

# TENDER DOCUMENT

TENDER SPECIFICATION No : **BAP : ERN : RTPS : ESP : ELEC : C : 224**

NAME OF WORK:

**ELECTRICAL WORKS OF ESP & ID FAN INVOLVING HANDLING AT SITE STORES / STORAGE YARD, TRANSPORTATION TO SITE OF WORK, ERECTION, TESTING AND COMMISSIONING OF ELECTRICAL COMPONENTS OF ESP & ID FAN IN B-STN (1X 62.5 MW), RAMAGUNDAM TPS, ANDHRA PRADESH, OF M/S APGENCO, USING CONTRACTOR'S OWN TOOLS AND PLANTS, CRANES , CONSUMABLES, MANPOWER ETC**

Issued to M/s. :

## PART – I ( TECHNICAL BID )



**ERECTION SERVICES DEPARTMENT**  
**BHARAT HEAVY ELECTRICALS LIMITED**  
( A Government of India Undertaking )  
BOILER AUXILIARIES PLANT  
INDIRA GANDHI INDUSTRIAL COMPLEX  
RANIPET – 632 406

**BHARAT HEAVY ELECTRICALS LIMITED**  
**BOILER AUXILIARIES PLANT**  
**RANIPET- 632406.**

**ERECTION SERVICES DEPARTMENT**

TENDER SPECIFICATION NO. : BAP:ERN:RTPS:ESP:ELEC:C:224

<b>CONTENTS</b>			
<b>S.No.</b>	<b>Description</b>	<b>Section / Appendix No.</b>	<b>No. of Pages</b>
<b>A.</b>	<b>PART - I (TECHNICAL BID)</b>		
01.	Special Instructions to Tenderer	---	<b>01</b>
02.	Notice Inviting Tender	---	<b>03</b>
03.	Procedure for Submission of Sealed Tenders	---	<b>01</b>
04.	Offer of Contractor	---	<b>01</b>
05.	Project Information	---	<b>01</b>
06.	Tender Specification No. - BAP:ERN:RTPS:ESP:ELEC:C:224	---	<b>04</b>
07.	Technical Description	ANNEXURE -I	<b>01</b>
08.	Statutory Requirements of Contract – ES:F:009	---	<b>17</b>
09.	General Conditions of Contract - ES:F:010	SECTION –I & II	<b>20</b>
10.	Special & Common Conditions of Contract for Electrical Works - BAP:ERN:ELEC:SPN:01	SECTION– IV & V	<b>24</b>
11.	Special Conditions of Contract – Extra Works	SECTION - VI	<b>01</b>
12.	Special Conditions of Contract – Over-run Charges	SECTION - VII	<b>01</b>
13.	General Terms and Conditions of Reverse Auction	SECTION - VIII	<b>02</b>
14.	List of major tools & tackles etc. to be arranged by contractor.	APENDIX - I	<b>01</b>
15.	Format for furnishing details of tax registration etc.	APPENDIX – II	<b>01</b>
16.	E - payment acceptance format	APPENDIX - III	<b>01</b>
<b>B.</b>	<b>PART - II (PRICE BID)</b>		
01.	SCHEDULE OF RATES AND QUANTITIES		<b>06</b>

**BHARAT HEAVY ELECTRICALS LIMITED  
BOILER AUXILIARIES PLANT  
RANIPET – 632 406**

**ERECTION SERVICES DEPARTMENT**

SPECIAL INSTRUCTIONS TO TENDERER

1. This Booklet consists of the scope and bill of quantities of the entire scope of work etc.
2. The Tenderers are requested to go through the instructions contained in the documents attached fully and then quote in the Rate Schedule attached.
3. Tenderers are advised to go through the General conditions of contract, special & common conditions of the contract, tender specifications etc. and fully understand the scope of work before quoting. Any doubt in the documents should be got clarified from Erection Services Department of BHEL, Ranipet before submitting their offer.
4. Tenderers shall note that all consumables, tools & tackles and **all the required Cranes / Trucks / Trailors / Tractors etc.** are to be provided by the contractor.
5. **No advance payment towards mobilization of site operation** or for any other purpose will be made by BHEL. The payment for work will be made strictly as per payment terms in the tender specification.
6. **The Tender Documents should be submitted duly signed and stamped in all the pages** of the Tender Specification, General conditions, special conditions, Annexures etc. by the Tenderer.
7. The Tenderer should mobilise maximum labour force only from local area of site work.
8. The undersigned is not bound to accept the lowest or any Tender and will have the right to reject any or all the Tenders without assigning any reason whatsoever.
9. **No special tools are envisaged to be provided by BHEL.**
10. Approvals, if any, required from statutory authorities like Electricity Board etc., should be obtained by the tenderer at his own cost and risk.
11. These Tender Documents are not transferable.
12. Tender with all the required documents should be submitted so as to reach as per schedule given in the notice inviting tender and duly addressed to :  
**THE ADDL. GENERAL MANAGER,  
ERECTION SERVICES DEPARTMENT,  
BHARAT HEAVY ELECTRICALS LIMITED,  
BOILER AUXILIARIES PLANT,  
RANIPET – 632 406.**  
Phone No.:04172 - 241171 / 254515  
E-mail : [cramiah@bhelrpt.co.in](mailto:cramiah@bhelrpt.co.in)

**BHARAT HEAVY ELECTRICALS LIMITED**  
**BOILER AUXILIARIES PLANT, RANIPET- 632406.**  
**ERECTION SERVICES DEPARTMENT**

**NOTICE INVITING TENDER**

Sealed Tenders in TWO PARTS are invited from experienced bidders meeting Qualification Requirements (QR) for the work mentioned below. Points relevant to the tender are mentioned below and are to be complied with.

---

1. TENDER SPECIFICATION NO. : **BAP : ERN : RTPS : ESP : ELEC : C : 224**

2. **NAME OF THE WORK** :

**ELECTRICAL WORKS OF ESP & ID FAN INVOLVING HANDLING AT SITE STORES / STORAGE YARD, TRANSPORTATION TO SITE OF WORK, ERECTION, TESTING AND COMMISSIONING OF ELECTRICAL COMPONENTS OF ESP & ID FAN IN B-STN (1X 62.5 MW), RAMAGUNDAM TPS, ANDHRA PRADESH, OF M/S APGENCO, USING CONTRACTOR'S OWN TOOLS AND PLANTS, CRANES , CONSUMABLES, MANPOWER ETC.**

3. **EARNEST MONEY DEPOSIT** : Rs. 40,000/- (Rupees Forty Thousand only)

4. SALE OF TENDER SPECIFICATION DOCUMENTS : **01.03.11 To 24.03.11**

5. DUE DATE AND TIME FOR SUBMISSION OF OFFER : **24.03.2011 at 14.30 Hrs.**

6. DATE & TIME OF OPENING OF TECHNICAL BID : **24.03.2011 at 15.00 Hrs.**  
*(Please obtain updated information from the website about the latest applicable dates.)*

---

7. **EARNEST MONEY DEPOSIT (EMD)** : EVERY TENDER MUST BE ACCOMPANIED BY THE PRESCRIBED AMOUNT OF EARNEST MONEY DEPOSIT. EARNEST MONEY DEPOSIT (EMD) **shall be remitted along with the tender in the form of pay order or DEMAND DRAFT only drawn in favour of BHARAT HEAVY ELECTRICALS LIMITED payable at RANIPET. EMD in the form of bank guarantee / fixed deposit receipt or in any other form will not be accepted.**

8. **Tender that is not accompanied by the requisite EMD amount is liable to be summarily rejected.**

9. Tenderers whose technical bids are found acceptable to BHEL will be intimated separately about the status of their offers and the date of opening of Price Bids.

10. Tender specification documents with complete details are hosted in web page ([www.bhel.com](http://www.bhel.com)). Bidders can directly download the same and use for submission of offer. Tender document charges shall be paid to BHEL along with or before submission of offer.

11. Interested bidders may alternately collect hard copy of tender specification documents from Erection Services Dept / BHEL / Ranipet on all working days (between 10.00 to 15.00 hrs) within the sale period on payment of tender document charges.

12. **Tender specification document charges (Non-refundable)** : Rs.2000/- by DD in favour of BHEL payable at Ranipet or by Cash. Courier /Postal charges will be Rs.500 extra if tender specification documents are requested through courier/post. The tender documents are not transferable.

## NOTICE INVITING TENDER

13. BHEL will not take any responsibility for delay/loss of documents or correspondence sent by courier/post.
14. Acceptance of any tender shall be subject to the approval by BHEL's Customer.
15. BHEL reserves the right to accept or reject any or all tenders without assigning any reasons whatsoever.
16. Dates of price bid opening will be intimated to the qualified bidders later.
17. All corrigenda, addenda, amendments, clarifications etc. to tender specification will be hosted in the web page ([www.bhel.com](http://www.bhel.com) > **Tender notifications** > **view corrigendum**) only and not in the news paper. Bidders shall keep themselves updated with all the such developments.
18. BHEL reserves the right to reject any tender on the basis of unsatisfactory performance of the bidder in any on going job or any similar job in the past.
19. BHEL will operate CPSE purchase preference policy as applicable.
20. **Qualification Requirements (QR) :**  
Bidders shall essentially meet all the qualifying requirements in a & b as under:

- (a) The contractor must have successfully executed Erection and Commissioning of Electrical/ Electrical and C&I work in industries like steel plants, Refineries, Cement plants, Thermal Power plants, Captive power plants etc. in the last seven years as on 31.12.2010 as follows.
  - (i) One work of atleast **Rs.9.91 Lakhs** in a single work order.
  - (ii) Two works of atleast **Rs.6.19 Lakhs** each.
  - (iii) Three works of atleast **Rs.4.95** each.

(AND)

- (b) The contractor must have achieved minimum average annual financial turn over of **Rs.3.71 Lakhs** during the last three financial years (FY) ending on 31/03//2010.

**Fulfillment of basic requirements: A bidder must satisfy all the qualifying requirements enumerated as in (a) & (b) above concurrently in order to qualify to participate in this tender.**

- (c) **Supporting documents for QR:**  
**Bidder shall submit documents in support of possessing qualifying requirements as under, duly self certified and stamped by the authorized signatory.**

- (i) List of jobs done with the name of the project, Owner of the project, Name of the customer, Work order reference No and date, brief details of jobs, executed value, date of start, date of completion.
- (ii) Photocopies of work orders issued by the Customer containing details of bill of quantities/schedule of rates and certificates for proof of satisfactory completion of work.
- (iii) Photo copies of profit and loss account accompanied by relevant schedules for turn over figures.

## NOTICE INVITING TENDER

**(d) Tender Specification Document Cost and Courier/postal Charges :**

Charges for Tender Specification document @ Rs.2000/- per Tender Specification and Courier/Postal Charges @ Rs.500/- per Tender Specification shall be paid by Account Payee Demand Draft in favour of “Bharat Heavy Electricals Ltd.” payable at Ranipet or in Cash at the cash counter of BAP/Ranipet. Courier/Postal Charges shall be paid in case of request for dispatch of Tender Specification documents by the bidder. In the case of downloading of the Tender Specification documents etc. from the web page, the bidder shall remit the tender document charges (Rs.2000/-) positively along with or before submission of offer.

21. **Seeking clarification on Tender Specification :** Clarifications on tender specification if any may be sought by the bidders so as to reach this office at least seven days before the last date for tender submission. BHEL shall not be responsible for receipt of queries after the due date for seeking of clarification due to postal delay.
  22. BHEL may decide holding pre-bid conference (PBC) with any /all intending bidders. On such communication from BHEL, the bidder shall ensure participation in the same at the appointed time, date and place as may be decided by BHEL. Any clarification/query received after the pre-bid conference shall not be entertained.
  23. All the information as called for in the various clauses and annexure of tender specification should be furnished. Please refer to the check list. The details so furnished should be complete in all respects and as per the formats prescribed in the Tender specification (Statutory requirement of Contract). The bidder may have to produce original documents for verification, if so decided by BHEL.
  24. Offers received with any deviation or without relevant information are liable to be rejected.
  25. Price bids received in any form other than prescribed in Part-II (PRICE BID) are liable to be rejected.
  26. The tender offer should be kept valid for 180 days from the date of bid opening for acceptance by BHEL. No unsolicited revision in the tender offer shall be entertained after opening of tenders and till expiry of the validity period.
  27. **Liquidated Damages/Penalty:** BHEL will impose Liquidated Damages and Penalty as per suitable clauses in the Tender Specifications on account of delay, violation of contract conditions and non-performance attributable to the contractor.
  28. **REVERSE AUCTION:** BHEL Reserves the right to adopt the process of **Reverse Auction** (ON LINE BIDDING on INTERNET) among the bidders who are found to be qualified on the basis of technical bid. Refer the **General Terms and Conditions of reverse auction** in SECTION-VIII. No extension of time on this account will be entertained for bid submission.
-

**BHARAT HEAVY ELECTRICALS LIMITED**  
BOILER AUXILIARIES PLANT  
RANIPET- 632406.  
**ERECTION SERVICES DEPARTMENT**

**PROCEDURE FOR SUBMISSION OF SEALED TENDERS**

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

**PART-II (PRICE BID) COVER-II :**

All indications of price shall be given in this part-II “Price Bid” only.

THESE TWO COVERS I & II (PART-I AND PART-II) SHALL TOGETHER BE ENCLOSED IN A **THIRD ENVELOPE (COVER-III) ALONG WITH REQUISITE EMD** AS MENTIONED IN THE NOTICE INVITING TENDER AND THIS SEALED COVER SHALL BE SUPERSCRIBED AND SUBMITTED TO AGM/ERECTION SERVICES AT THE ADDRESS GIVEN IN “Special Instructions to Tenderers” ON OR BEFORE THE DUE DATE.

-----

**OFFER OF CONTRACTOR**

To

**The Additional General Manager,**  
 Erection Services Dept,  
 Bharat Heavy Electricals Limited,  
 Boiler Auxiliaries Plant,  
 Indira Gandhi Industrial Complex,  
 RANIPET –632 406. (TAMIL NADU).

-----

Sir,

I/We hereby offer to carry out the work detailed in the Tender Specification NO.BAP:ERN:RTPS:ESP:ELEC:C:224 issued by M/s. Bharat Heavy Electricals Limited, Boiler Auxiliaries Plant, Ranipet in accordance with the terms and conditions thereof:

I/ we have carefully pursued the following documents connected with the above work and agree to abide by the same.

- a. General terms and conditions of work (ES: F:010)
- b. Statutory requirement of Contract (ES: F:009)
- c. Special & Common conditions of Contract for Electrical works (BAP: ERN: ELEC:SPN:01)
- d. Tender Specification no. BAP: ERN:RTPS:ESP:ELEC:C:224
- e. Special Instructions to Tenderer
- f. General terms and conditions of Reverse Auction.
- h. Other sections, appendices, schedules and drawing.

I/We have deposited / forwarded herewith the Earnest Money Deposit in the form prescribed and as stipulated in Clause No.1.4. of the General Conditions of Contract for Works towards the Earnest Money Deposit for a sum of **Rs.40,000/- (Rupees Forty Thousand only )** vide Pay Order No.....Dt..... 2011 / Demand Draft No.....dt..... 2011 which shall be refunded should our offer not be accepted. Should our offer be accepted, I/We further agree to deposit such additional sum, within the stipulated time as may be indicated by BHEL, which along with the sum of **Rs.40,000/-** mentioned above, shall make up the Security Deposit for the work as provided for in clause 1.8.2 of the General Conditions of Contract for Works.

I/We further agree to execute all the works referred to in the said documents upon the terms and conditions contained or referred to therein and as indicated in the Annexure enclosed thereto.

**SIGNATURE OF TENDERER:**

Place:  
Date:

ADDRESS:

**WITNESSES WITH FULL ADDRESS**

SIGNATURE	NAME	ADDRESS
1)		
2)		
3)		

**TENDER SPECIFICATION NO. : BAP:ERN:RTPS:ES:ELEC:C:224****PROJECT INFORMATION**

1. Purchaser and Owner : M/s. ANDHRA PRADESH POWER GENERATION CORPORATION LIMITED (APGENCO), HYDERABAD
2. Location : RTS - B , (1 X 62.5 MW )  
RAMAGUNDAM THERMAL POWER STATION,  
RAMAGUNDAM – 505 208  
KARIMNAGAR DIST, ANDHRA PRADESH
3. Nearest Railway station : Ramagundam Rly Station
4. Climatic condition : Temperatures:  
a) Max Temp : 44.3 Deg C  
b) Min Temp : 11.0 Deg C
5. Relative humidity : a) Maximum during monsoon 85%  
b) Minimum 11%
6. Rain fall : a) Max : 39.5 mm  
b) Annual : 624 mm
7. Air Quality : Dusty

Before offering his/her/their tender, the Tenderer has to thoroughly acquaint with the site conditions with reference to Operating procedures inside the plant, HSE rules prevailing in the plant, site interference problems, movement of cranes / derricks etc. in the store yard / work site during material handling, erection etc. No compensation or revision of rates will be entertained at a later date for not having proper knowledge of the site conditions.

Oo-o-o-o-o-o-o-o-o-o-Oo

**TENDER SPECIFICATION NO. BAP:ERN:RTPS:ESP:ELEC:C:224**

- 1.0 **SCOPE OF WORK** : The scope of work broadly covers the complete handling at stores / storage yard, transportation to site of work, pre-assembly, erection , testing and commissioning of all the Electrical components of new Electrostatic Precipitator and ID Fan system for 'B'-Stn (1 X 62.5 MW), Ramagundam Thermal Power Station, Ramagundam , Andhra Pradesh of M/s APGENCO, using contractors own material handling equipments, manpower, tools and plants, consumables etc.
- 1.1 **Detailed scope of work** : The detailed scope of work is as per the Special Conditions of Contract and bill of quantities attached along with this tender. Trial-run, testing & commissioning of the entire system within the contract time and to the entire satisfaction of the of M/s APGENCO and BHEL forms part of the work.
- 2.0 **ROUND THE CLOCK WORK** : A part of the work is to be carried during shutdown of the running plant and the relevant works have to be completed within such planned shutdown. This will call for working with enhanced resources and extended hours (including round the clock). The tenderer shall consider all such contingencies in their offer.
- 3.0 **TERMINAL POINTS** : The terminal points decided by BHEL shall be final and binding on the contractor for deciding the scope of work and effecting payment for the work done.
- 4.0 **SITE LOCATION** : The site of work is inside the existing Ramagundam Thermal Power Station of M/s APGENCO, where the existing RTS-B plant is in operation.
- 5.0 **TOOLS & TACKLES** : It may be noted that **BHEL will not provide** any cranes , trailers / trucks / tractors, tools and plants for execution of the work. All required resources are to be arranged by the tenderer only.
- 6.0 **CONSTRUCTION POWER & WATER** : Required construction power and water to site shall be provided by BHEL on FREE OF CHARGE at one point only. Necessary power cabling from the source to distribution boards, energy meters etc. and distribution pipe lines to different locations of water point with taps, valves etc., shall be provided by the tenderer at his cost.
- 7.0 **HEALTH, ENVIRONMENT AND SAFETY** : The tenderer shall visit the site of work before quoting for this work and take note of the site conditions, possible interferences for erection work as well as for the movement of cranes and also for hook up / testing of the equipments. The tenderer shall also acquire knowledge of prevailing rules and regulations pertaining to Health, Environment and Safety (HSE) procedures of M/s APGENCO, project site rules, prevailing labour laws enforced by local authorities, labour regulations, movement of labour / vehicles inside the plant area, time keeping systems etc., in force and other local political conditions before submission of offer. No payment shall be made extra for not having adequate knowledge about the site conditions or for any extra work on the account of existing site constraints.
- 7.1 All the working personnel should obtain proper safety certificates issued by M/s APGENCO before start of work.
- 8.0 **COMPLIANCE TO STATUTORY REQUIREMENTS** : It is the responsibility of the contractor to obtain the required labour license from the appropriate authorities before commencement of work.
- 8.1 The contractor shall comply with all State/Central Laws, Statutory Rules, Regulations etc. inclusive of those regarding Labour and Industrial Laws which are applicable from time to time and shall comply with the provision of the same Labour Legislation, Rules and Regulations

framed under the provision of Employees' Provident Fund and Miscellaneous Provision Act 1952, ESI registration, Labour License etc..

- 8.2 The tenderer shall specify the **Provident Fund Code / ESI Number** allotted to their firm by the Provident Fund authorities for engagement of labour for this tendered **work or otherwise shall obtain PF Code/ESI No. from respective Authorities** before finalisation of the tender.
- 8.3 **ELECTRICAL CONTRACTORS LICENSE** : The tenderer shall enclose a copy of valid electrical contractors license applicable for the state where the site is located valid till commissioning of the ESP and ID Fan system. In case the tenderer is not in possession of such a license, they may execute the work through any other agency having such valid license. This may be indicated in the offer itself and acceptance of such party may be enclosed with the offers. Offers not having any of these, are liable to be rejected.
- 9.0 **APPROVAL FROM CIEG** : It is the responsibility of the tenderer to test, commission and obtain necessary safety certificates & approvals from the Electrical authorities for the equipment installed / erected by them and by the other agencies to enable commissioning of the system.
- 10.0 **SITE MANAGEMENT** : The tenderer shall arrange to print all materials management forms, daily labour progress reports, and all other forms & reports etc., as indicated / instructed by BHEL and customer's HSE plan and project site rules.
- 11.0 **MOBILISATION ADVANCE** : **No advance payment** towards mobilization of site operation or for any other purpose will be made by BHEL. The payment for work will be made strictly as per payment terms in the tender specification.
- 12.0 **FIRM PRICE** : The Contractor has to keep his quoted rates firm for the entire contractual period including total extended period, if any, and no claim for revision of rates or price escalation is allowed under any circumstances.
- 13.0 **VARIATION IN QUANTUM OF WORK** : The details of quantum of work are indicated in the rate schedule which is only approximate and is likely to vary to the extent of PLUS or MINUS 15% of the scheduled quantities, as per site conditions ( except for S.No. N for which the quantity may vary beyond 15%).
- 14.0 **EARNEST MONEY DEPOSIT (EMD)** : The EMD amount to be remitted along with the offer and the mode of remittance shall be as indicated in the "Notice Inviting Tender".
- 15.0 **SECURITY DEPOSIT (SD)** : The successful tenderer shall within the time specified in the letter of intent deposit the required amount of security deposit. The SD shall be as per clause 1.8 of General Conditions of Contract (GCC).
- 16.0 **TAXES AND DUTIES** : Rates quoted shall include all royalties, taxes, terminal taxes, Octroi, duties, Sales Tax on Works Contract, Entry Tax, Central or Provincial Excise Tax and other taxes (**except Service Tax**) leviable under the state and the central Government Rules. BHEL will not entertain any claim whatsoever in this respect. No reimbursement on account of increase in rate of existing levies shall be made.
- 16.1 The tenderer shall not include Service Tax in their quoted rates. **Service Tax** as applicable to this contract will be reimbursed by BHEL. The successful tenderer shall register themselves with the service tax authority and pay separately the Service Tax as applicable to this contract during execution of the work and get it reimbursed at actuals by BHEL by submitting necessary invoices / documentary proof as required by BHEL
- 16.2 **Procedure for reimbursement of Service Tax** : The service tax claimed in the first Running Account Service Invoice will be paid by BHEL. For subsequent invoices, Service Tax amounts

will be paid only on production of proof for having remitted the previous service tax amounts paid by BHEL

- 17.0 **PAYMENT TERMS** : All payments for the works completed shall be paid based on bills raised by the contractor as payment terms and certified by Engineer-in-Charge of BHEL. **Payment will be made within a period of 30 days from the date of submission of bills along with all the enclosures as called for by BHEL. Payment will be only through e-payment** (through electronic fund transfer (EFT) / RTGS) only after deducting Bank charges as per BHEL terms of payment indicated below.
- 17.1 **DETAILS OF PAYMENT TERMS** : Refer clause 4.20. of Special Conditions of Contract for Electrical and C & I works **Section-IV** for details of terms of payment.
- 17.2 **The tenderer has to furnish information called for in the APPENDIX-I & II attached with this booklet.** The details pertaining to the Bank Accounts where proceeds will be transferred through BHEL's Banker is to be furnished.
- 17.3 Copies of EPF remittance challans, ESI / Insurance remittances, Wage register, attendance register etc of the workers pertaining to the site of work and period applicable shall be attached to every bill submitted, failing which bills will not be processed. Copies of half yearly and annual EPF returns for the workers have also to be submitted, if required.
- 18.0 **PERIOD OF CONTRACT** : The tendered works shall be executed within the following tentative time schedule. The total **period of contract for the tendered scope of work is 3 (three) months** which will be reckoned from the date of commencement of erection work at site.
- 18.1 **Tentative Schedule** : Erection, Testing and commissioning of Electrical components of the ESP and ID FAN ..... **From September 2011 to November 2011**
- 18.2 BHEL is endeavoring to prepone the commissioning of ESP system to meet the Customer requirement. The Contractor has to mobilize all resources to meet BHEL / Customer schedule.
- 18.3 The Contractor has to submit a bar chart indicating various activities for erection of the equipments to complete entire erection work within the duration (Weekly) to meet out the above scheduled period. However, the contractor shall have to start the erection work as per instructions of BHEL Engineer at site.
- 18.4 The contractor shall mobilise the resources like manpower, cranes, consumables, tools and plants required to complete the entire work with in the above said schedule.
- 19.0 **LIST OF TOOLS & TACKLES** : The list of Tools and tackles, cranes etc proposed to be deployed by the contractor shall be given along with the offer.
- 20.0 **G.A Drawing** : Not applicable
- 21.0 **LIQUIDATED DAMAGES** : The total contract period shall be **03 months** from the date of commencement of erection work at site. However, there shall be a grace period of 03 ( three ) months in the overall contract time schedule towards any delay in provision of inputs from BHEL. In case of no delay in providing inputs from BHEL, this grace period will not apply. Tenderers may note that, in case the work completion gets delayed and the contract period goes into the grace period as explained above, no compensation shall be paid till completion of grace period. However, if the work completion gets delayed and the contract period goes into grace period due to reasons attributable to the tenderer, penalties as per provisions of contract (clause No.2.7.5 of

General conditions of Contract for Works) shall apply. All decisions of BHEL in this regard will only be final and binding on the tenderer.

22.0 **EXTRA CHARGES FOR MODIFICATION AND RECTIFICATION WORKS**: Refer Section-VIII of the special conditions of contract.

23.0 **OVER-RUN COMPENSATION (ORC)**: Refer Section-IX of the special conditions of contract.

24.0 **The following documents enclosed shall also form part of the tender:**

- a. Technical Description – (Annexure- I)
  - b. Statutory requirement of contract (ES:F:009)
  - c. General terms and conditions of work (ES:F:010)
  - d. Special & Common conditions of Contract for Electrical works (ERN:ELEC:SPN:01)
  - e. Special Conditions of Contract – ( Section –VI and VII)
  - f. General Terms and Conditions for REVERSE AUCTION (SECTION-VIII)
  - g. Appendix-I, II and III
-

TENDER SPECIFICATION NO. BAP:ERN:RTPS:ESP:ELEC:C:224

**ANNEXURE – I**

**TECHNICAL DESCRIPTION**

The technical description given below is only for the purpose of a general understanding of the major equipment, the electrical components of to be erected and commissioned . This does not constitute the complete scope of work. The complete scope of work shall be as per the detailed tender specification and bill of quantities.

**WORKING PRINCIPLE OF ELECTROSTATIC PRECIPITATOR**

The Precipitator essentially consists of two sets of electrodes called ‘collecting electrodes’ and ‘emitting electrodes’ (also discharge electrodes). The collecting electrode is made up of steel sheet pressed to a special profile and the emitting electrode is a thin wire drawn to a helical form. A unidirectional high voltage is applied between these electrodes, connecting its negative polarity to collecting electrodes which are also earthed. The dust laden flue gas from boiler passes between rows of collecting and discharge electrodes. The high voltage includes ionization of gas molecules adjacent to the negatively charged emitting electrodes. The positive charges of the ions created travel towards the discharge electrodes and the negative charges towards the collecting electrodes. On their way to the collecting electrodes, the negative charges got deposited on the dust particles. Thus the dust particles are electrically charged, In the presence of high electric field between the electrodes charged dust particles experience a force which causes the particles to move of them A minor portion of the dust particles which have acquired positive charges got deposited on the emitting electrodes. Periodically these are dislodged from the electrodes by a process called rapping. The particles then fall into hoppers at the bottom.

**CONSTRUCTIONAL FEATURES OF ELECTROSTATIC PRECIPITATOR**

The Electrostatic Precipitator may be divided into two major groups viz-electrical parts and mechanical parts. The electrical parts comprise of Service Transformer, Switch Gear Panels, High Voltage Rectifiers, Main and Auxiliary Controls, Electronic Control Panel, Heaters, Ash Level Indicators and Interlocks. The mechanical parts constitute the precipitator proper which consists of casing and functional parts forming internals of the precipitator.

**ELECTRICS:**

The precipitator is powered by High Voltage Rectifier transformers (HVR) mounted on the roof. Erection of HVR is carried out by the Mechanical erection contractor. The main electrical control cubical for these is located on the ground level. The Auxiliary Control panel containing programmers, relay switches etc., is also located at the ground level. The erection of main control panel, auxiliary control panel and inter connecting cables, cable trays, LT switchboard are included in the contractor’s scope. Electrostatic Precipitator is high voltage equipment. Safety of the operating personnel and protection of the equipment are ensured by an interlocking system. These interlocks are provided for the inspection doors on hoppers, wall panels, insulator housings, disconnecting switch etc.

**GENERAL DESCRIPTION OF ID FAN**

The ID FAN is of double suction radial type ( NDZV 22) . The rotor of this fan is of simply supported design i.e. the impeller is positioned in between bearing. Each fan consists of Casing, Bearings, Impeller, Damper control, Shaft, Lub oil system and Drive Motor.

**CAPACITY CONTROL OF ID FAN**

The capacity of the fan is regulated by speed control thro’ Variable Frequency Drive ( VFD) and by Inlet damper. The Damper includes a number of blades, which in partially closed position impart a swirl to given an improved performance. Damper blades are controlled by means of operating a single control lever from an external actuator. Erection , testing and commissioning of the VFD panels are in the scope of work.

# STATUTORY REQUIREMENT

*OF*

# CONTRACT

**ES : F : 009**



R 05- 275

**ERECTION SERVICES DEPARTMENT**  
**BHARAT HEAVY ELECTRICALS LIMITED**  
( A Government of India Undertaking )  
**BOILER AUXILIARIES PLANT**  
**INDIRA GANDHI INDUSTRIAL COMPLEX**  
RANIPET – 632 406

**BHARAT HEAVY ELECTRICALS LIMITED  
BOLIER AUXILIARIES PLANT  
INDIRA GANDHI INDUSTRIAL COMPLEX  
RANIPET –632 406.**

**TENDER SPECIFICATION NO. BAP:ERN:RTPS:ESP:ELEC:C:224**

**CHECK LIST**

**Tenderers are required to fill in the following details:**

- |   |                   |
|---|-------------------|
| <b>1. a. Name of the Tenderer<br/>With address</b>  | <b>:</b>          |
| <b>b. Nature of Firm</b>  | <b>:</b>          |
| <b>2. Whether EMD submitted as per tender<br/>Specification Terms and conditions</b>                        | <b>: YES / NO</b> |
| <b>3. Validity of offer (offer shall be kept valid for<br/>acceptance for a period of minimum 6 months)</b> | <b>: YES / NO</b> |
| <b>4. Whether tenderer visited the erection Site and<br/>acquainted with Site Conditions before quoting</b> | <b>: YES / NO</b> |
| <b>5. Whether the following details are furnished.</b>  |                   |
| <b>a. Previous Experience – Photocopies as in QR</b>  | <b>: YES / NO</b> |
| <b>b. Present assignments</b>   | <b>: YES / NO</b> |
| <b>c. Organization chart of the Company</b>   | <b>: YES / NO</b> |
| <b>d. Financial status of the Company</b>   | <b>: YES / NO</b> |
| <b>e. In case of Company, proof of<br/>registration of the Company</b>                                      | <b>: YES / NO</b> |
| <b>f. Memorandum and Articles of Association of<br/>Company / copy of Partnership Deed.</b>                 | <b>: YES / NO</b> |
| <b>g. Profit and Loss Account For the last three Years</b>  | <b>: YES / NO</b> |
| <b>h. Balance sheet for the last three years</b>  | <b>: YES / NO</b> |
| <b>i. Income Tax clearance Certificates</b>   | <b>: YES / NO</b> |
| <b>j. Solvency Certificate from a Nationalized Bank</b>   | <b>: YES / NO</b> |
| <b>k. Power of Attorney of the person signing the tender<br/>duly attested by a Notary Public</b>           | <b>: YES / NO</b> |

- l. Names and addresses of Directors, Partners their Experience and qualification : YES / NO**
- m. Manpower Organization chart and Tools list with deployment plan at Site for satisfactory completion of work under this specification : YES / NO**
- n. EPF registration No. ( with a copy of certificate) : YES / NO**
- o. Service Tax registration No. ( with a copy of certificate) : YES / NO**
- p. E- payment acceptance as per appendix. : YES / NO**
- q. Rate schedule as per the schedule appended : YES / NO**
- 6. Whether the Tenderer is conversant with local labour laws and 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) filled : YES / NO**
- 9. Whether the erection schedule (as per appendix enclosed) furnished : YES / NO**
- 10. Whether all the pages are read, understood and signed : YES / NO**

**SIGNATURE OF TENDERER**

**NOTE : The tenderers are requested to peruse the Tender Specification terms and conditions carefully and furnish the above information also in detail as required.**

**TENDER SPECIFICATION No. : BAP:ERN:RTPS:ESP:ELEC:C:224**

**CERTIFICATE OF NO DEVIATION**

I / We .....of M/s .....  
hereby certify that there is no deviation from the Tender conditions either technical  
or commercial and I am / We are agreeing to all the terms and conditions mentioned  
in the Tender Specification (No. : **BAP:ERN:RTPS:ESP:ELEC:C:224**).

**Date :**

**SIGNATURE OF THE TENDERER**

**TENDER SPECIFICATION No. : BAP:ERN:RTPS:ESP:ELEC:C:224**

**DECLARATION SHEET**

I, .....  
hereby certify that all the information and data furnished by me with regard to this Tender Specification No. BAP : ERN : RTPS: ESP: ELEC: C :224 are true and complete to the best of my knowledge. I have gone through the specification, conditions and stipulations in detail and agree to comply with the requirements and intent of specifications. 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 AND ADDRESS:

AUTHORISED REPRESENTATIVE'S SIGNATURE  
WITH NAME AND ADDRESS

**FINANCIAL VIABILITY**

1. **Owner's Capital in the business**  
(In case of Partnership please : Rs.  
Mention percentage of shares and  
Amount)
  
2. **Quantum of business done during : Rs.**  
Last three financial years.
  - 1.
  - 2.
  - 3.
  
3. **Value of Fixed Assets of the : Rs**  
business in last three years
  - 1.
  - 2.
  - 3.
  
4. **Guarantee limits (if any) : Rs.**  
Enjoyed by the firm
  
5. **Overdraft limits (if any) : Rs.**  
Enjoyed by the firm
  
6. **Income Tax paid during the last  
three Years : Rs.**
  
7. **Please state whether audited :  
profit and Loss Account and  
Balance Sheet for last 3 Years  
and Solvency Certificate are  
Enclosed.**

**Signature of the Tenderer**

## **ORGANISATION STRUCTURE**

- 1. Management structure of the firm:  
Whether public limited / Private Limited / Sole Proprietorship / Partnership.**
- 2. Details of the staff presently on permanent rolls of the organization.**
  - a) Engineering / Supervisory Staff.**

---

<b>Sl. No.</b>	<b>Name and Designation</b>	<b>Qualification</b>	<b>Experience</b>	<b>Proposed to be deployed at Site for this job</b>	<b>Remarks if any</b>
----------------	-----------------------------	----------------------	-------------------	---	-----------------------

---

---

**Signature of the Tenderer**

**b) Details of Technical staff:**

<b>Sl. No.</b>	<b>CATEGORY</b>	<b>Total Number on Rolls</b>	<b>Numbers Proposed to be deployed at site for this job</b>
01.	Supervisors / Foreman		
02.	Store Keepers		
03.	Electrician		
04.	Fitters		
05.	Welders		
06.	Sarang		
07.	Rigger		
08.	Painter		
09.	Light Vehicle Driver		
10.	Heavy vehicle Driver		
11.	Semi-skilled worker		
12.	Unskilled Worker		
13.	Crane Operators		
14.	Crane Maintenance Staff		
15.	Other vehicles maintenance staff		
16.	Other category of staff, if any		

**Signature of the Tenderer**

**FACILITIES FOR STAFF & WORKERS AT SITE**

**1. ACCOMMODATION:**

**a) For Engineer / Supervisor / other staff**

<b>Sl. No.</b>	<b>Category</b>	<b>Type of accommodation</b>	<b>Facilities provided</b>	<b>Remarks if any</b>
----------------	-----------------	------------------------------	----------------------------	-----------------------

---

**b) No. of quarters, plinth area of each quarter and estimated cost proposed to be constructed for workmen.**

**1. MEDICAL:**

**2. CONVEYANCE:**

**3. OTHER AMENITIES:**

**Signature of the Tenderer**

SCHEDULE TO BE FURNISHED BY THE TENDERER

- 1. Tenderer shall submit a detailed write – up on his erection plan along with the offer indicating how he proposes to achieve the milestone dates, giving details of erection sequence, manpower deployment plan and T&P deployment plan for monthly erection activities.
- 2. Tenders received without above documentary proof are liable to be rejected summarily.
- 3. The Tenderer is required to submit following schedule along with his offer.

**SCHEDULE ‘A’: Construction power and electricity required for residence/ labour hutments/ Office / stores / workshop sheds, etc. of the tenderer in the following format.**

a) Construction power required

Average

Peak

Amp .....

KVA .....

b) Electricity required for labour hutments / residences /Office & Storage sheds

Average

Peak

Amp .....

KVA .....

**SCHEDULE ‘B’**

**Proposed rate of erection plan day/week/month wise.**

**SCHEDULE ‘C’**

**Consumption of gases, electrodes and other consumables.**

**SCHEDULE ‘D’**

**Day/ week/ month wise deployment of skilled / semiskilled / unskilled and other categories of workers to suit the above programme.**

**SCHEDULE ‘E’**

**PERT Bar chart showing milestones dates.**

- 4. Tender offers are liable to be rejected in the event of non-submission of above schedules along with the offer complete with all the details asked for.

**Note: Contractor may also indicate their ability in completing the contract in all respects within a shorter period than that mentioned.**

**ANALYSIS OF UNIT RATE QUOTED**

<b>Sl. No.</b>	<b>Description</b>	<b>Percentage of the unit rate quoted</b>	<b>Remarks if any</b>
<b>01.</b>	<b>Site facilities viz. electricity, water, workshop and other infrastructure facilities</b>		
<b>02.</b>	<b>Salary &amp; wages for staff and workers</b>		
<b>03.</b>	<b>Consumables</b>		
	<b>a) Gases</b>		
	<b>b) Electrodes</b>		
	<b>c) Steel materials</b>		
	<b>d) Others</b>		
<b>04.</b>	<b>Depreciation and maintenance for T&amp;P, other items</b>		
<b>05.</b>	<b>Establishment and Administration expenses of sites</b>		
<b>06.</b>	<b>Retrenchment benefit</b>		
<b>07.</b>	<b>Overheads</b>		
<b>08.</b>	<b>Extra work incidental to erection</b>		

**NOTE: All Tenderers are requested to take care that the rates quoted by them are not disclosed in any way while furnishing the above details.**

**Signature of the Tenderer**

## A - 1

**STATUS OF TOOLS & PLANTS**

List of equipments / Machinery / T&P owned by the contractor and proposed to be deployed by the contractor for this work.

NOTE: Tenderers are required to furnish the details as desired below with regard to the equipments machinery, tools & plants, consumables and workshop facilities owned by them along with documentary proof for the same.

Sl. No.	Name of the equipments	Total Qty. Available	Quantity Proposed to be Deployed	Type Capacity Specification	Year of make	Date of Purchase	Registration Number	Present Location	Utility Factor of the Machine
1	2	3	4	5	6	7	8	9	10
01	10 MT Capacity Electric Winches								
02	a) 18T / 16T /12T Capacity Mobile crane b) 75 T/ 100 T capacity crane for erection purposes.								
03	5T or 8T Capacity fork-lift or Hydromack								
04	Tractor Trailors								
05	Trucks								
06	Wooden sleeper for use in the Stores. Storage yard,								

Signature of the Tenderer

---

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

---

07. DC Welding Generator with cables

08. Welding transformer with cables

09. Air Compressors

10. Electrical winches

5T Capacity

3T Capacity

2T Capacity

11. Hand winches

12. Hydraulic Torque wrenches

13. Electrode drying oven

14. Portable electrode drying oven

15. Spur gear chain pulley block

5T Capacity

3T Capacity

2T Capacity

16. Gas cutting set with hoses

---

Signature of the Tenderer

---

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

---

## 17. Hydraulic jacks

5T Capacity

10T Capacity

20T Capacity

## 18. Low voltage transformer with

Hand lamps

## 19. Single sheave snatch pulley blocks

5T Capacity

10T Capacity

20T Capacity

## 20. Double sheave pulley blocks

3T Capacity

5T Capacity

10T Capacity

## 21. 3T Capacity D shackle

## 22. 5T Capacity D shackle

## 23. 10T Capacity D shackle

## 24. 20T Capacity D shackle

---

Signature of Tenderer

---

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

---

25. Various sizes of portable grinders

26. Bench grinder

27. Heavy duty high speed portable grinder

28. Flexible shaft grinders

29. Pneumatic drill ½” & 1”

30. Torque wrenches     300mm  
                                  450mm  
                                  600mm

31. Pull lifts 1.5T Capacity  
                          3T Capacity  
                          6T Capacity

32. Compensating Cables

33. Steel wire ropes for guy ropes

**34. Details of tools & tackles / measuring instruments / devices given in Appendix-I**

---

Signature of the Tenderer

**ANALYSIS OF SIMILAR JOBS EXECUTED / IN PROGRESS IN THE LAST SEVEN YEARS**

---

Sl. No.	Details of Jobs executed / In progress With location of projects	Financial value of the contracts	Number of Strikes / work stoppages with duration and mandays Lost during Execution of job	Number of accidents (fatal / Minor)	Details of insurance provided for the workers for accidents / deaths	Details of safety equipments provided for workers
1	2	3	4	5	6	7

---

Signature of the Tenderer

## B – II

**( FOR ESP PROJECTS ONLY )**

---

Sl. No.	Name of the Project with unit capacity	Date of letter of Intent	Date of start of erection	Date of collecting electrode Loading	Trial run of rapping motors	Date of air tightness test	Date of GD test	Testing & commissioning
1	2	3	4	5	6	7	8	

---

Signature of the Tenderer

# GENERAL CONDITIONS OF CONTRACT

FOR

WORKS

( SECTION – I & II )

**ES : F : 010**



**ERECTION SERVICES DEPARTMENT**

**BHARAT HEAVY ELECTRICALS LIMITED**

( A Government of India Undertaking )

BOILER AUXILIARIES PLANT

INDIRA GANDHI INDUSTRIAL COMPLEX

RANIPET – 632 406

**BHARAT HEAVY ELECTRICALS LIMITED**  
**BOILER AUXILIARIES PLANT**  
**RANIPET 632 406**  
**GENERAL CONDITIONS OF CONTRACT FOR WORKS IN ERECTION SERVICES DEPARTMENT OF**  
**BHARAT HEAVY ELECTRICALS LIMITED (RANIPET)**

**SECTION -I**

**1. GENERAL INSTRUCTIONS TO TENDERERS**

**1.1. DESPATCH INSTRUCTIONS:**

- 1.1.1.** This tender specification as a whole, duly furnishing all the details required and other documents as required in the following pages, shall be duly signed and sent in a sealed cover duly super scribing the name of work as given in the tender notice.
- 1.1.2.** The tender shall be addressed to Officer inviting tender as indicated in the tender notice.
- 1.1.3.** Tenders submitted by post shall be sent by “REGISTERED POST WITH ACKNOWLEDGEMENT DUE “ and shall be posted with the due allowance for any postal delay. The tenders received after the due date and time of opening are liable to be rejected. Telegraphic offers and offers received by telex may not be considered.
- 1.1.4.** Tenders shall be opened by authorized officer of BHEL at his office at the time and date as specified in the tender notice in the presence of such of those tenderers or their authorized representatives who may be present.
- 1.1.5.** The Tenders shall closely pursue all the clauses, specifications and drawings indicated in the tender documents before quoting. Should the tenderer have any doubt the meanings of any portion of the tender specification or find discrepancies or omission in the drawings or the tender documents issued are in complete or shall require clarification on any of the technical aspect, scope of work etc., he shall at once contact the authority inviting the tender for clarification before the submission of the tender.
- 1.1.6.** Before tendering, the tenderers are advised to inspect the site of work and the environments and be well acquainted with the actual working and other prevalent conditions, facilities available, position of material and labour. No claim will be entertained later, on the ground of lack of knowledge.
- 1.1.7.** Tenderer must fill up all the schedules and furnish all the required information as per the instructions given in various sections of the tender specification. Each and every page of the Tender Specification must be signed and submitted along with the offers by the tenderer in token of complete acceptance thereof . The informations furnished shall be completed by itself.
- 1.1.8.** The tenderers shall quote the rates in English language and international numerals. These rates shall be entered in figures as well as in words. In case of difference in rates between words and figures, the least of the two will be treated as valid rate. **In case of any discrepancy between the Unit rate quoted and the Total Price due to arithmetical errors, the Unit rate quoted will be considered valid and the Total price will be corrected accordingly.** For the purpose of the tender, the metric system of units shall be used.
- 1.1.9.** All entries in the tender shall either be typed or be written in ink. Erasers and overwriting are not permitted and may render such tenders liable to summary rejection. All cancellations and insertions shall be duly attested by the tenderer.

**1.2. QUALIFICATION OF TENDERERS:**

Only tenderers who have previous experience in the work of this nature and description detailed in this tender specification are expected to quote for this work duly submitting details of experience along with the offer. Offers from tenderers who do not have proven and established experience in the field are not likely to be considered.

**1.3. DATA TO BE ENCLOSED:**

Full information shall be given by the tenderer in respect of the following. Non-submission of these information may lead to rejection of the offer.

**1.3.1. FINANCIAL STATUS:**

A certificate from Scheduled Bank to prove his financial capacity to undertake the work duly indicating financial limits the tenderer enjoys or solvency certificate from the concerned Government authority. Informations required in Annexure A, shall be furnished by the tenderer along with the offer.

**1.3.2. INCOME TAX CERTIFICATE:**

A certificate of Income Tax clearance from the appropriate authority in the forms prescribed there for indicating annual turnover and the Sales Tax clearance certificate from the appropriate authorities as prescribed by the concerned state government, if any. These certificates shall be valid for one year from the date of issue or for the period prescribed therein for all tenders submitted during the period.

**1.3.3. PREVIOUS EXPERIENCE:**

A statement giving particulars duly supported by documentary evidence of the various services rendered for each similar work by the tenderer indicating the particulars, value of each work, the site location, the duration, date of completion, a list of site locations and particulars and value of various services that are under progress. Information required in Annexure –BI & BII shall be furnished by the tenderers along with the offer.

**1.3.4. ORGANISATION CHART:**

The Organisation pattern that is presently available with the tenderer and that will be employed by the tenderer for this work shall be furnished.

**1.3.5.** An attested copy of the Power of Attorney, in case the tender is signed by an individual other than the sole proprietor, shall also be attached. (If it is a Company or Firm, etc., Director/Managing Partner as the case may be is required to sign)

**1.3.6. IN CASE OF AN INDIVIDUAL:**

His full name, address and place and nature of business shall be indicated.

**1.3.7. IN CASE OF PARTNERSHIP FIRMS:**

The names of all the partners and their addresses be furnished along with a copy of the partnership deed/instrument of partnership duly certified by Notary Public shall be enclosed.

**1.3.8. IN CASE OF COMPANIES:**

Date and place of registration including date of commencement certificate in case of public companies (certified copies of Memorandum and Articles of Association are also to be furnished) are to be furnished.

**1.3.9.** Nature of business carried on by the Company and the provisions of the Memorandum relating there of shall be furnished.

**1.3.10** Names and particulars including addresses of the Directors and their previous experiences shall be furnished.

**1.3.11** A list of tools and tackles that the tenderer is having and those that will be used on this job shall be furnished.

**1.3.12** In addition to the above, the particulars required in various annexure shall also be furnished.

**1.4. EARNEST MONEY DEPOSIT:**

**1.4.1.** Every tender must be accompanied by the prescribed amount of Earnest Money Deposit in any one of the following forms.

**1.4.1.1.EMD shall be deposited in cash ( as permissible under income tax act ), Payorder or Demand Draft ( payable at Ranipet in favour of “Bharat Heavy Electricals Ltd.,” ) only. No other form of EMD remittance shall be acceptable to BHEL.**

**1.4.1.2.**In case of payment of EMD in the form of Cash, the amount should be remitted by the tenderer to the Cash Office of Bharat Heavy Electricals Limited, BAP,Ranipet-632 406 during it's working hours and cash receipt issued shall be enclosed along with the tender.

**1.4.2.** Tenders received without Earnest Money in full in the manner prescribed above are liable to be rejected.

**1.4.3.** The Earnest Money Deposit of the successful tenders may be retained towards part of Security Deposit.

**1.4.4.** In the case of unsuccessful tenderers, the Earnest Money will be refunded to them within a reasonable time after finalisation of the tender.

**1.4.5.** Earnest Money Deposit by the tenderer will be forfeited as per tender documents if the tenderer:

**1.4.5.1.**Fails to communicate unqualified acceptance of Letter of Intent within 15 days of date of Letter of Intent.

**1.4.5.2.**Does not commence the work within the period as per LOI/Contract. In case the LOI/Contract is silent in this regard then within fifteen days after award of contract.

**1.4.5.3.**After opening of Tender, revokes/withdraws his tender within the validity period or revises/alters his earlier quoted rates/conditions.

**1.4.5.4.**Fails to submit SD as indicated in the Letter of Intent.

**1.4.6.** Earnest Money deposit shall not carry any interest.

## **1.5. AUTHORISATION AND ATTESTATION:**

**1.5.1.** Tenders shall be signed by persons duly authorized /empowered to do so. Certified copies of such authority and relevant documents shall be submitted along with the tenders.

## **1.6. VALIDITY OF OFFER:**

The rates in the Tender shall be kept open for acceptance for a minimum period of six months from the date of opening of tenders. In case the Bharat Heavy Electricals Limited calls for negotiations such negotiations shall not amount to cancellation or withdrawal of the original offer , which shall be binding on the tenderers.

## **1.7. EXECUTION OF CONTRACT:**

The successful tenderer's responsibility under this contract commences from the date of issue of the Letter of Intent by Bharat Heavy Electricals Limited. The successful tenderer shall be required to execute an agreement in the prescribed form (Annexure-D) with BHEL within a reasonable time after the acceptance of his tender and in any case before submitting the first bill for payment. The expenses for completion, stamping and registration of the agreement with prescribed authority, if necessary, shall be borne by the Contractor.

## **1.8. SECURITY DEPOSIT:**

**1.8.1.** Upon acceptance of tender, the successful tenderer within the time specified in the letter of intent must deposit the required amount of Security Deposit for satisfactory execution of work and shall not commence work under this contract before remitting security deposit except as directed by BHEL.

### **1.8.2. The total amount of Security Deposit shall be as follows:**

**1.8.2.1.**In the case of work costing up to Rs.10 lakhs – 10% of the quoted value.

- 1.8.2.2.**In the case of work costing Rs.10 lakhs to Rs.50 lakhs – Rs.1 lakh plus 7.5% of the amount exceeding Rs.10 Lakhs.
- 1.8.2.3.**In the case of work costing more than Rs.50 Lakhs – Rs.4 lakhs plus 5% of the amount exceeding Rs.50 Lakhs.
- 1.8.3. The Security Deposit may be furnished in any one of the following forms:-**
- 1.8.3.1.**Cash ( as permissible under the income tax act ).
- 1.8.3.2.** Payorder , Demand Draft in favour of BHEL.
- 1.8.3.3.** Local cheques of Scheduled Banks, subject to realization.
- 1.8.3.4.** Securities available from Post Offices such as National saving Certificates, Kisan Vikas Patras etc. (Certificates should be held in the name of contractor furnishing the security and duly pledged in favour of BHEL and discharged on the back).
- 1.8.3.5.**Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the companies act subject to a maximum of 50% of the total security deposit value. Balance 50% has to be remitted either by cash or in the other form of security. The Bank Guarantee format should have the approval of BHEL (Annexure-E). The Bank Guarantee furnished towards Security Deposit should be kept valid by proper renewal till the expiry of 6 Months after the said work is actually completed.
- 1.8.3.6.**Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the companies act. The FDR should be in the name of the contractor, account BHEL, duly discharged on the back.
- 1.8.3.7.**Security deposit can also be recovered at the rate of 10% from the running bills. However in such cases atleast 50% of the security deposit ( as Bank Guarantee or Demand Draft ) should be remitted before start of the work and balance 50% may be recovered from the running bills till the full Security Deposit is made up.
- 1.8.3.8.**EMD of the successful tenderer may be converted and adjusted against the security deposit on specific request by the contractor.
- 1.8.3.9.** Acceptance of security deposit as per clause 1.8.3.4 and 1.8.3.6 above will be subject to hypothecation or endorsement on the documents in favour of BHEL. However, BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith.
- 1.8.4.** If the value of the work done at any time exceeds the accepted agreement value, the security Deposit shall be correspondingly enhanced and the extra Security Deposit shall be immediately deposited by the Contractor or recovered from payments due to him.
- 1.8.5** Failure to deposit the Security Deposit within the stipulated time, may lead to forfeiture of Earnest Money and cancellation of the award of work.
- 1.8.6** If any part of Security Deposit of the Contractor is held in the form of approved securities it shall be kept transferred in the name of Bharat Heavy Electricals Limited, Ranipet, in such a manner that the same can be realized fully without referring to the Contractor, BHEL shall not be responsible for any depreciation in the value of the Security while in BHEL's custody or for any loss of interest thereon.
- 1.8.7** BHEL reserves the right to forfeiture of Security Deposit in addition to the other claims and penalties in the event of the Contractor's failure to fulfill any of the Contractual obligation including liquidation or bankruptcy of the contractor, non-payment of money payable by means of arbitration award in favour of BHEL or in the event of termination of Contract as per terms and conditions of Contract. BHEL reserves the right to set off the Security Deposit, against any claims of any other contracts with BHEL.

**1.8.8 RETURN OF SECURITY DEPOSIT:**

If the Contractor performs and completes the work in all respects to the entire satisfaction of BHEL and presents an absolute “No Demand Certificate” in the prescribed form (Annexure-F) and returns properties belonging to BHEL handed over, lent or hired by him for carrying out the said works, Security Deposit will be released to the Contractor after deducting all cost of expenses or other amounts that are to be paid to BHEL under this or other contracts entered into with the Contractor. **It may be noted that in no case the Security Deposit shall be refunded/released prior to passing of final bill.**

**1.9. REJECTION OF TENDER AND OTHER CONDITIONS**

- 1.9.1.** The acceptance of Tender will rest with BHEL which does not bind itself to accept the lowest tender or any tender and reserves to itself full rights for the following without assigning any reasons whatsoever.
- 1.9.1.1.** To reject any or all of the tenderers.
- 1.9.1.2.** To split up the work amongst two or more Tenderers.
- 1.9.1.3.** To award the work in part.
- 1.9.1.4.** Either of the contingencies stated in (1.9.1.2) and (1.9.1.3) above to modify the time for completion suitably.
- 1.9.2.** Conditional and Unwitnessed tenders, tenders containing absurd or unworkable rates and amounts and tenders which are incomplete and otherwise considered defective and tenders not in accordance with the tender conditions, specifications, etc., are liable to be rejected.
- 1.9.3.** If a tenderer expires after the submission of his/her tender or after the acceptance of his/her tender, BHEL may at their discretion cancel such tender. If a partner of a firm expires the submission of the tender or after the acceptance of the tender, BHEL may cancel such tender at their discretion unless the firm retains its character.
- 1.9.4.** BHEL will not be bound by any power of Attorney granted by the tenderer or by changes in the composition of the firm made subsequent to the execution of the Contract. They may, however recognize such power of Attorney and changes after obtaining proper legal advice, the cost of which will be chargeable to the contractor concerned.
- 1.9.5.** If the tenderer deliberately gives wrong information in his tender, BHEL reserves the right to reject such tender at any stage or cancel the contract, if awarded. The Earnest Money/Security Deposit /any other money due shall also be forfeited.
- 1.9.6.** Canvassing in any form in connection with the tender is strictly prohibited and the tenders submitted by the contractors who resort to canvassing in any form are liable to rejection.
- 1.9.7.** Should a tenderer or contractor or in the case of a firm or company of contractors one or more of its partners/share holders/Directors have a relation or relations employed in BHEL, the authority inviting tender shall be informed of the fact along with the offer, failing this BHEL may, at its sole discretion reject the tender or cancel the contract and forfeit the Earnest Money/Security Deposit.
- 1.9.8.** The successful tenderer should not sub-contract the part or complete work detailed in the tender specification undertaken by him without written permission of BHEL. The tenderer is solely responsible to BHEL for the work awarded to him.
- 1.9.9.** No deviation from the tender tender specification shall be acceptable to BHEL. Tenderers shall confirm their unqualified acceptance of the terms and conditions by giving an undertaking to this effect in a separate letter as specified by BHEL.
- 1.10. NO INTEREST shall be payable by BHEL on Earnest Money / Security Deposit / or any money due to the Contractor by BHEL.**

## SECTION -II

### 2.1. DEFINITION:

The following terms shall have the meaning hereby assigned to them except where the context otherwise requires.

- 2.1.1. BHEL or (B.H.E.Ltd)** shall mean Bharat Heavy Electricals Limited a Company registered under Indian Companies Act 1956, with its Registered Office at BHEL House, Siri fort, New Delhi 110 049 or its Authorised Officers or its Resident Engineer or other employees authorized to deal with any matters with which these persons are concerned on its behalf.
- 2.1.2. “GENERAL MANAGER”**  
shall mean the Officer in Administrative charges of contracting unit of BHEL.
- 2.1.3. “ENGINEER”** or “ENGINEER IN CHARGE” shall mean Engineer who is in-charge for the works referred in Erection Services. The term also includes PROJECT MANAGER, “RESIDENT MANAGER” “SITE ENGINEER “ “ RESIDENT MANAGER” and “ASSISTANT SITE ENGINEER “ of BHEL at the site as well as the Officers incharge at Head Office.
- 2.1.4. “SITE”** shall mean the place or places at which the plants/equipments are to be erected and services are to be performed as per the specification of this contract.
- 2.1.5. “CLIENTS OF BHEL”** or “CUSTOMER” shall mean the project authorities to whom BHEL is supplying the equipments.
- 2.1.6. “CONTRACTOR”** shall mean the individual, firm or company who enters in to this contract with BHEL and shall include their executors, administrators, successor and permitted assignees.
- 2.1.7. “CONTRACT”** or “CONTRACT DOCUMENT” shall mean/and include the agreement or work order, the accepted appendices of rates, schedules, quantities, if any and general conditions of contract, the special conditions of contract, instructions to the tenderers, the drawings, the technical specifications, the special specifications, if any, the tender documents and the Letter of Intent/Acceptance Letter issued by BHEL. Any conditions or terms stipulated by the contractor in the tender document or subsequent letters shall not form part of the contract unless specially accepted in writing by BHEL, in the Letter of intent and incorporated in the agreement.
- 2.1.8. “GENERAL AND SPECIAL CONDITIONS OF CONTRACT”** shall mean the “Instructions to Tenderers and General and Special Conditions of Contract” pertaining to the work for which the tenderers are called for.
- 2.1.9. “TENDER SPECIFICATIONS”** shall mean the “SPECIFIC CONDITIONS, Technical specifications, appendices, site informations and drawings” pertaining to the work in which the tenderers are required to submit their offer, Individual specification number will be assigned to each tender specification..
- 2.1.10. “TENDER DOCUMENTS”** shall mean the General and Special Conditions of Contract(2.1.8) and tender specification(2.1.9).
- 2.1.11. “LETTER OF INTENT”** shall mean the intimation by a letter to the tenderer that the tender has been accepted in accordance with provisions contained in that letter. The responsibility of the contractor commences from the date of issue of this letter and all the terms and conditions of contract are applicable from this date.
- 2.1.12. “COMPLETION TIME”** Shall mean the period by date specified in the acceptance of tender or date mutually agreed upon for handing over of the erected equipment/plant which are found acceptable by the Engineer being of required standard and conforming to the specifications of the contract.

- 2.1.13. “PLANT”** shall mean and cannot be the entire assembly of the plant and equipments covered by the contract.
- 2.1.14. “EQUIPMENT”** shall mean all equipments, machinery, materials, structurals, electricals and other components of the plant covered by the contract.
- 2.1.15. “TESTS”** shall mean and include such test or tests to be carried out on the part of the contractor as are prescribed in the contract or considered necessary by BHEL in order to ascertain the quality, workmanship, performance and efficiency of the contract work or part thereof.
- 2.1.16. “APPROVED” “DIRECTED” or “INSTRUCTED”** shall mean approved, directed or instructed by BHEL.
- 2.1.17. “WORK OR CONTRACT WORK”** shall mean and include supply of all categories of labour specified consumables, tools and tackles required for complete and satisfactory site transportation handling, stocking, storing, erecting, testing, and commissioning of the equipments to the entire satisfaction of BHEL.
- 2.1.18. “SINGULAR AND PLURAL ETC”** works carrying singular number shall also include plural and vice versa, where the context so required. Words importing the masculine gender shall be taken to include the feminine gender and words imparting persons shall include any company or association or body of individuals, whether incorporated or not.
- 2.1.19. “HEADINGS”**  
The headings in these general conditions are solely for the purpose of facilitating reference and shall not be deemed to be part thereof or be taken into consideration in the interpretation or construction thereof or of the contract.
- 2.1.20. “MONTH”** shall mean calendar month, unless specified otherwise in the tender.
- 2.1.21. “WRITING”** shall include any manuscript typewritten or printed statement under the signature of BHEL.
- 2.2. LAW GOVERNING THE CONTRACT AND COURT JURISDICTION**  
The contract shall be governed by the Law for the time being in force in the Republic of India, and shall be subject to the Jurisdiction of the courts having Jurisdiction over RANIPET (VELLORE Dist, Tamil Nadu).
- 2.3. ISSUE OF NOTICE:**  
The Contractor shall furnish to the BHEL ENGINEER the name, designation and address of his authorized agent and all complaints, notices, communication and reference shall be deemed to have been duly given to the contractor or his authorized agent or left or posted to the address of either the contractor or of his representative and shall be deemed to have been so given in the case of posting on the day on which they would have reached such address in the ordinary course of post or on which they were so delivered of / or left.
- 2.4. USE OF LAND:**  
No land belonging to BHEL or their customer under temporary possession of BHEL shall be occupied by the Contractor without the written permission of BHEL.
- 2.5. COMMENCEMENT OF WORKS:**
- 2.5.1.** The Contractor shall commence the works within the time indicated in the Letter of Intent from BHEL and shall proceed with the same with due expedition without delay.
- 2.5.2.** If the successful tenderer fails to start the work within the stipulated time, BHEL, at his sole discretion will have the right to cancel the contract. His earnest money and/or Security Deposit with BHEL will stand forfeited without any further reference to him without prejudice to any and all of BHEL’s other rights and remedies in this regard.

- 2.5.3.** All the works shall be carried out under the direction and to the satisfaction of BHEL.
- 2.5.4.** The erected/constructed plant or work performed under this contract shall be taken over when it has been completed in all respects and/or satisfactorily put in to operation at site.
- 2.6. MODE OF PAYMENT AND MEASUREMENT OF THE WORK COMPLETED:**
- 2.6.1.** All payments due to the contract shall be paid through E-PAYMENT (EFT / RTGS) only. The contractor has to furnish acceptance for e-payment, duly indicating the bank account details in the prescribed format.
- 2.6.2.** For Progress running bill payment:  
The contractor shall present detailed measurement working sheets, in quadruplicate, duly indicating all relevant details based on technical documents and connected drawings for work done during the month/period under various categories in line with terms of payment as per letter of intent. The basis of arriving at the quantities/weight shall be the relevant documents and drawings released by BHEL.
- 2.6.3.** These measurement working sheets will be checked and vetted by BHEL Engineers and quantities and percentage eligible for payment under various groups shall be decided by BHEL engineers. The abstract of quantities and percentage so arrived based on the terms of payment shall be entered in Measurement Book and signed by both the parties.
- 2.6.4.** Based on the above quantity, contractor shall prepare the bills in prescribed proforma and work out the financial value. These will be entered in Measurement Book and signed by both the parties and paid duly effecting recoveries due.
- 2.6.5.** All recoveries due from the contractor for the month/period shall be effected in full from the corresponding running bills unless specific approval from the competent authorities is obtained otherwise.
- 2.6.6.** Measurement shall be restricted to that for which it is required to ascertain the financial liability of BHEL under this contract.
- 2.6.7.** The measurement shall be taken jointly by persons duly authorized on the part of BHEL and by the contractor.
- 2.6.8.** The contractor shall bear the expenditure involved, if any, in making the measurement. The contractor shall, without extra charges provide all the assistance with appliances and other things necessary for measurement.
- 2.6.9.** If, at any time due to any reason, whatsoever, it becomes necessary to re-measure the work done in full or in part, the expenses towards such re-measurements shall be borne by the contractor.
- 2.6.10.** Passing of measurement as per bills does not amount to acceptance of the completion of the work mentioned. Any left out work has to be completed if pointed out at a later date by BHEL.
- 2.6.11.** Final measurement bill shall be prepared in the final bill proforma prescribed for the purpose based on the certificate issued by BHEL Engineer that entire work as stipulated in the tender specification has been completed in all respects to the entire satisfaction of BHEL. Contractors shall give unqualified 'No Due' and 'No Demand' certificate. All the tools and tackles loaned to them should be returned in condition satisfactory to BHEL. Quantities/Weight erected shall be prepared and paid, within a reasonable time after completion of work. After payment of final bill, only guarantee obligation percentage shall remain unpaid which shall be released in accordance with clause 2.13. The final bill quantities and financial value shall also be entered in Measurement Book and signed by both the parties to the contract.

## **2.7 RIGHTS OF BHEL**

BHEL reserves the following rights in respect of this contract without entitling the contractor for any compensation.

- 2.7.1.** To get the work done through other agency at the risk and cost of the Contractor, in the event of Contractor's poor progress, or inability to progress the work, persistent disregard in instruction of BHEL, assignment transfer, subletting of the contract without permission of BHEL, non fulfillment of any contractual obligation etc., and to recover compensation for such losses from the contractor including BHEL's supervision charges and overheads from Security Deposit / other dues.
- 2.7.2.** To withdraw any portion of work and/or to restrict/alter quantum of work as indicated and get it done through other agency and/or with departmental labour to suit BHEL's commitment to its customer or in case BHEL decides to advance the date of completion due to other emergency reasons/BHEL's obligation to its customer.
- 2.7.3.** To terminate the contract after due notice to cause forfeiting of Security Deposit and recover the loss sustained in getting the balance work done through other agencies in addition to liquidated damages in the event of :
- 2.7.3.1.** Contractor's continued poor progress.
- 2.7.3.2.** Withdrawal from or abandonment of the work before completion of the work.
- 2.7.3.3.** Corrupt act of contractor.
- 2.7.3.4.** Insolvency of the contractor.
- 2.7.3.5.** Persistent disregards to the instructions of BHEL.
- 2.7.3.6.** Assignment transfer, sub-letting of the contract without BHEL's permission.
- 2.7.3.7.** Non-fulfillment of any contractual obligations.
- 2.7.4.** To recover any money due from the contractor from any money due to the contractor under this contract or any other contract or from the Security Deposit.
- 2.7.5.** To claim compensation for losses sustained including BHEL's supervision charges and overheads for completion on termination of contract and to impose penalty for delay in completion of the work at the rate of ½% of the contract value per week of delay or part thereof subject to a ceiling of 10% of contract value.
- 2.7.6.** To terminate the contract or to restrict the quantum of work and pay for the portion of work executed in case BHEL's contracts with their customers are terminated for any reason.
- 2.7.7.** To effect recovery from any amount due to the contractor under this or any other contractor in any other form the moneys BHEL is forced to pay to anybody, due to contractor's failure to fulfill any of his obligation.
- 2.7.8.** To restrict or increase the quantity and nature of work to suit the site requirements since the tender specification is based on preliminary documents and quantities furnished there in are indicative and approximate and the rates quoted shall not be subject to revision.
- 2.7.9.** To deploy BHEL's fitters, welders, operators and technicians in case of emergency/poor progress/deficiency in skill on the part of employees of contractor and to recover the expenditure on account of the same from contractor's bills.
- 2.7.10.** While every endeavor will be made by BHEL they cannot guarantee un-interrupted work to the contractor due to conditions beyond their control. Contractor will not be entitled for any compensation extra payment on his account.
- 2.7.11.** In the event of any dispute of any nature, the decision of BHEL shall be final and binding on the contractor.
- 2.8. RESPONSIBILITIES OF THE CONTRACTOR IN RESPECT OF LOCAL LAWS, EMPLOYMENT OF WORKERS Etc.**

The following are the responsibilities of the Contractor in respect of observation of local laws, employment of personnel, payment of taxes etc.

- 2.8.1.** As far as possible unskilled workers shall be engaged from the local areas in which the work is being executed.
- 2.8.2.** The contractor at all times during the continuance of this contract shall, in all his dealings with local labour for the time being employed on or in connection with the work, have due regard to all local festivals, religious and other customs.
- 2.8.3.** The contractor shall comply with all state and Central Laws, Statutory Rules, Regulations etc., inclusive of those regarding labour and industrial laws which are applicable from time to time and they shall comply with the provisions of the said labour legislations, rules and regulations framed under the provisions of Employees Provident Fund and Miscellaneous Provisions Act 1952 shall be strictly followed.
- 2.8.4.** The contractor shall pay all taxes, including sales Tax on works contract if any fees, license, charges, deposits duties, tool royalty commissions or other charges which may be leviable on account of any of his operations in execution of the contract in case BHEL is forced to pay any of such taxes. BHEL shall have the right to recover the same from the contractor either from his bills or other wise as deemed fit.
- 2.8.5.** While BHEL would pay the inspection fees, of the Boiler Inspectorate, all other arrangements for the visits periodically by Boiler Inspector to site, Inspection Certificate etc., will have to be made by the contractor. However BHEL will not make any payment to Boiler Inspector in connection with contractor's welders qualification/requalification tests etc.
- 2.8.6.** The contractor shall be responsible for provision of health and sanitary arrangements (more particularly described in Contract Labour Regulation & Abolition Act) safety precautions etc., as may be required for safe and satisfactory execution of the contract.
- 2.8.7.** The contractor shall be responsible for providing proper accommodation including adequate medical facilities for the personnel employed by him.
- 2.8.8.** The contractor shall be responsible for the proper behavior and observance of all regulations by the staff employed by him.
- 2.8.9.** The contractor shall ensure that no damage is caused to any person/property of other parties working at site. If any such damage is caused it is the responsibility of the contractor to make good the losses or compensate for the same.
- 2.8.10.** All the properties/equipments/components of BHEL their client loaned with or without deposit to the contractor in connection with contract shall remain the properties of BHEL/their client. The contractor shall use such properties for purpose of execution of this contract, all such properties/equipments/components shall be deemed to be in good condition when received by the Contractors unless he notifies within 48 hours to the contrary. The Contractor shall return them in good condition as and when required by BHEL/their client. In case of non-return, loss, damage, repairs etc, the cost thereof, as may be fixed by the site Engineer, will be recovered from the Contractor.
- 2.8.11.** It is not obligatory on the part of BHEL to supply any tools and tackles or other materials other than those specifically agreed to do so by BHEL. However, depending upon the availability/possibility BHEL's customer's handing equipment and other plants may be made available to the contractor on payment of the hire charges/free of charges, as fixed subject to the conditions laid down by BHEL/Customer from time to time. Unless paid in advance such hire charges if applicable shall be recovered from contractors bills/security deposit in one installment.
- 2.8.12.** The Contractor shall fully indemnify BHEL against all claims of whatsoever nature arising during the course of erection/construction/performing work under the contract.
- 2.8.13.** In case the Contractor is required to undertake any work outside the scope of this contract the rate payable shall be those mutually agreed upon.

- 2.8.14.** Any delay in completion of works/non-achievement of periodical targets, due to reasons attributable to the contractor, the same will have to be compensated by the Contractor either by increasing manpower and resources or by working extra hours and/or by working more than one shift. All these are to be carried out by the contractor at no extra cost.
- 2.8.15.** The contractor shall arrange and co-ordinate his work in such a manner as to cause no hindrance to other agencies working in the same premises.
- 2.8.16.** All safety rules and codes applied by the client/BHEL at site shall be observed by the contractor without exception. The contractor shall be responsible for the safety of the equipment/material and works to be performed by him and shall maintain all light, fencing guards signs etc, or other protection necessary for the purpose. Contractor shall also take such additional precautions as may be indicated from time to time by the Engineer with a view prevent pilferage, accidents, fire hazards and due precautions shall be taken against fire hazards and atmospheric conditions. Suitable number of clerical staff, watch and ward, store keepers to take care of equipment, materials and construction tools and tackles shall be posted at site by the contractor till the completion of the work under this contract. The contractor shall arrange for such safety devices as are necessary for such type of work and carry out the requisite site tests of handling equipments, lifting tools, tackles, etc., as per prescribed standards and practices.
- 2.8.17.** The contractor will be directly responsible for payment of wages to his workmen. A pay roll sheet giving all the type payments given to the workers and duly signed by the contractor's representative should be furnished to BHEL Site office on or before 15th of every succeeding month.
- 2.8.18.** In case of any class of work for which there is no such specification as laid down in the contract, such work shall be carried out in accordance with the instructions and requirements of the Engineer.
- 2.8.19.** No levy of payment or charge made or imposed shall be impeached by reason of any clerical error or by reason of any mistake in the amount levied or demanded or charged.
- 2.8.20.** Also no idle labour charges will be admissible in the event of any stoppage caused in the work resulting contractor's labour being rendered idle due to any cause at any time.
- 2.8.21.** The contractor shall take all reasonable care to protect the materials and work till such time the plant/equipment has been taken over by BHEL/their client.
- 2.8.22.** Contractor shall not stop the work or abandon the site for whatsoever reason or dispute, excepting for force major conditions. All such problems/dispute, shall be separately discussed and settled without affecting the progress of work. Such stoppage or abandonment shall be treated as breach of contract and dealt with accordingly.

## **2.9. CONSEQUENCES OF CANCELLATION:**

Whenever BHEL exercises its authority to terminate the contract/withdraw a portion of work under the clause 2.7 they may complete the work by any means. In the event of the cost of completion as certified by the site Engineer which is final and conclusive being less than the contract cost, the advantage shall accrue to BHEL and that if the cost of completion exceeds the moneys due to the contractor under the contract, the contractor shall either pay the excess amount ordered by BHEL or the same shall be recovered from the contractor by any other means. This will be in addition to the forfeiture of Security Deposit and recovery of liquidated damages as per the relevant clauses.

- 2.9.1.** In case BHEL completes the work under the provision of this condition, the cost of such completion to be taken into account in determining the excess cost to be charged to the contract under this condition, shall consist of materials purchased and/or labour provided by BHEL with an addition of such percentage to cover supervision and establishment charges as may be decided by BHEL.

## **2.10 INSURANCE:**

- 2.10.1.** BHEL/their customer shall arrange for insuring the materials/properties of BHEL / customer covering the risks during transit, storage, erection and commissioning.
- 2.10.2.** It is sole responsibility of the contractor to insure his workmen against accidents and injury while at work as required by relevant Rules and to pay compensation, if any, to workmen as per workmen's Compensation Act. The work will be carried out in a protected area and all the rules and regulations of the client/BHEL in the area of project which are in force from time to time will have to be followed by contractor.
- 2.10.3.** If due to negligence and/or non-observance of safety and other precautions, any accident/injury occurs to any other persons/public, the contractor shall have to pay necessary compensation and other expenses if so decided by the appropriate authorities.
- 2.10.4.** If due to contractor's carelessness's, negligence of non-observance of safety precautions damage to BHEL's /customer's property and personnel should occur and if BHEL is unable to recover in full cost from the insurance company, the same will be recovered from the contractor.
- 2.10.5.** It shall be the responsibility of the contractor to provide security arrangement for the equipment/ materials belonging to BHEL and handed over to the contractor for erection/transportation till the same are taken over by BHEL after erection/returned to BHEL stores.

## **2.11. STRIKES & LOCKOUTS:**

- 2.11.1.** The contractor will be fully responsible for the entire dispute and other issues connected with his labour. In the event of the contract labour resorting to strike or the contract resorting to lock-out and if the strike or lock-out declared is not settled within a period of one month, BHEL, shall have the right to get the erection work executed employing its own labour or through any agencies or both and the cost so incurred by BHEL be deducted from the contractor's bills.
- 2.11.2.** For any purpose whatsoever the employees of the contractor shall not be deemed to be in the employment of BHEL.

## **2.12. FORCE MAJEURE:**

- 2.12.1** The following shall amount to FORCE MAJEURE:

Act of God or of any Government, War, Sabotage, Riots, Civil commotion, Police action revolution, Flood, Fire, Cyclones, Earth quake and epidemic and other similar causes over which the contractor has no control.

- 2.12.2.** If the contractor suffers delay in the due execution of the contractual obligation due to delays caused by FORCE MAJEURE as defined above, the agreed time of completion of the job covered by this contract or the obligation of contractor shall be extended by a period of time equal to the period of delay provided that on the occurrence of any such contingency the contractor immediately reports to BHEL in writing the causes of delay and the contractor shall not be eligible for any compensation.

## **2.13. GUARANTEE:**

Even though the work will be carried out under the supervision of BHEL Engineers the contractor will be responsible for the quality of the workmanship and shall guarantee the work done for a period of twelve months from the date of completion of work as certified by the Engineer for good workmanship and shall rectify free of cost all defects due to faulty erection, detected during the guarantee period starting from the date of the completion of rectification. In the event of the contractor failing to repair the defective works within the time specified by the Engineer, BHEL may proceed to undertake the repairs of such defective works at the contractor's risk and cost, without prejudice to any other rights and recover the same from Security Deposit/other dues or by other legal means.

## 2.14. ARBITRATION:

Except where otherwise provided for in the contract all questions and disputes relating to the meaning of the specifications, designs, drawings and instructions herein before mentioned and as to the quality of workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in anyway arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the work or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the sole arbitration of the General Manager of BHEL and if General Manager is unable or unwilling to act, to the sole arbitration of some other person appointed by the General Manager, willing to act as such arbitrator.

The cases referred to arbitration shall be other than those for which the decision of the Accepting

Officer, or Engineer-in-charge as the case may be is expressed in the contract to be final and conclusive. There will be no objection if the arbitrator so appointed is an employee of BHEL and that he had to deal with the matters to which the contract relates and that in the course of his duties as such he had expressed views on all or any of the matters in dispute or difference.

The arbitrator to whom the matter is originally referred being transferred or vacating his office or being unable to act for any reason, such General Manager as aforesaid at the time of such transfer, vacation of office or inability to act shall appoint another person to act as an arbitrator in accordance with the terms of the contract. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor.

Subject as aforesaid the provision of the Arbitration Act 1940 or any statutory modification or reenactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceeding under this clause.

It is a term of the contract that the party involving arbitration shall specify the dispute or dispute to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute.

The arbitrator(s) may from time to time with consent of the parties enlarge the time, for making and publishing the award.

The work under the contractor shall, if reasonably possible, continue, during the arbitration proceedings and no payment due or payable to the contractor shall be withheld on account of such proceedings.

The arbitrator shall be deemed to have entered on the reference on the date he issues notice to both the parties fixing the date of first hearing.

The arbitrator shall give a separate award in respect of each dispute or difference referred to him.

The venue of arbitration shall be such place as may be fixed by the Arbitrator in his sole discretion. The award of the Arbitrator shall be final conclusive and binding on all parties to this contracts.

In the event of disputes or differences arising between one public sector and a Government Department or between two public sector enterprises the above stipulations shall not apply, the provisions of BPE Office memorandum No.BPE/CL/001/76 MAN/2(1.10)76-BPE(GM-1)dated 1<sup>st</sup> January 1976 or its amendments for arbitration shall be applicable.

**ANNEXURE –‘D’**

**BHARAT HEAVY ELECTRICALS LIMITED  
(A GOVERNMENT OF INDIA UNDERTAKING)  
BOILER AUXILIARIES PLANT  
INDIRA GANDHI INDUSTRIAL COMPLEX  
ERECTION SERVICES DEPARTMENT  
RANIPET – 632 406**

**CONTRACT AGREEMENT**

**AGREEMENT NO: BAP : ERN : BHE :**

**DATE:**

Name of work :

Name of the contractor with full address :

Amount of tender accepted :

Letter of Intent No. :

Time allotted for completing the work  
(date of completion) :

(Officer authorized to sign the agreement)

CONTRACTOR

**CONTRACT AGREEMENT****AGREEMENT No: BAP: ERN : BHE :****DATE:**

This agreement made this day, the \_\_\_\_\_ of \_\_\_\_\_ between the Bharat Heavy Electricals Limited, Ranipet having its Registered Office at 'BHEL House' , Siri Fort, New Delhi 110 049 (herein after called the FIRST PARTY) of one part and Messrs. \_\_\_\_\_ (herein after called the ("CONTRACTOR")) of the SECOND PARTY.

2. WHEREAS the first party is desirous of executing the work of \_\_\_\_\_ more particularly described in the appendices including drawings and specifications attached herewith.

3. WHEREAS IN PURSUANCE of the said Contractor's Tender having been accepted, the first party has decided to give the above said work to Contractor, and WHEREAS the contract between the parties was concluded by virtue of a letter of intent issued by the First Party under reference. \_\_\_\_\_ Dt.

4. WHEREAS the said Contractor has agreed to do the aforesaid work of the first party subject to the conditions herein contained in the presents, instructions to tenderers, general conditions and special conditions, schedules, appendices, letter of intent and specifications (hereinafter referred as the said contract schedule) at the approved rates (herein referred as the said contract rate).

5. AND WHEREAS the said contractor has furnished a Bank Guarantee for a sum of Rs. \_\_\_\_\_ Valid up to \_\_\_\_\_ towards initial 50% security Deposit and has further agreed for balance 50% Security Deposit being recovered at 10% of value of each running bill till the full Security Deposit is made up for the satisfactory completion and performance of the work and whereas the validity of the said Bank Guarantee has to be extended by the Contractor, if so required before for the balance period of contract period and in the event of his failure to do so, the contractor shall pay or accept recovery of this amount of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only), from the bills forthwith in one installment and it has further been agreed that the failure to extend the validity of Bank Guarantee or failure to pay the aforesaid amount the manner specified above shall constitute the breach of contract, and first party reserved the right to take easy legal action deemed fit for recovering the said sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only). This amount of Rs. \_\_\_\_\_ Will be refunded (and Bank Guarantee will be returned) to the Contractor on satisfactory completion of the work as specified in the Contract documents.

6. Now THESE PRESENTS WITNESS that in consideration of the said contract schedule and said contract rate as also of agreement of good and faithful services to be rendered and performed by the contractor in the execution of the said work, subject to the stipulation hereinafter expressed.

7. That the said contractor will perform the aforesaid work subject to the conditions contained in these presents, instructions to tenderer, general and special conditions of contract and the contract documents attached herewith including the said schedules, specifications, appendices, letter of intent, drawings attached and also such other drawings and instructions as may from time to time be given by the first party. And that the said contractor shall be deemed to have carefully examined the specifications and conditions of contract, appendices, schedules, letter of intent , drawings etc., as aforesaid and also to have satisfied himself as to the nature and character of work to be executed.

8. That the said contractor shall carry out and complete the execution of the said work to the entire satisfaction of the Engineer within the agreed time schedule.

9. That the first party after proper scrutiny of the bills submitted by the said contractor will pay to him during progress of the said work, at said contract rates and agreed terms of payment, a sum as determined by the first party in respect of the work executed by the contractor.

10. That the contract shall come into force with retrospective effect from the date on which the letter accepting the tender (Letter of Intent) has been issued to the said contractor.

11. That whatever under this contract or otherwise, any sum of money shall be recoverable from or payable by the Contractor, the same may be deducted in the manner as set out in the conditions of contract as aforesaid.

12. That all charges on account of Octroi, terminal and sales-tax or other duties on materials obtained for the work shall be borne by the said contractor.

13. That is agreed between the parties that the non-exercise of any of the powers conferred on the authorities of the first party will not in any manner constitute waiver of the conditions thereto contained in these presents and the liability of the said contractor either of past or further compensation shall remain unaffected.

14. That the expression BHEL wherever occurring means THE BHARAT HEAVY ELECTRICALS LIMITED, RANIPET.

15. The contract is subject to RANIPET(TamilNadu) jurisdiction.

16. The document hereto attached viz. shall also form part of this agreement.

17. General Conditions of Contract attached to the Notice inviting tender shall form part of this contract in so far as any thing is not provided specifically in this agreement.

18. In witness hereof the parties have respectively set their signatures in the presence of :

**WITNESSES:**

(with full address)

1.

2.

**Signature of the Contractor (to be signed by a  
Person holding valid power of Attorney of the Company)**

**Date:**

**WITNESSES:**

(with full address)

1.

2.

**For and on behalf Bharat Heavy Elec.Ltd.**

**Date:**

## ANNEXURE 'E'

## PROFORMA FOR SECURITY DEPOSIT

THIS DEED OF GUARANTEE made this day of \_\_\_\_\_ by Messrs. \_\_\_\_\_ (hereinafter called the Bank) in favour of Messers. BHARAT HEAVY ELECTRICALS LIMITED, RANIPET having its Registered Office at New Delhi (hereinafter called the Principal)

WHEREAS Messrs. \_\_\_\_\_ (hereinafter called the Contractor) has entered in to a Contract with Bharat Heavy Electricals Ltd., Ranipet arising out of Letter of Intent No. \_\_\_\_\_ Dt. \_\_\_\_\_ addressed by the Principal to the Contractor (hereinafter called the said agreement) for

AND WHEREAS the said Agreement provides that the contractor shall pay a sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) towards 50% of full Security Deposit to be made in the form and manner therein specified.

AND WHEREAS the Contractor have approached the Bank and at their request and in consideration of the agreement arrived at between the said contractor and the Bank, the Bank has agreed to give such guarantee as hereinafter mentioned to the Principal.

NOW, therefore, these present witness that we the Bank by the hand Mr. \_\_\_\_\_ its lawfully and duly constituted attorney, do hereby undertake to pay to the principal a sum of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) without demur on demand being made by the principal and to keep the principal indemnified to the extent of Rs. \_\_\_\_\_ by virtue of this guarantee against any loss or damage caused to or suffered by the principal by reason of any breach by the aforesaid contract of any of the terms and or conditions, stipulations or undertakings of any one of them contained in the said Agreement and the tender documents attached thereto and for the payment of any money or moneys payable by the said contractor to the principal under the terms and conditions of the said Agreements (the decisions regarding the breach, loss damage or payment due being solely in the discretion of the Principal).

We further undertake to pay without demur the aforesaid amount in a lump sum on demand or such part thereof as the Principal may demand from time to time irrespective of the fact whether the said contractor admits or denies such claim or questions its correctness in any Court Tribunal or Arbitration Proceedings or before any authority. The aforesaid guarantee will remain in force and we shall be liable under the same irrespective of any concession or time being granted by the principal, to the Contractor in or fulfilling the said agreement between contractor and the principal and the guarantee will remain in full force irrespective of any change of terms, conditions or stipulation or any variation in the terms of the said agreement irrespective of whether notice of such change or/variation is given to us or not and claim to receive such notice of any change/and or variation of the terms and or variation of the terms and or/conditions of the said agreement is hereby specifically waived by us. Further we shall not be release from this guarantee by any forbearance of the exercise or non-exercise of any of the powers or rights under the said agreement by the principal against the contractor irrespective of whether notice of such forbearance enforcement or non-enforcement of any powers or rights, modifications or change made in the said agreement or concessions shown to contractor by the principal is given to us or not.

The guarantee herein contained shall not be determined or affected by the liquidation or winding up or insolvency of or change in the constitution of the contractor but shall in all respects and for all purposes be binding and operative untill all payments of all moneys due or that may hereafter become due to the principal in respect of any liability or obligations of the contractor under the said agreement.

We, the Bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the principal under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till the principal certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said contractor and accordingly discharges the guarantee subject to however that the principal shall have no rights under this guarantee after the expiry of six months from the date of completion of the contract (the date of completion shall be as certified by the Principal) unless this guarantee is extended by agreement.

Any claim or dispute arising under the terms of this contract shall only be enforced or settled in the Court having jurisdiction over RANIPET (VELLORE Dist, Tamil Nadu)

And lastly the Bank undertakes not to revoke this guarantee during its currency except with the previous consent of the principal in writing.

The bank hereby declares that it has power to issue this guarantee under that Bank's Memorandum and Articles of Association and the undersigned has power to do so on its behalf under the power of Attorney granted to him by the proper Authorities of the Bank.

**Date:**

**(Name of the Bank & Place)**

**Seal:**

**DESIGNATION OF THE AUTHORISED**

**PERSON SIGNING THE GUARANTEE**



# **SPECIAL CONDITIONS OF CONTRACT**

*FOR*

# **ELECTRICAL WORKS**

**BAP:ERN :ELE: SPN : 01**



**ERECTION SERVICES DEPARTMENT**

**BHARAT HEAVY ELECTRICALS LIMITED**

( A Government of India Undertaking )

**BOILER AUXILIARIES PLANT**

**INDIRA GANDHI INDUSTRIAL COMPLEX**

**RANIPET – 632 406**

**SECTION - IV****SPECIAL CONDITIONS OF CONTRACT FOR ELECTRICAL WORKS IN  
ELECTROSTATIC PRECIPITATOR (ESP)****4.1 SCOPE OF WORK**

- 4.1.1 The work covered under this specification is of highly sophisticated nature requiring the best quality of workmanship, engineering and construction management. The contractor should ensure timely completion of work. The contractor must have adequate quantity of tools. Measuring instruments, calibrating equipment etc. in his possession. He must also have on his rolls adequately trained. Qualified and experienced engineers supervisory staff and skilled personnel. The manpower deployment identified by contractor should match requirement of sophistication involving microprocessor-based systems.
- 4.1.2 The work shall be executed under the usual conditions affecting major power plant construction and in conjunction with numerous other operations at site. The contractor and his personnel shall co-operate with the personnel of other agencies. Co-ordinate his work with others and proceed in a manner that shall not delay or hinder the progress of work as whole.
- 4.1.3 All the work shall be carried out as per the instructions of BHEL engineer. BHEL engineer's decision regarding the correctness of the work and method of working shall be final and binding on the contractor.
- 4.1.4 The services, tests and support to be provided by the agency of the work mentioned in the various sections of this tender are indicative and not exhaustive, but not limited to these for the completion of the work in all respects.
- 4.1.5 Contractor shall erect, test and commission all the equipments, cabinets/panels, instruments and cabling etc. as per sequence prescribed by BHEL at site. The sequence of erection / commissioning methodology will be decided by the BHEL engineers depending upon the availability of materials/work fronts etc. No claims for extra payment from the contractor will be entertained on the grounds of deviation from the methods of erection / commissioning adopted in erection / commissioning of similar jobs or for any reasons whatsoever.
- 4.1.6 The work to be carried out under the scope of this specification covers the complete work of loading at site stores/ storage yard, handling, transporting, unloading at location of erection, pre-assembly, erection, calibration (where specified), testing, air flushing, pre-commissioning tests, assistance for commissioning of systems, trial run of various auxiliaries, achieving various activities till handing over of the unit to BHEL's customer.
- 4.1.7 The work shall conform to dimensions and tolerances specified in various drawings that will be provided during the erection. If any portion of the work is found to be defective in workmanship or not conforming to drawings or other specifications the contractor shall dismantle and re-do the work duly replacing the defective materials at his cost, failing which the work will be got done departmentally or by engaging other agencies and recoveries will be effected from contractor's bills towards expenditure incurred including departmental charges.
- 4.1.8 The terminal points as decided by BHEL shall be final and binding on the contractor for deciding the scope of work and effecting payment for the work done.
- 4.1.9 All works such as cleaning, leveling aligning trial assembly, dismantling of certain equipments / components for checking and cleaning, fabrication of tubes and pipes as per general engineering practice and as per BHEL engineers instructions at site cutting weld depositing, grinding straightening, chamfering filling of cut outs/openings for mounting of console inserts modules/indicators/recorders, drilling of holes for gland entries, reaming,

scrapping, dressing, fitting up etc. as may be applicable in such erection works are treated as incidentals to erection work and are necessary to complete the work satisfactorily shall be carried out by the contractor as part of the work.

- 4.1.10 House keeping in the erection and pre-assembly area is as important as the well-planned and orderly work. The access to site for inspection by BHEL and customer engineers and leading of the material shall be made available by the contractor at all times.
- 4.1.11 The shifting and re-shifting of erection materials tools and plants and clearance of restrictions filling of ditches undulation near ESP area is the responsibility of the contractor. Contractor should visit the site and acquaint himself with all restrictions and difficulties that he may encounter during erection/commissioning stages.
- 4.1.12 Detailed scope for various items of work is further elaborated in clauses herein under. The tests required to be carried out before commissioning of equipment and procedure to be adopted shall be decided in consultation with the BHEL. The decision of BHEL in this regard shall be final and binding on the contractor.
- 4.1.13 Electrostatic Precipitator shall have one or more flue gas passes and each pass comprises of rectifier transformer (silicon/mineral oil filled), auxiliary control panels, switch gear panels, electronic controller, LT main switch board and its bus duct, Drives for rapping/controlling/Gas damper screen, heating element for hoppers/shaft and supporting insulator housing, ash level indicator and ESP management system (software based) including computer interface and associated interlock and protection.

#### 4.2 **ERECTION OF SERVICE TRANSFORMER**

- 4.2.1 The scope of work under this head is defined as below.
- 4.2.2 Transportation of transformer and accessories from BHEL site stores/ storage yard to the transformer foundations / plinth, assembly of loose supplied items, erection, testing & commissioning.
- 4.2.3 The transformer shall be handled in such a manner so that no jerk is transferred to the core, winding and internals of the transformer.
- 4.2.4 Placement of transformer on plinth, alignment with respect to the foundation and in line with lay out drawings.
- 4.2.5 Topping-up of Oil, Filtration of oil and testing for BDV.
- 4.2.6 All the accessories shall be assembled/mounted as per GA drawings and these should be thoroughly cleaned prior to installation.
- 4.2.7 The contractor shall arrange required testing equipments for carrying out electrical test like voltage ratio, vector group, magnetic balance, winding resistance measurements, BDV value of oil, insulation resistance etc. The contractor shall arrange oil sample testing for tests applicable at approved testing laboratory at his own cost including all incidental expense.
- 4.2.8 The contractor shall consult and finalise the required tests / procedure with BHEL prior to commencement of the work.

#### 4.2.9 **TESTING BEFORE COMMISSIONING SHALL INCLUDE THE FOLLOWING.**

- 4.2.9.1 Measurement of Insulation resistance and winding resistance.
- 4.2.9.2 Conducting Ratio test, vector group test etc., as required/ instructed at site.
- 4.2.9.3 Filtration of transformer oil for at least one complete cycle.
- 4.2.9.4 Measuring BDV value of transformer oil and further filtration, if required.

#### 4.3 **INSTALLATION OF ELECTRICAL PANELS**

- 4.3.1 ESP Switch Gear panels (SGP), Electronic Control panels (ECP), Auxiliary Control panels (ACP), Variable Frequency Drive (VFD) Control panels, Rapper Control panels (RCP if

applicable), Instrument panels etc. are normally supplied in set of either one/two/three or loose shipping sections with integral or loose supplied base frame. These panels may have to be installed as stand alone or in groups consisting of number of panels in each row, depending upon the plant layout and foundation arrangement.

- 4.3.2 ACP / SGP are double front draw-out /non-draw type consisting of circuit breakers units, contractor/starter, switch fuse units, protection and metering relays/ instruments etc. arranged in multi tier construction.
- 4.3.3 VFD for Fans etc., if applicable, will consist of VFD transformer, Dynamic Brake resistance panel (DBRP), Vacuum Circuit Breaker (VCB) etc.
- 4.3.4 The panels shall be transported from stores to place of installation in vertical position. Care shall be taken such that the switches, lamps, instruments etc., mounted on the panel do not get damaged during transit.
- 4.3.5 Panels have to be shifted to their locations through floor openings temporary openings like floor grills door etc. which shall be part of work and no claim whatsoever will be entertained with regard to non-availability of opening as per shortest route etc. Panel have to be erected at different locations and elevation in Plant Control Rooms, ESP control room , Plant area etc.
- 4.3.6 Panels are normally supplied with base frames. Wherever the panels are to be mounted on cable trenches channel supports have to be provided across the cable trench over which the base frame of panel shall be mounted. The scope of work includes fabrication and erection of steel frames/ bracket required for supporting the panels. Supply of materials like channels, angles etc. is in the scope of BHEL
- 4.3.7 Separate rates shall be paid for steel fabrication and erection of supports/brackets/ base frames as per rate schedule.
- 4.3.8 Installation of panel shall include fixing of base frame, fabrication of base frame if required, leveling, alignment, fixing of anti-vibration pads, removal of side covers, fixing of cubicle interconnection hardware, bus bar jointing, wiring interconnection, welding and grouting of panels and base frames, mounting of panel canopy wherever supplied as part of panel, drilling of gland plates (if additionally required) and sealing of cable entries.
- 4.3.9 Normally the panels shall be supplied with instrument, relay, meters, electronic modules etc. mounted and pre-wired. However if these are supplied loose / separately for safety in transit contractor shall mount/wire such devices as part of the panel installation work and no separate rates shall be applicable unless otherwise specially listed in the rate schedule.
- 4.3.10 No separate payment shall be made for replacement of any devices like electronic modules relays conductors terminal block push buttons etc. which are found defective during pre-commissioning / post-commissioning of any equipment / item.
- 4.3.11 Panel and instruments once erected in position should be properly protected using necessary care to prevent ingress of dust/moisture. This will have to be periodically cleaned and surroundings have to be kept tidy.
- 4.3.12 For the panels erected by other agencies commissioning / calibration work and trouble shooting has to be carried out by the contractor as part of testing and commissioning work as per the quoted rates for the same in the rate schedule.
- 4.3.13 Minor civil works like drilling, chipping, punching holes and opening in concrete floors slabs and brick walls grouting related to Rack support installation minor civil works required for installation of control panels Junction boxes etc., shall be included in the erection cost of such items. The scope also includes supply of grouting material, if any.
- 4.3.14 **TEST TO BE CARRIED OUT BEFORE COMMISSIONING SHALL INCLUDE THE FOLLOWING.**
  - 4.3.14.1 Checking of installation for correctness.

- 4.3.14.2 Mechanical functional checking/ adjustment of individual breaker.
- 4.3.14.3 Measurement of Insulation resistance of individual breaker, complete switchgear board and combined insulation resistance of individual breaker with cable connected to drives.
- 4.3.14.4 Testing of Protection Relay, Thermal over relay, Power transducers Energy/ Ammeters, Voltmeters, Power factor, frequency, tri-vector meters & metering etc. in static & dynamic condition of relay.
- 4.3.14.5 Conducting test such as Insulation Resistance measurement, Ratio, polarity, winding resistance on CT and PT.
- 4.3.14.6 Checking of electrical control & protection interlock of individual breaker and integration with other system.
- 4.3.14.7 Calibration of energy meters, tri-vector meters, voltmeters, ammeters, power current & voltage transducers etc.
- 4.3.14.8 Provide assistance for checking the electrical operation of individuals breakers from local stations/remote panels/ MMI package.
- 4.3.14.9 The contractor shall arrange all the required testing instruments/ test kits / calibration equipments etc. for testing and calibration.

#### **4.4 ERECTION OF DISCONNECTING SWITCH**

- 4.4.1 Disconnecting switches are to be erected on the outer roof of ESP, between the HVR Transformer and insulator housing.
- 4.4.2 Adequate precautions have to be taken during shifting of disconnecting switches to ESP location, lifting, and erection to avoid any damage to the insulators inside them.
- 4.4.3 Ensure proper alignment as per drawing and that the supplied gaskets, ropes etc. are properly placed. Connect the copper tubes as per drawing using connectors supplied by BHEL.
- 4.4.4 The scope of work includes fabrication and erection of steel frames required for supporting the disconnecting switches. Supply of materials like angles etc. is in the scope of BHEL. Separate rates shall be paid for steel fabrication and erection of supports as per rate schedule.

#### **4.4.5 TESTING BEFORE COMMISSIONING SHALL INCLUDE THE FOLLOWING.**

- 4.4.5.1 Cleaning of the switch internals, insulators etc. and application of lubricants.
- 4.4.5.2 IR value check.
- 4.4.5.3 Checking and ensuring copper connecting tubes are in order/tight and proper operation of the switch.

#### **4.5 ERECTION OF INTERLOCKING SYSTEM**

- 4.5.1 The interlocking system is provided in the ESP to ensure safety of personnel working in ESP. The system basically ensures isolation all the high voltage points before access is possible.
- 4.5.2 The system consists of one or more panels for holding the keys and have to be installed on the roof of ESP. The locks, which are supplied loose are to be fixed / welded to the access / inspection doors in Hoppers, Support Insulator housing, disconnecting switches, casing panel etc.
- 4.5.3 The scope of work includes fabrication and erection of steel frames required for supporting the disconnecting switches. Supply of materials like angles etc. is in the scope of BHEL. Separate rates shall be paid for steel fabrication and erection of supports as per rate schedule.

#### **4.6 ERECTION OF HEATING ELEMENTS AND THERMOSTATS**

- 4.6.1 Heating elements / heaters are tubular or panel type and are to be fixed in the appropriate areas where suitable provisions are already made by other agencies / BHEL.
- 4.6.2 Hopper Heaters are to be fixed in ESP hoppers, while Support insulator and Shaft insulator heaters are to be fixed in insulator housing on ESP roof area.
- 4.6.3 TESTING BEFORE COMMISSIONING SHALL INCLUDE THE FOLLOWING.**
- 4.6.3.1 Check resistance and IR values of each heater. Provide low voltage heating if improvement of IR value is required.
- 4.6.3.2 Ensure the looping connections are as per drawing. Check the current in each phase.
- 4.6.3.3 Scope of work includes replacement of heater/s found defective, if any, at no extra cost to BHEL.

#### **4.7 ERECTION OF JUNCTION BOXES AND PUSH BUTTON STATIONS**

- 4.7.1 Various Junction Boxes and Push Button stations of steel construction shall be supplied with required holes in the gland plates, required cable glands and lugs.
- 4.7.2 The unit rate quoted for erection of JB's and Push button stations shall cover installation of JB's/SSPB's on supporting frames, painting the tag nos. of JB or fixing separate tag plate on JB's/SSPB's.
- 4.7.3 Separate rate shall be paid for fabrication and erection of supports as per rate schedule.
- 4.7.4 Required fasteners shall be supplied by BHEL free of cost.

#### **4.8 ERECTION OF ASH LEVEL INDICATOR (ALI) AND OPACITY MONITOR (OPM)**

- 4.8.1 The unit rate quoted shall include installation of ALI / OPM with all accessories, putting them into operation and providing assistance for commissioning and troubleshooting.
- 4.8.2 **ASH LEVEL INDICATOR** is a capacitance type level monitoring instrument consisting of an electronic unit, a probe and connecting co-axial cable.
- 4.8.3 The electronic unit is fixed to ESP support column below hoppers on supports/ brackets along with manifolds and associated fitting and clamps. The probe is fixed at specified height on the hoppers by cutting a suitable opening and welding an adapter. The connecting co-axial cable and earthing wire are run through flexible steel conduits. The flexible conduit is to be clamped suitably for support. All the materials like clamps, flexible conduits, fixing bolts etc. will be supplied by BHEL on free issue basis.
- 4.8.4 **OPACITY MONITOR** consists of an electronic unit, receiver unit, control unit and connecting cables.
- 4.8.5 The total OPM unit has to be installed in the outlet duct of ESP at specified location by a suitable opening and welding an adapter. All the materials like clamps, flexible conduits, fixing bolts etc. will be supplied by BHEL on free issue basis.
- 4.8.6 The Unit rate shall also cover marking tag Nos. of instruments/racks, either by paint or a separate tag plate as per BHEL Engineer directive.
- 4.8.7 Separate rates shall be paid for fabrication and erection of supports/brackets as per rate schedule.
- 4.8.8 Temporary protection by polythene sheets / steel sheets shall be provided by contractor for safe guarding the OPM against damages. The protective covers shall be provided at no extra cost by contractor

#### **4.9 ERECTION OF INTEGRATED OPERATING SYSTEM (IOS)**

- 4.9.1 The scope of installation of IOS includes providing power supply and electronic earthing of

the IOS etc. assistance in commissioning and trouble shooting.

4.9.2 An IOS consists of two numbers of PC based controller (CPU), two CRT / LCD Monitors, one printer, one UPS, interconnecting cables and a set of furniture.

4.9.3 The scope of work includes Unit rate quoted for IOS shall cover installation & integration of all the above said equipment and providing necessary commissioning assistance. No separate unit rate applicable for installation of all loose items/ modules/ components or accessories etc, which is not explicitly mentioned in the rate schedule, but comes as part of the system.

#### **4.10 SCOPE OF COMMISSIONING OF EQUIPMENT ERECTED BY THE MECHANICAL CONTRACTOR / OTHER AGENCIES.**

##### **4.9.1 HT MOTORS**

- a) Measurement of winding resistance.
- b) Testing of CT where required.
- c) Meggering and if insulation resistance is low, dry out of the motor.
- d) Conducting polarization index test, if required.
- e) Testing the healthiness of RTDs. Replacement of defective element (only for bearing).
- f) Checking direction of rotation of motors and testing and commissioning from local as well as remote.

##### **4.9.2 LT MOTORS / RAPPING DRIVES**

- a) Checking IR value and if insulation resistance is low, dry out of the motor.
- b) Measuring winding resistance.
- c) Checking direction of rotation of motors and testing and commissioning from local as well as remote.

##### **4.9.3 ACTUATORS FOR DAMPERS/ GATES ETC.**

- a) Measuring of winding resistance and IR value of drive motor and if insulation resistance is low, dry out of the motor.
- b) Checking direction of rotation of motors and testing and commissioning from local as well as remote.
- c) Scope of work includes providing loop wire on actuator terminal block, setting of mechanical/ electrical or electronic position transmitters, setting of limit / torque switches, cable checking, internal wiring checks, local / remote operation from MCC&MMI package and replacing defective components like limit switches etc.

##### **4.9.4 ELECTRICAL HOIST**

- a) Electrically operated hoist are provided for maintenance purpose of High Voltage Rectifier Transformer installed on the roof of electrostatic precipitator etc. Mechanical erections of hoist components such as runway beams, hoist carriage, drive unit, etc. shall be done by another agency / BHEL. The scope of work covered in this tender specification for erection and commissioning is installation of DSL system and associated accessories. The scope of work for the contract in this package is as follows.
- b) DSL SYSTEM : It consists of tee iron guide for cable trolley and associated supporting structural members, trailing cable, cable guide trolley, dog chain, switch fuse unit, limit switch etc.
- c) DSL system shall have to be erected at higher elevation. Contractor shall take all safety measures while carrying out the work.

- d) For installation of tee iron & other structural steel member, unit rate for fabrication & erection shall be applicable and for other items unit rate shall be paid as per rate schedule. However cable dressing, fixing of leather bands, rope clamps and any incidental work such making approaches for executing the work, scaffolding etc. shall be part of work.
- e) Commissioning & testing of electrical hoists shall include panel wiring check, IR measurement, functional check, over load relay testing, trail run, providing assistance during load test, replacement of component if required etc.. However preparatory work for load test and arrangement of load etc. shall be done by another agency / BHEL.

#### 4.9.5 HIGH VOLTAGE RECTIFIER TRANSFORMER (HVR)

- a) Installation and functional check of various devices supplied loose along with transformer like Buckholtz relay, breather etc., including replacement, if required.
- b) Checking of IR value of primary and secondary windings.
- c) Winding resistance measurement.
- d) Filtration of Oil for atleast one full cycle.
- e) Measuring BDV of oil and further filtration, if required.
- f) Topping of transformer oil and thorough cleaning of the HVR.
- g) Assistance during OC and SC test of the transformer.

#### 4.10 CABLE LAYING

- 4.10.1 Laying of power and Control Cable includes transportation from BHEL's stores, laying, dressing, clamping and tagging cable marker at both ends. The cable shall be laid in Ladder / perforated type cable trays The Cables shall be tied after dressing using 3mm dia nylon ropes/ties and the nylon ropes/ties shall be supplied by the contractor. The cable shall be clamped suitably with cable trays at maximum 1.5M interval using 3mm aluminum clamps/strips as per the instruction of BHEL Engineer. **Supply of necessary strips, clamps and bolts for the above work is included in the contractor's scope.**
- 4.10.2 The contractor shall lay the cables on cable trays, in built-up cable trenches, vertical tray ways, overhead areas and supports, pulled through conduits, pipes, run clamped on wall / ceiling steel structure etc. A uniform rate to be quoted shall include laying, proper dressing, tying etc. Standard of Workmanship shall be to the approval of BHEL Engineers.
- 4.10.3 The arrangement of the Cable and all methods of laying shall be planned to provide an orderly formation to avoid bends and crossings and to facilitate easy removal of any one cable without undue disturbance to adjacent cables. The Standard of Workmanship shall be to the approval of BHEL Engineers.
- 4.10.4 Cable laid in (or) entering into (or) emerging from cable racks, cable trays, conduits, cable supports shall be suitably formed to avoid bearing against sharp edges.
- 4.10.5 When cables pass through floors, walls etc., etc it shall be passed through a pipe for mechanical protection and the pipe ends sealed suitably.
- 4.10.6 Care shall be taken to avoid sharp bending and kinking of conductor, damaging insulation and stressing the cable beyond the pulling force recommended by the manufactures. Cables shall be protected at all times from mechanical damage.
- 4.10.7 Where cabling passes through brickwork (or) concrete work suitable local protection against mechanical damage shall be provided by the contractor.
- 4.10.8 Jointing of cables, if necessary, shall be done by crimping type cable joints after getting the approval of BHEL Engineers.
- 4.10.9 Entry to the panels and JB's may be at top, sides or bottom. All cables are require to be properly supported and clamped near to the JB panel.

- 4.10.10 Many of the cable trays and cables have to be laid in cable trenches. For this purpose the cover of the trenches have to be opened for working in site and whenever the cables are to be laid in existing cable tray, all safety precautions have to be observed. After completing the work the trenches have to be cleaned and covers put back into position Contractor shall also carry out de-watering from the trenches if required and arrange pumps etc., at his cost.
- 4.10.11 Contractor shall carefully plan the cutting schedule of each cable drum in consultation with site engineer such that wastage are minimized.

#### **4.11 TERMINATION OF CABLES**

- 4.11.1 All the cables laid by the contractor shall be terminated by him. **Cable glands and lugs will be supplied along with the panels / equipments etc., unless specifically mentioned otherwise.** Unit rates for various sizes of cables is to be indicated in rate schedule.
- 4.11.2 Termination includes dressing & glanding, splicing and dressing inside panels, JB's etc., providing ferrules / printed ferrules ( contractor to arrange ferrule printing machines ) and crimping of lugs.
- 4.11.3 Supply of required PVC cable ties, PVC ferrules, PVE button and tapes, PVE sleeves, compounds, necessary tools, joining materials etc. shall be supplied by the contractor within the quoted rates for cable termination. The quality of material shall be got approved from BHEL engineer prior to their use on job. is in the contractor's scope.
- 4.11.4 Special tool clips, saddles, etc., required for the connections and terminations of cables shall also be provided by the Contractor at his cost.
- 4.11.5 At cable termination points, where the conductor and the cable insulation will be terminated termination shall be made in a neat, workman like manner.
- 4.11.6 The Contractor shall include connections to termination of various equipment installed by other agencies. The contractor shall work in co-operation with other agencies in obtaining correct direction of rotation and commissioning of equipments.
- 4.11.7 Looping wire at terminal block of panels and electrical actuator as shown in the inter-connection diagrams or as required is to be done by contractor at no extra cost.
- 4.11.8 Cable lugs shall be provided by compression, adapting necessary crimping tools. Insulating sleeves shall be provided over the barriers and conductors to prevent accidental contact with ground (or) adjacent terminals. The insulating sleeves shall be fire resistant and be long enough to over pass conductor insulation and shall be properly sized.
- 4.11.9 Termination of all cables installed by the Contractor is included in his scope, The work of testing and reconnection, changing of connections re-arrangement of leads to required extent shall be carried out by the contractor without additional cost.
- 4.11.10 Cable shielding – all signal cables are supplied with bare shielded copper wire/with braided wire shield. Generally shield wire is kept isolated at instrument/field device end and continuity is maintained through JB and grounded at panel end only. While terminating the shield wire, either in panel or JB, PVC sleeves are to be used to avoid two-point earthing.
- 4.11.11 **TESTING BEFORE COMMISSIONING SHALL INCLUDE THE FOLLOWING.**

##### **4.11.11.1 HT CABLE**

- a) Insulation resistance of the HT cable.
- b) Conducting Hi-pot Test.
- c) Ensure proper identification tags are in place.

##### **4.11.11.2 LT POWER / CONTROL / INSTRUMENT CABLES**

- a) Insulation resistance of the cable.

- b) Identify the cables with tag plates.

#### **4.12 INSTALLATION OF CABLE TRAYS AND ACCESSORIES**

- 4.12.1 Erection of Cable Trays includes installing ladder/perforated type cable trays in cable trenches, plant area, steel columns, overhead areas etc. on the supports already provided. Approximate quantity is indicated in the rate schedule.
- 4.12.2 Cable trays, coupler plates and fasteners shall be supplied by BHEL.
- 4.12.3 Only straight trays will be supplied by BHEL. Other accessories like Bends Tees, Cross, etc... which may be required for proper laying of cable as per cable routing will be fabricated by the contractor at his cost to the extent of 10% of the number of trays supplied by BHEL. The fabricated trays shall conform to the shape and configuration of original bends etc, that would have been supplied. The fabrication of the bends from straight trays will include cutting the ladder steps, bending the side plates to the required radius and re-welding the ladder steps with the bent plates. Trays supplied will be of G.I. and hence 1.5mm citofine electrode only shall be used for welding purposes. All cuttings shall be done only with hack-saw and gas cutting should not be resorted to.
- 4.12.4 The cable trays shall be adequately tack welded to supporting steel work and shall be sufficiently supported to prevent sagging. The weld shall be painted using cold galvanizing paint (supply of paint is in the scope of contractor)
- 4.12.5 In case cable trays are required to be fabricated from structural steel and installed, unit rate applicable for fabrication and installation of structural steel shall be applicable in such instance.

#### **4.13 INSTALLATION OF EARTHING**

- 4.13.1 Installation of above-ground earthing for the complete system is the scope of the contractor. following. Required quantity of GI flats/wires will be supplied by BHEL.
- 4.13.2 Earthing of all motors, Switch gear Panels, LTMCC, PMCC, ACP, PLC, Electronic Control Panel, Push Button Stations, Junction Boxes, Transformers, Heaters, thermostats, instruments, Cable trays and accessories, cable armours and conduits used for cable installation, etc. are in the scope of work.
- 4.13.3 Installation of earthing conductors and terminations at the equipments and at the earth rings / buses/ earth pits and the necessary clamping of the conductors shall be carried out by the contractor. The tentative quantities required for the earthing is indicated in the rate schedule.
- 4.13.4 All equipments shall be earthed by two separate and distinct connections. Earthing terminals will be available in all the equipment supplied by BHEL.
- 4.13.5 The earthing conductor of galvanized mild steel strips, wires will be supplied by BHEL. All connections for the equipment to the main earthing conductor shall be made as indicated in schematic drawings provided during execution of work.
- 4.13.6 A continuous earthing conductor shall be installed in all cable trays and securely clamped to each tray section by suitable connections to form a continuous earthing system. When two (or) more trays supporting power cables run parallel, a continuous earthing conductor shall be provided on one tray only with tap offs to the control cable trays.
- 4.13.7 All joints in the earthing system shall be welded type. Earthing connections to all equipment including motor shall be of bolted type.
- 4.13.8 Earthing connections shall be free from tinning, scale, paint, enamel, grease, rust (or) dirt at the time of making joint.
- 4.13.9 Screens / Shields and armour of all multi core cables shall be bonded and earthed.

- 4.13.10 Earthing conductors ,along their run on columns, beams, walls etc. shall be supported by suitable cleats to intervals of 750mm.
- 4.13.11 Welded joints shall be painted with red oxide and Aluminium paint / cold galvanizing paint in turn and afterwards coated with bitumen as per IS 3043. Supply of paint etc. are in the scope of contractor.
- 4.13.12 Earth lead and riser connections shall be as short and direct as possible and shall be without any links and spacing.
- 4.13.13 All earthing works includes laying of earthing flat as per the schematic drawing and termination up to the earthing pit.

#### **4.14 STRUCTURAL STEEL FABRICATION AND ERECTION**

- 4.14.1 Structural steel material like MS angles, channels, beams, flats, plates, pipes etc. shall be supplied in running meters and same shall be used for fabrication of panel base frame, cable tray supports, supporting frames for instruments, junction boxes, distribution boards, impulse lines etc., canopies for instruments/ panels/ JB/push button stations etc.
- 4.14.2 This shall include cutting to size, contouring of end for connections if required, welding, grinding of excess weld deposits/ burrs, drilling of holes for mounting of device/instrument, installation at location, leveling, alignment, providing bracings, painting etc. **No gas cut holes will be permitted** contractor to follow the BHEL supplied welding schedule and welding procedures.
- 4.14.3 All the fabricated supports/frames shall be painted as per painting schedule. **All paints, primers etc. are in the scope of the contractor.**
- 4.14.4 Frame installation/cable tray accessories' installation at site may involve mounting either on concrete floor by grouting/using anchor fasteners or on steel structure by welding etc. All consumables shall be arranged by the contractor.
- 4.14.5 In certain packages galvanized members of junction box frames and instrument racks shall be supplied in cut to sizes and frame assemblies are required to be done as per drawing by bolting/welding. The installation rate as quoted shall include the assembling of the frames.
- 4.14.6 Gas cutting of tray/impulse pipe support and gas cut holes in frame shall be avoided. Only drilled hole is permitted in frame etc.

#### **4.15 PAINTING**

- 4.15.1 **Supply of Primer, Finish paint etc is included in the scope of the contractor.** Paints shall be arranged from standard reputed suppliers in consultation with BHEL.
- 4.15.2 **Colour Banding, Legend and Identification Marking, Direction Marking etc. shall be in scope of the contractor for all items erected/commissioned by the contractor.**
- 4.15.3 All the weld joints of GI cable trays and GI structural members shall be applied with a coat of cold galvanizing zinc paint. Paint etc shall be arranged by contractor at his cost.

#### **4.15.4 STRUCTURALS**

- 4.15.4.1 All the supporting steel work for the over head cable trays, risers, JBS, SSPBs, instruments etc., shall also have protective painting. The surfaces of the above shall be free from rust, foreign adhering matters, grease etc. structural components shall be cleaned as per specifications and then coated with two coats of primer and finish paint as per BHEL instructions.

#### **4.15.5 PANELS, JUNCTION BOXES , TRANSFORMER ETC.**

- 4.15.5.1 Panels and Junction Boxes shall be Touch-up painted as and where original shop paint is peeled off. Necessary surface cleaning and preparation shall be done by the contractor as per relevant painting codes followed by two coats of Primer and two coats of Finish Paint.

#### **4.16 INTEGRATED TESTING, PRE-COMMISSIONING, AND POST COMMISSIONING**

- 4.16.1 The contractor shall perform various activities during pre-commissioning, integrated Testing, post commissioning stages of equipment covered under this tender specification. It is responsibility of contractor to arranged tools & plants, test equipments, experienced engineers and technicians.
- 4.16.2 The contractor's commissioning group shall work as per the instruction of BHEL engineer and they shall coordinate day-to-day activity with other agency and BHEL/ customer. The testing activity may have to repeated till satisfactory results are obtained and also to satisfy the requirement of BHEL.
- 4.16.3 The equipments erected by the contractor will be tested and commissioned as per normal testing practice like panel charging, Meggering of cables, conducting of open circuit / short circuit testing etc. as per the instruction of BHEL engineers.
- 4.16.4 The contractor will supply required manpower along with all required testing equipments like multimeter, megger, tong tester, test kit etc. and his quoted rates will be inclusive of all equipment / instruments like multimeter, megger, tong tester, test kit etc. and his quoted rates will be inclusive of all above aspects.
- 4.16.5 The contractor shall prepare all erection / commissioning log sheets and protocols / test certificates as per field quality plan, get is signed by the concerned BHEL/Customer engineer and submit the same to BHEL engineer as per his instruction.
- 4.16.6 While testing and commissioning, if the equipment to which the cabling is connected is observed to be not functioning, it is the responsibility of the contractor to check, establish and demonstrate, in close coordination with the commissioning agencies, that there is no defect in the cabling. The contractor shall depute his supervisor and workmen to assist the commissioning agencies to check the interconnecting cables.
- 4.16.7 The mobilization of these commissioning groups shall be such that planned activities are taken up in time and also completed as per schedule and work undertaken round the clock if required. It is responsibility of contractor to discuss on day to day basis the requirement of manpower, consumables, tools & tackles / testing equipments with BHEL engineers and arrange for the same.
- 4.16.8 During the commissioning activities and carrying out various tests, if any one of temporarily work such mounting of test equipments / cabling etc are required, the contractor shall carry out such work without on any extra cost. The same shall be removed after completion of the activity.
- 4.16.9 The contractor shall carry out any other tests as desired by BHEL engineer on erected equipment covered under the scope of this contract during testing, pre-commissioning and commissioning, to demonstrate the completion of any part or whole of work performed by the contractor.

#### **4.17 ELECTRICAL INSPECTORATE'S APPROVAL/ STATUTORY INSPECTION**

- 4.17.1 Contractor shall have/obtain valid electrical contractors License to carry out the erection, Testing & Commissioning work on High/Low voltage electrical equipments from the appropriate statutory authority of concerned state or central electricity authority, as the case may be. All fees and expense in this regard shall be in the contractor's account.
- 4.17.2 Contractors shall arrange inspection of concerned statutory Authority for the installation, testing & commissioning of high / low voltage equipments covered under the scope of work and including those erected by other agencies and obtain the statutory authorities approval in appropriate format prior to charging of the equipments.
- 4.17.3 Contractor shall be responsible for all necessary liaisoning work with statutory authority towards the certification of installation / works. BHEL will only pay statutory fees in respect of inspection of all installations as per demand note/challan issued by the statutory

authority. All other expense shall be borne by the contractor. BHEL / BHEL's customer shall be providing technical assistance, drawing & document for submission to statutory authority. Contractor shall provide all logistics services in this regard.

#### **4.18 STANDARDS**

4.18.1 Complete erection shall conform to Indian Electricity Act with latest amendments and also to latest editions of the relevant Indian Standards.

- a) IS:2274- Code of practice for electrical wiring installation. (System Voltage not exceeding –650 V).
- b) IS:732- Code of practice for electrical wiring installation (System Voltage not exceeding – 650 V)
- c) IS:732 – Code of practice for earthing.
- d) IS : 3072 – Code of practice for installation and maintenance of switch gears.
- e) The latest edition of IE Act & IE Rules.
- f) Other relevant standards as applicable.

#### **4.19 MEASUREMENTS**

4.19.1 For all payments purposes, measurement shall be made on the basis of actual execution in line with drawings/ documents /site requirements.

4.19.2 The measurement of cable, impulse pipes/ tubes, conduits, flexible conduits, trays etc. shall be made on the basis of length actually laid.

4.19.3 For all site-fabricated steel items such as supports, racks, frame, canopy etc., physical measurement shall be made and then converted to tonnage. For steel material supplied to contractor, all scrap shall be returned to BHEL stores with due accounting.

4.19.4 The cable take-off from drums shall be planned strategically such that jointing in the run of cables and wastage are avoided. For this purpose, the exact route length between various equipment /panels as per the cable schedule shall be measured and the route length recorded before laying of the cables. Depending upon the route length and the type of cable required for various destinations, the cable drums should be suitably selected for cable laying. Any jointing shall be approved by the BHEL Engineer. All the cut pieces/ bits of cables, which are not used/ unused shall be returned to BHEL for accounting purpose.

#### **4.20 TERMS OF PAYMENT FOR ELECTRICAL WORKS :**

4.20.1 60% of the contract rate on pro-rata basis progressively as and when the erection work is completed as per BHEL drawings and instructions.

4.20.2 Further 30% of the contract rate shall be paid on completion of alignment grouting, Cable laying, Cable termination, cable dressing. Tagging and testing of entire equipments to the satisfaction of BHEL and their client.

4.20.3 Further 5% of the contract value shall be paid on commissioning of entire equipments to the satisfaction of BHEL and their client.

4.20.4 The balance 5% of the contract value shall be paid after guarantee period of 12 months. The guarantee period will commence from the date of handing over of the unit to the customer or six months after the date of successful completion of Trial run, whichever is earlier. However, this 5% amount can be released against Bank Guarantee valid for 12 months as aforesaid in the prescribed proforma of BHEL.

-----

## **SECTION - V**

### **COMMON CONDITIONS OF CONTRACT FOR ELECTRICAL WORKS**

#### **5.1 SCOPE OF CONTRACT**

The indent of this specification is to provide services for execution of projects according to most modern and proven techniques and codes. The omission of specific reference to any method, equipment or material necessary for the proper and efficient services towards the work allotted shall not relieve the contractor of the responsibility of providing such services/facilities to complete the project or portion of project awarded to him. The quoted rate shall deem to be inclusive of all such contingencies.

- 5.1.2** The contractor shall carry out the work in accordance with instructions/drawings/specification standard practices supplied by BHEL from time to time.
- 5.1.3** Provision of all types of labour, supervisors, Stores staff, watch and ward as required, tools and tackles as specified consumables as specified under various clauses of Tender Specification for erection, testing and commissioning and dismantling of existing structures.
- 5.1.4** Proper out turn as per BHEL plan and commitment.
- 5.1.5** Completion of work in time.
- 5.1.6** Good quality and accurate workmanship for proper performance of equipment.
- 5.1.7** Repair and rectification.
- 5.1.8** Re-conservation / preservation of all components.

#### **5.2 FACILITIES TO BE PROVIDED AND DEVELOPED BY THE TENDERERS AT HIS COST**

- 5.2.1** It shall be the responsibility of the contractor to construct his own office shed, stores shed, labour tonements, with all facilities like electricity, water supply, sanitary arrangements in the area allotted to him for the purpose.
- 5.2.2** Distribution of water for construction purposes and as well as drinking purpose from the single point provided by BHEL to various works fronts shall be the Contractor's responsibility and at his cost.
- 5.2.3** Necessary meters for recording consumption of water and power for cost analysis purpose and maintenance of the same during execution period shall be Contractor's responsibility.
- 5.2.4** Provision for distribution of electrical power from the given single central point to the required places with proper distribution boards, approved cable laying, including supply of all materials like cables, switch boards, pipes, etc., observing the safety rules laid down by the Electricity Authority of the State/BHEL/their customer shall be the responsibility of the tenderer /contractor.
- 5.2.5** As there are bound to be interruptions in regular power supply, power cut/load shedding in any construct on sites due to inherent power shortage in State on this account, suitable extension of time only be given and contractor is not entitled for any compensation. Such interruptions should be intimated to BHEL by the contractor timely It shall be the responsibility of the

contractor to have at least a few diesel operated welding generator sets to get urgent and important work done with out interruption.

- 5.2.6** Adequate lighting facilities such as flood lamps, 24V Safety lamps and area flood lighting shall be arranged by the Contractor at the site of constructions, pre-assembly area, Contractor's material storage area and at access roads etc., at his cost.
- 5.2.7** 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.
- 5.2.8** On completion of work, all the temporary buildings, structures, pipelines, cables etc. shall be dismantled and leveled and debris shall be removed as per instruction of BHEL by the contractor at his cost. In the event of his failure to do so, the same will be arranged to be removed and expenditure therefore will be recovered from the Contractor. The decision of BHEL Engineer in this regard is final.
- 5.2.9** The Contractor shall provide all materials required for scaffolding, formwork and centering wherever necessary for erection should arrange at his cost.
- 5.2.10** Depending upon the nature of work and availability of facilities locally, Contractor may have to arrange for a temporary work-shop for facilitating uninterrupted progress of work.
- 5.2.11** The contractor shall secure and maintain comprehensive including third party insurance for appropriate amount to protect your and our interest against all risk and claims to the men/women or for labour force. If failure in securing the insurance policies in this regard shall not absolve you from reimbursing to us for any loss / damages / injuries or death to any person.
- 5.2.12** The contractor shall be fully responsible for obtaining labour licence/approval if any, from State/Central/Local authorities at his own cost and risk.
- 5.2.13** It is the responsibility of contractor to obtain approval from statutory authorities like pollution control board, Factory Inspectorate etc., if necessary.
- 5.2.14** All fees connected with the contractor for Testing his Welders/Men / Works and Testing, Inspection, calibrating 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 be contractor's Account.

### **5.3 GASES**

- 5.3.1** All required gases like oxygen / Acetyllene / LPG for the 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 attending the required progress.
- 5.3.2** In case of improper arrangement of above gases, BHEL reserves the right to procure the same from any source and recover the cost from the Contractor's bill at market value plus BHEL departmental charges as may be fixed from time to time Postponement of recoveries is not permissible. The decision of BHEL Engineer in this regard is final and binding on the Contractor.
- 5.3.2** BHEL reserves the right to reject the use of any gas in case the required purity is not maintained.

- 5.3.3** The Contractor shall submit Weekly / fortnightly / monthly statements / reports regarding consumption of above gases for cost analysis programme.
- 5.3.4** The Contractor shall ensure safekeeping of the inflammable cylinders at separate place away from normal habit with proper security etc.
- 5.4 ELECTRODES**
- 5.4.1** All the electrodes 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 subjected to inspection and approval by BHEL. The Contractor shall inform BHEL, the details regarding type of electrode, batch number, date of expiry etc.
- 5.4.2** Storage of electrode shall be done in an air-conditioned / controlled humidity room as per requirement.
- 5.4.3** Shortage of any of the electrodes of the equipment suggested by BHEL shall not be quoted as reason for deficiency in progress or for additional rate.
- 5.4.4** BHEL reserves the right to reject the use of any electrodes at any stage, if found defective because of bad quality, improper storage, quality, date of expiry, unapproved type of electrodes etc. It shall be the responsibility of the Contractor to replace at his cost with out loss of time.
- 5.4.5** All electrodes shall be dried in the electrodes drying oven to the temperature and period specified by BHEL Engineer before they are used for erection work. Electrode drying ovens shall be provided by the contractor.
- 5.4.6** In case of improper arrangement for 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 the departmental charges of BHEL communicated from time to time. Postponement of such recovery is not permitted.
- 5.4.7** Contractor shall submit weekly/ fortnightly / monthly statement / reports regarding consumption of electrodes of all types for cost analysis purpose.
- 5.5 CRANE AND OTHER TOOLS AND TACKLES**
- 5.5.1** All the T&P including Cranes, trucks, lorries, tractors, trailers etc required for the satisfactory execution of work shall be arranged by the Contractor. BHEL will not arrange any Tools and Plants.
- 5.5.2** All the T&P arranged by the Contractor including electrical connection wherein required shall be reliable / proven tested with necessary test certificate.
- 5.5.3** All the T&P, lifting tackles including wire ropes, sling, shackles and electrically operated equipments arranged by Contractor shall be got approved by BHEL Engineer before they are actually put on use.
- 5.5.4** Civil works required for safe and efficient operation of tools and tackles shall be the Contractor's responsibility.
- 5.5.5** Contractor shall take into consideration the above clauses and quote the rates as called for in the rate Schedule.

## **5.5.6 SUPERVISORY STAFF AND WORKMEN**

- 5.6.1** The Contractor shall supply all skilled workmen like welders, gas cutters, riggers, erectors, carpenters, fitters, electricians etc., in addition to other skilled, semi-skilled, unskilled workmen required for all the works of receipt, material handling, transportation, erection, testing and commissioning contemplated under this specification. Only fully trained and competent men with previous experience in the job shall be employed. They shall hold 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 or removal of any employee of the Contractor shall for with remove him.
- 5.6.2** The supervisory staff employed by the Contractor shall ensure proper out-turn of work and discipline on the part of the labour put on the job by Contractor and in general see that the works are carried out in a safe and proper manner and in co-ordination with other labour and staff employed directly by BHEL or other contractors of BHEL or BHEL'S client.
- 5.6.3** 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.
- 5.6.4** The work shall be executed under the usual conditions affecting major power plant constructions and in conjunction with numerous other operations at site. The Contractor and his personnel shall co-operate with other personnel and proceed in a manner that shall not delay or hinder the progress of work as a whole.
- 5.6.5** It is the responsibility of the contractor to arrange gate pass for all his employees, T&P etc. Necessary coordination with customer officials is the responsibility of the contractor. Contractor to follow all the procedures laid down by the customer for making gate passes. Where permitted, by customer/ BHEL, to work beyond normal working hours, the contractor shall arrange necessary work permit for working beyond normal working hours.
- 5.6.6** The Contractor's supervisory staff shall execute the work in the most substantial and work man like manner in the stipulated time Accuracy of work and aesthetic finish are essential part of this contract. The contract 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.
- 5.6.7** 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.
- 5.6.8** It is the responsibility of the Contractor to engage his workmen in shifts or on over time basis for achieving the target set by BHEL and also during the period of commissioning and testing The Contractor's quoted rate shall include all these contingencies.
- 5.6.9** In case Contractor's progress is found unsatisfactory BHEL may deploy fitters, welders, operators and technicians on BHEL rates and will assist in improving the progress. All expenses incurred for will be recovered from Contractor's bill.
- 5.6.10** If the Contractor or his workmen or employees shall break, deface, injure or destroy any part of 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 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 from the Contractor.

## **5.7 CIVIL WORKS**

- 5.7.1** Column foundation and foundation for other plants, control room building and necessary civil works shall be provided by BHEL. The dimensions 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 benchmark, etc. All minor adjustments of foundation level, dressing and chipping of foundation, up to 40mm 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 materials like cement, steel etc., shall also be arranged by the Contractor.
- 5.7.2** Any civil works required for safe and efficient operation of tools and tackles issued by BHEL like grouting/excavation casting of foundation for anchor points for derricks, winches etc., and any other temporary supports shall be the Contractor's responsibility.
- 5.7.3** The Contractor shall ensure perfect matching of packer plates with foundation by dressing the foundation and between the packer plates and the base plates of structural column/equipment to the satisfaction of BHEL Engineer.
- 5.7.4** Grouting of column base plates/equipments foundation box and base plates shall be carried out by the Contractor for which cement alone will be provided by BHEL on chargeable basis. All other materials to be arranged by Contractor.
- 5.7.5** The contractor shall satisfy himself regarding the correctness of the civil works, foundation, etc., so that the equipment erected by him shall not suffer due to any defects in the above. For this purpose, he should also visit site during the progress of civil construction works, if necessary, to ensure that the civil work is carried out as per his requirements.

## **5.8 SCOPE OF MATERIAL HANDLING**

- 5.8.1** While BHEL will endeavor to store/stack/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, following the procedure indicated by BHEL and transport the materials safely to pre-assembly yard, erection site in time, according to schedule.
- 5.8.2** The Contractor shall identify necessary supervisor/labour for the above work in sufficient quantity as may be needed by BHEL for areas covering their scope.
- 5.8.3** It shall be the Contractor's responsibility to arrange for necessary crane/tractor/trailor or trucks/slings/tools and tackles /labour/including operators for loading from storage yard on to transport equipment, move it to erection site/pre-assembly yard and unload the same at pre-assembly yard/erection site and to erect the ESP and the quoted rate shall include the same. Tenderers may please note that the storage yards are at an approximate distance of 5.0.km from erection site.
- 5.8.4** All equipments so used by Contractor shall be of proven quality and safe in operation as approved by BHEL Site Engineer's from time to time.
- 5.8.5** 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.
- 5.8.6** The Contractor shall take delivery of components and equipment and special consumables from storage area after getting the approval of BHEL Engineer on standard indent forms.

- 5.8.7** In the event of Contractor's inability to arrange in time any of the above equipment/T&P etc., if possible BHEL shall provide the same on specific written request from the Contractor subject to the availability of equipment on the normal hire charges of BHEL, applicable from time to time and recoverable from Contractor's subsequent month's running bills.
- 5.8.8** All the surplus, damaged unused materials, package materials/containers, special transporting frames, gunny bags etc. supplied by BHEL shall be returned to BHEL Stores by the Contractor.
- 5.8.9** 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.
- 5.8.10** The Contractor shall make suitable security arrangements (round the clock) 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 at Site.
- 5.8.11** The Contractor shall ensure that all the packing materials and protection devices used for the various equipments during transit and storage are removed before these equipments are installed.
- 5.8.12** All equipments shall be handled very carefully to prevent any damage or loss. No bars, wire ropes, slings etc., shall be used for unloading and/or handling of the equipments with out the specific written permission of the Engineer. The equipment 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 equipment at Site.
- 5.8.13** 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. Whenever 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.
- 5.8.14** The Contractor shall be responsible for taking all safety precautions during the constructions and leaving the site safe at the end of each working day and at all times. When the work is temporarily suspended, he shall protect all construction materials, equipments and facilities from causing damage to existing property interfering with the operation of the station when it goes into service. 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.
- 5.8.15** 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.
- 5.8.16** 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 and tested and commissioned and taken over by BHEL's client. The stolen/lost/damaged good shall have to be made good by the contractor at his own cost.

## **5.9 PRESERVATION OF COMPONENTS**

- 5.9.1** In order to maintain the surfaces of various components from rusting etc., frequent painting/re-painting of material at storage yard has to be carried out. Contractor has to arrange for supply of paint/thinner etc., it is also shall be responsibility of Tenderer/Contractor to provide sufficient number of unskilled category of labour for carrying out the preservative painting. The number of labour to be supplied will depend on the quantum of work awarded.

- 5.9.2** The above-referred labour will be given by the Contractor right through the contract period without fail and any failure on their part will entail in reduction of the value of their running bills.
- 5.9.3** It shall be the responsibility of the Contractor to apply preservative painting on equipments erected by him till such time of final painting. All paints and thinner will be supplied by CONTRACTOR and it shall be Contractor's responsibility to arrange for required labour, scaffolding materials, providing of scaffoldings, supply of cleaning materials like wire brush, emery sheets, etc., cleaning of surface and provide one coat of preservative painting from time to time as decided by BHEL Engineer. The quoted rate shall include this work also. It is to be noted that such painting may have to be done twice a year till such time the final painting is carried out.
- 5.9.4** 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.
- 5.9.5** Any failure on the part of the Contractor to carry out works according to above clauses will entail BHEL to carry out the job from any other party and recover the cost from the Contractor.

## **5.10 DRAWING AND DOCUMENTS**

- 5.10.1** The detailed drawings, specifications, available with BHEL Engineers will form part of this Tender Specification These documents will be made available to the Contractor during execution of work at site.
- 5.10.2** 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.
- 5.10.3** Should any error ambiguity be discovered in the specification or information, the Contractor shall for with 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.
- 5.10.4** The data furnished in various appendices and the drawings enclosed 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 quality may be expected to occur as is usual in any such large scales of work.
- 5.10.5** Deviation from design dimensions should not exceed permissible limit. The Contractor shall not correct or alter any dimension/details, without specific approval of BHEL.

## **5.11 SITE CLEANLINESS AND SAFETY REQUIREMENTS:**

- 5.11.1** During the course of construction, alternation or repairs, scrap lumber with protruding nails, sharp edges etc., and all other debris shall be kept cleared from working areas, passageways and stairs in and around Site. Proper house keeping is the responsibility of the Contractor.
- 5.11.2** Combustible scrap and debris shall be removed at regular intervals during the course of construction. Safe means shall be provided by the Contractor to facilitate such removal. If this is not done regularly, BHEL will get the job done and debit the cost to Contractor.
- 5.11.3** Rigging equipments for material handling shall be inspected prior to use of each shift and as necessary during its use to ensure that it is safe. Defective rigging equipment shall be removed from service. Necessary test certificates have to be provided by the Contractor for the rigging

and handling equipments brought by them. Otherwise this will be got to be done by BHEL and the cost will be debited to Contractor.

- 5.11.4** Rigging equipment shall not be loaded in excess of its recommended safe working load.
- 5.11.5** Rigging equipment when not in use shall be removed from the immediate work area so as not to present a hazard to employees.
- 5.11.6** The Contractor will notify the Engineer his intention to bring on to site any equipment or any container with liquid or gaseous fuel or other substance which may create a hazard. The Engineer shall have the right to prescribe the conditions under which such equipment or container may be handled and used during the performance of the works and the Contractor shall strictly adhere to such instructions. The Engineers shall have the right to inspect any construction plant and to forbid its use, if in his opinion it is unsafe. No claim due to such prohibition shall be entertained.
- 5.11.7** Where it necessary to provide and/or store petroleum products or petroleum mixture and explosives, the Contractor shall be responsible for carrying out such provision and/or storage in accordance with the rules and regulations laid down in the relevant petroleum Act., Explosive Act and Petroleum and Carbide of Calcium Manual, published by the Chief Inspectorate of Explosives of India. All such storage shall have prior approvals of Engineer. In case any approvals are necessary from the Chief Inspector of Explosives of any other statutory Authorities, the Contractor shall be responsible for obtaining the same.
- 5.11.8** Valve protection caps shall be in place and secured.
- 5.11.9** Cylinders shall be moved by tilting and rolling them on their bottom edges. They shall not be intentionally dropped, struck or permitted to strike each other violently.
- 5.11.10** When cylinders are transported by powered vehicles, they shall be secured in vertical position.
- 5.11.11** All workmen of the Contractor working construction areas shall wear safety helmets and/or safety belt when working at heights. Contractor shall insure his workmen against all accidents, and the policy shall be presented to BHEL will arrange the same and the expenditure towards this will be debited to the Contractor. In case the Contractor fails to provide necessary safety equipments to workmen, BHEL will provide the same to the workers and recover the cost of equipment along with BHEL overheads.
- 5.11.12** All the above safety conditions are not exhaustive but gives an idea for the Contractor and the Contractor shall adhere to all the safety precautions given by the BHEL Engineer at Site. Such of those workmen who do not follow safety precautions shall be turned out from Site. They will not be allowed to work until they fulfill safety regulations.
- 5.11.13** Contractor shall arrange at his cost suitable flood lighting arrangement at various levels for safe and proper working during night hours at the work spot as well as at the pre-assembly area.
- 5.11.14** The Contractor shall be responsible for provision of all the safety notices and safety equipments as enjoined on him by the application of relevant statutory regulations/provisions and/or as called upon by the BHEL Engineer from time to time.
- 5.11.15** The Contractor shall provide temporary fencing wherever required as a safety measure against accident and damage to properties. Suitable caution notices shall be displayed where access to any part is found to be unsafe and hazardous.

- 5.11.16** The Contractor shall ensure the safety of all the workmen, material and equipments either belonging to him or to others working at site.
- 5.11.17** It will be the responsibility of the Contractor to ensure safe lifting of the equipments, taking due precaution to avoid any accidents and damages to other equipments and personnel.
- 5.11.18** The Contractor shall provide necessary first aid facilities for all his employees, representatives and workmen working at Site.
- 5.11.19** All the Contractor's Supervisory personnel and sufficient number of workers shall be trained for fire fighting and shall be assigned specific fire protection duties. Enough number of such trained personnel must be available during the tenure of the Contract. Contractor should nominate one of his supervisors to co-ordinate and for implementation of safety measure.
- 5.11.20** Contractor shall provide enough fire fighting equipment of the types and numbers at his office, temporary structures, labour colony area etc. Access to such fire fighting equipment shall be easy and kept open at all times. Compliance of the above requirement under fire protection shall in no way relieve the Contractor of any of his responsibilities and liabilities to fire accident occurring.
- 5.11.21** The Contractor shall at his cost remove of on vicinity of work, all scrap packing materials rubbish unused and other materials and deposit them in places specified by BHEL engineer to keep the work Site clean and tidy.

## **5.12. TIME SCHEDULE**

- 5.12.1 The entire work of erection, testing and commissioning of the under the scope of work shall be completed within the time specified in the time schedule.
- 5.12.2 Time is the essence of this contract. The contractor shall be able to mobilize his manpower, tools, plants and consumables round the clock for the entire period to complete the work within the stipulated time.
- 5.12.3 For this purpose the completion of erection work shall be deemed to be completed in all respects only when the trial runs of motors, charging of transformers, panels and instruments/equipments are completed and certified so by BHEL Engineer. The decision of BHEL in this respect shall be final and binding on the contractor.
- 5.12.4 The commissioning of the unit shall be deemed to be completed in all respects only when all the equipments are tested and commissioned and the Unit is ready for commercial operation.

## **5.13. IDLE LABOUR**

- 5.13.1 No idle labour charges will be admissible in the event of any stoppage caused in the work resulting in contractor's labour being rendered idle due to any cause at any time.

## **5.14. PRICE ESCALATION:**

- 5.14.1 The Contractor has to keep his quoted rates firm for the entire contractual period including total extended period, if any, and no claim for revision of rates is allowed under any circumstances.
- 5.14.2 However, the Contractor shall maintain sufficient work force and other resources required for completion of the job expeditiously for the entire contractual period including total extended period.

- 5.14.3 **OVER-RUN COMPENSATION** : In case due to unforeseen circumstances and due to reasons not attributable the Contractor, the work gets delayed and completion time gets extended as per Bar Chart from the date of actual start of work at Site, the Contractor shall not be entitled for any over run compensation for a period of first 3 months after the Contractual completion date. However, the contractor shall be paid over-run charges for extension in the completion period beyond 3 months as stated above and for reasons not attributable to the Contractor.
- 5.15 **INSPECTION / QUALITY ASSURANCE / QUALITY CONTROL STATUTORY INSPECTION**
- 5.15.1 Various inspection/ quality control/ quality assurance procedures/methods at various stages of erection and commissioning will be as per BHEL / customer quality control procedure/codes and the other statutory provisions and as per BHEL Engineers instructions.
- 5.15.2 Preparation of quality assurance log sheets and protocols with customer's engineers, and other quality control and quality assurance documentation as per BHEL engineer's instructions, with in the scope of work / specification.
- 5.15.3 The protocols between contractor and customer / BHEL shall 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 with in tolerable limits and to avoid accumulation and multiplication of errors.
- 5.15.4 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.
- 5.15.5 Approval given by customer/BHEL for welding, results tests etc. shall also be recorded in the log book.
- 5.15.6 All the electrical/technical Measuring and Testing instruments / Gauges, Feeler gauges, Height Gauges , Dial Gauges, micrometers, Levels, Sprit Levels, surface Plates, Straight Edges, Vernier calipers and all measuring instruments shall be provided by the contractor for checking, Levelling, Alignment, testing etc of erected equipments at various stages. The instruments/ gauges/tools etc. provided should be Brand, quality and accuracy, specified by BHEL engineer and should have necessary calibration and other certificates as per the requirements of BHEL engineer.
- 5.15.7 Re-work necessitated an account of use of invalid instruments/measuring devices etc. shall be entirely to the contractor's account. The contractor shall be responsible for taking corrective actions, including resource augmentation if any, as specified by BHEL to make- up for the loss of time.
- 5.15.8 Total quality is the watch word of the work and standards, procedures laid down by BHEL. We shall follow all the instructions as per BHEL drawings and quality/standards. Contractor shall provide for the services of quality assurance engineer.
- 5.15.9 **STAGE INSPECTION BY FES/ QA ENGINEER:** Apart from Day-to-Day inspection by BHEL Engineers stationed at site and also by customers engineer's, 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 unit/ factory quality assurance and commissioning engineers. Customer shall arrange all labour, Tools and tackles, etc. for such stage inspections free of cost.
- 5.15.10 Any modification suggested by FES and QA engineers team shall be carried out claims of contractor, if any shall be dealt as applicable.

- 5.15.11 Any minor rectifications of major repairs of defective work found out during stage inspection shall be rectified free of cost, by the contractor
- 5.15.12 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.

## **5.16. SUBMISSION OF PERIODICAL REPORTS**

Contractor shall submit periodical reports in respect of following aspects of operation:

- 1) Consumption of welding electrodes and gases
- 2) Consumption of construction power
- 3) Manpower reports
- 4) Progress reports - periodically
- 5) Field calibration reports

BHEL at site will inform formats for these reports, which have to be printed by the contractor at their cost.

## **5.17 ELECTRICAL INSPECTORATE'S APPROVAL / STATUTORY COMPLIANCE**

- 5.17.1** Contractor shall have/obtain electrical contractors License to carry out the Erection, Testing & commissioning work on High/Low voltage Electrical Equipments from the appropriate statutory authority of the concerned state or Central Electricity Authority, as the case may be. All fees and expenses in this regard shall be in the contractor's account.
- 5.17.2** Contractor shall arrange inspection of concerned statutory authority for the installation, testing & commissioning of High/Low voltage equipments covered under the scope of work and including those erected by other agencies and obtain the statutory authorities approval in appropriate format prior to charging of the equipments.
- 5.17.3** **Contractor shall be responsible for all necessary liasioning work with statutory authority** towards the certification of installation / works. BHEL will pay statutory fees in respect of inspection of installations as per demand note/challan issued by the statutory authority. All other expense shall be borne by the contractor. BHEL/BHEL's customer shall be providing technical assistance, drawing and document for submission to statutory authority. Contractor shall provide all logistics services in this regard.
- 5.17.4** In case these inspections 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 their Bills.

-----

## SPECIAL CONDITIONS OF CONTRACT

### SECTION - VI

#### 6.0 EXTRA CHARGES FOR MODIFICATION AND RECTIFICATION WORKS:

- 6.1 BHEL may consider payment for extra works on man-hour basis for such of those works which require major modification which is totally unusual to normal erection or commissioning work which are not due to contractor's faulty erection.
- 6.2 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 sheets duly certified by BHEL Engineer at site. But BHEL got the option to get those work done through other agencies if they so desire.
- 6.3 All the extra works, 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 the contractor's representative and BHEL Engineer. Signing of 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 Site-in-Charge of BHEL and accepted by designers/supplier's competent authority only will be considered for payment. The decision of BHEL in this regard shall be final and binding on the contractor.
- 6.4 Average single manhour rate including overtime if any, supervision, use of tools and tackles and other site expenses and incidentals, **including consumables** for carrying out any rework / revamping as may arise during the coarse of erection shall be **Rs. 40/- per man hour**.
- 6.5 Average single manhour 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 coarse of erection shall be **Rs. 25/- per man hour**.
- 6.6 Extra works does not include nominal dressing of foundations, holes, bases, nut and bolts. In case of abnormal conditions, this can be mutually discussed before starting of such work.
- 6.7 Extra works are broadly defined as below:
- i) Design changes which will be intimated to the contractor after the start of the work which call for dismantling of the erected components, rectification, modification, etc.
  - ii) Repair / rectification of the components damaged during transit and intimated to BHEL before drawing the materials from BHEL stores.
  - iii) Modification, rectification of components wrongly manufactured/fabricated at works subject to acceptance of the approving authority. Any such modification work costing less than 48 Man Hours per work of a DU shall be considered as incidental to erection and shall not be considered for payment.
  - iv) Jobs which require major modification, major repair, major reworks etc. which will be identified as major and warrant extra payment, certified as such by the Site-in-Charge of BHEL and accepted by the designers/competent authority of BHEL. The decision of BHEL in this regard shall be final and binding on the contractor.

~~~~~

**SPECIAL CONDITIONS OF CONTRACT****SECTION - VII****7.0 OVER-RUN COMPENSATION (ORC):**

- 7.1 In case due to reasons not attributable to the contractor, the work gets delayed and the completion gets extended beyond the contract completion date by more than the grace period of 3 months, the contractor shall be paid Over-run compensation for every month of extended period so determined by BHEL beyond the contract completion date (and the grace period) indicated in this specification.
- 7.2 ORC will be paid only at the end of the contract period, including extension/s of period if any, after ascertaining the actual period of eligibility of delay as aforesaid. For this purpose, the contractor shall submit details of factors with time estimates which accounted for the delay in work completion.
- 7.3 All decisions of BHEL in this regard shall be final and binding on the contractor. The period to be considered for ORC shall not include loss of time due to Force-majeure conditions explained in this tender.
- 7.4 **The ORC shall be paid by BHEL only after completion of all works within the scope of the works awarded to the Contractor.** Hence, it is obligatory on the part of the tenderer to complete the works during extended period also.
- 7.5 This supplements the clause 5.15 of Common Conditions of Contract for Electrical works – Section -V enclosed along with this tender specification.
- 7.6 **The rate of ORC payable shall be Rs.24,000/-** (Rupees Twenty Four Thousand only) per month for the total eligibility period determined by BHEL. The tenderer shall confirm their acceptance for this clause.

~~~~~

## SPECIAL CONDITIONS OF CONTRACT

### SECTION – VIII

#### **8.0 GENERAL TERMS AND CONDITIONS OF REVERSE AUCTION**

- 8.1 For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
- 8.2 BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on Internet.
- 8.3 BHEL will inform the vendor in writing, in case of reverse auction, the details of service provider to enable them to contact and get trained.
- 8.4 Business rules like event date, time, start price, bid decrement, extensions, etc. also will be communicated through service provider for compliance.
- 8.5 Vendors have to fax the compliance form in the prescribed format (provided by service provider) before start of Reverse auction. Without this the vendor will not be eligible to participate in the event.
- 8.6 BHEL will provide the rate schedule (e.g. EXCEL sheet) for the vendor to enable them to fill-in the price and keep it ready for keying in during the auction. In the event of discrepancy in rate and amount against any item of work, the least of the two will be taken for bid price. In case of discrepancy between the total price indicated in price bid and the arithmetic sum arrived based on rate quoted, then also the least of the two will be taken for the bid price. The bids are compared on the total price quoted and NOT on individual ITEM of works.
- 8.7 Reverse auction will be conducted on scheduled date & time.
- 8.8 At the end of reverse auction event, the lowest bidder value will be known on the network.
- 8.9 The lowest bidder has to fax the duly signed filled-in prescribed format as provided on case-to-case basis to BHEL through Service provider within 24 hours of auction without fail.
- 8.10 Opening bid in reverse Auction: The opening bid (in the reverse Auction) of the bidders shall be same as that quoted in their final sealed price submitted to BHEL(along with Technical offer). The bidder shall confirm in writing to BHEL that their opening bid (in reverse auction) shall be same as that quoted in their final sealed price bids submitted to BHEL against this NIT along with Technical Bid (Patr-1).**If any bidder offered a unsolicited discount or rebate, in separate cover etc. in any place other than the sealed price bid, then the opening price bid in reverse auction, by such a bidder in Reverse Auction, shall be the price offered in final sealed price bid submitted (against this NIT) minus discount offered in any place other than the sealed price bid.**
- 8.11 BHEL reserves the right to cancel Reverse Auction (RA) without assigning any reasons and resort to considering the sealed bids submitted by vendor for processing and finalizing the tender.

- 8.12 In case the process of reverse auction is found unsuccessful by BHEL, then BHEL at its discretion may decide to call the L1 bidder of reverse auction for further negotiation.
- 8.13 Any variation between the on-line bid value and signed document will be considered as sabotaging the tender process and will invite disqualification of vender to conduct business with BHEL as per prevailing procedure.
- 8.14 In case BHEL decides not to go for Reverse auction procedure for this tender enquiry, the Price Bids and price impacts, if any already submitted and available with BHEL shall be opened as per BHEL's standard practice.
- 8.15 Only those vendors, who participate in the Online Initial Opening Bid, will be eligible to participate in the subsequent Online English Reverse Auction.
- 8.16 Price bids offered by the bidders during reverse auction process is considered as an offer to execute the work. Bids once made by a bidder cannot be cancelled/withdrawn and bidders shall be bound to execute the work at the final bid price. BHEL shall take appropriate action if the bidder fails to do so.
-

## APPENDIX - I

**LIST OF MAJOR TOOLS & TACKLES , TESTING & MEASUREING INSTRUMENTS/ TOOLS AND TRACKLES TO BE ARRANGED/BROUGHT BY CONTRACTOR.**

This is only an indicative list. All the tools & tackles, equipment, instruments, test kits etc. required for completion of the work shall be arranged by the contractor. **All safety equipment required for this work shall be arranged by the contractor. All safety regulations of BHEL/their client M/s.APGENCO must be followed by the contractor during the erection work.**

SL.NO.	Description
<b>I. INSTRUMENTS , TEST KITS AND EQUIPMENT</b>	
01	Primary Injection Kits
02	Secondary Injection Kits
03	Motorised Megger (2.5/5 KV)
04	Micro ohm Meters
05	HV Test Kit
06	Digital Multimeters (31/2/4 ½ Digit)
07	Insulation tester hand operated 250V/500V/1000V rated mains/battery operated (Megger).
08	Tong testers
09	Industrial type vacuum cleaner
10	Transformer Oil Filtration Machine and BDV Test Kit
<b>II. HANDLING EQUIPMENT</b>	
01	Turn buckles
02	D-Shackles
03	Steel wire ropes
04	Manila ropes
05	Chain pulley blocks
06	Mobile Crane (10 MT)
<b>III. MAJOR T&amp;P</b>	
01	Grinding machine and Drilling machine ¼”, 1/2”, 3/4” and 1”.
02	Sprit level.
03	Tap sets for both BSP and NPT threads upto 1” each
04	Mechanical tool kit for fitters.
05	Electrical tool kits including spanners, Allen keys etc.
06	Cutting tools
07	Flood light fittings.
08	Distribution boards with power cable as required.
09	Painting brush.
10	Safety belts and safety helmets.
11	Ferrule printing machine if required.
12	Electrode drying ovens.
13	Gas cutting set
14	Welding Generators/T/F

## APPENDIX – II

(To be filled by Tenderer and submitted along with Tender document )

S.No.	PARTICULARS	YES	NO
<b>01</b>	<b>SERVICE TAX</b>		
<b>a.</b>	Service Tax Registration No. of Tenderer (copy to be enclosed)		
<b>b.</b>	Issue of Service Tax Invoice as per Rule 9 of Cenvat Credit rules2004		
<b>c.</b>	Whether Tenderer is taking Service Tax Credit for their Inputs		
<b>d.</b>	Under which Service Head is Service provided		
<b>e.</b>	If Service Tax is Exempted , furnish reasons		
<b>f.</b>	BHEL Service Tax Registration No. ( To indicate in your Invoice) : <b>AAACB/4146/PST/008</b>		
<b>02</b>	<b>INCOME TAX</b>		
<b>a.</b>	PAN No. of Tenderer		
<b>b.</b>	If Exempted , furnish exemption Certificate		
<b>c.</b>	PAN No. of BHEL : <b>AAACB/4146/P</b>		
<b>03</b>	<b>WC ST</b>		
<b>a.</b>	CST Registration No.		
<b>b.</b>	VAT Registration No.		
<b>c.</b>	Whether Tenderer is availing VAT Credit		
<b>d.</b>	If Exempted , furnish Reasons		
	<b>NOTE :</b>		
	1. Rates Quoted shall be clearly indicated that they are <b>INCLUSIVE</b> of all Taxes & Duties except service tax. The Contractor has to issue invoice accordingly. Also refer clause 15.0 of Tender specification regarding Taxes & Duties		
	2. Payment will be made <b>only through e-payment</b> to your account. Payment through Cheque / DD payment will not be made by BHEL.		
<b>Tenderer has to submit Banker's Certificate as per format specified in APPENDIX- IV.</b>			
<b>Agreed to the Above Conditions</b>			
<b>Signature of the Tenderer :</b>			

**APPENDIX - III****ACCEPTANCE FOR ELECTRONIC FUND TRANSFER / RTGS TRANSFER**

01	<b>NAME &amp; ADDRESS OF THE SUPPLIER / VENDOR</b>	
02	<b>VENDOR CODE</b> (as in Purchase Order)	
03	<b>Details of Bank Account:</b>	
A)	<b>NAME &amp; ADDRESS OF THE BANK</b> (WITH PIN CODE)	
B)	<b>BANK TELEPHONE NUMBER</b> (WITH STD CODE)	
C)	<b>BANK BRANCH CODE</b>	
D)	<b>MICR CODE</b>	
E)	<b>ACCOUNT NUMBER</b>	
F)	<b>TYPE OF ACCOUNT</b>	CURRENT A/C / OD / CASH CREDIT
G)	<b>VENDOR NAME AS PER BANK RECORDS</b>	
H)	<b>BANK BRANCH RTGS IFSC CODE</b>	
I)	<b>BANK BRANCH NEFT IFSC CODE</b>	
J)	<b>YOUR EMAIL ID</b> (give two ids)	
K)	<b>NAME OF AUTHORISED SIGNATORY</b>	

**CERTIFICATE**

I / We hereby agree to receive the payments due from BHARAT HEAVY ELECTRICALS LIMITED, RANIPET by the National Electronic Funds Transfer and/or RTGS Transfer mode by credit to my / our above mentioned Bank Account. I / We also agree that payments made to the above mentioned Account is a valid discharge of the liability of Bharat Heavy Electricals Limited, Ranipet. I / We also agree to bear the applicable Bank Charges for the above mode of transfer.

AUTHORISED SIGNATORY OF VENDOR WITH SEAL

**Banker's Certification**

We confirm that we are enabled for receiving RTGS and NEFT credits and we further confirm that the account number of \_\_\_\_\_ (name of account holder), the signature of the authorized signatory and the MICR and IFSC codes of our Branch mentioned above are correct.

PLACE:

DATE:

\_\_\_\_\_  
(Manager / Officer's  
signature Under Bank stamp)