the months under consideration.

P1 = Increase in the billing amount as per the escalation formulae for the particular month of billing.

P0 = Billing amount calculated on the accepted contract rate.

6.14.2 Price escalation as per above formula will be calculated and paid (excluding payments towards extra works and overrun, if any) on month to month basis. BHEL however reserves the right to freeze escalation for that such of duration of delays, from time to time which are entirely attributable to the contractor.

6.14.3 With the provision of price escalation as per the above clauses no claim / compensation on account of any increase whatsoever, (irrespective of whether escalation are steep / unanticipated or not compensated by the above escalation provisions in full towards minimum wages, consumables, electrodes, gases or any other item / reasons) will be payable during the entire period of execution including extended period, if any.

6.14.4 Payment of PVC will be restricted to 10 % contract value.

## 6.15.0 Taxes and Duties

### 6.15.1 Value Added Tax (VAT) for the works

Price quoted shall be inclusive of VAT except service tax.

Notwithstanding the fact that this is only an erection service contract not involving any transfer of materials whatsoever and not attracting VAT liability, being labour oriented job work, for the purpose of VAT the contractor has to maintain the complete data relating to the expenditure incurred towards wages etc. in respect of the staff/workers employed for this work as also details of purchase of materials like consumables, spares etc., inter alia indicating the name of the supplier, address and VAT Registration No. and VAT paid for the purchases,etc

The bidder shall get registered with State VAT authorities and the registration certificate shall be forwarded to BHEL immediately after commencement of work. In case the bidder had already registered under respective State VAT, they must quote their registration Number and forward copy of Registration Certificate while submitting this tender. The bidder has to obtain VAT clearance certificate from the concerned authorities, on completion of work and submit along with the final bill as one of the documents for contract closure.

In case the Bidder decides to include any VAT element along with the quoted price, they shall specify (1) The value of VAT included in the quote, (2) the rate of VAT adopted and (3) On what value etc , as additional information, in the price bid.. If no VAT element is included in the price, the same shall be indicated in the quote.

The bidder shall quote very competitive price after taking into consideration of above points.

### 6.15.2 Service Tax

Price quoted shall be exclusive of Service Tax. The service tax as statutorily leviable and payable by the bidder under the provisions of service tax Law / Act shall be paid by BHEL as per bidder claim through various running bills. The bidder shall furnish proof of service tax registration with Central Excise Department specifying the name of services covered under this contract. Registration Certificate should also bear the endorsement for the premises from where the billing shall be done by the bidder on BHEL for this project. The bidder shall obtain prior consent of BHEL before billing the service tax amount.

### **6.15.3 Other Taxes & Levies**

Any other taxes and duties (except VAT & Service Tax) viz. Entry Tax, Octroi, Seigniorage, Licenses, Deposits, Royalty, Stamp Duty, other charges / levies, etc. prevailing / applicable on the date of opening of technical bids and any variation thereof during the tenure of the contract are in the scope of bidder. In case BHEL is forced to pay any such taxes, BHEL shall have the right to recover the same from the bidder either from running bills or otherwise as deemed fit.

### **6.15.4 New Levies / Taxes**

In case Government imposes any new levy / tax after award of the work 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..

### **6.15.5 Statutory variations**

Statutory variations are applicable only in the cases of Value Added Tax and Service Tax. The changes implemented by the Central / State Government in the VAT Act / Service Tax 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 including extended period, if any.

### **6.15.6 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.

### 6.15.7 **IMPORTANT CONDITIONS FOR PAYMENT**

It may be noted that the first running bill will be released only on production of the following.

1. PF Regn. No.
2. Labour Licence No.
3. Workmen Insurance Policy No.
4. Un Qualified Acceptance for Detailed L.O.I.
5. Initial 50% Security Deposit.
6. Rs. 100/- Stamp Paper for Preparation of contract agreement

6.15.8. All payments due to the contractor shall be made only through "e-Payment" , including return of EMD amount to unsuccessful tenderers. The tenderer has to furnish details of his Bank account as certified by the concerned Banker in the format furnished to enable e-payment.

### **FORM TO BE FILLED BY VENDORS FOR REGISTERING FOR E-PAYMENT**

Details of Bank Account of Contractor for remittance of e-Payment

1	NAME & ADDRESS OF THE CONTRACTOR / SUPPLIER	:	
2	BANK A/C NO.	:	
3	TYPE OF A/C (CC / CURRENT)	:	
4	NAME OF THE BANK	:	
5	NAME OF THE BRANCH	:	
6	BRANCH CODE	:	
7	BANKER'S ADDRESS (BRANCH)	:	
8	MICR NO.	:	
9	IFSC CODE	:	

Note : THE ABOVE DETAILS ARE TO BE FURNISHED IN THEIR LETTER HEAD BY THE CONTRACTOR / SUPPLIER, DULY ATTESTED BY THEIR BANKERS.

## **6.16.0 PROVIDENT FUND & MINIMUM WAGES**

- 6.16.1 The contractor is required to extend the benefit of Provident Fund to the labour employed by you in connection with this contract as per the Employees Provident Fund and Miscellaneous Provisions Act 1952. For due implementation of the same, you are hereby required to get yourself registered with the Provident Fund authorities for the purpose of reconciliation of PF dues and furnish to us the code number allotted to you by the Provident Fund authorities within one month from the date of issue of this letter of intent. In case you are exempted from such remittance an attested copy of authority for such exemption is to be furnished. Please note that in the event of your failure to comply with the provisions of said Act, if recoveries therefore are enforced from payments due to us by the customer or paid to statutory authorities by us, such amount will be recovered from payments due to you.
- 6.16.2 The contractor shall ensure the payments of minimum labour wages to the workmen under him as per the rules applicable from time to time in the state.
- 6.16.3 The final bill amount would be released only on production of clearance certificate from PF/ESI and labour authorities as applicable.

## **6.17.0 OTHER STATUTORY REQUIREMENTS**

- 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 alongwith the **first** running bill.
- 2) The contractor 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.
- 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 contractor, BHEL will reserve its right to pay the workmen under the orders of Appropriate authority at the risk and cost of the Contractor.

- 4) The Contractor shall submit copies of Final Settlement statement of disbursal of retrenchment benefits on retrenchment of each workmen 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.
- 5) 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.
- 6) 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.

## SECTION – VII APPENDIX –II

PROJECT : SIMHADRI –STAGE II      RATING: 500 MW      Unit - 3

### SCHEDULE OF WEIGHTS

SNo	PG	Description	Weight (MT) Approx./Unit
01	39	External supporting Structures	1700
02	48	Ducts ( BOF to Chimney)	1549
03	79 & 89	ESP And Galleries & Platforms	8335
		<b>Total</b>	<b>11584</b>

#### Note to weight schedule

1. The weights mentioned above are approximate and are liable to vary as per design consideration. There will be change in PG, weight, description etc., however the payments will be made to them for the tonnage actually erected at the quoted rate.
2. Besides the PG indicated above there is likely hood of addition of product groups integral to ESP and its aux. The quoted rate shall be applicable for such product group also
3. Complete insulation, water washing system, hoists etc are covered in this scope of contract.
4. The Erection of rectifier transformer, along this package are covered in this scope of contractor. However, dry out, testing and commissioning is not in the scope of this contract.
5. Erection & dismantling of air blowers and connecting pipes & ducts, providing blanks/ dummies at the required locations and conducting gas-tightness test is in the scope contract and shall be carried out with in the quoted rate.

Simhadri –Stage II Unit-3 ESP

<b>PGMA</b>	<b>PGMA DESCRIPTION</b>	<b>EST WEIGHT</b>
39-012	Foundation Materials I.D.Duct Supports	24,000.000
39-101	Columns Frames Before Esp- Left	166,000.000
39-102	Columns Frames Before Esp -Right	333,000.000
39-141	Cols Frames Near Id Fan ?Left	166,000.000
39-142	Cols Frames Near Id Fan - Right	333,000.000
39-150	Col Frames Betn I.D.Fan And Chimney	78,000.000
39-300	Platforms - External Structure	333,000.000
39-301	Struc And Platform For Fans	6,700.000
39-302	Struc For Motor Hood Covering	6,700.000
39-304	Fan Handling Structure For Fd Fan	23,000.000
39-305	Fan Handling Structure For Pa Fan	11,500.000
39-306	Fan Handling Structure For Id Fan	67,000.000
39-700	Hsfg Fasteners For Pg 39	1,100.000
39-810	Floor Grill	99,000.000
39-820	Stairs	22,000.000
39-850	Hand Rail And Hand Rail Posts	30,000.000
<b>TOTAL WEIGHT FOR PG 39</b>		<b>1,700,000.000</b>

<b>PGMA</b>	<b>PGMA DESCRIPTION</b>	<b>EST WEIGHT</b>
48-372	Rect Duct Cascade Evaporator To Ep	14,000.000
48-462	Rect Duct Boiler Outlet To Elec Precp	337,000.000
48-465	BOF To Ep Ducting Supports	6,000.000
48-468	Sq Duct,Blr Outlet Flange-Ep,Right	163,000.000
48-482	Rect Ducts-Elec Prptr/M.S To ID Fan	106,000.000
48-485	Supportsetelec Prptr/M.S To ID Fan	39,000.000
48-486	Ep Spool Duct	163,000.000
48-489	Sq Duct,Ep Interconn-ID Fan	77,000.000
48-492	Rect Duct ID Fan To Chimney	375,000.000
48-494	Expn Pieces ID Fan To Chimney	189,000.000
48-495	I.D.System Duct Supports	80,000.000
<b>TOTAL WEIGHT FOR PG 48</b>		<b>1,549,000.000</b>

**SIMHADRI STAGE-II ESP 79- PGMA WEIGHT SCHEDULE FOR UNIT-3**

<b>SLNO.</b>	<b>PGMA</b>	<b>DESCRIPTIONS</b>	<b>WT IN KG</b>
1	79805	ESP - SUB - DELIVERY COMPO	16000
2	79806	INSULATOR HOUSING AS	57754.452
3	79808	GAS DIST ASSY	90000
4	79809	GD - RAPPING MECHANISM	12157.92
5	79810	GD DRIVE ARRANGEMENT	852.408
6	79811	GAS SCREEN-EP	60297.84
7	79813	EMIT SYST SUSPENSION	21786.96
8	79814	SUPPORT INSULATORS	4800
9	79815	EMITTING ELECTRODES	38554
10	79816	EMIT ELECT RAPP MECH	49400
11	79817	DRIVE ARGT. FOR EMIT	40800
12	79819	COL ELEC SUSPENSION	172745.24
13	79820	COLLECTING ELECTRODE	880354.376
14	79821	EMIT SYSFRAME - TOP	144995.562
15	79822	EMIT SYS FRAME BOTOM	217224.492
16	79823	INSPECTION DOORS	23748.944
17	79824	SHOCK BARS	153745.051
18	79825	COLL ELECT RAPP MECH	124200
19	79826	COLL ELEC RAPP DRIVE	8524.08
20	79828	ESP ROOF PANELS	200428.484
21	79830	ELECTRICAL SD COMPTS	8000
22	79831	GEARED MOTORS FOR RAPP	18000
23	79832	EMIT SYS FRAME - MIDLE	316771.281
25	79842	OUTER ROOF - EP	282000
26	79843	HOPPER RIDGES	92872.808
27	79844	HOPPER UPPER PART	424600
28	79845	HOP MLD & LOWER PART	516700
29	79846	INSULATOR SUPP PANEL	111100
30	79847	ROOF PANEL ASSY	175800
31	79848	CASING STRUCTURE	458276.28
32	79849	CASING SHELL / PANEL	677237.832
33	79850	INLET - OUTLET FUNNEL	194748.92
34	79855	PENT HOUSE FOR EP	262500
35	79857	SPLITTER & GUIDE VANES	28690.128
38	79861	EP PERF TEST EQUIPT	844.992
41	79865	HOPPER APPROACH PLATFORM	251200
42	79866	WATER WASHING SYSTEM	4600
45	79872	INTERLOCKS - EP	2100
46	79873	ELECTRICALLY OPERTD HO	6100
49	79880	FOUNDATION MATLS FOR E	25495.714
50	79881	SUPPOTING STRUCTURES F	538204.776
51	79890	HEATING ELEMENTS& THERMOSTATS	1500
52	79891	PANEL TYPE HOPPER HEATRS AND ACCESSR	34000
57	79920	COLLECTING ELECTRODE	875398.8
58	79981	SUPPOTING STRUCTURES F	346442.912
60	79996	TOOLS & TACKLES	420
62	89610	EP GALLERIES & STAIRS	138996.586
63	89611	ESP ROOF HANDRAILS	8996.28
64		ESP HV - RECTIFIER TRANSFORMERS WITH ACCESSORIES 80 NoS. (2MT X 80 )	160000.000
		<b>TOTAL WEIGHT IN KGS</b>	<b>8279967.118</b>

(APPR  
8280MT)

**SECTION – VII**

**APPENDIX – III**

**PROJECT : SIMHADRI –STAGE II      RATING: 500 MW      Unit - 3**

**AA)** The Following minimum Tools & Plants shall be arranged by the contractor for execution of this contract with in the quoted rate

<b>Sl.No</b>	<b>Description</b>	<b>Qty</b>
1.	100 T Crane	1 No.
2.	18 T Crawler Crane	1 No.
3.	8 T Mobile Crane	1 No.

**BB)** List of Tools & Plants to be made available by BHEL to contractor free of hire charges on sharing basis

<b>S.No</b>	<b>Description</b>	<b>Qty</b>
1	150T Sumitomo or Equivalent	1 No
2	75T Crawler Crane	1 No
3	Blowers for Gas tightness Test	2 Nos
4	Huck Bolting M/c	As required

**NOTE:**

- 1) All the above T&Ps shall be given to contractor on sharable basis and the allotment is made by BHEL/Site in Charge, on need basis.
- 2) For 75T crane contractor shall provide the qualified operator for 150T crane operator will be provided by BHEL & Contractor has to provide two helpers to assist BHEL operator at his cost.
- 3) For all the cranes the contractor within the quoted rate shall provide fuel and lubricants.
- 4) Cranes are only for erection purpose and shall not be available for material handling and for transportation purpose for which contractor shall make his own arrangement.
- 5) The day-to-day and routine maintenance for the BHEL T&Ps will be carried out by the contractor at his own cost. However, BHEL shall supply spare parts free of charges.
- 6) Any loss/damage of tools by the contractor shall have to be replaced or otherwise cost thereof shall be recovered from the contractor.
- 7) Apart from the above, any other tools and plants required for satisfactory completion of the work has to be arranged by the contractor.

**III - Electrostatic Precipitator (ESP)**

SI No	Surface Location	PGMA	Surface Preparation	Primer		Finish		Total DFT in ( $\mu$ m ) min.
				Paint	DFT ( $\mu$ m) min.	Paint	DFT ( $\mu$ m) min.	
01	Insulator Housing assy	79-806	Power Tool Cleaning to St3(SSPC-SP3)	Heat Resistant Aluminum Paint Gr 2 to IS 13183 (Two coats)	40	--	--	40
02	Gas distribution assy	79-808	-DO-	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50
03	GD rapping mechanism	79-809	-DO-	-DO-	50	--	--	50
04	GD drive arrangements	79-810	-do-	Red Oxide Zinc Phosphate Primer to IS: 12744(Two Coats)	40	Synthetic Enamel to IS 2932 Grey shade 692 of IS 5 (Three Coats)		100
05	Gas screening	79-811	-do-	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50

SI No	Surface Location	PGMA	Surface Preparation	Primer		Finish		Total DFT in (μm) min.
				Paint	DFT (μm) min.	Paint	DFT (μm) min.	

06	Emitting system suspension	79-813	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50
07	Emitting Electrode rapping	79-816	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50
08	Drive arrangement for emitting system	79-817	Do	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two Coats)	40	--	60	100
09	Suspension arrangement for collecting electrode	79-819	-DO-	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50
10	Frame of emitting system – Top	79-821	-DO-	-DO-	50	--	--	50
11	Frame of emitting system – Bottom	79-822	-DO-	-DO-	50	--	--	50
12	Inspection doors	79-823	-DO-	Red Oxide Zinc Phosphate Primer to IS: 12744(Two Coats)	40	--	60	100
13	Shock bars	79-824	Power Tool Cleaning to St3(SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50
14	CE rapping mechanism	79-825	-DO-	-DO-	50	--	--	50
15	Drive arrangements for CE rapping	79-826	-DO-	Red Oxide Zinc Phosphate Primer to IS: 12744(Two Coats)	40	--	60	100
16	Frame of emitting system – Middle	79-832	-DO-	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50

SI No	Surface Location	PGMA	Surface Preparation	Primer		Finish		Total DFT in (μm) min.
				Paint	DFT (μm) min.	Paint	DFT (μm) min.	

17	Outer roof	79-842	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744(Two Coats)	40	Synthetic Enamel to IS 2932 Grey shade 692 of IS 5 (Three Coats)	60	100
18	Ridges	79-843	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50
19	Hopper Upper part	79-844	-DO-	Heat Resistant Aluminum Paint Gr 2 to IS 13183(Two coats)	40	-	-	40
	Flue gas Swept surfaces		Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50	
20	Hopper Lower & Middle part	79-845	-DO-	Heat Resistant Aluminum Paint Gr 2 to IS 13183(Two coats)	40	-	-	40
	Flue gas Swept surfaces		Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50	
21	Insulator Support Panel	79-846	Power Tool Cleaning to St3 (SSPC-SP3)	Heat Resistant Aluminum Paint Gr 2 to IS 13183(Two coats)	40	-	-	40
	Flue gas Swept surfaces		Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50	
22	Roof panel assy	79-847	Power Tool Cleaning to St3(SSPC-SP3)	Heat Resistant Aluminum Paint Gr 2 to IS 13183(Two coats)	40	--	-	40
	Flue gas Swept surfaces		Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50	

NTPC-SIMHADRI Stage II (2x 500MW,Unit – 3&4)

Painting Schedule: For APH, ESP, FAN AND GATES AND DAMPERS

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SI No	Surface Location	PGMA	Surface Preparation	Primer		Finish		Total DFT in (μm) min.
				Paint	DFT (μm) min.	Paint	DFT (μm) min.	
23	Casing Structure	79-848 79-828	Power Tool Cleaning to St3 (SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50
24	Casing (Shell, side panels, Gables & GD housing )	79-849	Power Tool Cleaning to St3 (SSPC-SP3)	Heat Resistant Aluminum Paint Gr 2 to IS 13183 (Two coats)	40	-	-	40
			Do	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50
25	ESP Funnels	79-850	Do	Heat Resistant Aluminum Paint Gr 2 to IS 13183 (Two coats)	40	-	-	40
			-DO-	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50
26	ESP Pent house	79-855	Do	Red Oxide Zinc Phosphate Primer to IS: 12744(Two Coats)	40	Synthetic Enamel to IS 2932 Grey shade 692 of IS 5 (Three Coats)	60	100
27	Splitters & Guide Vanes	79-857	Power Tool Cleaning to St3(SSPC-SP3)	Red Oxide Zinc Phosphate Primer to IS: 12744 (Two coats)	50	--	--	50
28	ESP test equipment	79-861	-DO-	Red Oxide Zinc Phosphate Primer to IS: 12744(Two Coats)	40	Synthetic Enamel to IS 2932 Grey shade 692 of IS 5 (Three Coats)	60	100
29	Water Washing system	79-866	Power Tool Cleaning to St3(SSPC-SP3)	-DO	40	-DO-	60	100
30	Tools & Tackles	79-996	-Do-	Red Oxide Zinc Phosphate Primer to IS: 12744(Two Coats)	40	Synthetic Enamel to IS 2932 Grey shade 692 of IS 5 (Three Coats)	60	100
31	Commissioning Spares Mandatory spares	79-988 79-997						

As per respective items as above

SI No	Surface Location	PGMA	Surface Preparation	Primer		Finish		Total DFT in (µm) min.	
				Paint	DFT (µm) min.	Paint	DFT (µm) min.		
32	Foundation Materials for ESP and Shims of X81 column	79-880		All threaded and other surfaces of foundation bolt and its materials shall be coated with temporary rust preventive fluid and during execution of civil works, the dried film of coating will be removed using organic solvents.					
33	Handrails, Posts Step treads, Floor grills,	89-610, 89-611 79-865		Hot dip Galvanizing to 900 gm per Sq.M (Minimum)					
34	Collecting electrode	79-820 79-920		Rust Preventive application					
35	Lifting beam		Power tool cleaning to St3 (SSPC-SP3)	Red Phosphate Primer to IS: 12744(Two Coats)	Zinc Oxide	40	Synthetic Enamel to IS 2932 Grey shade 692 of IS 5 (Three Coats)	60	100
36	Emitting Electrode	79-815		Rust preventive application on Hook (Electrode Wire is Stainless Steel)					
37	Supporting structure for ESP (#)	79-881 79-981		<b>Primer:</b> Inorganic Ethyl Zinc Silicate primer (Solid by Volume min 60%).DFT = 100 µm minimum					
38	Hopper approach platform (For items other than mentioned in s.no.33)	79-865	Blast Cleaning to Sa 2 1/2 (Near white metal with Surface profile 35 - 50 µm)	<b>Intermediate coat:</b> Epoxy based Polyamide cured pigmented TiO2 paint ,volume solids min 60%) .DFT = 100 µm minimum <b>Finish Coat:</b> Epoxy based polyamide cured finish paint (Solids by volume min 60%) DFT = 75 µm minimum + Aliphatic Polyurethane paint (Solids by volume min 40%) DFT= 25 µm. <b>Note:</b> a) Out of two coats of Epoxy polyamide cured finish paint, one coat to be applied at shop/subcontracting works to DFT- 35 microns minimum (Shade 692 of IS 5). And Second coat of epoxy finish paint to DFT 40 Microns followed by one coat of polyurethane paint to DFT 25 Microns shall be applied at site either by spray or brush.(Shade GREY- RAL 9002) b) The total paint thickness (Primer + Intermediate + Finish with polyurethane) shall be minimum 300 microns c) Thickness of individual coat shall be ensured separately and the same shall meet the specified minimum thickness of each coat as given above					
38	Stringer for stairs case and guard plates, frames/brackets for galleries, walkways & staircases	89-610							

**General Notes:**

- 1) No painting is required for Galvanized items, non-ferrous items.& stainless steel items , except as indicated above.
  - 2) Machined items are to be applied with one coat of temporary rust preventive oil.
  - 3) PGMAs under sub-vendor items viz SCAPH, Pent house ventilation fan & its coupling, seal air fan coupling, support bearing and sub delivery components of ESP, etc are not indicated, however the Painting scheme for all items supplied by all vendors and BOI including SCAPH, Penthouse ventilation fans& its coupling, seal air fan coupling, support bearing etc. under the scope of BHEL shall be same as for main equipment covered in this document as per specification
  - 4) In components, wherever plates /sheets of thickness less than or equal to 5 mm and rods are used, power tool or hand tool cleaning to SSPC-SP3/SP2 shall be followed.
  - 5) Ground shade/colour of finish paints and identification tag/band for equipments, Fans, piping, pipe services, supporting structures and other components shall be followed as per NTPC doc at site
  - 6) All components covered under different PGMAs are to be painted. In case any component is left out, the same shall be deemed to be included under the relevant section
- (#) For portion of steel surfaces embedded in concrete, the surface shall be prepared by power tool cleaning to ST3 and provided with primer coat of chlorinated rubber based zinc phosphate primer of Min. 50 micron DFT.

### **PAINTING OF DAMAGED AREAS**

(Areas where paint has deteriorated badly by erosion and areas where the paint film has lost its adhesion and where the steel has rusted appreciably, should be repainted as per following)

Paint damaged components falling under sl.No.36 to 38 of ESP	<b>Surface Preparation:</b> Power tool cleaning to bare metal	Primer: One coat of Epoxy Zinc rich primer to IS 14589 Gr II to DFT of 100 µm. Intermediate and Finish: As given in respective scheme
Paint damaged components falling under other s. nos of APH, Fan and ESP	<b>Surface Preparation:</b> Power tool cleaning to bare metal	Primer, and Finish: As given in respective scheme

NTPC-SIMHADRI Stage II (2x 500MW, Unit – 3&4)

Painting Schedule: For APH, ESP, FAN AND GATES AND DAMPERS

PR: QA: 578 Rev.02 DT 09 01 08

Issued by Quality Assurance.

**SECTION VII**

**APPENDIX – V**

**DECLARATION SHEET**

I, \_\_\_\_\_ hereby certify that, all the information and data furnished by me with regard to this Tender Specification No.BHEL:PSSR:SCT:1283 are true and complete to the best of my knowledge. I have gone through the specifications, conditions, stipulations in detail and agree to comply which the requirements and intent specifications.

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.

**TENDERER'S NAME & ADDRESS**

**AUTHORISED REPRESENTATIVE'S  
SIGNATURE WITH NAME & ADDRESS**

**SECTION VII**

**APPENDIX – VI**

**TENDER SPECIFICATION NO BHEL:PSSR:SCT:1283**

**CERTIFICATE OF DECLARATION FOR CONFIRMING  
KNOWLEDGE ON SITE CONDITIONS**

We,

hereby declare and confirm that we have visited the project site under subject, namely and acquired full knowledge and information about the site conditions. We further confirm that the above information is true and correct and we will not raise any claim of any nature due to lack of knowledge of site conditions.

**TENDERER'S NAME AND ADDRESS**

**Place:**

**Date :**

**SIGNATURE OF AUTHORISED  
REPRESENTATIVE WITH NAME & ADDRESS:**

**OFFICE SEAL**



**Bharat Heavy Electricals Limited**

(A Govt. of India Undertaking)

Power Sector – Southern Region

EVR Periyar Building

690 , Anna Salai, Nandanam, Chennai – 600 035.

**SECTION VIII**

**APPENDIX - VII**

**CHECK LIST**

**TENDER SPECIFICATION NO, BHEL: PSSR : SCT : 1283**

Tenderers are required to fill in the following details:

1. a) Name of the Tenderer with address : YES/NO  
b) Telegraphic/Telex address : YES/NO  
c) Phone (Office/Residence) : YES/NO  
d) Management Structure of firm (Pvt. Ltd./Public Ltd./Partnership/Sole Proprietorship) Documentary proof For the same enclosed) : YES/NO
2. Whether EMD submitted as per Tender specifications terms and Conditions : YES/NO
3. Validity of offer (offer shall be kept open for acceptance for minimum six months) : YES/NO
4. Whether tenderer visited the erection site and acquainted with the site conditions before quoting : YES/NO

**SIGNATURE OF THE TENDERER**

5. Whether the following details are furnished : YES/NO
- a) Previous Experience : YES/NO
  - b) Present assignments : YES/NO
  - c) organization chart of the company : YES/NO
  - d) Company financial status : YES/NO
  - e) Incase of company, proof of Registration of the company : YES/NO
  - f) Memorandum & Articles of Association of company/copy of Partnership deed : YES/NO
  - g) Profit & Loss account for the Last 3 years : YES/NO
  - h) Audited Balance sheet for the Last 3 years : YES/NO
  - i) Income Tax clearance certificate (latest) : YES/NO
  - j) Solvency Certificate from a Nationalised Bank : YES/NO
  - k) Power of Attorney of the person Signing the tender duly attested By a Notary Public : YES/NO
  - l) Manpower organization chart With deployment plan at site For posting of Engineers/super Visitors and workers/labourers For satisfactory completion of Work under this specification : YES/NO

SIGNATURE OF THE TENDERER

6. Whether the Tenderer is conversant with local labour laws & conditions : YES/NO
7. Whether the tenderer is aware of all safety rules and codes : YES/NO
8. Whether the Declaration sheet (as per appendix enclosed) : YES/NO
9. Time required for mobilization of of site organization and start of work : YES/NO
10. Whether list of tools and Plants available with the contractor and proposed to be deployed for this work enclosed : YES/NO
11. Whether all the Pages are read understood and signed. : YES/NO
12. Deviations, if any Pointed out :
13. Whether PF exemption No. is allotted by RPFC of your area if so, indicate number : YES/NO

SIGNATURE OF THE TENDERER

# **TENDER SPECIFICATION**

**BHEL:PSSR:SCT: 1283**

**FOR**

Handling at Site Stores / Storage yard, Transportation to Site of Work, Erection, Testing and Commissioning of Electrostatic Precipitator and its Auxiliaries including Supply and Application of Final Painting for Unit – 3 of 2 x 500 MW sets

at

**NTPC Simhadri Super Thermal power Project  
Stage II - Visakhapatnam, AP.**

**PART – II PRICE BID**

**BOOK NO :**



**BHARAT HEAVY ELECTRICALS LIMITED**

(A Government of India Undertaking)

Power Sector – Southern Region

690, Anna Salai, Nandanam, Chennai – 600 035.



**Bharat Heavy Electricals Limited**

(A Govt. of India Undertaking)

Power Sector – Southern Region

EVR Periyar Building

690 , Anna Salai, Nandanam, Chennai – 600 035.

TENDER SPECIFICATION NO:BHEL:PSSR:SCT:1283

NAME OF WORK

Handling at Site Stores / Storage yard, Transportation to Site of Work, Erection, Testing and Commissioning of Electrostatic Precipitator and its Auxiliaries including Supply and Application of Final Painting for Unit – 3 of 2x 500 MW sets at NTPC- Simhadri Super Thermal Power Project, Sage II - Visakhapatnam, AP.

PART II

**(PRICE BID)**

Issued to  
M/s.

For and on behalf of  
BHARAT HEAVY ELECTRICALS LIMITED

Addl. General Manager/Contracts

(This tender document is not transferable)

Place: Chennai-600 035.

Date:

**SECTION VII – APPENDIX – VIII**

**RATE SCHEDULE**

**BHEL- PSSR - SCT :1283**

Sl.	Description of Work	Approx. Weight in MT	Unit Rate (Rs.)	Amount Rs.
01.	Erection, testing, commissioning and supply & application of final painting of ESP and its auxiliaries for Unit – 3 of 2x 500 MW sets at NTPC- Simhadri Super Thermal Power Project Sage II Visakhapatnam, AP Including supporting structures and columns, stairways, floor grills, hand-rails etc. and also the external platforms as per detailed description and nature of works as enumerated in the tender specification and also as per the BHEL drawing including supply of necessary consumables, tools and tackles, all handling and transportation from BHEL stores, preservation of components in the erection site and other incidental works during pre assembly, erection, testing and commissioning works as detailed in the Tender Specification.	<b>11584 MT</b>	/MT	

SIGNATURE OF THE TENDERER

**Note :** In case VAT (Value Added Tax) is included to the above price.  
Please indicate the following ( If no VAT is added please indicate as NIL )  
Refer clause in Section VI.

- (i) Value of VAT added in the quote Rs.....
- (ii) The Rate of VAT adopted Rs.....
- (iii) On what value VAT has worked out Rs.....

SIGNATURE OF THE TENDERER

**NOTE TO RATE SCHEDULE:**

1. The quantities indicated in column 3 are approximate and are liable for variation and alteration at the discretion of BHEL. The quoted unit rate shall be applicable for any additional product groups of manufacturing unit, if included at a later date. The work executed shall be measured and priced at unit rate quoted by the contractor and accepted by BHEL.
2. The description of work indicated in the Rate Schedule shall include all types of handling and transportation of materials from storage yard / pre-assembly yard to the place of erection, preservation of components at the erection site with contractor's own handling equipments and any extra work with modification / rectification that may arise during erection testing and commissioning works which are incidental to normal erection works.
3. The Tenderer is expected to fill up the rate column after satisfying all terms and conditions of Tender Specification.
4. Tenderers are requested to quote their rates, only in the price bid (part II) provided by BHEL. Quoting of rates in any other form / formats will not be entertained.

SIGNATURE OF THE TENDERER