

TENDER DOCUMENT

TENDER SPECIFICATION No :

BAP : ERN : AGM : RTPS : ESP : MECH : OPEN : C : 216-A

NAME OF WORK:

RECEIPT, UNLOADING, STACKING, HANDLING AT SITE STORES / STORAGE YARD, TRANSPORTATION TO SITE OF WORK, **ERECTION (MECHANICAL)**, TESTING AND COMMISSIONING OF **ELECTROSTATIC PRECIPITATOR AND ID FAN** (INCLUDING DUCTING ETC.) **FOR 1 X 62.5MW UNIT AT RTS-B, RAMAGUNDAM, OF M/S APGENCO.**

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:AGM:RTPS:ESP:MECH:OPEN:C:216-A**

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**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 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 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 for 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. The special tools envisaged to be provided by BHEL are as per the list in APPENDIX-II only.
10. Approval from statutory authorities like Pollution Control Board, Electricity Board, etc., will be obtained by the tenderer on his own cost and risk, if necessary.
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 : vs@bhelrpt.co.in

MANAGER / ERECTION SERVICES

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

NOTICE INVITING TENDER

Sealed Tenders 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.

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1. TENDER SPECIFICATION NO. : **BAP:ERN:AGM:RTPS:ESP:MECH:OPEN:C:216-A**
 2. **NAME OF THE WORK** : RECEIPT, UNLOADING, STACKING, HANDLING AT SITE STORES / STORAGE YARD, TRANSPORTATION TO SITE OF WORK, ERECTION OF MECHANICAL COMPONENTS, TESTING AND COMMISSIONING OF **ELECTROSTATIC PRECIPITATOR AND ID FAN (INCLUDING DUCTS ETC.) FOR 1 X 62.5MW RTS-B, RAMAGUNDAM OF M/s APGENCO.** USING CONTRACTOR'S OWN TOOLS AND PLANTS, CRANES , CONSUMABLES, MANPOWER ETC.
 3. **EARNEST MONEY DEPOSIT** : Rs. 2,00,000/- (Rupees Two Lakhs only)
 4. SALE OF TENDER SPECIFICATION DOCUMENTS : 15.05.09 To 06.06.09
 5. DUE DATE AND TIME FOR SUBMISSION OF OFFER : **06.06.2009 at 14.30 Hrs.**
 6. DATE & TIME OF OPENING OF TECHNICAL BID : 06.06.2009 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. 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.
9. Tender specification documents with complete details are hosted in web page (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.
10. 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.
11. **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

12. BHEL will not take any responsibility for delay/loss of documents or correspondence sent by courier/post.
13. Acceptance of any tender shall be subject to the approval by BHEL's Customer.
14. BHEL reserves the right to accept or reject any or all tenders without assigning any reasons whatsoever.
15. Dates of price bid opening will be intimated to the qualified bidders later.
16. All corrigenda , addenda, amendments, clarifications etc. to tender specification will be hosted in the web page (www.bhel.com > **Tender notifications** > **view corrigendum**) only and not in the news paper. Bidders shall keep themselves updated with all the such developments.
17. 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.
18. BHEL will operate CPSE purchase preference policy as applicable.

19. Qualification Requirements (QR) :

Bidders shall essentially meet all the qualifying requirements a & b as under:

- a. Bidder must have successfully executed Erection of mechanical components and Commissioning of atleast one ESP and Fan for any of the BHEL units in the last seven years as on 31.03.2009.

(OR)

Bidder must have successfully executed Erection of mechanical components and Commissioning of ESP and Fan in at least one unit of 60 MW or higher rated thermal power plant in the last seven years as on 31.03.2009.

(OR)

Bidder must have successfully executed Erection of mechanical components and Commissioning work in industries like steel plants, Refineries, Cement plants, Thermal Power plants, Captive power plants etc. which includes erection of atleast one ESP and Fan in the last seven years as on 31.03.2009 as follows.

- (i) One work of atleast Rs.148.60 lakhs in a single work order.
- (ii) Two works of atleast Rs.92.88 Lakhs each..
- (iii) Three works of atleast Rs.74.30 Lakhs each.

In case of ii & iii, erection of ESP and Fans should have been executed jointly or severally

(AND)

- b. Bidders must have achieved minimum average annual financial turn over of Rs.55.73 lakhs during the last three financial years (FY) ending on 31/03/2009.

20. Fulfillment of qualifying requirements: A bidder must satisfy all the qualifying requirements enumerated as a & b for this tender concurrently in order to get qualified.

NOTICE INVITING TENDER

21. 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.
- (iii) Photo copies of certificates for proof of satisfactory completion of work issued by the work order issuing authority.
- (iv) Photo copies of profit and loss account accompanied by relevant schedules for turn over figures.

22. 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" 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.

23. **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.
24. 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.
25. 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.
26. Offers received with any deviation or without relevant information are liable to be rejected.
27. Price bids received in any form other than prescribed in Part-II (PRICE BID) are liable to be rejected.
28. **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.

RANIPET
DATE:

MANAGER / ERECTION SERVICES

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 Addl. General Manager (Erection Services and R&M)
 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:AGM:RTPS:ESP:MECH:OPEN:C:216-A 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:032)
- b. Statutory requirement of Contract (ES:F:009)
- c. Special conditions of Contract for Mechanical works (ERN:MECH:SPN:002)
- d. Tender Specification no. BAP:ERN:AGM:RTPS:ESP:MECH:OPEN:C:216-A
- e. Special Instructions to Tenderer
- f. 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. 2,00,000/- (Rupees Two Lakhs only)** vide Pay Order No.....Dt..... 2009 / Demand Draft No.....dt..... 2009 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.2,00,000/-** 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:

ADDRESS :

Date :

WITNESSES WITH FULL ADDRESS

	SIGNATURE	NAME	ADDRESS
1)			
2)			
3)			

TENDER SPECIFICATION NO. : BAP:ERN:AGM:RTPS:ESP:MECH:OPEN:C:216-A**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:AGM:RTPS:ESP:MECH:OPEN:C:216-A

- 1.0 **SCOPE OF WORK** : The scope of work includes **receipt, unloading and stacking** of components & structures of **Electrostatic Precipitator and ID FAN** system including all ducts, Gates, Dampers, expansion joints, pipes, cables and cable trays, electrical panels, all accessories including insulation and other materials required for erection of the complete ESP and ID FAN system from lorries / trailers / trucks to BHEL's storage yard / customer's store / work site, using cranes, trailers / trucks etc., **mechanical erection, insulation, painting, testing and commissioning** of ESP, ID Fan, ducts, Gates, Dampers etc. for RTS-B, Ramagundam Thermal Power Station of M/s APGENCO using contractor's own tools and plants, cranes, material handling equipment, consumables, manpower etc.
- 2.0 The detailed scope of work is as per the special conditions of contract and Rate schedule attached along with this tender. Hooking up of the erected equipment to the existing system, erection of connecting ducts, Trial-run, testing & commissioning of the entire system within the contract time and to the entire satisfaction of the customer and BHEL forms part of the work. Dismantling of existing ducts to the extent required for hooking up the new retrofit ESP and ID Fan is in the scope of work. Dismantling of the existing ESP and ID FAN is not in the scope of work.
- 3.0 The terminal points decided by BHEL shall be final and binding on the tenderer for deciding the scope of work and effecting payment for the work done.
- 4.0 Interconnection / Hook up with the existing system shall form part of work. Such interconnections/Hook ups require shutdown of 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. The tenderer shall consider all such contingencies in their offer.
- 5.0 It may be noted that **BHEL shall not provide** any cranes , trailers / trucks / tractors , tools and plants for execution of work. All required resources are to be arranged by tenderer only.
- 6.0 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 laying of distribution pipe lines to different locations of water point with taps, valves etc., shall be provided by the tenderer at his cost.
- 7.0 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 of the equipments. The tenderer shall also acquire knowledge of prevailing rules and regulations of M/s APGENCO., **Health, Environment and Safety (HSE) procedures, 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.
- 8.0 **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.
- 9.0 **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.

- 10.0 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..
- 11.0 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.
- 12.0 **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 Sl. Nos. 02, 05, 08 & 09, for which the quantities may vary beyond 15%).
- 13.0 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.
- 14.0 **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.
- 15.0 **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.
- 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. Tender has to pay separately the Service Tax as applicable to this contract during execution of the work and get it reimbursed at actuals from BHEL by submitting necessary invoices / documentary proof as required by BHEL.
- 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
- 16.0 **PAYMENT TERMS** : All payments for the works completed shall be paid to the contractor **once in a month** based on bills raised by the contractor 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 through e-payment** (through electronic fund transfer (EFT) / RTGS) only after deducting Bank charges as per BHEL terms of payment indicated in **SECTION-III, IV and VII** of special conditions of the contract enclosed.
- 17.0 **The tenderer has to furnish information called for in the APPENDIX-III & IV attached with this booklet.** The details pertaining to the Bank Accounts where proceeds will be transferred through BHEL's Banker is to be furnished.
- 18.0 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.

19.0 **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 18 (Eighteen) months** which will be reckoned from the date of unloading of first consignment at site.

- a. Unloading of materials From June 2009 to Sep 2010
- b. Erection, Testing, hooking up and commissioning of the ESP and ID FAN From Aug 2009 to Nov 2010

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.

20.0 The tenderer has to submit a bar chart indicating various mile stone activities for erection of the equipments to complete entire erection, testing and commissioning work within the duration (in weeks) 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.

21.0 The tenderer shall mobilise the resources like manpower, cranes, consumables, tools and plants required to complete the entire work with in the above said schedule.

22.0 The total contract period shall be 18 **months** from the date of unloading of first consignment 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.

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

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

25.0 The list of major Tools and Plants to be deployed by the Contractor is as per Appendix-I. This is not an exhaustive list. It is the responsibility of the contractor to arrange all the necessary tools and plants including cranes of suitable capacity and boom length as and when required to execute the work.

26.0 BHEL shall provide the special tools indicated in Appendix-II. No other tools and plants will be arranged by BHEL. The contractor shall take necessary care to avoid any damage etc while operating the special tools provided.

27.0 A Layout drawing of the ESP and ID Fan is attached with this tender. This is not the final drawing and is liable to change during detailed design. It is only to give a general understanding of the arrangement of equipment and interconnecting ducts.

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

- a. General terms and conditions of work (ES:F:032)
- b. Statutory requirement of contract (ES:F:009)
- c. Special Conditions of Contract for Mechanical works (ERN:MECH:SPN:002)
- d. Appendix-I, II, III and IV
- e. Layout drg no.0-00-111-27332 Rev 00

MANAGER / ERECTION SERVICES

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:AGM:RTPS:ESP:MECH:OPEN:C:216-A

CHECK LIST

Tenderers are required to fill in the following details:

- 1. a. Name of the Tenderer** :
With address

- b. Nature of Firm** :

- 2. Whether EMD submitted as per tender Specification Terms and conditions** : YES / NO

- 3. Validity of offer (offer shall be kept valid for acceptance for a period of minimum 6 months)** : YES / NO

- 4. Whether tenderer visited the erection Site and acquainted with Site Conditions before quoting** : YES / NO

- 5. Whether the following details are furnished.**
 - a. Previous Experience** : YES / NO
 - b. Present assignments** : YES / NO
 - c. Organization chart of the Company** : YES / NO
 - d. Financial status of the Company** : YES / NO
 - e. In case of Company, proof of registration of the Company** : YES / NO
 - f. Memorandum and Articles of Association of Company / copy of Partnership Deed.** : YES / NO
 - g. Profit and Loss Account For the current Year.** : YES / NO
 - h. Balance sheet for the last three years** : YES / NO
 - i. Income Tax clearance Certificates** : YES / NO
 - j. Solvency Certificate from a Nationalized Bank** : YES / NO
 - k. Power of Attorney of the person signing the tender duly attested by a Notary Public** : YES / NO

- 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:AGM:RTPS:ESP:MECH:OPEN:C:216-A

CERTIFICATE OF NO DEVIATION

I / Weof 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.

Date :

SIGNATURE OF THE TENDERER

TENDER SPECIFICATION No. : BAP:ERN:AGM:RTPS:ESP:MECH:OPEN:C:216-A

DECLARATION SHEET

I,
hereby certify that all the information and data furnished by me with regard to this Tender Specification No. BAP : ERN :AGM : RTPS: ESP: MECH:OPEN :C :216-A 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.**

Sl. No.	Name and Designation	Qualification	Experience	Proposed to be deployed at Site for this job	Remarks if any
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Signature of the Tenderer

b) Details of Technical staff:

Sl. No.	CATEGORY	Total Number on Rolls	Numbers Proposed to be deployed at site for this job
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**

Sl. No.	Category	Type of accommodation	Facilities provided	Remarks if any
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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 month wise

SCHEDULE ‘C’

Consumption of gases, electrodes and other consumables.

SCHEDULE ‘D’

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 shorter than the period mentioned.

ANALYSIS OF UNIT RATE QUOTED

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

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	5T / 10T Capacity derricks								
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
01	DC Welding Generator with cables								
02	Welding transformer with cables								
03	Air Compressors								
04	Electrical winches 5T Capacity 3T Capacity 2T Capacity								
05	Hand winches								
06	Hydraulic jacks of various capacities								
07	Electrode drying oven								
08	Portable electrode drying oven								
09	Spur gear chain pulley block 5T Capacity 3T Capacity 2T Capacity								
10	Gas cutting set with hoses								

Signature of the Tenderer

1	2	3	4	5	6	7	8	9	10
01	Hydraulic jacks 5T Capacity 10T Capacity 20T Capacity								
02	Low voltage transformer with Hand lamps								
03	Single sheave snatch pulley blocks 5T Capacity 10T Capacity 20T Capacity								
04	Double sheave pulley blocks 3T Capacity 5T Capacity 10T Capacity								
05	3T Capacity D shackle								
06	5T Capacity D shackle								
07	10T Capacity D shackle								
08	20T Capacity D shackle								

Signature of Tenderer

1	2	3	4	5	6	7	8	9	10
01	Hydraulic jacks 5T Capacity 10T Capacity 20T Capacity								
02	Low voltage transformer with Hand lamps								
03	Single sheave snatch pulley blocks 5T Capacity 10T Capacity 20T Capacity								
04	Double sheave pulley blocks 3T Capacity 5T Capacity 10T Capacity								
05	3T Capacity D shackle								
06	5T Capacity D shackle								
07	10T Capacity D shackle								
08	20T Capacity D shackle								

Signature of Tenderer

1	2	3	4	5	6	7	8	9	10
01	Various sizes of portable grinders								
02	Bench grinder								
03	Heavy duty high speed portable grinder								
04	Flexible shaft grinders								
05	Pneumatic drill ½” & 1”								
06	Torque wrenches 300mm 450mm 600mm								
07	Pull lifts 1.5T Capacity 3T Capacity 6T Capacity								
08	Compensating Cables								
09	Steel wire ropes for guy ropes								
10	Bench files of various sizes								

Signature of the Tenderer

B-I

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 : 032



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 therefor 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 in Annexure-C.

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 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 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 calender 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 give 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 triplicate, 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 won 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 contract 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 contract.

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 1st 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 lumpsum 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

MECHANICAL WORKS

ERN : MECH : SPN : 002



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

SECTION-III**SPECIAL CONDITIONS OF THE CONTRACT FOR UNLOADING AND TRANSPORTATION WORKS****3.1 RESPONSIBILITIES OF THE CONTRACTOR & SCOPE OF WORK**

- 3.1.1** Unloading of electrostatic precipitator components with connected ducts, cables, cable Trays,
Electrical panels, all accessories and miscellaneous equipments including insulation & any other materials required for erection from Railway Wagons/Trailors /Lorries at the Railway Siding/ Railway Station/ Transport Godowns, Re-loading at Siding/ Godowns and transportation to storage yard/work site using Contractor's own cranes, tractors, trucks, lorries, trailers and other unloading and transporting equipments (having valid permits for their operation) unloading at storage yard and stacking, handling at storage yard for verification and restacking after verification shall be the responsibility of the contractor under this contract
- 3.1.2** It would be responsibility of the contractor to keep in contact with the BHEL authorities at site to find out the arrival of the consignment. The Railway receipt/Lorry Way Bill/ Truck Way Bills for the consignments shall be furnished by the Contractor immediately on receipt.
- 3.1.3** The Contractor is required to find out from Transport authorities regarding arrival of consignment prior to the receipt of consignment note, if any and take delivery of the same on 'Indemnity Bond'. Indemnity Bonds would be executed by BHEL, when intimation regarding arrival of consignments is furnished by the Contractor. Similar arrangements in respect of consignment received by road also shall be taken care by the Contractor.
- 3.1.4** Payment of all demurrages/wharfages that results due to Contractor's fault would be the responsibility of the Contractor and to his account. If BHEL have to make payment of demurrage/wharfage together with the freight, the amounts so paid as demurrages/wharfages for the reasons stated above shall be paid by the Contractor forthwith or would be recovered from the bills of the Contractor.
- 3.1.5** It would be the responsibility of the Contractor to examine the packages, consignments etc., on arrival and bring to the notice of transport Authorities and BHEL Authorities regarding loss/damages, if any, observed in the consignments proposed to be taken delivery of. Before taking delivery, particularly of consignments in "smalls" the weight of the package shall be checked with the invoiced weight of the packages and any discrepancies shall be reported immediately to BHEL/Transport Authorities. In case it becomes necessary to take open delivery from the authorities, Contractor should make all arrangements for taking open deliveries. All expenses connected there with shall be to the account of the Contractor. Any loss that may accrue to BHEL on account of such failures shall be debited to the Contractor's account and recovery effected from his progress bills.
- 3.1.6** Any discrepancy/shortage/damage found in the consignment after taking delivery from the carriers after giving clear receipt would be the responsibility of the Contractor and the amount liable to be lost by BHEL on such account is recoverable from the Contractor.
- 3.1.7** In case of apparent damages/shortages to/in consignments/packings noticed by the Contractor, such cases shall be brought to the notice of BHEL and cleared only with their knowledge/approval.
- 3.1.8** CONSIGNMENTS coming on Sundays and holidays are also required to be handled by the Contractor. Since the offices and godowns will probably remain closed on these days it will be

the responsibility of the Contractor to contact the site Engineer/his authorized representative of BHEL at their residence and obtain instructions.

- 3.1.9** BHEL reserves the right to recover from the Contractor any loss which arises out of undue delay/discrepancy/shortage/damage or any other causes during transit from the godowns of any lorry depot and BHEL Stores or during unloading at lorry head or during stacking or any time in the custody of the Contractor.
- 3.1.10** The Contractor shall make suitable security arrangements including employment of Security personnel (round the clock) to ensure the protection of all materials/equipments and works from theft, fire, pilferage and any other damage and loss at stores/Storage yards till the contract is getting over. The contractor will be responsible for receipt and issue of materials and will maintain proper records in prescribed proforma of BHEL. The materials shall be accounted properly by the contractor on completion of contract.
- 3.1.11** Unloading from Transport equipments, re-loading and transportation, unloading at storage area of heavy/sophisticated equipment like motors, bearings, electrical panels etc., shall be done in the presence of and as per the direction of BHEL's representative, including stacking and restacking if necessity arises.
- 3.1.12** Certain packages are likely to be received by BHEL by passenger trains. The relevant parcel way bills will also be handed over to the Contractor for clearing the same from the Railway parcel office. It is the responsibility of the Contractor to clear the same at railway parcel office, transport and handover to BHEL authorities at site, under the scope of this contract. Consignments coming by road, shall also be similarly cleared, transported and handed over to BHEL authorities at site, under the scope of this contract.
- 3.1.13** Since the Consignments are expected to arrive during any time of the day, contractor shall have his workmen round the clock at site as well other places required to unload the materials. Contractor's quoted rate shall include all such contingencies.
- 3.1.14** Under the scope of this contract, it shall be the responsibility of the Contractor to provide facilities to open the package in the presence of BHEL Engineers, verifying the same, re-packing wherever and whenever necessary, properly stacking them as may be directed by BHEL so as to facilitate proper handling and verification.
- 3.1.15** All the materials shall be stored 6" above the ground level using concrete or wooden sleepers or wooden logs. No material shall be allowed to remain on ground at any time. Materials shall not be stacked in low lying areas, where it is likely to get flooded during rain. Wooden/concrete sleepers and tarpaulins wherever deemed necessary, shall be provided by the Contractor at his own cost.
- 3.1.16** Stacking of the materials shall be done as per the instruction and to the satisfaction of BHEL Engineers. The materials shall be so stacked that it should facilitate easy handling during erection. In case any negligence or improper stacking is noticed, it shall be the responsibility of the Contractor to re-stack at his cost. Failure to do so may force BHEL to get the job done through other agencies and recover the cost from the Contractor. The stacking should be done in such a way not to cause damage to the materials. On occurrence of damages, the tender should rectify the defect at his own cost.
- 3.1.17** The necessary lifting tackles, tools, wire rope slings of suitable capacities and other equipment incidental to carry out this work shall have to be arranged by the Contractor himself. All such lifting tackles and equipment shall be approved by BHEL, before they are actually used for works.

- 3.1.18** The Contractor shall execute the work in the most substantial and workman like manner. The stores shall be handled with care and diligence. Any loss to BHEL due to Contractor's lapse shall have to be made good by the Contractor.
- 3.1.19** If the contractor or his workmen or employees shall break, deface, injure or destroy any part of a building, road, kerbs, fence, enclosures, water pipes, cables, drains, electric or telephone posts or wires, trees or any other property belonging to BHEL or their client or to any part of erected equipment, stores components etc., the Contractor shall make good the same at his own expense or in default, the site Engineer may cause the same to be made good by other workmen or by other means and deduct the expense (of which the site Engineer's decision is final) from any sums that may be then or at any time thereafter become due to the Contractor or from his security Deposit or any other money due.
- 3.1.20** BHEL will carryout periodic stock verification of materials with respect to receipt and issue records. The tenderer should make available all records in proper form, for easy verification by BHEL officials. In case any shortage, pilferage, the tenderer should take all action for replacing the shortages, otherwise BHEL will replace and recover the cost of materials with BHEL overheads from the bills of the Contractor.
- 3.1.21** The contractor should note that all damages/shortages etc., in the lorryway bill/RRs while receipt of materials. Any damages observed on the materials subsequently that are not noted on the LWBs/RRs will be deemed to have been occurred during unloading and stacking of materials and the tenderer shall rectify the damages at his cost and risk.
- 3.2** LABOUR AND SUPERVISORY STAFF
- 3.2.1** The contractor shall engage especially skilled labour, e.g. sarang, riggers, khalas etc., for works under this contract. Only fully trained and competent men with previous experience in the job shall be employed.
- 3.2.2** The supervisory staff employed by the Contractor to ensure proper out-turn of work and discipline on the part of the labour put on the job by the Contractor and in general ensure that the works are carried out in a safe and proper manner and in coordination with other labour and staff employed directly by BHEL or other Contractors of BHEL or BHEL'S Client.
- 3.2.3** 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.
- 3.2.4** It will be the responsibility of the Contractor to ensure safe lifting of the equipment taking due precautions to avoid any accidents and damage to other equipment and personnel. The Contractor shall be responsible to make good the damages to personnel, equipment or other materials arising out of accidents, during execution of the work by him.
- 3.2.5** The Contractor shall employ adequate competent skilled and other categories of workers, keeping prescribed records and will act as per the rules of Central/State/Local Government factory regulations, etc., in this regards. The workers/Supervisors shall be paid minimum wages prescribed under the relevant laws and including wages of paid holidays/rest days.
- 3.2.6** The contractor and his employees shall abide and act as per the discipline and standing instructions at work site. The contractor as stated elsewhere shall be fully responsible for his workers in all respects and keep us indemnified in this regard.
- 3.2.7** Necessary electrical staff, supervisory personnel, skilled and unskilled labour including personnel with approved licence as per Indian Electrical Rules 1956 as amended.

3.2.8 The contractor should provide identity badges for his employees. These badges should be properly displayed by employee during the working hours.

3.2.9 The contractor shall employ only competent and skilled workmen fully experienced and capable performance in duties assigned to them. When local law requires your employees shall be required to acquire the necessary certificate competency for his work from the competent at authority as instructed by BHEL Engineer.

3.3 TERMS OF PAYMENT

3.3.1 The Contractor shall submit his bills once in a month duly furnishing the following information.

3.3.2 The gross weight as per RR/LWB/BL.

3.3.3 RR/PWB/LWB/BL Number

3.3.4 Vehicle/Truck number and number of Bundles/Boxes/Pieces in each Vehicle/Truck.

3.3.5 Shortage/Damage reports in BHEL'S standard material management forms.

3.3.6 Rate/tonne

3.3.7 Amount claimed

3.3.8 Recoveries such as hire charges etc., if any.

3.3.9 75% of the rate shall be paid as soon as the materials are unloaded, transported and verified as per RR/LWB/BL/PWB/ if any subject to furnishing following information along with the bill.

- a. Shortage report/open delivery taken with respect to RR/LWB/BL/PWB if any and acceptance there of by Railway authorities/transporters etc.,
- b. Proof of the claim lodged with Railway/Road Transporters etc., in respect of above shortage/open delivery.
- c. Material Management Forms duly filled and certified by BHEL Engineer.

3.3.10 20% of the rate shall be paid as soon as the materials are duly stacked and verified as per packing slip by opening the boxes re-packing, stacking etc., wherever necessary. Payment will be released on submission of the information as per Material Management Forms by the Contractor immediately after verification of materials and certified by BHEL Engineers. The requisite profoma would be supplied by the Site Engineer.

3.3.11 Balance 5% will be released after completion of the contract in full and certified by BHEL Engineer.

3.4 RATE SCHEDULE

3.4.1 The tenderer shall quote the rate per Metric Tonne as per the 'RATE SCHEDULE' vide part II 'PRICE BID' Annexed. Conditional offers are liable to be rejected. The scope of work and the responsibility of the Contractor as mentioned under all the clauses etc., of the tender specification shall be covered within the quoted rates.

3.4.2 'The rates quoted' in the tender are to be kept firm for entire period/extended period of the contract (if any) from the date of Letter of indent issued by BHEL, No escalation, on any account whatsoever will be accepted by BHEL.

- 3.4.3** The total weight mentioned in the rate schedule is APPROXIMATE and is liable to vary later at the discretion of BHEL. No variation in quoted/accepted rates per Metric Tonne shall be allowed due to increase/decrease in total tonnage mentioned.
- 3.4.4** The work executed will be priced at the unit rate quoted by the contractor and accepted by BHEL for the purpose of the payment. For the purpose of payment the gross weight indicated in RR/LWB/PWB/BL will be taken into account for calculating the tonnage handled.
- 3.4.5** The distance if any indicated in the rate schedule are only approximate. However the tenderer should assess the various distances and site conditions by visiting the site before submitting their offer.
- 3.4.6** The tenderer is also required to quote for all the "PROVISIONAL ITEMS" if any of the rate schedule as the same may be operated according to the site conditions and entirely at the discretion of BHEL during the execution of the contract.
- 3.4.7** The tenderer is expected to fill up the 'RATE SCHEDULE' after satisfying all the terms and conditions stipulated in the TENDER SPECIFICATION.
- 3.4.8** The scope of work under this contract is deemed to be completed only when so certified by the Site Engineer of BHEL.
- 3.4.9** During the entire period of contract, the Contractor shall maintain proper progress, adequate manpower, requisite handling and transportation equipments, tools and tackles and other consumables, to meet the scheduled programme as per the priority given by BHEL Site Engineer.

3.5 CONTRACTOR'S PERSONNEL

To facilitate proper stacking of materials, handling the materials at storage yard/stores, verification of material receipt position periodically, stock taking, re-packing wherever necessary after verification, contractor has to provide the following category of personnel:

- a. Store Supervisor 1 No. (Technically qualified)
- b. Unskilled/Semiskilled workers 4 Nos.

The above personnel shall be working along with BHEL personnel and to be provided by the Contractor besides his regular working personnel engaged for other operations. The rate quoted for unloading work shall be inclusive of the cost of above manpower

If the contractor fails to deploy above personnel, BHEL will deploy the persons on behalf of contractor and cost of the operation will be recovered from Contractor's Running bills.

SECTION –IV**SPECIAL CONDITIONS OF CONTRACT FOR ERECTION****4.1 SPECIAL CONDITIONS FOR ESP AND ID FAN**

The special conditions for ESP and ID FAN shall be comprising of but not limited to the following:

- 4.1.1** Any fixtures, concrete block supports, steel structures, required for temporary supporting for pre-assembly, checking, welding, lifting and handling during pre-assembly and erection shall be arranged by contractor, at his cost. It shall be the Contractor's responsibility to check the various foundations for their correctness with respect to level orientation, dimensions etc., and ascertained dimensions shall be measured and submitted to BHEL for approval before erection. Also minor chipping and dressing of foundations up to 40mm, for obtaining of proper face for packer plates/shims, enlarging of the pockets in foundation etc., as may be required for the erection of the equipment/plants will have to be carried out by the Contractor without extra cost.
- 4.1.2** The scope of equipments to be erected under this contract are detailed in tender specification, Technical Description etc. The schedule of weights given are approximate and are meant only to give a general idea to the Tenderer about the magnitude of the work involved.
- 4.1.3** All works such as cleaning, leveling, blue-matching, aligning, assembling for temporary erection and alignment, dismantling of certain equipments for checking/cleaning, surface preparation, fabrication of tubes and pipes as per general engineering practice at site. Cutting, grinding, straightening, chamfering, filling, chipping, drilling, reaming, scraping, shaping, fitting up etc., as may be applicable in such erection work are to be treated as incidental to erection and necessary to complete the work satisfactorily, shall be carried out by the Contractor, as part of the work.
- 4.1.4** It shall be the responsibility of the contractor to provide ladders on columns for initial work till such time stairways are completed. For this, the ladder should not be welded on the column and should be pre-fabricated clamping type ladders. Temporary welding on any structural member is permitted under special circumstances only with the approval of BHEL.
- 4.1.5** No member of the structure/platform should be cut without specific approval of BHEL.
- 4.1.6** Welding of necessary instrumentation tapping points, will also be the responsibility of the Contractor and will be done as per the instructions of BHEL Engineer. The welding of all the above items will be Contractor's responsibility even if the
 - 1) Product groups under which these items are not specifically indicated in the technical Specifications.
 - 2) Items are supplied by an agency other than BHEL.
- 4.1.7** All welded joints should be painted with anti-corrosive paint. Daily welding reports in the proforma suggested by BHEL should be submitted the next day morning without fail.
- 4.1.8** All rotating machineries and equipment shall be cleaned, lubricated, checked for their smooth rotation if necessary by dismantling and refitting before erection. If in the opinion of BHEL Engineer, the equipment is to be checked for clearance at any stage of work or during commissioning period, all such works are to be carried out by Contractor at his cost.

- 4.1.9** Contractor shall carry out chipping and blue matching of foundation concrete with the packer plates. The packer plates shall be supplied by BHEL. Necessary machining and blue matching of packer plates shall be carried out by the contractor with in the quoted rates.
- 4.1.10** The contractor shall take all reasonable care to protect the materials and equipments during stacking and erection. Preservative painting required to be done on any equipment or part during the course of stacking and erection will have to be done by the Contractor at no extra cost to BHEL. Paints and all other materials shall be arranged by the contractor.
- 4.1.11** Electrostatic precipitator collecting electrodes may require strengthening and repair due to minor transport damages before erection and spot heating in position to get correct alignment. This shall be carried out by the contractor as part of the work.
- 4.1.12** Erection, alignment/ fixing in final position of HIGH VOLTAGE RECTIFIER Transformer of ESP are in the scope of work. However testing and commissioning will be done by other agencies.
- 4.1.13** Installation of **High voltage Interlocks** (excepting rotary switch interlock in EC Panels) is in the scope of work.
- 4.1.14** **AIR-IN LEAKAGE TEST** has to be carried out after erection of ESP and before clearing for insulation. Necessary equipment like air blower, venturi, instrumentation etc. will be provided by BHEL free of charges. Handling at stores, transport, erection, commissioning, carrying out the leakage test and attending to leakages till satisfactory sealing / leak proof shall be in thje scope of work. Contractor shall dismantle the test equipment and return to BHEL stores in good condition after due reconciliation, cleaning, servicing. No separate/ additional payment is envisaged for the above.
- 4.1.15** Complete erection, alignment, testing, pre-commissioning etc. of drive motors of collecting electrode and emitting electrode rapping mechanism is in the scope of work.
- 4.1.16** Additional platforms of permanent nature for approaching different equipments, as per site requirements which may not be indicated in drawings, shall be installed by the contractor. The materials required for platforms will be supplied by BHEL in running meters at free of cost.
- 4.1.17** All welders shall be tested and approved by BHEL Engineer / client of BHEL before they are actually engaged on work. BHEL reserve the right to reject any welder without assigning any reason.
- 4.1.18** In case of any class of work for which there is no such specifications as laid down in the contract, such work shall be carried out in accordance with the instructions and requirements of BHEL Engineer at the quoted rates only.
- 4.1.19** BHEL Engineer is entitled to stop any welder from his work if found unsatisfactory for any technical reason or there is a high percentage of rejection the work welded by him which, in the opinion of BHEL Engineers, which adversely affect the quality of welding, though the welder has earlier passed the tests.
- 4.1.20** All charges for testing of welders including destructive and non-destructive tests shall have to be borne by the contractor.
- 4.1.21** All welded joints shall be subject to acceptance by BHEL Engineer/client.
- 4.1.22** The contractor shall make suitable security arrangements including employment of security personnel (round the clock) to ensure the protection of all materials/equipments and works

from theft, fire, pilferage and any other damage and loss at stores/storage yard/pre-assembly area/erection site, till the contract is getting over.

4.1.23 APPLICATION OF INSULATION & CLADDING

1. Application of insulation and sheet metal covering includes leading the materials from stacking area/storage sheds to the place of work
2. The insulation work should be carried out with contractor's own scaffolding materials, tools etc.
3. Welding of hooks, supports as per pitch/applying red oxide paint to welded portion as directed and as per the drawings before application of Mineral Wool / Glass Wool mattresses and as instructed by BHEL Engineer.
4. Wool insulations are received at site as bonded / unbonded mattresses in standard sizes. These are to be dressed / cut to suit site requirement by the Contractor.
5. Applying anti-corrosive paint to the inner surface of GI/ALUMINIUM Cladding, Cutting suitable to size, shape grooving and fixing on holders as instructed and as per drawings and specifications. Application of Bituminous Sealing Compound on top of cladding joints shall be done. **SUPPLY OF BITUMINOUS SEALING COMPOUND AND ANTICORROSIVE PAINT IS UNDER THE SCOPE OF CONTRACTOR.**
6. The contractor should ensure that the finished surface of insulation confirms to dimensions and tolerances given in the drawings. Aesthetic finish & accuracy of work and time are most important.
7. Details of application of insulation and GI/Aluminium cladding are given in the various drawings of BHEL supplied to the Contractor.
8. Insulation of ESP casing, funnels, ducts, hoppers, insulator housing etc. shall be by welding of studs with retainers in a spacing of 480mm X 240mm, lagging of mineral wool/ LRB wool mattresses over the retainers, sewing the mattress, fixing up of top retainers, fixing casing supports, tying binding wire over the wool, fixing of GI/Al sheets over the wool mattresses, using self tapping screws (at spacing of 150mm for both vertical and horizontal joints) and application of bituminous sealing compound for vertical joints of sheets. The cladding sheets shall be end grooved and creased to obtain proper shape and strength as per drawing of BHEL. The contractor shall arrange required scaffoldings to undertake the work.
9. Insulation of ESP inner roof shall be by welding of studs in a spacing of 480mmX480mm, lagging of mineral wool/LRB wool mattresses, sewing the mattresses, fixing the top retainers and tying of binding wire over the wool mattresses.

4.1.24 APPLICATION OF PAINT:

1. The scope of final painting work includes supply of **SYNTHETIC/EPOXY/~~CHROMATE RUBBERISED ENAMEL (2-PACK)~~ finishing paint should confirm to ~~EPI LUX-4~~ specification in the rate schedule..**
2. The above paint should be purchased from any one of the following brands:
1) Shalimar 2) Berger 3) Bombay paints 4) Asian 5) Wipco-Madras.
3. Before application of paint, the surface to be painted should be thoroughly cleaned with wire brush to remove dirt, dust, rust, grease etc.

4. The painting work should be carried out with contractor's own scaffolding materials, wire brushes, painting brushes, cleaning materials etc.
5. Finishing paint is to be applied in exposed areas like ESP Supporting structure, rectifier handling system, stairs and galleries, duct supporting structure, hand- rails etc.
6. Paint of approved shade and quality is only to be applied. Approved epoxy enamel TC paint tins/packs/containers will be inspected by BHEL Engineer before opening of the seal at work site.
7. A separate register is to be maintained for painting works and for taking signature of BHEL'S Engineer during stage inspection.
8. After application of each coat of Epoxy enamel BHEL Engineer will clear application of next coat by affixing the signature in the protocol register.

4.1.25 TESTS

1. The contractor shall supply manpower and consumables to carry out the required tests on the equipments such as Air-in leakage Test (using air blower provided by BHEL), Gas tightness test by smoke test method or kerosene method and other tests such as Gas Distribution test, Performance Guarantee test etc., to be specified by the Resident Engineer, BHEL at free of cost. Contractor's quoted rate shall include blanking of hopper, funnel and ducts to conduct air-in leakage test, smoke test etc. and all other contingencies such as checking of coupling alignments, various clearances between stator and rotor components, bearing clearing, trial runs etc.
2. All the above tests should be repeated till all the equipments satisfy the requirement/obligation of BHEL to their customer.
3. **PRE-COMMISIONING TEST AND COMMISIONING OF THE UNITS:**
 - i. Commissioning of the equipments will involve trial runs of all the equipments erected, and any other works incidental to commissioning. Contractor shall supply labour for all these without any extra cost under this contract.
 - ii. In case any defect is detected during tests, trial runs such as loose components, undue noise or vibration, strain on connected equipment etc., the Contractor shall immediately attend to these defects and take necessary corrective measures. If any re-adjustment and re-alignment are necessary, the same shall be done as per BHEL Engineer's instructions. If any part of the equipment needs repair, rectifications or replacement, the same shall be done by the Contractor at his cost. The parts to be replaced shall be provided by BHEL.
 - iii. During this period, though the BHEL's/Client's staff will also be associated in the work, the Contractor's responsibility will be to arrange for the complete labour requirement for the successful trial run of equipment till it is handed over to customer.
 - iv. It shall be specifically noted that the above employees of Contractor may have to work round the clock along with the BHEL Commissioning Engineers and hence any overtime payment so involved, the Contractor's quoted rates shall be inclusive of all these factors also.
 - v. During commissioning, re-aligning of rotating and other equipment, attending to leakages and minor adjustment of erected equipment may arise. The quoted rate of Contractor shall be inclusive of all such works.

- vi. In case any rework is required because of Contractor's faulty erection which is noticed during commissioning the same has to be rectified by the contractor at his cost. If, during commissioning, any improvement or rectification due to design requirements is involved the same shall be paid at man-hour rates quoted. For this purpose, daily labour report indicating there in, nature of work carried out, consumables used etc., shall be maintained by contractors and for signed by BHEL Engineers every day.

4.1.26 PROGRESS OF ERECTION WORK:

1. During the course of Erection, if the progress is found unsatisfactory, or if the target dates are to be advanced, or in the opinion of BHEL if it is found that the welders employed are not sufficient, BHEL will induct on work their own welders, in addition to Contractor's welders working and recover from the Contractor's bills the charges incurred for engaging the welders with the overheads. This is binding on the Contractor.
2. In case the Contractor's progress is found unsatisfactory, BHEL may deploy unskilled, semi-skilled, skilled operators, Technicians and other required manpower and will assist in improving the progress. All the expenses incurred for, will be recovered from Contractor's bills with overheads.
3. It is obligatory on the part of the Contractor to give daily feed back on progress of erection.

4.1.27 PAYMENTS FOR WORK COMPLETED:

1. The Tenderer shall quote separate rates per metric tonne for each of the categories of work in the rate schedule appended. No eraser should be used and no overwriting is acceptable.
 2. The Contractor shall submit his running bills for erection work. The Contractor shall submit his running bills once in a month before end of each month.
 3. Subject to any deduction which BHEL may be authorized to make under the contract, the Contractor shall on the certificate of the Engineer at site, be entitled for payment as explained in the payment terms.
4. **FOR MECHANICAL ERECTION:**
- i. 35% of contract rate on prorata basis on completion of erection.
 - ii. 50% of the contract rate on prorata basis after alignment / fastening / welding / grouting along with supports are completed.
5. **LINING AND INSULATION:**
- 85% of contract rate on prorata basis progressively when the work is completed as per BHEL's drawings and instructions.
6. **PAINTING WORK:**
- 95% of contract rate on prorata basis progressively when the work is completed as per BHEL's instructions.
7. Further 10% of payment for items 4 and 5 shall be released as indicated below:

- a. Further 5% of the contract rate shall be paid on completion of mechanical erection of all the items put together and after completion of air-in leakage test, air-gas tightness test, trial runs of equipment including electrical items and the Unit is ready for commissioning and painting.
 - b. Further 5% of the contract rate shall be paid when the entire equipment is commissioned and Gas Distribution test is conducted to the satisfaction of BHEL and their client.
8. The balance 5% of the contract value for items 4 and 5 shall be paid after the guarantee period of 12 months. The guarantee period will commence from the date of handing over of unit to customer or six months after the date of successful completion of trial run, whichever is earlier, provided all erection, testing and commissioning works are completed in all respects. However this 5% amount can be released against bank guarantee valid for 12 months as aforesaid in the prescribed proforma of BHEL.
 9. The balance 5% of the contract value for item 6 shall be paid on completion of entire painting work.

4.2 SCOPE OF DISMANTLING:

The Scope of work will comprise of but not limited to following:

- 4.2.1** Disconnection and dismantling of existing mechanical structures / ducts to the extent required at site for hooking up of the system with existing system as per the instruction of Site in-charge, loading of dismantled components to transport equipments, transportation to BHEL'S Clients storage yard after weighment if required and unloading etc., by supplying required manpower, all consumables and using contractors own trucks, lorries, tractors, trailers, cranes and other unloading, transporting and material handling equipments (having valid permission for their operation)

4.2.2 PROGRESS OF DISMANTLING WORK:

1. During the course of dismantling if the progress is found unsatisfactory, or if the target dates to be advanced, or in the opinion of BHEL if it is found that the workers employed are not sufficient BHEL will induct on work their own workers in addition to contractor's workers and recover from the contractors bills the charges incurred for engaging the workers with the overheads. This is binding on the contractor.
2. In case the contractor's progress is found unsatisfactory, BHEL may deploy gas cutters, fitters and technicians etc., and will assist in improving the progress. All the expenses incurred for will be recovered from contractors bill with overheads.
3. It is obligatory on the part of the contractor to give daily feedback on progress of dismantling.

4.2.3 PAYMENTS FOR WORK COMPLETED

1) PAYMENT FOR THE DISMANTLING OF EXISTING STRUCTURE:

- a) 95% payment of the tonnage rate for existing structure dismantling will be released on prorata basis after the materials are dismantled, transported and handed over to BHEL'S Clients storage yard.
- b) Balance 5% will be released on completion of the entire dismantling work as certified by BHEL Engineer.

4.3 SPECIAL REQUIREMENTS

- 4.3.1 The entire work of erection testing and commissioning of the ESP and ID FAN shall be completed within the time specified in the time schedule.
- 4.3.2 The contractor has to indicate their ability in completing the contract in all respects shorter than the period mentioned in the time schedule.
- 4.3.3 As time is the essence of this contract, the contractor shall be able to mobilize his manpower round the clock for the entire period to complete the work within the stipulated time.
- 4.3.4 The contractor should be able to mobilize all the tools, plants and consumables necessary for three shifts operation to meet the requirements.

4.4 IMPORTANT GENERAL & SPECIAL CONDITIONS OF CONTRACT :

4.4.1 RETURN OF SECURITY DEPOSIT:

If the contractor fully performs and completes the work in all respects to the entire satisfaction of BHEL and their client and presents an absolute “No Demand Certificate” in the prescribed form and returns properties belonging to BHEL, handed over / lent to them for carrying out the said works, security deposit will be released to the contractor after deducting all the cost of expenses, if any, under other contracts entered in to with the contractor. It may be noted that in no case the security deposit shall be refunded /released prior to passing of the final bill.

4.4.2 IDLE LABOUR

If the contractor suffers delay in the due execution of the contractual obligation due to delays caused by FORCE MAJEURE conditions, the agreed time of completion of the contract 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 about the causes of delay. The contractor shall not be eligible for any other compensation.

4.5 RIGHTS OF BHEL IN CASE OF POOR PROGRESS OF WORK:

To get the work done through other agencies at the risk and cost of the contractor, in the event of contractor’s poor progress or inability to execute work, persistent disregard to instructions of BHEL, assignment transfer, subletting of contract without the 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 the security deposit / other dues.

SECTION-V**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, consumables as specified under various clauses of Tender Specification for unloading, 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 TENDERER 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 construction site 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, form work 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.

5.3 GASES

- 5.3.1** All required gases like oxygen / Acetylene / 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 and 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 of 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 for 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, slings, 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 rare Schedule.

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 & dismantling 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** 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 contractor shall be responsible to ensure that assembly and workmanship confirm to the dimensions and tolerances given in the drawings/instructions given by BHEL Engineers, from time to time.
- 5.6.6** The Contractor shall employ the necessary number of qualified and approved full time electricians at his cost to maintain his temporary electrical installation till the completion of work.
- 5.6.7** 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.
- 5.6.8** 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.
- 5.6.9** 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 pitches 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 BHEL.
- 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 programme.
- 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 id 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 in 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. While BHEL will arrange for supply of paint/thinner etc., it 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 c\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 found 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. BHEL 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 BHEL 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 the handlamps used by the contractors workmen shall be of 24V only. Adequate stepdown transformers should be installed at site to cater to the complete requirement. (230V handlamps should not be used).
- 5.11.12** All workmen of the Contractor working in construction areas shall wear safety shoes, safety helmets, & safety belt (with double harness - when working at heights). Contractor shall insure his workmen against all accidents, and the policy shall be presented to BHEL. In case of failure to do so BHEL will arrange the same and the expenditure towards this will be debited to the Contractor including BHEL overheads. 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.
- 5.11.13** 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.
- 5.11.14** Contractor shall arrange at his cost suitable flood lighting arrangement at various levels for safe and proper working operations during night hours at the work spot as well as at the pre-assembly area.
- 5.11.15** 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 and their client from time to time.
- 5.11.16** 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.
- 5.11.17** The Contractor shall ensure the safety of all the workmen, material and equipments either belonging to him or to others working at site.
- 5.11.18** 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.

- 5.11.19** The Contractor shall provide necessary first aid facilities for all his employees, representatives and workmen working at Site.
- 5.11.20** 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.
- 5.11.21** 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.
- 5.11.22** The Contractor shall at his cost remove from the 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.
- 5.11.23** For this purpose the mechanical completion of erection work shall be deemed to be completed in all respects only when the trial runs of motors and gas tightness tests are completed and certified so by BHEL Engineer. The decision of BHEL in this respect shall be final and binding on the contractor.
- 5.11.24** 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.

6.0 PRICE ESCALATION:

- 6.0.1** 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.
- 6.0.2** 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.
- 6.0.3** In case due to unforeseen circumstances and due to reasons not attributable to 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. This shall be mutually discussed and settled at that time.

SPECIAL CONDITIONS OF CONTRACT FOR MANPOWER SUPPLY ASSISTANCE ETC.**SECTION – VII**

7.0 The quantity of manpower assistance indicated in the rate schedule is only approximate. BHEL will specify the actual requirement as and when the need arises at various stages of execution of contract. BHEL will have the option of not operating any of the items indicated in the rate schedule under manpower supply.

7.1 The manpower provided shall be capable of carrying out the assigned work to the satisfaction of BHEL. BHEL reserves the right to decide on the suitability of the personnel deployed and insist on removal of any employee found unsuitable for the work assigned. The contractor shall forthwith arrange for replacement.

7.2 MANPOWER SUPPLY FOR SITE MANAGEMENT ETC:

Compliance with statutory obligations as well as any other requirements / provisions with respect to manpower supplied and equipment including insurance, medical facilities, minimum wages, safety requirements, accommodations, conveyance etc., are the responsibility of the Contractor. **The rates quoted shall be inclusive of all the above requirements.**

THE CONTRACTOR SHALL STRICTLY ABIDE BY THE STATE AND CENTRAL LAWS, STATUTORY RULES, REGULATIONS ETC. AS INDICATED IN THE GCC AND OTHER SECTIONS OF THE SPECIAL CONDITIONS OF CONTRACT. IN ADDITION THE CONTRACTOR SHALL HAVE TO COMPLY WITH PROFESSIONAL TAX / AND PF /ESI/ LABOUR LICENCE REGULATIONS FOR ALL HIS EMPLOYEES / WORKMAN AS PER THE LOCAL AUTHORITIES / GOVERNING BODIES INSTRUCTIONS.

7.3 SPECIFICATION FOR PC SYSTEM (01. NO.)

For management of materials receipt, issues etc., site management activities and to prepare statements a PC is required. The Contractor should provide ONE No. of Personal Computer system as per the following specification at their cost. The rate for one no. clerk shall be inclusive of the PC. The scope of contractor shall include providing a licensed operating system (Vista Business version), licensed software (latest version of MS OFFICE with CD/DVD), maintenance, servicing and replacement of spares. The system will be kept in BHEL site office and used exclusively for BHEL's site management activities. Maintenance of the System including supply of spares is the responsibility of the Contractor, and if any fault / failure of the system occurs, it should be rectified immediately without delay at contractor's cost. The scope also includes supply of consumables like printer cartridges etc. as and when required by BHEL.

SPECIFICATION FOR PC SYSTEM:

To be arranged by the Contractor at their cost.

SL.NO	FEATURES	MINIMUM REQUIREMENTS
01	Processor	Intel Pentium 4.2 GHz or above
02	Chipset	Intel 845 or higher Intel Chipset
03	RAM	1 GB DDR SDRAM
04	HDD	250 GB SATA
05	FDD	1.44 MB
06	Optical Drive	52 X DVD writer or higher, SATA
07	Monitor	15" TFT colour
08	Key Board	Minimum 104 Keys Windows keyboard
09	Mouse	2 Button optical mouse
10	Ethernet	Integrated 10/100 Mbps NIC for LAN
11	Ports	Minimum 1 parallel, USB

12	OS	VISTA Business version
13	USB	USB-2
14	Accessories	Mouse pad & Dustcovers
15	UPS	1KVA UPS with 1 Hr. back up
16	MULTI FUNCTION PRINTER	A4 size laser jet printer with built in FAX and Scanning facility -20 ppm or above (with all consumables, cartridges etc.)

7.4 SPECIFICATION FOR LAPTOP COMPUTER (01. NO.)

The Laptop computer shall be used exclusively by BHEL authorized personnel and shall be in their custody for the period of contract. The scope of contractor shall include providing a licensed operating system (Vista Business version), licensed software (latest version of MS OFFICE with CD/DVD) , maintenance, servicing and replacement of spares.

SPECIFICATION FOR LAPTOP:

To be arranged by the Contractor at their cost.

SL.NO	FEATURES	MINIMUM REQUIREMENTS
01	Processor	Intel Core 2 Duo 2.26 GHz or above
02	RAM	3 GB
03	HDD	250 GB
04	Optical Drive	DVD writer
05	Screen	14.1" WXGA
06	Ethernet	Integrated 10/100 Mbps
07	Accessories	Carry case

7.5 PAYMENT TERMS FOR MANPOWER SUPPLY ASSISTANCE ETC. (S.No.08 of the Rate schedule)

- a) 95% of the contract rate will be released on prorata basis for the Man Months/ Months of services provided against each item as certified by BHEL Engineer at site.
 - b) Balance 5% will be released on completion of the entire scope of work under this contract as certified by BHEL Engineer.
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SPECIAL CONDITIONS OF CONTRACT**SECTION - VIII****8.0 EXTRA CHARGES FOR MODIFICATION AND RECTIFICATION WORKS:**

- 8.1 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.
- 8.2 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.
- 8.3 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.
- 8.4 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 course of erection shall be **Rs. 40/- per man hour.****
- 8.5 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 course of erection shall be **Rs. 25/- per man hour.****
- 8.6 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.
- 8.7 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 - IX****9.0 OVER-RUN COMPENSATION (ORC):**

- 9.1 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 as per Item no.09 of rate schedule for every month of extended period so determined by BHEL beyond the contract completion date (and the grace period) indicated in this specification. This will be paid only at the end of the contract 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.
- 9.2 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. The ORC shall be paid by BHEL only after completion of all works within the scope of the works awarded to the tenderer. Hence, it is obligatory on the part of the tenderer to complete the works during extended period also., This supplements the clause 6.0 of Special conditions of Contract for Mechanical works -V enclosed along with this specification.
- 9.3 The rate of ORC so quoted shall be in line with the Unit rate analysis furnished by the tenderer in page no.12 of "Statutory Requirement of Contract". If otherwise, BHEL shall work out the rate in line with the data so furnished by the tenderer. The interpretation of BHEL on the individual element of cost comprising the ORC and the rate of ORC so arrived at shall be final and binding on the tenderer without any reference. The tenderer shall confirm their acceptance for this clause.

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## SPECIAL CONDITIONS OF CONTRACT

### SECTION – X TECHNICAL DESCRIPTION

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

#### 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 various parts are illustrated in the EP General arrangement drawing. The assembly of precipitator is divided into sub-groups. The electrical parts comprise of high voltage rectifiers, main and auxiliary controls, heaters and interlocks. The mechanical parts constitute the precipitator proper which consists of casing and functional parts forming internals of the precipitator.

##### Mechanical Parts:

(i) Casing: This is made up of wall panels, hopper roof panels and supporting members. The casing rests on support bearings which are fixed to the supporting structures. The hoppers are delivered to the site in prefabricated units of suitable size. The upper portion of two adjacent hoppers is a reinforced ridge to support the hoppers across the width.

##### (ii) Internals:

###### (a) Gas distribution Screen:

Two sets of gas distribution plate with perforations are located at the inlet of the casing in order to distribute the flue gas entering the precipitator over its entire cross sectional area.

###### (b) Emitting electrode System:

The most essential part of the precipitator is the discharge electrode system it consists of a rigid box like framework which is suspended from four insulators from roof of the precipitator. The insulators are housed in double walled insulator housings. The emitting electrodes are hard drawn/annealed spiral stainless steel wires of dia 2.7 mm. These are delivered at Site in the form of coils to the ends of which are attached hooks. At site those coils are stretched out between top and bottom holders in each tier of the discharge electrode framework.

## (c) Collecting electrode System:

The collecting electrodes are made of steel sheets and shaped in one piece by roll forming. The collecting plates are provided with hooks at the top edges from which they are hung.

## (d) Rappers for G.D. Screen:

The cleaning of the gas distribution screens is done with a rapping system employing tumbling hammers which are mounted on a horizontal shaft in a staggered fashion. This rapping mechanism is connected to the output shaft of the geared motor mounted on the side panel of the casing.

## (e) Rappers for discharge Electrodes:

The cleaning of discharge electrode is done with a rapping system employing tumbling hammers, which are mounted on a horizontal shaft in a staggered fashion. The rapping mechanism is connected via shaft insulator fixed to the output shaft of geared motor mounted on the roof panel/side panel of the casing.

## (f) Rappers for collecting electrodes:

Each collecting plate has a shock receiving plate at its lower end. The collector plates in one row are connected to one another by means of shock receiving plates located in slots in the shock bar, maintaining required spacing. The shock bars are kept in alignment by means of guides located at front and rear of each shock bar.

The tumbling hammers are mounted on a horizontal shaft in a staggered fashion with one hammer in each shock bar. As the shaft rotates slowly each of the hammers in turn over balances and tumbles and hits associated shock bar. The shock bar transmits the blow to each of the collecting plates in one row.

**ELECTRICS:**

The precipitator is powered by high voltage rectifier transformers mounted on the roof. The main 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 also 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.

**ERECTION PROCEDURE****GENERAL**

The performance of the precipitator depends, apart from other factors, on the proper erection of various functional parts in strict accordance with the instructions as per drawings/BHEL Engineer.

Optimum collecting efficiency can be ensured only when the alignment of electrodes is done carefully adhering to the stipulated tolerance and the components of rapping mechanism are erected properly. Due care is to be exercised at every stage of erection. In this part the important points to be taken care of is outlined for the various groups of precipitator assembly. The instructions also furnish general sequence of erection.

## 1) Foundations:

Check elevation of foundations with leveling instruments. The foundation centerline is to be checked with respect to centerline of boiler as well as from the last row of boiler column.

## 2) Supporting structure:

Check column length and straightness. The vertically of columns should be maintained with 5mm. The top level of all the columns are to be brought in same level using shims below the base plate. The placement of support bearings assemblies on the column top face is to be done taking the measurement in X, Y, X is with reference to fixed bearing as given in the drawing and also ensure horizontally.

## 3) Casing (casing assembly, hopper assembly, wall panels and roof panels)

The wall panels may be pre-assembled and erected. Available space and lifting capacity of cranes will be the factors to decide how many panels can be built together and lifted at one time. Before erection of roof panels, the roof beams are erected. Then hopper ridges are erected. Subsequently the erection of hoppers can be taken up. In hopper erection care should be taken to ensure that the slope of wall is maintained properly.

## 4) Galleries and Stairways:

The galleries and stairways should be erected with necessary expansion arrangement as provided in the drawing.

## 5) Collecting electrode suspension frame:

The frame that comes under gas path centerline of any one single gas path is erected first. The suspension arrangements are to be aligned with reference to the lower most point of underside of roof beam. The subsequent frames are to be erected taking cumulative dimensions from one angle of the first frame.

## 6) Emitting system frame work is and suspension assembly:

The emitting system framework is they erected with necessary precautions and using lifting tools to position the same on the roof panel.

## 7) Collecting electrodes, emitting electrodes, shock bars:

All collecting electrodes shall be checked before erection. Damages like twists or bends sustained during transit shall be rectified by straitening.

Collecting electrodes may be erected either by top entry method or by bottom entry method depending on site conditions. For top entry method, the bundles, of electrodes may be lifted and placed on the roof panels. The plates may be straightened one by one and lowered in to the field manually. 5 to 7 persons can easily erect the collecting electrodes without the help of mechanical means. After erection of one row of collecting electrodes the shock bars may be fixed.

Next one row of emitting electrodes is taken up. For this all emitting electrodes for upper tier are hung on the top frame hooks. Three persons are needed for stretching one on the top frame, second on the middle frame and the third on the bottom frame. The stretching tool supplied for this purpose is used.

It is essential that the emitting system electrodes spin freely around its own axis during extraction. The emitting electrodes shall not be stretched any longer than the exact length for fixing it between the holders. All the collecting and emitting electrodes are fitted in the above manner ensuring at each stage that individual panel of collecting electrodes are perfectly aligned and straight.

## 8) Alignment of collecting electrodes and emitting electrodes:

The gap between collecting electrodes and emitting electrodes are to be checked at top, bottom and middle levels at inlet and outlet.

9) Deflection plates and hopper baffle assembly:

The deflection plates are installed after fixing the shock bars to the collecting electrodes. The hopper baffle plates are also installed prior to marking the internals.

10) Outer roof:

The balance roof panels can be taken up. All weldings must be leak proof. Erection of outer roof may be taken up in the alternate bays. First insulate one bay and cover it with outer roof, leave the second bay and insulate the third and cover that with outer roof. This procedure allows working space on the roof panel.

While welding insulator housing with supports thin sheet cylinders may be used to cover the support insulators, so that the welding spark does not fall on them. The welding between the insulator housing and supports should be full seal welding. Similarly welding of the supports on the roof panel should be full seal welded. Proper closing of insulator housing is a must.

11) Collecting electrode rapping mechanism:

Next the erection of rapping mechanism for collecting electrodes is taken up. It shall be ensured that the shaft rotates freely in the bearings and the shock bar must run freely in the guide arrangements.

12) Rapping mechanism for emitting electrode:

Next the rapping mechanism for emitting electrodes is taken up.

13) Emitting system drive arrangement:

It is essential to keep proper alignment between emitting rapper shaft and the drive shaft. The direction of rotation is to be checked with respect to the hammer.

14) Drive arrangements for collecting rapping system:

After proper alignment the direction of rotation is to be checked with respect to hammers along with electrical drive motors.

15) High Voltage Rectifier Transformer (HVR) and its handling structure:

The HVR Transformer and its handling arrangement are to be erected on the outer roof of ESP.

16) Insulator housing and disconnecting switches:

The insulator housing and high voltage disconnecting switches are to be mounted according to assembly drawing.

17) Inspection Doors:

All inspection doors are to be fitted inside panels and hoppers. It should be ensured that the doors swing freely as well as close tightly.

18) The interlocks :

The interlock system is meant for safety of the operating personnel and maintenance purposes. These are to be erected as per the drawings.

## 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 the following components.

|          |                  |
|----------|------------------|
| Casing   | Bearings         |
| Impeller | Capacity control |
| Shaft    |                  |

### CASING

The casing consists of suction box and spiral casing. The casing is manufactured from carbon steel (IS 2062) material, adequately stiffened to prevent vibration. The casing shall have flanged inlet and outlet connections. The casing is split in such a way that a portion can be removed for easy dismantling of rotor for maintenance purposes. Inspection doors and drain shall be fitted to the casing at convenient locations. The lower part of the casing rests on the supporting brackets on the foundations. Labyrinth seals are provided at the shaft passages of the casing.

### IMPELLER

The impeller has backward curved plate blades giving a stable pressure – volume characteristics. The impeller is welded design. The impeller is made of high strength steel plates. Blades of the impeller are provided with renewable wear liners. The impeller members are selected with adequate factor of safety, to withstand the stresses. After fabrication and before final machining, the impeller is stress relieved. The impeller is balanced dynamically according to ISO 1940.

### SHAFT

The shaft is designed with two forged end pins fitted to a hollow tube. The shaft is machined and the bearing locations are given a high surface finish with close tolerances. The impeller is fastened to a flange, which is welded to the shaft. The shaft is extended at one end and key-wayed to take driven half coupling. The shaft is designed so that the first critical speed is well above the operating speed. The shaft is also balanced according to ISO 1940.

### BEARINGS

The fans are provided with water cooled sleeve bearings with Forced oil lubrication. The locating bearing is near the drive end and is designed to absorb axial forces.

### CAPACITY CONTROL

The capacity of the fan is regulated by speed control thro' 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.

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**SPECIAL CONDITIONS OF CONTRACT  
SECTION – XI**

**ERECTION SPECIFICATIONS FOR FANS / OTHER ROTATING MACHINES**

**PREPARATION OF FOUNDATION**

Building foundations and other necessary civil works for supporting structures, equipments etc., will be provided by the customer/BHEL. The checking of dimensional accuracy, axes, elevation, levels etc., with reference to bench marks of foundations and anchor bolt pits and also adjustments of foundation level, dressing and chipping of foundation surfaces of all equipments as per BHEL Engineer's instructions, should be done by the contractor as part of the work. Contractor should log before taking over the foundations. Dressing and chipping of foundation up to 40 mm for achieving proper levels will be within the scope of work / Specification.

Contractor shall carryout scrapping and blue matching of embedded plates/packers of rotating equipments. Chipping of the bedding concrete surfaces, finally dressing up to the extent required to obtain contact between packer and concrete with all consumables, is also covered in the scope of this work. The fine dressing of concrete shall be with Prussian blue match chalks. Scrapping, chipping and matching shall be done so as to achieve prescribed percentage of contact as per BHEL Engineer's instructions.

Cleaning of the foundation surfaces, pocket holes, anchor bolt pits and dewatering and making them free of oil, grease, sand and other foreign materials by soda washing, water washing, compressed air and other approved methods will be within the scope of this specification/work. Grouting work to be carried out as per the instructions of BHEL Engineer.

BHEL will provide only shims and packer plates free of cost (either Machined or plain), which go as permanent part of the equipment. Packer plates and shims required, if any, over and above the quantity received as a part of supplies from manufacturing units of BHEL, will have to be cut out of steel plates, steel sheets at site to meet site requirements. Necessary steel for this purpose will be provided by BHEL free of cost. Contractor shall cut and prepare packers and shims by gas cutting or chiseling, and grind and file for debarring the packers as per BHEL engineer's instructions. However necessary machined packers will be arranged by BHEL free of cost.

**CHECKING OF EQUIPMENT AFTER GROUTING:**

After the grout is set and cured, the contractor shall check and verify the alignment of equipments, alignment of shafts of rotating machinery, couplings, etc. as applicable and the like items to ensure that no displacement had taken place during grouting. The values recorded prior to grouting shall be used during such post-grouting check up and verifications. Such pre and post grout records of alignment details shall be maintained by the contractor in a manner acceptable to the BHEL engineer.

**ROTATING MACHINERIES:**

Specifications covered under the following paras and also other relevant specifications contained in other paras elsewhere in this tender document will be applicable for rotating machines like ID Fan etc.

All lubricants for testing, preservation and lubricants for trial runs of the equipments shall be supplied by BHEL. All services including labour will be provided by the contractor for drawing it from BHEL/customer's stores, transporting, handling, filling, emptying, RE-filling, accounting and return of balance/containers etc within the quoted rates.

All rotating machineries and equipments shall be cleaned, lubricated, checked for their smooth rotation, if necessary, by dismantling and re-fitting before erection. If, in the opinion of the BHEL engineer, the equipment is to be checked for clearances, tolerances at any stage of the work or during

commissioning period, facilities for dismantling, cleaning, lubricating and re-fitting shall be provided by the contractor at his cost. All rotating machines shall be rotated periodically during stage, erection and log maintained to avoid bowing of shafts.

The contractor shall carry out trial run of all motors including checking the direction of rotation in the uncoupled condition, check alignment and recouple the motor to the driven equipment as per instructions of BHEL engineer and to their satisfaction. Forced lub oil systems of HT motors or rotating equipments form part of the work under this specification.

Contractor shall carry out kerosene testing of all bearing housings of various rotating equipments like pumps, fans etc., as per BHEL engineer's instructions. Performance of hydrotest of oil coolers of rotating machines and hydrotest of lines and other equipments as per BHEL engineer's instructions is included in the scope of work.

Certain rotating machineries after, initial runs and commissioning of the equipment, have to be hot aligned as per the instructions of BHEL engineer. Cleaning of fans, ducting etc., free of extraneous steel, scaffolding materials, electrodes, all foreign materials etc., before trial run of rotating machinery, and at various stages of pre-commissioning activities as per BHEL engineer's instruction, is within the scope of work/specifications.

All the bearings, gear boxes etc of the equipments and electrical motors to be erected are provided with protective greases only. Contractor shall arrange as and when required by the engineer, for cleaning the bearing, gears etc with kerosene or some other reagent, if necessary, by dismantling some of the parts of the equipment during erection and shall arrange for re-greasing/lubricating them with recommended lubricants and for assembling back the dismantled parts, at quoted rate. Lubricants will, however, be supplied free of cost by BHEL.

After initial trial of rotating equipments, control and power cabling for motors and other equipments/instrumentations shall have to be disconnected for checking alignment and re-setting/re-alignment/hot alignment. Contractor will have to arrange labour for disconnecting control and power cabling as per BHEL engineer's instructions and clearance and reconnect the control and power cabling after re-alignment, quoted tonnage rate shall be inclusive of the above.

Packer plates should not only be blue matched with the foundations but also inter packer contact surfaces, contact surfaces between packer and equipment, contact surfaces between packer and foundation frame etc, shall also be blue matched by Prussian blue match checks and percentage contact shall be achieved by chipping, scrapping as per BHEL engineer's instructions. Blue matching of packer has to be carried out as per FQA check list and as per the instructions of BHEL engineer.

Contractor shall arrange changing of preservative oil in the gear box and other bearing assemblies of rotating equipments when in storage areas or after erection of equipments as the case may be as per the instructions of BHEL engineer. Necessary lubricants/oil will be supplied by BHEL. No additional payment will be made for such works even though supply of lub oil might have been made under regular despatchable unit no. against product group main assembly (PGMA) and appearing in the shipping list. Prior to the commissioning of the equipment, oil to be drained and collected in drums provided by BHEL and returned to BHEL/customer's stores.

The HT motor bearings shall be blue matched at site and checked for bearing clearance. Scraping of bearing housing if required shall be carried out by the contractor. The HT motor will also be checked for air gap and adjustment of stator/rotor for magnetic center shall be carried out as part of erection.

Vital clearances of fans and other rotating parts should be checked at site and adjusted if required. All the motors if necessary shall be stripped open, thoroughly serviced with proper care and reassembled properly before erection by the contractor. During servicing, if any deficiency is observed, the same should be taken up with BHEL engineer at site without any delay.

All the shafts of the rotating equipments shall have to be properly aligned to those of matching equipment to perfection, accuracy as required and the equipment shall be free from excessive vibrations so as to avoid overheating of bearings or other conditions, which may tend to shorten the life of the equipment. All bearings, shafts and other rotating parts shall be thoroughly cleaned and lubricated as per the recommendations of BHEL engineer before starting.

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**APPENDIX – I**

**The tenderer shall arrange the minimum tools & tackles listed here under at site. 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.**

**LIST OF TOOLS AND PLANTS TO BE DEPLOYED BY CONTRACTOR**

| <b>SL.NO.</b> | <b>Description</b>                                                                                      |
|---------------|---------------------------------------------------------------------------------------------------------|
| 01.           | <b>Crawler / Tyre mounted Crane for erection with suitable boom length ( 75 / 90 / 100 MT capacity)</b> |
| 02.           | <b>Mobile Crane (10 / 12 MT Capacity)</b>                                                               |
| 03.           | Steel wire ropes and D shackles of various sizes                                                        |
| 04.           | Chain pulley blocks (3T, 5T, 10T)                                                                       |
| 05.           | Hand / Power winch (5T, 10 T)                                                                           |
| 06.           | Single, double, triple sheave pulleys.                                                                  |
| 07.           | Manila ropes                                                                                            |
| 08.           | Derrick of suitable capacities and qty                                                                  |
| 09.           | Welding Transformers.                                                                                   |
| 10.           | Welding generators.                                                                                     |
| 11.           | Cutting torches/tools and accessories                                                                   |
| 12.           | Turn buckles                                                                                            |
| 13.           | Electrode drying ovens.                                                                                 |
| 14.           | Drilling m/c, Grinding m/c, Cutting m/c etc.                                                            |
| 15.           | Mechanical tool kit for fitters.                                                                        |
| 16.           | Electrical tool kits including spanners, allen keys etc.                                                |
| 17.           | Master Spirit level, Dial gauges, Feeler gauges etc.                                                    |
| 18.           | Measuring instruments like micrometers and calipers.                                                    |
| 19.           | Copper tube bender and cutter of sizes 6mm,8mm,                                                         |
| 20.           | Flood light fittings.                                                                                   |
| 21.           | Fire extinguishers as required.                                                                         |
| 22.           | Distribution boards with power cable complete as required.                                              |
| 23.           | Painting brushes.                                                                                       |
| 24.           | Fire proof tarpaulins.                                                                                  |
| 25.           | Safety belts, safety helmets, safety goggles, safety shoes etc.                                         |
| 26.           | 24V AC transformer & hand lamps.                                                                        |

**75 / 90 / 100 MT Crane mentioned above is mainly required for erection of supporting structures, casing panels, funnels, ducts etc . of ESP and for dismantling works.**

**The list of tools and plants mentioned above are not exhaustive. It is the responsibility of the contractor to arrange the necessary tools and plants as and when required at site.**

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**APPENDIX – II**

BHEL will provide the under listed Special Erection Tools only to the Contractor. These tools are to be returned to BHEL after completion of Erection works.

LIST OF SPECIAL ERECTION TOOLS WHICH WILL BE PROVIDED TO THE TENDERER BY BHEL:

| SL.NO. | Description                                       |
|--------|---------------------------------------------------|
| 1.     | HUCK BOLTING MACHINE WITH ACESSORIES              |
| 2.     | AIR BLOWER, VENTURY ETC., FOR AIR-IN LEAKAGE TEST |
| 3.     | STRETCHING DEVICE FOR EMITTING ELECTRODE ERECTION |
| 4.     | HAND OPERATED RIVETTING GUN                       |

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**APPENDIX – III****(To be filled by Tenderer and submitted along with Tender document )**

| S.No.                                                                                       | PARTICULARS                                                                                                                                                                                                                                  | YES | NO |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| <b>01</b>                                                                                   | <b>SERVICE TAX</b>                                                                                                                                                                                                                           |     |    |
| a.                                                                                          | Service Tax Registration No. of Tenderer (copy to be enclosed)                                                                                                                                                                               |     |    |
| b.                                                                                          | Issue of Service Tax Invoice as per Rule 9 of Cenvat Credit rules 2004                                                                                                                                                                       |     |    |
| c.                                                                                          | Whether Tenderer is taking Service Tax Credit for their Inputs                                                                                                                                                                               |     |    |
| d.                                                                                          | Under which Service Head is Service provided                                                                                                                                                                                                 |     |    |
| e.                                                                                          | If Service Tax is Exempted , furnish reasons                                                                                                                                                                                                 |     |    |
| f.                                                                                          | BHEL Service Tax Registration No. ( To indicate in your Invoice) : <b>AACB/4146/PST/008</b>                                                                                                                                                  |     |    |
|                                                                                             |                                                                                                                                                                                                                                              |     |    |
| <b>02</b>                                                                                   | <b>INCOME TAX</b>                                                                                                                                                                                                                            |     |    |
| a.                                                                                          | PAN No. of Tenderer                                                                                                                                                                                                                          |     |    |
| b.                                                                                          | If Exempted , furnish exemption Certificate                                                                                                                                                                                                  |     |    |
| c.                                                                                          | PAN No. of BHEL : <b>AAACB/4146/P</b>                                                                                                                                                                                                        |     |    |
| <b>03</b>                                                                                   | <b>WC ST</b>                                                                                                                                                                                                                                 |     |    |
| a.                                                                                          | CST Registration No.                                                                                                                                                                                                                         |     |    |
| b.                                                                                          | VAT Registration No.                                                                                                                                                                                                                         |     |    |
| c.                                                                                          | Whether Tenderer is availing VAT Credit                                                                                                                                                                                                      |     |    |
| d.                                                                                          | 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.<br>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 - IV****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><br>(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)