

TENDER SPECIFICATION

BHEL:PSSR:SCT: 1250

FOR

Handling at site stores, storage yard and
Transportation to site of work, Application of
Refractory ,Insulation materials and connected works
for Boiler and its Auxiliaries and Piping works for
Unit –VII of 1 x 500 MW set

at

**VIJAYAWADA THERMAL POWER STATION
STAGE IV , IBRAHIMPATNAM
KRISHNA DISTRICT , VIJAYAWADA
ANDHRA PRADESH**

PART – I TECHNICAL BID

BOOK NO :



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)

Power Sector – Southern Region

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

INDEX – SCT 1250- INSULATION –VIJAYAWADA 1 X 500 MW UNIT -7		
SNo	DESCRIPTION	PAGE
1	Covering Letter	1 - 2
2	Special Instructions to Bidders	3 - 4
3	Procedure for Submission of Sealed Bids	5
4	Tender Notice	6 - 7
5	Certificate for No Deviation	8
6	Offer of the Contractor	9 – 10
7	Project Information	11-12
8	Section – III – Common Conditions of Contract	13 - 36
9	Section- VI – Scope of Work and Special conditions	37 - 52
10	Section –VII – APPENDIX	
	Appendix - I Matrix	53- 76
	Appendix - II Weight Schedule	77
	Appendix - III T & P provided by BHEL	78
	Appendix - IIIA T & P provided by contractor	79
	Appendix –IV – Painting instructions	80
	Appendix –V – List of major drawings	81
	Appendix –VI -Special notes	82
	Appendix-VII – Declaration Sheet	83
	Appendix- V III– Certificate of declaration for Confirming Knowledge on site conditions	84
	Appendix- IX– Check list	85 - 87
	Appendix- X – Rate Schedule – Separate Book	88 - 92
11	General Conditions of Contract (separate book)	1-73

BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)
Power Sector, Southern Region
690, Anna Salai, Nandanam, Chennai – 600 035

Tender Specification No. BHEL:PSSR:SCT: 1250

Messrs

Date:

Dear Sir,

Sub: Handling at site stores, storage yard and Transportation to site of work, Application of Refractory ,Insulation materials and connected works for Boiler and its Auxiliaries and Piping works for Unit – VII of 1 x 500 MW set at Vijayawada Thermal Power Station , Stage IV, Krishna District, Andhra Pradesh.

Please find enclosed one set of non-transferable tender documents containing **92** pages along with General Guidelines for insulation work book for the above work.

You are requested to go through the tender documents, GCC Booklet and offer your most competitive rate and submit the tender documents duly filled in as per procedure indicated in the tender specification along with requisite EMD of Rs.1,50,000/- (Rupees One lakh fifty thousand s only) in the form Demand Draft drawn in favour of M/s. Bharat Heavy Electrical Limited Chennai - 35. Bids with Deviations from the tender conditions will be rejected.

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

The completed quotations shall reach the office of the under signed on or before at **30.08.2007, 15.00** Hrs. The Technical bids, will be opened on the same day at **15.30** hrs. We shall separately intimate the date for opening the price bids only to those parties who are technically qualified. You are requested to depute your authorized representative at the time of opening.

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

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

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

Thanking you,

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

ADDITIONAL GENERAL MANAGER / CONTRACTS

This Tender document is not transferable.

Place : Chennai -35

Encl: One set of Tender documents, General Conditions of contract & drawings

BHARAT HEAVY ELECTRICALS LIMITED
(A government of India undertaking)
Power Sector : Southern Region
690, Anna Salai, Nandanam, Chennai – 600 035.

SPECIAL INSTRUCTIONS TO BIDDERS

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

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

01. Details of previous experience during the last five years indicating contract value, duration, completion period and present engagement as per G.C.C.
02. Organization structure of the Company as per GCC.
03. Financial status of the firm enclosing balance sheet and profit and loss account for the past 3 years and certificate from the Company's Banker as per G.C.C
04. Turnover of the Company in last 3 Financial years pertaining to this scope of work only.
05. Latest Income Tax clearance certificate.
06. BIO DATA of key personnel presently in the Rolls of the company and proposed site organization for carrying out the work including deployment of Engineers and Supervisors.
07. Declaration sheets as per Appendix of Tender Specification.
08. Checklist and Schedule of General particulars as per Appendix in GCC.
09. T & P owned/deployment details as per G.C.C.
10. Technical manpower deployment details as per G.C.C
11. Other relevant details as per GCC and checklist.

12. These terms and conditions will be read and construed along with General Conditions of contract and in case of any conflict or inconsistency between the General conditions and the Terms and conditions of the tender specification, the provisions contained in the Term and conditions (NIT, Rate Schedule, Common conditions, Special Conditions including Appendices) shall prevail.

13. **THE BIDDERS ARE REQUESTED TO FURNISH THE DOCUMENTS LIKE COPIES OF LOIs, WORK ORDERS ETC PERTAINING TO THE EXPERIENCE INDICATED IN QUALIFYING REQUIREMENTS, AS GIVEN BELOW.**

14. **QUALIFICATION REQUIREMENT**

- a) The bidders should have successfully executed insulation application and refractory works in 200 MW or above capacity in Thermal Power Stations , during last seven years.
- b) The bidder should have a minimum average financial turn over of Rs.66 Lakhs per year in the preceding three years ending 2005-2006.

The Bidder must have earned profit in any one of the last three financial years ending 31.03.2006 and should have positive net worth as on 31.03.2006.

Bidder should submit audited balance sheet and profit & loss account of the company for last three years ending 31.03.2006 in support of above requirement.

- c) Notwithstanding the above, BHEL reserves the right to reject any Tender or all the Tenders for reasons whatsoever beyond our control and the decision of BHEL is final.

15. A Declaration Sheet Indicating That There Is No Deviation In Tender Documents (As In Page 8) Tenderers May Further Note That THIS DECLARATION IS A PREREQUISITE FOR BHEL TO CONSIDER THEIR BIDS. **BIDS SUBMITTED WITHOUT "NO DEVIATION DECLARATION" WILL BE REJECTED BY BHEL.**

16. SAFETY PLAN

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

BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India undertaking)
Power Sector : Southern Region
690, Anna Salai, Nandanam, Chennai – 600 035.

PROCEDURE FOR SUBMISSION OF SEALED BIDS

The Tenderers must submit their bids as required in two parts in separate sealed covers prominently super scribed as Part I "Technical Bid" and Part II "Price Bid" and also indicating on each of the covers the tender specification number and due date and time as mentioned in the Tender Notice.

Part I (Technical Bid) Cover I

Excepting Rate Schedule, all other schedules, data sheets and details called for in the specification shall be enclosed, in part I Technical Bid only.

Part II (Price Bid) Cover II

All indications of price shall be given in this part II Price Bid.

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

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

NOTE:

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

EMD amount for this Tender is Rs.1,50,000/- (Rupees One Lakhs fifty thousand only). This EMD amount shall be submitted in the form of either pay order or demand draft only drawn in favour of M/s. Bharat Heavy Electricals Limited, Chennai – 35.

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

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

Additional General Manager/Contracts.

BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)

Power Sector, Southern Region

690, Anna Salai, Nandanam, Chennai – 35

TENDER NOTICE

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

Tender Specification No. BHEL:PSSR:SCT: 1250

Description	EMD
Handling at site stores, storage yard and Transportation to site of work, Application of Refractory ,Insulation materials and connected works for Boiler and its Auxiliaries and Piping works for Unit – VII of 1 x 500 MW set at Vijayawada Thermal Power Station , Stage IV Krishna District , Andhra Pradesh	Rs.1,50,000/- (Rupees One Lakh fifty thousand only)

Cost of Tender Documents (Including all Taxes)	:	Rs.1040/-	
Sale Starts on	:	10.08.2007	
Sale closes on	:	28.08.2007	
Due date and Time for Submission	:	30.08.2007	15.00 Hrs.
Date and time for opening Of Technical Bids	:	30.08.2007	15.30 Hrs.

QUALIFICATION REQUIREMENT

- a) The bidders should have successfully executed insulation application and refractory works in 200 MW or above capacity in Thermal Power Stations ,during last seven years.
- b) The bidder should have a minimum average financial turn over of Rs.66 Lakhs per year in the preceding three years ending 2005-2006.

The Bidder must have earned profit in any one of the last three financial years ending 31.03.2006 and should have positive net worth as on 31.03.2006.

Bidder should submit audited balance sheet and profit & loss account of the company for last three years ending 31.03.2006 in support of above requirement.

- c) Notwithstanding the above, BHEL reserves the right to reject any Tender or all the Tenders for reasons whatsoever beyond our control and the decision of BHEL is final

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

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

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

ADDITIONAL GENERAL MANAGER/CONTRACTS

TENDER SPECIFICATION : BHEL:PSSR:SCT:1250

CERTIFICATE FOR NO DEVIATION

*I, _____ of
M/s _____*

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

SIGNATURE OF THE TENDERER

OFFER OF CONTRACTOR

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

Sir,

I/We hereby offer to carry out the work detailed in Tender Specification No.BHEL:PSSR:SCT:1250 issued by Bharat Heavy Electricals Limited, Power Sector : Southern Region, in accordance with the terms and conditions thereof.

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

1. Instructions to Tenderer
2. General Conditions of Contract
3. Special conditions of Contract
4. Other Section, Appendices and Schedules

I/We have deposited/forwarded herewith the Earnest Money Deposit/a sum of Rs.1,50,000/- (Rupees One lakh fifty thousand only) vide DD.No. . Dt. which shall be refunded should our offer not be accepted. Should our offer be accepted, I/We further agree to deposit such additional sum which along with the sum of Rs.1,50,000/- (Rupees one Lakh fifty thousand only) mentioned above, make up the Security Deposit for the work as provided for in the Tender Specification within the stipulated time as may be indicated by BHEL, Power Sector : Southern Region, Chennai – 600 035.

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

DATE:

CONTRACTOR:

PLACE:

ADDRESS:

Witness with their address

Signature

Name

Address

PROJECT INFORMATION

1 x 500 MW - VIJAYAWADA – STAGE IV

1	Owner	APGENCO, Hyderabad
2	Consultant	DESEIN, New Delhi
3	Project Title	1 x 500 MW VIJAYAWADA TPS, Unit 7, Stage – IV
4	Location	Ibrahimpatnam, Vijayawada, Krishna Dist, AP State, India
5	Latitude and longitude	13 Deg North latitude, 82 Deg East longitude
6	Elevation above mean sea level	26.5 meters
7	Climatic Conditions	
	a) Temperature (Monthly Basis)	
	I. Annual average maximum temperature	47.6 ^o C
	II. Annual average minimum temperature	13.0 ^o C
	b) Relative Humidity	
	Relative Humidity	Varies between 43 % and 82 %

	c. Rain fall	
	Annual average rain	998 mm most of which occurs during June to October
	d. Wind speed	
	I. annual mean wind speed	16.5 KM / Hour
	II. Maxium mean wind speed	55 m / sec
8	Wind load	Calculations for wind effect shall be in accordance with IS:875-1987 (Part 3) taking into account the following:
9	Seismic Data (as per IS: 1893 latest issue)	
	a. Zone	Zone III
	b. Important factor (I)	1.5
10	Response reduction factor	5.0

**SECTION III
COMMON CONDITIONS OF CONTRACT
FOR ERECTION WORK**

3.1 SCOPE OF CONTRACT

- 3.1.1 The Intent 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 and equipment or material necessary for the proper and efficient services towards installation of the Plant 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.
- 3.1.2 The contractor shall carry out the work in accordance with instructions/ drawings/ specification/ standard practices supplied by BHEL from time to time.
- 3.1.3 Provision of all types of labour, Supervisors, Engineers watch and ward as required, tools and tackles as required, consumables as required under various clauses of tender specification for handling transportation, erection, testing and commissioning.
- 3.1.4 Proper out-turn as per BHEL plan and commitment.
- 3.1.5 Completion of work in time.
- 3.1.6 Good quality and accurate workmanship for proper performance of equipment / systems.
- 3.1.7 Preservation of all components at all stages of pre-assembly/erection/ till unit is handed over, as specified in detail in clause 3.9.0(Preservation clause)

3.2 FACILITIES TO BE PROVIDED BY BHEL:

3.2.1 OPEN SPACE :

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

3.2.2 ELECTRICITY:

For construction purpose, electricity of 415 V- 3 Phase Supply will be provided free of charge at one single point nearer to the site as provided by the customer. Further distribution shall be arranged by the contractor for his office & Stores Shed and for construction at his cost.

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

3.2.3 WATER:

Water for construction purposes will be provided at single point, free of charge, as provided by customer to BHEL nearer to the site. Further distribution shall be arranged by the contractor at his cost.

3.2.4 TOOLS & TACKLES:

All the tools and tackles required for the complete erection of components shall be arranged by the contractor and the quoted rate shall be inclusive of such requirements. The stipulation pertaining to these are detailed in clause 3.6. of Tender specification

3.2.5 CONSUMABLES:

All consumables and Electrodes including special Electrodes if any like E7018 are to be arranged by the contractor at his cost.

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

3.3.1 CIVIL CONSTRUCTION:

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

3.3.2 WATER DISTRIBUTION:

Distribution of water for construction purpose and as well as drinking purpose from the single point provided by BHEL to various work-fronts shall be contractor's responsibility and at his cost.

3.3.3 ELECTRICITY DISTRIBUTION:

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

3.3.4 POSSESSION OF GENERATORS :

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

3.3.5 LIGHTING FACILITY:

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

3.3.6 POWER DISTRIBUTION:

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

3.3.7 CONTRACTOR'S OBLIGATION ON COMPLETION :

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

3.4 GASES :

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

3.4.2 BHEL reserves the right to reject the use of any gas in case required purity is not maintained.

3.4.3 The contractor shall submit weekly / fortnightly / monthly statement report regarding consumption of all consumables for cost analysis purposes.

3.4.4 The contractor shall ensure safe keeping of the inflammable cylinder at a separate place away from normal habit with proper security etc.

3.4.5 The contractor shall arrange air / gas manifold ensuring proper distribution and reduction of handling time.

3.5 ELECTRODES

3.5.1 All the required electrodes as approved by BHEL shall be arranged by contractor at his cost. It shall be the responsibility of the contractor to obtain prior approval of BHEL, before procurement regarding, suppliers, type of electrodes etc. On receipt of the electrodes at site, it shall be subject to inspection and approval by BHEL. The contractor

shall inform BHEL details regarding type of electrodes, batch number and date of expiry etc.

- 3.5.2 Shortage of any of the above electrodes or the equivalent suggested by BHEL shall not be quoted as reason for deficiency in progress or for additional rates.
- 3.5.3 Storage of electrodes shall be done in an air conditioned / humidity controlled room as per requirement, at his own cost by the contractor.
- 3.5.4 All low hydrogen electrodes shall be baked/dried in the electrode drying oven to the temperature and period specified by the BHEL Engineer before they are used in erection work and each welder should be provided with one portable electrode drying oven at the work spot. Electrode drying oven and portable drying ovens shall be provided by contractor at his cost.
- 3.5.5 In case of improper arrangement of procurement of above electrodes BHEL reserves the right to procure the same from any source and recover the cost from the contractor's first subsequent bills at market value plus departmental charges of BHEL communicated from time to time. Postponement of such recovery is not permitted.
- 3.5.6 BHEL, reserves the right to reject the use of any electrodes at any stage if found defective because of bad quality, improper storage, date of expiry, unapproved type of electrodes etc. It shall be the responsibility of the contractor to replace at his cost without loss of time.

3.6 TOOLS & TACKLES

- 3.6.1 The contractor have to bring their own tools, tackles and plants etc., namely manila ropes, wire ropes, winches, steel scaffolding materials , compressor 300 CFM, weighing devices, cutogen sets, water pumps with their accessories, welding generators, welding electrode holders and welding cables, small tools, sheet metal machines and equipments etc., required for the work for timely and perfect execution as laid down in the drawings and specifications. The work should not suffer for want of any of the T & P.
- 3.6.2 Necessary electrical / water / air connection required for operation of any of the above equipment shall be to Contractor's account.

- 3.6.3 All the T & P arranged by contractor including electrical connections wherein required shall be reliable / proven / tested with necessary test certificate.
- 3.6.4 All other T & P required for the satisfactory execution of work shall be arranged by contractor.
- 3.6.5 All the instruments, measuring tools etc., are to be calibrated periodically as per the requirement of BHEL and necessary calibration certificates are to be submitted to BHEL before use and necessary calibration certificates / test certificates shall be obtained from the approved agency.
- 3.6.6 All T & P lifting tackles including wire ropes, slings shackles and electrically operated equipments shall be got approved by BHEL Engineer before they are actually put on use. Test certificates should be submitted before their usage. Test certificates obtained from the statutory authority should be submitted before their usage.
- 3.6.7 The list of major T & P required to be deployed by the contractor is indicated in the tender. The list is minimum and not exhaustive but anything required over and above these to suit the site condition / rate of progress / nature of work , shall be arranged by contractor at his own cost.
- 3.6.8 Contractor shall take into consideration the above clause and quote the rates as called for in the rate schedule.

3.7 SUPERVISORY STAFF AND WORKMEN

- 3.7.1 The Contractor shall supply all the skilled workmen like welders, gas cutters, electricians, riggers, serangs, erectors, carpenters, fitters, masons, ladders, tin-smiths etc., in addition to other skilled, semi-skilled and unskilled workmen required for all the works of handling and transportation from the site stores to erection site, erection, testing and commissioning contemplated under this specification. Only fully trained and competent men with previous experience on the job shall be employed. They shall also hold valid certificates wherever necessary. BHEL reserves the right to decide on the suitability of the workers and other personnel who will be employed by the contractor, BHEL reserves the right to insist on removal of any employee of the contractor at any time, if they find him unsuitable and the contractor shall forthwith remove him.

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

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

3.8 SCOPE OF MATERIAL HANDLING AND SITE STORAGE AND

OTHER RESPONSIBILITIES

- 3.8.1** While BHEL will endeavour to store/stock/identify materials properly in their open/closed storage yard/shed it shall be contractor's responsibility to assist BHEL in identifying materials well in time for erection, taking delivery of the same in time following the procedure indicated by BHEL and transport the material safely to pre-assembly yard/erection site in time according to programme.
- 3.8.2 The Contractor shall identify necessary supervisors/labour force for the above work in sufficient number as may be needed by BHEL for areas covering their scope.
- 3.8.3 It shall be contractor's responsibility to arrange for necessary crane/tractors, trailers / trucks / slings / tools and tackles / labour including operators, for loading the materials / equipments from stores / storage yard, move it to erection site / pre-assembly yard and unload the same at pre-assembly yard / erection site and the quoted rate shall include the same.
- 3.8.4 All equipment so used by contractor shall be of proven quality and safe in operation as approved by BHEL site Engineers from time to time.
- 3.8.5 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.
- 3.8.6 All the surplus , damaged, unused materials, package materials / containers / special transporting frames, gunny bags etc., supplied by BHEL shall be returned to the BHEL stores by the contractor and maintain records.
- 3.8.7 The contractors shall take delivery of the components and equipment and special consumables from the storage area after

getting the approval of the BHEL Engineer on standard indent forms to be specified by BHEL. At periodic intervals of work, complete and detailed account of the equipment as erected and electrodes used shall be submitted to the BHEL Engineer.

- 3.8.8 The contractor shall follow monthly plan for erection and the same will be mutually agreed upon after discussion. The contractor shall arrange for Engineers, Supervisors and labour force and tools and plants and consumables to suit the above plan and execute the work accordingly.
- 3.8.9 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.
- 3.8.10 The contractor shall make suitable security arrangement including employment of security personnel to ensure the protection of all materials/equipments and works from theft, fire, pilferage and any other damage and loss.
- 3.8.11 The contractor shall ensure that the packing materials and protection devices used for the various equipments during transit and storage are removed before these equipments are installed.
- 3.8.12 All equipments shall be handled very carefully to prevent any damage or loss. No bare wire ropes, slings etc. shall be used for unloading and / or handling of the equipments without the specific written permission of the Engineer. The equipments from the storage yard shall be moved to the actual site of erection / location at the appropriate time as per the direction of BHEL Engineer so as to avoid damage for such equipments at site.
- 3.8.13 The work covered under this scope of work is of highly sophisticated nature requiring best quality / precision workmanship engineering and construction management. He should also ensure successful and timely commercial operation of equipment installed. The contractor must have adequate quantity of precision tools, construction aids in possession. Contractor must also have adequate trained qualified and experienced supervisory staff and skilled personnel.
- 3.8.14 All the necessary certificates and licenses required to carry out this scope of work are to arranged by the contractor then and there at no extra cost.

- 3.8.15 The contractor shall take all reasonable care to protect the materials and work till such time the erected equipment has been taken over by BHEL/their client. Wherever necessary suitable temporary fencing and lighting shall have to be provided by the contractor as a safety measure against accident and damage of property of BHEL. Suitable caution notices shall be displayed where access to any part may be deemed to be unsafe and hazardous.
- 3.8.16 The contractor shall be responsible for taking all safety precautions during the construction and keeping the site safe at all times and the end of each working day. When the work is temporarily suspended he shall protect all construction materials, equipments and facilities from causing damage to existing property interfering with the operations of the station when it goes into services. The contractor shall comply with all applicable provisions of the safety regulations, clean-up programme and other precautionary measures which the BHEL has in effect at the site.
- 3.8.17 All lifting tackles including wire ropes, slings, shackles etc. used by the contractor shall be got approved by BHEL Engineer at site before they are actually put on the work. It will be the responsibility of the contractor to ensure safe lifting of the equipment taking due precautions to avoid any accidents and damage to other equipments and personnel. AH piping shall be adequately supported and protected to prevent damage during handling and erection. The history cards for major equipments to be maintained by the contractor.
- 3.8.18 the contractor shall take delivery of equipment from storage yard/stores/sheds. He shall also make arrangements for verification of equipment, scrupulously, maintain records and keep safe custody watch and ward of equipment after It has been handed over to him till these are fully erected, tested and commissioned and taken over by BHEL's client. The stolen/lost/damaged goods shall have to be made good by the contractor at his own cost.
- 3.8.19 Sometimes it may become necessary for the contractor to handle certain unrequired components in order to take out the required materials. The contractor has to take this contingency also Into account. No extra payment is payable for such contingencies.

3.9.0 PRESERVATION OF COMPONENTS

- 3.9.1 It shall be the responsibility of the contractor to apply touch up painting on all equipment before erection. It shall be contractor's responsibility to arrange for required labour, brush and other consumables like cotton waste, cloth etc. for carrying out preservative painting. The quoted rate shall inclusive of above work. The required paint (red oxide) and thinner shall be arranged by BHEL at free of cost.
- 3.9.2 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.
- 3.9.3 Any failure on the part of contractor to carry out work according to above clauses will entail BHEL to carry out the job from any other party and recover the cost from contractor.
- 3.9.4 Due to atmospheric conditions erected materials are likely to get rusted more frequently. It is the responsibility of the contractor to preserve the erection materials drawn from stores for erection till these are commissioned and handed over to customer. The required paint (Red oxide) and thinner shall be arranged by BHEL free of cost. All other consumables like painting brush, emery paper, cotton waste, cloth etc. have to be procured by the contractor at his cost. The contractor should ensure that the materials are not rusted on any account till they are handed over to customer. The decision of the BHEL Engineer is final with regard to frequency of application of paint.

3.10.0 DRAWINGS AND DOCUMENTS

- 3.10.1 The detailed drawing specification 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.
- 3.10.2 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.

- 3.10.3 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 quantity may be expected to occur as is usual in any such large scales of work.
- 3.10.4 Should any error or ambiguity be discovered in the specification, or information, the contractor shall forthwith bring the same to the notice of BHEL before commencement of work. BHEL's interpretation in such cases shall be final and binding on the contractor.
- 3.10.5 Deviation from design dimensions should not exceed permissible limit. The contractor shall not correct or alter any dimensions/details without specific approval of BHEL.

3.11.0 SAFETY AND CLEANLINESS

- 3.11.1 Contractor shall strictly follow all safety regulations/conditions as per clause 2.15 and its sub clauses of general conditions of contract booklet enclosed with this tender.
- 3.11.2 Non-conformity of safety rules and safety appliances will be viewed seriously and the BHEL has right to impose fines on the contractor as under:

Sl.No	Safety	Fine (Rs.)
01	Not wearing safety helmet	50/-
02	Not wearing safety belt	100/-
03	Grinding without goggles	50/-
04	Not using 24V supply for internal work	500/-
05	Electrical plugs not used for hand machines	100/-
06	Not slinging properly	200/-
07	Using damaged sling	200/-
08	Lifting cylinders without cage	500/-

09	Not using proper welding cable with lot of joints and not insulated properly	200/-
10	Not removing small scrap from platforms	200/-
11	Gas cutting without taking proper precaution or not using sheet below gas cutting	200/-
12	Not maintaining elec. Winches which are being operated dangerously	500/-
13	Improper earthing of electrical T & Ps	500/-

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

3.11.4 CONTRACTOR SHALL DEPLOY A SAFETY OFFICER EXCLUSIVELY TO HANDLE SAFETY REQUIREMENT

SPECIFIC REQUIREMENTS FOR ISO 9001 - 2000

3.12.0 IMPORTANT NOTE

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

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

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

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

3.13.0 INSPECTION / QUALITY ASSURANCE / QUALITY CONTROL STATUTORY INSPECTION

3.13.1 Various Inspection / quality control / quality assurance procedures/methods at various stages of erection and commissioning will be as per BHEL / Customer quality control procedure/codes/IBR and other statutory provisions and as per BHEL Engineer's instructions.

3.13.2 Preparation of quality assurance log sheets and protocols with customer's Engineers, welding logs and other quality control and quality assurance documentation as per BHEL Engineer's Instructions, is within the scope of work / specification.

3.13.3 The protocols between contractor and customer/BHEL shall be made prior to installation for correctness of foundations, materials, procedures, at each stage of Installation, generally as per the requirement of Customer/BHEL. This is necessary to ensure elimination of errors or keeping them within tolerable limits and to avoid accumulation and multiplication of errors.

- 3.13.4 A Daily log Book should be maintained by every supervisor/Engineer of contractor on the job in Duplicate (One for BHEL and one for Contractor) for detailing and incorporating Alignment / clearance / centering / Leveling Readings and Inspection details.
- 3.13.5 All the Important Measurements shall be recorded in the Daily Log Book with sketches based on BHEL Drawings indicating Readings / Measurements actually Taken and Signed by BHEL/Customer / Contractor Representatives.
- 3.13.6 Approval Given by Customer/BHEL for welding, results tests etc. shall also be recorded in the log book.
- 3.13.7 Welding Details like number of joints, welder's Name, Date of welding, Details of Repair, Heat Treatment, Etc. will be documented in welding Logs as per BHEL Engineer's Instructions.
- 3.13.8 Heat Treatment details of HP Welds indicating minimum Temperature Recorded, Heating Rate, Cooling Rate, soaking Time, Etc., shall also be Recorded and documented by contractor as per BHEL Engineer's Instructions. High pressure Welder's performance Record shall be furnished every month. The performance Report of Welders shall indicate the percentage of Repair for each welder.
- 3.13.9 All the Electrical/Technical Measuring and Testing Instruments/Gauges, Feeler Gauges, Height Gauges, Dial Gauges, Micrometers, Levels, Spirit Levels, Surface plates, straight Edges, vernier calipers and all measuring instruments shall be provided by the contractor for checking, leveling, Alignment, Centering etc of Erected Equipments at various stages. The Instruments/gauges/Tools etc. provided should be of Brand, Quality and Accuracy, Specified by BHEL Engineer and should have necessary calibration and other certificates as per the Requirements of BHEL Engineer.
- 3.13.10 Total Quality is the Watch Ward of the work and standards, Procedures laid down by BHEL. We shall follow all the Instructions as per BHEL Drawings and Quality / Standards. Contractor shall provide for the services of quality Assurance Engineer.
- 3.13.11 The Welders performance will be reviewed from time to time as per the BHEL / IBR Standards and any welders not performing to the Standards set by BHEL / IBR Standards will be removed from working, contractor shall arrange for the alternate welders immediately.

- 3.13.12 All the welders including the HP welders shall carry identity cards as per the Performa prescribed by BHEL only Welders Duly authorized by BHEL / Boiler Inspector / Consultant shall be engaged on the work.
- 3.13.13 Contractor shall ensure speedy alignment and welding of all Equipment erected by him after placement. Also all alignments, Welding, NDT Tests required for stage Inspection shall be completed as per Quality Assurance Procedures. All the Quality Assurance procedures have to be complied with before effecting column erection, Ceiling Beams erection, drum lifting, further structural work, Hydraulic Test, Trial Run of Equipment, Pre-commissioning and Post commissioning and any other tests required to be conducted for completing erection and commissioning.

3.14.0 STAGE INSPECTION BY FES / QA ENGINEERS

- 3.14.1 Apart from Day-to-Day Inspection by BHEL Engineers Stationed at site and also by Customer's Engineers, Stage Inspection of Equipment under Erection and commissioning at various stages of Erection and commissioning by TEAMS of Engineers, from Field Engineering Services of BHEL's Manufacturing units and Quality Assurance Teams from Field Quality Assurance Unit/ Factory Quality Assurance and commissioning Engineers. Contractor shall arrange all labour, Tools and Tackles, etc. for such stage inspections free of cost.
- 3.14.2 Any modifications suggested by FES and QA Engineers Team shall be carried out. Claims of Contractor, if any shall be dealt as applicable.
- 3.14.3 Any minor rectifications of minor repairs of defective work found out during stage Inspection shall be rectified free of cost, by the contractor.
- 3.14.4 Any major Rectification or Major Repair / Major Rework of Defective work found out during stage Inspection verification / checking, But not attributable to contractor shall also be carried out. Claims of contractor if any, shall be dealt as applicable.

3.15.0 STATUTORY INSPECTION

- 3.15.1 The scope includes Getting the Approvals from the statutory authorities (Like Boiler Inspector and labour officers). This includes arranging for inspection visits of Boiler Inspector periodically as per BHEL Engineer's instructions, submitting documents, radiograph, etc. and following up the matter with them.
- 3.15.2 All fees connected with the contractors for testing his welders / men / workers and testing, inspection calibrating of his instruments and equipments, shall be paid by the contractor. It shall be the contractor's responsibility to obtain approval of statutory authorities, wherever applicable, for the conducting of any work which comes under the purview of these authorities. Any cost arising from this shall be the contractor's account. However, BHEL shall pay all other fees. (FEES FOR VISITS INSPECTION FEES, REGISTRATION FEES, ETC.) In case these inspection have to be repeated due to default / fault of the contractor and fees have to be paid again, the contractor shall have to bear the charges. These would be deducted from his bills.

3.16.0 WELDING

- 3.16.1 All structural welders shall be tested and approved by BHEL Engineer before they are actually engaged on work though they may possess the required certificate. BHEL reserves the right to reject any welders without assigning any reason.
- 3.16.2 BHEL Engineer is entitled to stop any welder from the work if his work is unsatisfactory for any technical reasons or there is a high percentage of rejection of joints welded by him, which in opinion of the BHEL engineer will adversely affect the quality of the welding though the welder has earlier passed the tests prescribed by BHEL engineers. The welders having passed qualification tests does not relieve the contractor of a contractual obligation to check the welders performance.
- 3.16.3 All charges towards testing of welders for destructive and non destructive test, testing and approval of welders for engaging in the erection work shall be borne by the contractor.
- 3.16.4 All welded joints shall be subjected to acceptance by BHEL engineer.

3.17.0 PROGRESS OF WORK

- 3.17.1 During the course of erection if the progress is found unsatisfactory or if the target dates fixed from time to time for every milestone are to be advanced or in the opinion of BHEL, if it is found that the skilled workmen like fitters, operators, technicians etc., employed are not sufficient, BHEL will induct required additional workmen to improve the progress or take over a part of the job and get it done on risk and cost of the contractor and recover from contractor's bill, all charges incurred on this account including all expenses together with BHEL overheads from contractor's bill.
- 3.17.2 The Contractor shall submit daily, weekly and monthly progress reports, man power reports, material reports, consumables reports and other reports considered necessary by the BHEL engineer.
- 3.17.3 The manpower reports shall clearly indicate the manpower deployed category wise daily specifying also the activities in which they are engaged.
- 3.17.4 The progress reports shall indicate the progress achieved against planned with reasons indicating delays if any shall give remedial action which the contractor intends to make good the slippage or lost time so that further works can proceed as per the original programme and the slippage do not accumulate and affect the overall programme in format designed and approved by BHEL engineer
- 3.17.5 The contractor shall arrange for weekly progress review meeting with the "Engineers" at site during which actual progress during the week vis- a – vis scheduled programme shall be discussed for action to be taken for achieving targets. The programme for subsequent work shall also be presented by contractor for discussion. The contractor shall constantly update / revise his work programme to meet the overall requirements and suit the material availability.
- 3.17.6 The contractor shall arrange for submitting three sets of progress photographs every month to BHEL office the areas to be photographed will be as per the instruction of BHEL engineer. The quoted rate shall include this contingency.

- 3.17.7 The contractor must obtain the signature and permission of the security personnel of the customer for bringing any of their materials inside the site premises, without the Entry gate Pass these materials will not be allowed to be taken outside.
- 3.17.8 The contractor shall maintain a record in the form as prescribed by BHEL for all operations carried out on each weld and maintain a record indicating the number of welds, the name of welders who welded the same, date and time of start and completion, preheat temperature, radiographic results, rejections if any, percentage of rejection etc., and submit copies of the same to BHEL Engineer, as required.

HSE SPECIFIC REQUIREMENT

OCCUPATIONAL HEALTH & SAFETY MANAGEMENT SYSTEM

SUB CONTRACTOR TO ENSURE COMPLIANCE OF THE FOLLOWING HEALTH RELATED POINTS

01. Sub-contractor to identify nearest hospital for Health check up of his staff and workers and intimate BHEL site office & PSSR HQ.
02. To arrange for occupational health check up / screening of contractor's staff and workers engaged in sub contracting activities. In this, category of workmen such as welders, gas cutters, grinders, radiographers, crane operators are to be given exclusive attention in respect of health screening.
03. Sub-contractor to arrange an ambulance vehicle or emergency vehicle on a continuous basis to meet any emergency situation arising at site work in which his staff and workers are engaged.
04. To provide appropriate facilities for prompt first aid treatment of injuries and illness at work. One first Aider for each sub contractor to be provided. First Aider should undergo training on first aid.
05. To provide filtered drinking water at selected place in a clean container.

SUB CONTRACTOR TO ENSURE COMPLIANCE OF THE FOLLOWING SAFETY RELATED POINTS

01. Personnel protective equipment (PPES): Required number of following PPES (Confirming to Relevant is Standards) to be made available to workmen at site and ensured that they are used .
 - ❑ Helmet
 - ❑ Safety goggles
 - ❑ Welding face shields
 - ❑ Safety belts for working at heights
 - ❑ Safety shoes
 - ❑ Ear plugs
 - ❑ Rubber gloves and mats for low tension (I.T) electrical works
 - ❑ Gum boots & aprons
 - ❑ Other items as required by BHEL site

02. Sub contractor to liaise with nearest fire station and inform contact telephone number and contact person to meet any emergency.
03. To provide appropriate fire fighting equipment at designated work place and to provide fire fighting training to selected persons in his group of workmen to meet emergencies.
04. To provide adequate number of 24 V power supply points to work in a constrained and enclosed space.
- 05 . All power tapping points / switch boards /power & control cabling should fulfill required electrical safety aspects as per relevant is standard.
06. ELCB's (Earth leak circuit breakers) at all electrical distribution points to be provided.
07. Red and white caution tape of proper width (1.5 to 2 inch) to be used for cordoning unsafe area such as open trench, excavated area, etc.
08. To provide sub-contractors company logo or clothing to all staff and workers for identification including identity cards with photographs approved by BHEL.
09. High pressure and structural welders to be identified with color clothing and to display copy of welders certificate with photographs of welder at the work place. They also should be in possession of valid welding procedure.
10. To display safe handling procedure for all chemicals such as lube oil, grease, sealing compound, kerosene, diesel etc. At stores & respective work place.
11. Contractor should authorize a person at site to stop work if there is a unsafe work noticed as per his knowledge.
12. Fitness for use of erected scaffolding to be certified by the contractors approved scaffolder and the certificate should be displayed on the scaffolding itself. If the scaffolding is unsafe , the same will not be used. the certificate to be updated daily. The scaffolding to be made as per the relevant is standard.

13. For making platform on the scaffolding , proper thickness and size of the plank of required quality wood to be used. The safe working load of the platform to be displayed on the scaffolding itself. Proper use of platform to be explained to the user.
14. All plant equipment should have inspection report before put in to use.
15. All T&Ps should be of reputed brand and having quality certificates.
16. All IMTEs should have valid calibration certificate from recommended institution / testing lab and these should be in place.
17. All lifting tackle and plant equipment should have safe working load certificate.
18. The right worker should be deployed for right job and the resume of site in charge, supervisors, and key workers to be submitted before commencement of work..
19. Sub-contractor should submit inspection / testing matrix of all T&Ps and to be approved by BHEL.
20. Sub-contractor to display safety slogan, safety board, caution boards wherever required in consultation with BHEL.
21. Sub-contractor to provide gas detectors of reputed make at desired locations.
22. Sub-contractor to conduct emergency mock drills. one drill per 6 month and submit report to BHEL.
23. Safe handling and storing of all equipment with adequate space to be ensured.
24. Sub contractor to deploy safety supervisor till the completion of the project.
25. Sub contractor to comply the safety reporting procedure of BHEL as practiced at present and also additional requirements that may arise out of future improvements in the safety management system. This includes computation of safety indices such as frequency rate, severity rate & incident rate.

26. Sub contractor to identify probable emergency situations such as electric shocks to workmen , caving in of shored earth , fall from height, collapse of scaffolding fire etc., and should have clear action plan to overcome them. Sub contractor to take required guidance from BHEL in this regard.
27. Sub contractor to identify hazardous activities which he may carryout and should train his workmen in those activities with the relevant operation control procedures. Sub contractor to take required guidance from BHEL in this regard.
28. Safe work permit system to be followed while working in confined space / near electric systems.

SUB CONTRACTOR TO ENSURE COMPLIANCE OF THE FOLLOWING ENVIRONMENT RELATED POINTS

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

OTHER HSE REQUIREMENTS TO BE COMPLIED BY SUB CONTRACTOR

1. Sub contractor to clearly understand and accept the HSE policy of PSSR with a commitment to comply the requirements of the policy.
2. Sub contractors to arrange for daily meeting of their supervisors and work force before they disperse for their daily planned activities where in the relevant health , safety and environment aspects of the job and use of PPES are explained
3. Sub contractor to conduct monthly HSE meeting (internal) and submit the report to BHEL.
4. HSE slogans to be displayed in a proper board – hoarding at designated places in consultation with BHEL.
5. Sub contractor to submit a structured programme for training & occupational Health Screening of their work force at site after the Award of LOI.

SECTION – VI

SPECIAL CONDITIONS OF CONTRACT

6.1 SCOPE OF WORK

- 6.1.1 The work to be carried out at quoted/accepted rates by the contractor under the scope of these specifications covers the complete work of handling, loading and transporting of materials from project stores sheds / storage yards and unloading at site of work , cutting bending to the required shape as per drawing, painting of inner sheet wherever required with anti-corrosive paints, welding, application of refractory / insulation materials on the equipments namely Boiler , ESP , Fans, ducts, Piping, Vessels, etc., and binding and cladding with sheets etc., using their own tools plants, tackles, all consumables, supervisor and men as enumerated in the scope of contract at **1 x 500 MW Vijayawada Thermal Power Station , Stage IV, Unit VII.**
- 6.1.2 The work shall conform to dimensions and tolerances given in various drawings and quality manuals provided by BHEL. If any portion of work is found to be defective in workmanship not conforming to drawings or other stipulations, the contractor shall dismantle and redo the work duly replacing the defective materials at his cost, failing which the job will be carried out by BHEL by engaging other agencies / departmentally and recoveries will be effected from contractor's bill towards expenditure incurred including BHEL's overhead charges.
- 6.1.3 The contractor will have to follow the instructions provided in the technical manuals, drawings, and specifications provided by BHEL, to the contractor from time to time. In case of ambiguity or deviation the decision / clarification of BHEL Engineer will have to be followed.
- 6.1.4 All insulations and refractory materials including iron components and other sheets casing materials, paints etc., required as per drawing will be supplied by BHEL and the same have to be erected / applied as per the drawings and specifications of BHEL by the contractor.

- 6.1.5 It is the responsibility of the contractor to ensure that the insulation and refractory materials and sheet metal covering issued to him for application are well protected against loss or damage or weather conditions tending to affect its quality by the provision of close / semi closed sheds at his cost.
- 6.1.6 All the insulation and refractory materials and sheet metal covering etc., issued to the contractor shall be properly stored and handled before application due the same. If any damage occur to the materials due to improper storage or due to any causes attributable to the contractor except for normal breakage or damaged material shall be to the cost of the contractor.
- 6.1.7 Contractor is liable for the exact accounting of the materials issued to him and any unaccountable losses shall be made good by him. The necessary accounting of the material issued will have to be furnished by the contractor periodically.
- 6.1.8 All surplus, unused materials etc., supplied by BHEL shall be returned to BHEL after the work is over. Materials like gunny bags packing materials and empty containers etc., shall be returned to BHEL stores at periodical intervals by the contractor.
- 6.1.9 The contractor shall provide the required quantity of wire nails and other materials for centering works at their cost.
- 6.1.10 Wherever iron components are to be welded on non pressure parts, the contractor shall employ only approved structural welders. It shall also be the responsibility of the contractor to arrange for welding hooks, flats, , plates, supports and other fixtures also. All consumables tools and plants etc., required for the work shall be arranged by the contractor at their cost. Wherever iron components are to be welded on the **pressure parts and HP piping** the contractor shall employ **certified IBR high pressure welders** as required by BHEL and only welding generators are to be used.
- 6.1.11 The contractor shall also furnish weekly labour report showing by classification the number of employees engaged in various categories of work and progress report of work as required by BHEL Engineer.
- 6.1.12 Special type of insulation wool used in penthouse shall not be cut indiscriminately. All chicken mesh, cut bits shall be accounted for.

- 6.1.13 Contractor shall observe all precautions for laying and curing of castable refractory. Any defective works found shall be re-laid by contractor at his own cost including materials.
- 6.1.14 Application of insulation and refractory materials and sheet metal covering includes loading of materials from stacking area / storage sheds at the place of work i.e., the contractor shall use his own equipment, T & P required for loading /unloading transporting materials from main storage / storage yard and places of issue to the working site.
- 6.1.15 Subject to variation, the approximate weight of insulation and refractory materials and sheet metal covering are given in Appendix-II.
- 6.1.16 The contractor shall take all responsible care to protect the materials and work till such time the erected equipment has been taken over by BHEL / their client.
- 6.1.17 Wool insulations are received at site as bonded and unbonded mattresses in standard sizes. These has to be dressed / cut to suit equipment / site work by the contractor.
- 6.1.18 For the insulation of hot air duct, gas duct, ID duct etc., unfaced bonded wool, mattresses is to used with wire netting (wire netting is supplied separately) on the outside for rigidity.
- 6.1.19 Dressing of insulation bricks to suit site conditions curing the refractory concrete applied, sheet cladding over insulations, form the part of this work.
- 6.1.20 Application of refractory, wool insulation, sheet metal cladding, welding of hooks / supports to hold insulation and refractories under this contract including but are not limited to the following. Insulation of main boiler portion, boiler drum, ceiling heat recovery area, air and flue gas ducts, and connected ducts, HP & LP piping, temporary acid cleaning and steam blowing piping connected tubes, oil and coal burners, oil and steam tracing, lines, complete and fuel and draft plants, all drain lines, traps, flanges, fine fittings, sampling lines etc.,

- 6.1.21 Removal type of insulation to be provided for valves fittings, expansion joints etc., as per the drawings or as directed by BHEL Engineer.
- 6.1.22 All piping insulations ends shall be carried out in such a manner as to facilitate removal of bolts nuts and washers from the flanges.
- 6.1.23 Refractory works at complete combustion chambers, ceiling heat recovery area, oil and coal burner areas and application of castable refractory whether specified in drawing or as directed by BHEL Engineer have to be carried out.
- 6.1.24 Fabrication of covering sheets may be necessary like preparing the sheets to the sizes and shapes specified in drawings, beading, swaging, beveling of sheets crowning of the sheets if necessary the same to supports over wool insulation with screws as specified in BHEL drawings or as instructed by BHEL engineer.
- 6.1.25 Fabrication, fixing or welding of hooks / supports to equipment of boiler parts, ESP, piping and other connected equipments to support wool insulation applying of primer paint to welded portion parts (paints to be arranged by contractor at his cost) welding certain supports on parts other than pressure parts to hold refractories (by engaging approved welders) as per the drawings or as instructed by BHEL Engineer will have to be carried out by the contractor.
- 6.1.26 Painting of inner side of sheets metal covering over the insulation walls with anti-corrosive paint (two coats) to the entire satisfaction of BHEL Engineer and application of bitumonic ceiling compound on roof top of cladding joints, if necessary, shall also be carried out by the contractor for which the required amount of paint, thinner and bitumonic ceiling compound, will provided by BHEL free of cost. Other accessories for painting, cleaning the surfaces etc., shall be arranged by the contractor.
- 6.1.27 The contractor should ensure that the finished surface of the insulation and refractory works conforms to the dimensions and tolerances given in the drawings.

- 6.1.28 The contractor shall leave certain gap and opening while doing the work as per the instructions of BHEL Engineer to facilitate inspection by Boiler Inspector or doing commissioning to fix gauges, fittings, instruments. Those gaps will have to be finished as per drawings at a later date by the contractor at his cost, as required by BHEL .
- 6.1.29 Cladding sheets shall be suitably pressed along with diagonals to form diamond shape so as to improve the strength of the sheets, to avoid humpiness and to give a aesthetic look.
- 6.1.30 Plates ,bars, rods and other materials that are to be cut, and rewelded from the fabricated places to suit erection requirements for which no extra payment will be made to the contractor.
- 6.1.31 A log book shall be maintained by the contractor for the clearance of the area for application of refractory and insulation. If the contractor does the work on his own accord without prior permission the area should be redone at his cost.
- 6.1.32 The contractor shall draw only one week's requirement of material for their work from BHEL stores and keep them in their semi-closed shed near to the work area. The materials required for a particular case work only shall be taken to the work spot. At the end of the day's work the leftover or unused materials shall be taken back to their semi-closed shed for keeping the materials safe. Necessary records shall have to be maintained by the contractor in respect of the above drawals / deposits, on daily basis as instructed by BHEL. The contractor shall draw only one week's requirement.
- 6.1.33 Red oxide painting after proper surface cleaning wherever required to be done as per site requirement over all surfaces to be insulated prior to the application of the insulation. This is to be done as a part of contract with out any additional charges. Only red oxide paint will be supplied by BHEL . All the other consumables like brush etc., will be arranged by the contractor at his cost.

6.1.34 Wastages allowance for the materials issued are envisaged as follows:

- a) Castable refractory 2%
- b) Insulation bricks & mortar 2%
- c) Wool mattresses 2%
- d) Cladding sheets 2%

6.1.35 Making structural supporting works for pourable insulation, laying pourable insulation, adhering to all specifications and instructions shall be the responsibility of the contractor.

6.1.36 Upon completion of daily work , the contractor shall remove from the vicinity of work all scrap packing materials rubbish , unused and other materials and deposit them in places to be specified by BHEL Engineer. Also, the contractor will demolish all the hutments, sheds, offices, constructed by him and shall clean the debris after the contract is over. In the event of his failure to do so, the same will be arranged to be removed by BHEL Engineer and the expenses therefore will be recovered from the contractors.

6.1.37 Direct welding on pressure parts are envisaged. In some cases where such welding is required to be carried out by the contractor, they shall employ IBR qualified and certified welders for such jobs after duly obtaining approval of BHEL. The quoted rate shall also include this part of this work.

6.1.38 Delay in clearance of mechanical equipment and piping for insulations is unlikely to happen. However, if any delay occurs, the contractor shall not claim anything extra, like idle charges.

6.1.39 Welding of hooks as per pitch, non pressure parts, applying red oxide paint (Paint to be arranged by BHEL) to the welded portion as directed as per drawings before application of mineral wool mattresses will have to be done by the contractor.

6.1.40 Application of castable refractory between tubes around burners on ceiling and as directed by Engineers and as per detailed drawings and specifications will have to be done by the contractor.

- 6.1.41 Applying different layers of mineral wool as directed and as per drawings and specifications for boiler and its auxiliaries, pipelines valves and other vessels and after fixing require holdings materials, suitably if necessary, fabrication of rings etc., and fixing as directed and as per drawings and specifications shall also form part of this work.
- 6.1.42 If necessary the hooks may have to be made from the rods, raw materials supplied in running lengths. The contractor may have to carry out this work also and use the same hooks.
- 6.1.43 In case the contractor is required to dismantle and re-erect certain area as and when required for pre-commissioning / commissioning activities the rate as indicated in the rate schedule shall be paid by BHEL for erection. However, for dismantling no extra charge will be paid under any circumstances.
- 6.1.44 Wherever additional / clamps, frame works, etc., are required to be fabricated and installed even though not indicated in the drawings shall be fabricated and installed at their cost. Only steel materials shall be given by BHEL free of cost , consumables like electrodes, gases etc., are to arranged by the contractor at his cost.
- 6.1.45 Welding of all seal boxes covers after completion of refractory work shall be done by the contractor. No extra charges will be payable for the same.

6.1.46 **Field Quality Assurance Formats**

It is the responsibility of the contractor to collect and fill up the relevant FQA log sheets of BHEL and present the same to BHEL after carrying out the necessary checks as per the log sheets and obtaining the signature of BHEL and customer in token of their acceptance. Payment to the contractor will be linked with the submission of these FQA log sheets.

6.2.0 TIME SCHEDULE

- 6.2.1 The contractor shall have to mobilize in all respects within two weeks from the date of issue of FAX letter of intent to commence the work.
- 6.2.2 **The entire application of refractory and insulation works as detailed in the tender specification shall be completed within 11 (Eleven) from the date of start of work.**
- 6.2.3 During the total period of contract, the contractor has to carry out the activities in a phased manner as required by BHEL Engineer and as per the programme of events / targets fixed by BHEL / Customer.
- 6.2.4 During the tenure of contract, if BHEL is not satisfied with the progress of work, BHEL have the right to withdraw any portion of work, balance work and get the same done either employing their own men or through other agency at your own risk and cost. You shall not be entitled for any compensation whatsoever in this regard.
- 6.2.5 The work under this scope of contract is deemed to be completed in all respects only when all the components / equipments are erected and trial runs, testing and commissioning of all the equipments are completed. The decision of BHEL in this respect shall be final and binding with contractor.
- 6.2.6 BHEL , owing to its commitment to their customer, may ask contractor to compress the total completion schedule. Contractor shall plan his activities and mobilize additional resources accordingly to the satisfaction of BHEL engineer within the quoted rates.

6.3.0 TERMS OF PAYMENT

The payment bills shall be regulated as follows:

6.3.1 Application of Castable refractory, fire bricks and pourable insulation

- a) 85 % of the contract rate on pro-rata basis progressively when the work is completed as per the BHEL drawings and instructions on certification.

6.3.2 Application of Mineral wool

- a) 60 % of the contract rate on pro-rata basis after application of wool.
- b) 25% of the contract rate on pro-rata basis after completion of stitching of wool with GI wires, welding of retainer plates and casing supports etc., as certified by BHEL.

6.3.3 Erection of iron components and structural materials.

- a) 40% of the contract rate on pro-rata basis on completion of physical erection.
- b) 20% of the contract rate on pro-rata basis after completion of alignment in all respects.
- c) 25% of the contract rate on pro-rata basis after completion of welding.

6.3.4 Erection of Aluminium sheets.

- a) 60% of the contract rate on pro rata basis after completion of Aluminium sheet work.
- b) 25% of the contract rate on pro rata basis after completion of fixing screws, casing supports, application of sealing components, closing of voids in respective areas.

6.3.5 Further 10 % applicable to all categories mentioned above will be released on the completed portion of work (Payment released upto 85%) as follows:

- a) 2 % after synchronization
- b) 2% after coal firing
- c) 4% After Commissioning as below :

2% after complete cutting & removal of scraps and devolution to BHEL stores and complete cleaning of Boiler area & certified by BHEL / Customer engineer.

2% after reconciliation of materials, T & P drawn from BHEL for the above work and on completion of FQA log sheet.

- d) 2% on submission and acceptance of final bill.

6.3.6 Last 5% after guarantee period of 12 months.

The guarantee money of 5% shall be paid after 12 months. The guarantee period will be 12 months from the date of handing over of the work to customer or 6 months from the date first synchronization whichever is earlier. However this money shall be paid on production of matching bank guarantee from a nationised / scheduled bank with prescribed Performa of BHEL which shall be valid for 12 months from the date of start of guarantee period.

6.3.7 No levy or payment or charge made or imposed shall be impeached by reasons for any clerical error or demanded or charged.

6.3.8 BHEL at discretion, may further split-up the above percentage and effect payment to suit the site conditions, cash flow requirements, according to the progress of work.

6.3.9 **CONTRACTOR SHALL NOTE THAT ALL RUNNING BILLS SHALL BE RELEASED ONLY ON PRODUCTION OF A CERTIFICATE ISSUED BY SITE IN CHARGE THAT THE CONTRACTOR HAS FULFILLED ALL THE CONTRACTUAL REQUIREMENT INCLUDING STATUTORY CLEARANCE.**

6.4.0 **EXTRA CHARGES FOR MODIFICATION AND RECTIFICATION WORK**

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

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

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

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

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

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

6.5.0 EXTRA WORK DOES NOT INCLUDE

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

6.5.2 Extra works are broadly defined as below:

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

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

6.6.0 OVER RUN CHARGES

6.6.1 In case due to reasons not attributable to the contractor, the work gets delayed and completion time gets extended beyond **Eleven (11) months** from the date of commencement of the work, the contractor shall not be entitled for any over run compensation (ORC) for a period of first **Two (2) months** after the expiry of **Eleven (11) months**. In case ORC arises the same will apply at **Rs.40,000/- (Rupees Forty Thousand only)** per month for extension of the completion period beyond **13 (11+2) months** as stated above duly taking into account the balance work at the end of that period.

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

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

6.6.4 The payment of overrun charges for extended stay for reasons not attributable to contractor will be subject to achieving the monthly programme of work as mutually agreed upon during the extended stay.

6.7.0 PRICE ESCALATION

- 6.7.1 The quoted / accepted rate have to be kept firm for the entire contractual period including total extended period if any and no claim for revision of rates is allowed under any circumstances.
- 6.7.2 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.

6.8.0 TAXES

- 6.8.1 Notwithstanding the fact that this is only an erection service contract not involving any transfer of materials whatsoever and not attracting any sales tax liability, being labour oriented job work, for the purpose of Sales Tax the contractor has to maintain the complete data relating to the expenditure incurred towards wages etc. in respect of the staff/workers employed for this work as also details of purchase of materials like consumables, spares etc., interalia indicating the name of the supplier, address and ST Registration No. and ST paid and should furnish to BHEL at the year end.
- 6.8.2 The contractor has to register under local Sales Tax-Law and get assessed. The contractor has to give a certificate each year that the returns are submitted regularly and the turnover on this contract is included in his sales tax return. The sales tax registration number and certificate is to be furnished at site soon after the award of contract. However in case delay is anticipated in obtaining S.T. Regn.No. a copy of application for registration filed with ST authorities shall be submitted along with first running bill and the ST Regn.No. will have to be submitted within a reasonable time.
- 6.8.3 The final bill amount would be paid only after submission of proof of inclusion of the turnover of this contract in the ST Returns or ST Clearance certificate.

6.9.1 IMPORTANT CONDITIONS FOR PAYMENT

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

- i. PF Regn. No.
- ii. Labour Licence No.
- iii. Workmen Insurance Policy No.
- iv. Un Qualified Acceptance for Detailed L.O.I.
- v. Initial 50% Security Deposit.
- vi. Rs. 100/- Stamp Paper for Preparation of contract agreement

6.10.0 PROVIDENT FUND & MINIMUM WAGES

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

6.11.0 OTHER STATUTORY REQUIREMENTS

- 1) The Contractor shall submit a copy of Labour License obtained from the Licensing Officer (Form VI) u/r25 read with u/s 12 of Contract Labour (R&A) Act 1970 & rules and Valid WC Insurance copy or ESI Code (if applicable) and PF code no along with the **first** running bill.
- 2) The contractor shall submit monthly running bills along with the copies of monthly wages (of the preceding month) u/r78(1)(a)(1) of Contract Labour Rules, copies of monthly return of PF contribution with remittance Challans under Employees Provident Fund Act 1952 and copy of renewed WC Insurance policy or copies of monthly return of ESI contribution with Challans under ESI Act 1948 (if applicable) in respect of the workmen engaged by them.
- 3) The Contractor should ensure compliance of Sec 21 of Contract Labour (R&A) Act 1970 regarding responsibility for payment of Wages. Incase of "Non-compliance of Sec 21 or non-payment of wages" to the workmen before the expiry of wage period by the contractor, BHEL will reserve its right to pay the workmen under the orders of Appropriate authority at the risk and cost of the Contractor.
- 4) The Contractor shall submit copies of Final Settlement statement of disbursal of retrenchment benefits on retrenchment of each workmen under I D Act 1948, copies of Form 6-A(Annual Return of PF Contribution) along with Copies of PF Contribution Card of each member under PF Act and copies of monthly return on ESI Contribution – Form 6 under ESI Act1948 (If applicable) to BHEL along with the Final Bill.
- 5) In case of any dispute pending before the Appropriate authority under I D act 1948, WC Act 1923 or ESI Act 1948 and PF Act 1952, BHEL reserve the right to hold such amounts from the final bills of the Contractor which will be released on submission of proof of settlement of issues from the appropriate authority under the act.
- 6) In case of any dispute prolonged/pending before the authority for the reasons not attributable to the contractor, BHEL reserves the right to release the final bill of the contractor on submission of Indemnity bond by the contractor indemnifying BHEL against any claims that may arise at a later date without prejudice to the rights of BHEL.

6.12.0 SERVICE TAX

Service Tax as applicable for this Contract will be reimbursed by BHEL.

The contractor may claim the Service Tax in their R.A.bill and the same will be paid by BHEL, on production of copy of registration certificate. Proof of remittance of service tax by the contractor to the service tax authorities, relating to previous RA bill, has to be produced from the second running bill onwards.

6.13.0 TAXES, DUTIES, LEVIES

Refer to clause 2.8.4 of General conditions of contract in this regard.

6.13.1 New Levies / Taxes

In case the government imposes any new levy / Tax after award of the work, BHEL shall reimburse the same at actuals on submission of documentary proof of payment subject to the satisfaction of BHEL that such new levy / Tax is applicable to this contract. No reimbursement on account of increase in the rate of existing levies shall be made.

**SCOPE AT A GLANCE
SECTION VII – APPENDIX I
SITE FACILITIES**

PROJECT : VIJAYAWADA

RATING: 500 MW

UNIT 7

SI.No	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
1.1.0	ESTABLISHMENT			
1.1.1	FOR CONSTRUCTION PURPOSE:			
A	Open space for office	Yes		
B	Open space for storage	Yes		
C	Construction of bidder's office, canteen and storage building including supply of materials and other services		Yes	
D	Bidder's all office equipments, office / store / canteen consumables		Yes	
E	Canteen facilities for the bidder's staff, supervisors and engineers etc		Yes	
F	Fire fighting equipments like buckets, extinguishers etc		Yes	
G	Fencing of storage area, office, canteen etc of the bidder		Yes	

SI.No	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
1.1.2	FOR LIVING PURPOSES OF THE BIDDER			
A	Open space	Yes		
B	Living accommodation		Yes	
1.2.0	ELECTRICITY			
1.2.1	<u>Electricity For construction purposes</u> (to be specified whether chargeable or free)			Free of charge
1.2.1.1	Single point source	Yes		
1.2.1.2	Further distribution for the work to be done which include supply of materials and execution		Yes	
1.2.2	Electricity for the office, stores, canteen etc of the bidder which include:		Yes	
1.2.2.1	Distribution from single point including supply of materials and service		Yes	
1.2.2.2	Supply, installation and connection of material of energy meter including operation and maintenance		Yes	

SI.No	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
1.2.2.3	Duties and deposits including statutory clearances for the above		Yes	
1.2.2.4	Living facilities for office use including charges		Yes	
1.2.2.5	Demobilization of the facilities after completion of works		Yes	
1.2.3	Electricity for living accommodation of the bidder's staff, engineers, supervisors etc on the above lines.(in case BHEL provides this facility, the scope should be given without ambiguity)		Yes	
1.3.0	WATER SUPPLY			
1.3.1	For construction purposes:			
1.3.1.1	Making the water available at single point	Yes		
1.3.1.2	Further distribution as per the requirement of work including supply of materials and execution		Yes	
1.3.2	Water supply for bidder's office, stores, canteen etc		Yes	
1.3.2.1	Making the water available at single point	Yes		

SI.No	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
1.3.2.2	Further distribution as per the requirement of work including supply of materials and execution		Yes	
1.4.0	TRANSPORTATION			
1.4.1	For construction purposes:		Yes	
1.4.1.1	For the site personnel of the bidder		Yes	
1.4.1.2	For the bidder's equipments and consumables (T&P, consumables etc)		Yes	
1.5.0	LIGHTING			
1.5.1	For construction work (supply of all the necessary materials) 1. At office storage area 2. At the preassembly area 3. At the construction site /area		Yes	
1.5.2	For construction work (execution of the lighting work/ arrangements) 1. At office storage area 2. At the preassembly area 3 At the construction site /area		Yes	
1.5.3	Providing the necessary consumables like bulbs, switches, etc during the course of construction		Yes	
1.5.4	Lighting for the living purposes of the bidder at the colony / quarters		Yes	

SI.No	Description PART I	Scope / to be taken care by		Remarks
		BHEL	Bidder	
1.6.0	COMMUNICATION FACILITIES FOR SITE OPERATIONS OF THE BIDDER			
1.6.1	Telephone, fax, internet, intranet, e-mail etc		Yes	
1.7.0	COMPRESSED AIR SUPPLY			
1.7.1	Supply of Compressor and all other equipments required for compressor and compressed air system including pipes, valves, storage systems etc		Yes	
1.7.2	Installation of the above system and operation and maintenance of the same .		Yes	
1.7.3	Supply of the all the consumables for the above system during the contract period		Yes	

SCOPE AT A GLANCE

PROJECT : Vijayawada

RATING: 500 MW

Unit 7

SI.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.1.0	Engineering works for construction :	Yes		
2.1.1	Providing the erection drawings for all the equipments covered under this scope	Yes		
2.1.2	Drawings for construction methods		Yes	
2.1.3	As-built drawings – where ever deviations observed and executed and also based on the decisions taken at site-example – routing of small bore pipes		Yes	
2.1.4	Shipping lists etc for reference and planning the activities	Yes		
2.1.5	Preparation of site erection schedules and other input requirements		Yes	
2.1.6	Review of performance and revision of site erection schedules in order to achieve the end dates and other commitments	Yes	Yes	

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.1.7	Weekly erection schedules based on SI No 2.1.5		Yes	
2.1.8	Daily erection / work plan based on SI No 2.1.7		Yes	
2.1.9	Periodic visit of the senior official of the bidder to site to review the progress so that works are completed as per schedule. It is suggested this review by the senior official of the bidder should be done once in every two months.		Yes	
2.1.10	Preparation of preassembly bay		Yes	
2.1.11	Laying of racks for gantry crane if provided by BHEL or brought by the contractor/bidder himself		Yes	
2.1.12	Arranging the materials required for preassembly		Yes	

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.2.0	SUGGESTED LIST OF TOOLS AND PLANTS (BHEL should indicate the proposed number of items considered as free issue)			
2.2.1	250 T crawler crane			
2.2.2	250 T tyre mounted crane			
2.2.3	150 T crawler crane			
2.2.4	150T tyre mounted crane			
2.2.5	100 T crawler crane			
2.2.6	100T tyre mounted crane			
2.2.7	75 T crawler crane *			
2.2.8	75 T tyre mounted crane			
2.2.9	60T Kroll tower crane			
2.2.10	18 T crawler crane *			
2.2.11	18/20 T tyre mounted crane one			
2.2.11 A	8T Escort crane One No (1)			
2.2.12	30T gantry crane			
2.2.13	15 T gantry crane			
2.2.14	10T gantry crane			
2.2.15	30T tractor trailer			
2.2.16	20T trailer			
2.2.17	10 T trailer / truck			
2.2.18	Electrical winches 15 T with / wire ropes Drum lifting (2 Nos)			
2.2.19	Electrical winches 10T with / without wire ropes			

TO BE ARRANGED BY THE BIDDER AS PER SCOPE OF WORK

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.2.20	Electrical winches 5 T with / without wire ropes		TO BE ARRANGED BY THE BIDDER AS PER SCOPE OF WORK	
2.2.21	Electrical winch 3 T with or without wire rope			
2.2.22	Electrical winches with/without wire ropes			
2.2.23	Pneumatic winches 1 T with / without wire rope			
2.2.24	Welding generators			
2.2.25	Welding rectifiers			
2.2.26	Welding transformers air cooled			
2.2.27	Welding transformers oil cooled			
2.2.28	Chain pulley block 10T			
2.2.29	Chain pulley block 5 T			
2.2.30	Chain pulley block 3T			
2.2.31	Chain pulley block 1T /2T			
2.2.32	Pulling & lifting machines 5T			
2.2.33	Pulling & lifting machine 3T			
2.2.34	Pulling and lifting machine 2T / 1T			
2.2.35	Multi sheave pulley block 200 T (4) Drum Lifting			
2.2.36	Multi sheave pulley block 100 T (As Required)			
2.2.37	Multi sheave pulley block 50T			
2.2.38	Multi sheave pulley block 30T			
2.2.39	Multi sheave pulley block 20T			
2.2.40	Multi sheave pulley block 5T			

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.2.41	Single sheave shackle pulley block 20T		TO BE ARRANGED BY THE BIDDER AS PER SCOPE OF WORK	
2.2.42	Single sheave shackle pulley block 10T			
2.2.43	Single sheave shackle pulley block 5 T			
2.2.44	25 V transformer with sufficient spare bulbs			
2.2.45	Gas cutting torches with regulators			
2.2.46	Torque wrench			
2.2.47	Pipe vice			
2.2.48	Bench vice			
2.2.49	Anvil			
2.2.50	Baking oven for welding electrodes			
2.2.51	Portable drying oven for baked welding electrodes			
2.2.52	GQA grinding machine			
2.2.53	FF2 grinding machine			
2.2.54	Angle grinders AG7			
2.2.55	Tig welding sets			
2.2.56	Air conditioners 1.5 T			
2.2.57	Sheet bending machine			
2.2.58	Sheet rolling m/c			
2.2.59	Sheet grooving m/c			

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.2.60	Pedestal drilling m/c		TO BE ARRANGED BY THE BIDDER AS PER SCOPE OF WORK	
2.2.61	Drilling m/c 31 mm			
2.2.62	Drilling m/c 20mm			
2.2.63	Drilling m/c 10 mm			
2.2.64	Hand drilling m/c 6 mm			
2.2.65	D shackles 30 T			
2.2.66	D shackles 20T			
2.2.67	D shackles 15 T Drum lifting			
2.2.68	D shackles 10T			
2.2.69	D shackles 5T/3T			
2.2.70	Wire rope sling 6x36 12mmx6m			
2.2.71	Wire rope slings 12mmx10m			
2.2.72	Wire rope slings 16mmx4m			
2.2.73	Wire rope slings 16mmx6m			
2.2.74	Wire rope slings 16mmx10m			
2.2.75	Wire rope sling 19mmx15 m			
2.2.76	Loose wire rope 16mm			
2.2.77	Loose wire rope 19 mm			
2.2.78	Loose wire rope 25mm			
2.2.79	Loose wire rope 32mm			
2.2.80	Wire rope clamps for the above sizes sufficient quantity			
2.2.81	Manila ropes of sufficient quantity in different sizes			
2.2.82	Hydraulic jacks 250/200T			

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.2.83	Hydraulic jacks 100T		TO BE ARRANGED BY THE BIDDER AS PER SCOPE OF WORK	
2.2.84	Hydraulic jacks 50T			
2.2.85	Hydraulic jacks 25 T			
2.2.86	Hydraulic jacks 10T			
2.2.87	Tower crane 50T			
2.2.88	Derricks 30T with 70 M high with all necessary accessories 2 nos			
2.2.89	EOT cranes in TG hall ◆ Main hook 125 T ◆ Aux hook 30 T			
2.2.90	Sleepers both wooden and concrete for movement of cranes at site			
2.2.91	Concrete blocks for pre assembly works at site			
2.2.92	15 T snatch pulley blocks Drum lifting			
2.2.93	Hydro test pump 600 bar / 400 bar			
2.2.94	Hydro test pump 250 bar			
2.2.95	Hand operated hydro test pump			
2.2.96	Boiler filling pump 100m head with ~ 15 LPsec			
2.2.97	Pressure gauges 400 bar			

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.2.98	Pressure gauges 600 bar	Yes	TO BE ARRANGED BY THE BIDDER AS PER SCOPE OF WORK	
2.2.99	Pressure gauges 100 bar			
2.2.100	Acid cleaning pumps with all accessories including switch gears			
2.2.101	Stress relieving / preheating equipments including transformers, controllers, heating pads and insulating materials and consumables			
2.2.102	Hydraulic pipe bending machines to suit up to 80mm dia and 11 mm thick			
2.2.103	Electric driven pipe chamfering machines up to 100 mm dia tubes with necessary cutting tools and other consumables			
2.2.104	Electric driven pipe chamfering m/c to suit pipes from dia 100 mm to 500/600 mm			
2.2.105	Theodolite 1 min accuracy			
2.2.106	Dumpy level			
2.2.107	6 point temp. recorder			
2.2.108	Radiographic equipments with suitable isotopes/ x ray machines			
2.2.109	MPI test kit			

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.2.110	Ultrasonic flaw detector		TO BE ARRANGED BY THE BIDDER AS PER SCOPE OF WORK	
2.2.111	Dye penetrant test kits (as required)			
2.2.112	Moving platforms Sky Claimer			
2.2.113	Passenger cum goods lift (1)			
2.2.114	Dip lorries			
2.2.115	Rails and sleepers for dip lorries, both supply and installation			
2.2.116	Calibrated steel tapes of different sizes			
2.2.117	Plumb bobs			
2.2.118	Micro meters of different sizes both inside and out side			
2.2.119	Vernier calipers of different sizes			
2.2.120	Surface plate			
2.2.121	Straight edges of different lengths			
2.2.122	Feeler gauges of different lengths			
2.2.123	Inside and out side calipers			
2.2.124	Bolt heating equipments including thermo couples			
2.2.125	Dial gauges with magnetic base			
2.2.126	Magnifying glass			

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.2.127	Piano wires		TO BE ARRANGED BY THE BIDDER AS PER SCOPE OF WORK	
2.2.128	Precision water level micrometer			
2.2.129	Parallel blocks			
2.2.130	Taper wedges			
2.2.131	Micro jacks			
2.2.132	Lead wires			
2.2.133	Dial bore micro meter			
2.2.134	Thermo meters of different ranges			
2.2.135	Depth gauges			
2.2.136	"GO & "NO GO" gauges			
2.2.137	Drill sets			
2.2.138	Taps and die sets			
2.2.139	Spirit levels			
2.2.140	Master spirit level			
2.2.141	Spring balance			
2.2.142	Hg manometer			
2.2.143	Vibro meter			
2.2.144	Noise level meter			
2.2.145	Litmus paper			
2.2.146	Portable gas purity meter			
2.2.147	Dead weight tester			

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.2.148	Temp bath for calibration		TO BE ARRANGED BY THE BIDDER AS PER SCOPE OF WORK	
2.2.149	250V/500V megger			
2.2.150	½.5/5.0 KV motorised megger			
2.2.151	Ammeter and voltmeters			
2.2.152	HV test kit			
2.2.153	Double kelvin Bridge			
2.2.154	DC bridge			
2.2.155	Mano meters			
2.2.156	Auto transformers			
2.2.157	CT(100/5A)			
2.2.158	Purge test kits			
2.2.159	Multi meters			
2.2.160	Variac 3phase 10 A			
2.2.161	Phase sequence meter			
2.2.162	Dual beam oscilloscope continuity tester			
2.2.163	Rheostats			
2.2.164	Milli seconds syn timer			
2.2.165	Ultra violet recorder			
2.2.166	Tong tester			
2.2.167	Hardness tester			
2.2.168	Bolt stretching device			
2.2.169	Reamers of various sizes			
2.2.170	Vacuum cleaner			

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.2.171	Sand blasting machine with accessories		TO BE ARRANGED BY THE BIDDER AS PER SCOPE OF WORK	
2.2.172	Spray painting equipments			
2.2.173	Oil filtration units			
2.2.174	Bearing pullers of different sizes			
2.2.175	Bearing scrappers			
2.2.176	Slip gauges			
2.2.177	Elko meter to measure paint thickness			
2.2.178	MIG welding machines			
2.2.179	Files of different sizes			
2.2.180	Socket wrenches			
2.2.181	Spanner and pipe wrenches sets			
2.2.182	Hammers of different sizes (soft &hard)			
2.2.183	Allen keys sets			
2.2.184	Fire proof tarpaulins			
2.2.185	Steel scaffolding materials			
2.2.186	Pipe cutters			
2.2.187	Magnetic base for drilling machines			

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.2.188	Vibrator for grouting		TO BE ARRANGED BY THE BIDDER AS PER SCOPE OF WORK	
2.2.189	Mixing m/c (grouting and concreting)			
2.2.190	Tube expanding machine ie drives – hydraulic or pneumatic ()			
2.2.191	Tube expanders(expansion and flaring)			
2.2.192	Mercury plumb bob			
2.2.193	Band saw machines			
2.2.194	Copper rods			
2.2.195	Needle vibrators			
2.3.0	All consumables including :			
	Ordinary cement			
	Grouting cement			
	Any special cement			
	Sand, bricks etc			
	TIG wires			
	Electrodes		Yes	
	Brazing rod, flux etc		Yes	
	Soldering			
	DA, oxygen, argon		Yes	
	Nitrogen required for chemical cleaning			
	Nitrogen required for construction		;	

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
	Paints along with thinner, brushes, cleaning materials etc for preservation of components		Yes	
	Paints including thinner, brushes, cleaning materials etc for final painting , as per specifications		Yes	
2.4.0	WELDING			
2.4.1	All welding works		Yes	
2.4.2	All radiography and other testing works like DPI, MPI, UT,		Yes	
2.4.3	All connected works like preheating, post heating, stress relieving,			
2.4.4	Providing certified either IBR or as per other relevant welders for the works. BHEL will not provide materials, test certificates etc for the above purpose unless specifically stated .		Yes	
2.4.5	To submit the welders to BHEL/client's approval (preproduction test) before putting them on regular work. Required materials for preproduction test to be arranged by BHEL.		Yes	
2.4.6	The accessories required for the welders to be arranged by the bidder		Yes	
2.5.0	CHEMICAL CLEANING			
2.5.1	Supply of pumps, motor, starters, cables, piping and other materials required for the operation			

Sl.No	Description PART II ERECTION FACILITIES	Scope / to be taken care by		Remarks
		BHEL	Bidder	
2.5.2	Servicing the required equipments and commissioning		TO BE ARRANGED BY BIDDER AS PER SCOPE OF WORK	
2.5.3	Chemicals required for the operation including Nitrogen gas			
2.5.4	Handling equipments / consumables for the chemical cleaning works			
2.5.5	Effluent disposal system			
2.5.6	Services for the effluent disposal			

SCOPE AT A GLANCE

PROJECT : Vijayawada

RATING: 500 MW

UNIT 7

SI.No	Description PART III ERECTION TESTING & COMMISSIONING	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.1.0	SCOPE OF WORK			
3.1.0.1	Handling at site stores/ storage yard		Yes	
3.1.0.2	Transportation within the site		Yes	
3.1.0.3	Erection testing & commissioning		Yes	
3.1.0.4	Final painting of erected materials including supply of paints, thinners etc		Yes	
3.1.0.5	Carrying out P.G.test			
3.1.1.0	HANDLING & TRANSPORTATION			
3.1.1.1	Stores/storage yard to preassy area/ erection site		Yes	
3.1.1.2	Pre assembly area to site of installation		Yes	
3.1.1.3	Erection site to pre assembly area / stores/ storage area if required		Yes	
3.1.1.4	Touch up painting wherever required till final painting.(please refer the relevant clause for supply of paints, thinners etc)		Yes	
3.1.1.5	Preparation storage at site for proper stacking of materials		Yes	

SI.No	Description PART III ERECTION TESTING & COMMISSIONING	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.1.2	ERECTION TESTING & COMMISSIONING			
3.1.2.1	Erection drawings/documents/working instructions etc	Yes		
3.1.2.2	Welding schedules	Yes		
3.1.2.3	Engineering drawings for construction methods		Yes	
3.1.2.4	Organizing the resources required for erection, testing & commissioning of the materials covered under the scope and executing the work as per instruction of BHEL engineer		Yes	
3.1.2.5	Final painting of all the materials erected		Yes	
3.1.2.6	Demobilization of the erection site		Yes	
3.1.2.7	Cleaning of / upkeep of erection / preassembly / storage areas		Yes	
3.1.2.8	Return of excess materials drawn to BHEL stores/ customer		Yes	
3.1.2.9	Reconciliation of all the consumables, T&P drawn from BHEL / customer ` s store		Yes	
3.1.2.10	Filling up quality log sheets		Yes	
3.1.2.11	Providing all temporary arrangements like platforms, scaffoldings etc for execution		Yes	

SI.No	Description PART III ERECTION TESTING & COMMISSIONING	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.1.2.12	Assistance for P.G test	---	---	
3.1.3	CIVIL WORKS			
3.1.3.1	Taking over of foundations		Yes	
3.1.3.2	Checking, chipping and correcting final dimensions of the foundations if required		Yes	
3.1.3.3	Placement, erection of embedded parts integral for the scope of work and coordination with customer's civil/other agencies for embedment		Yes	
3.1.3.4	Bolt grouting with grout as specified		Yes	
3.1.3.5	Final grouting of all the equipments covered under this scope		Yes	
3.1.4	STATUTORY CLEARANCES			
3.1.4.1	Labour license		Yes	
3.1.4.2	Provident fund		Yes	
3.1.4.3	Insurance what ever comes under bidder's scope		Yes	
3.1.4.4	Workmen compensation		Yes	
3.1.4.5	Minimum wages		Yes	

SI.No	Description PART III ERECTION TESTING & COMMISSIONING	Scope / to be taken care by		Remarks
		BHEL	Bidder	
3.1.4.6	Sales tax		Yes	
3.1.4.7	Local laws governing the works like electrical inspectorate, factory inspectorate, etc		Yes	
3.1.4.8	Professional tax		Yes	
3.1.4.9	Safety rules and regulations		Yes	
3.1.4.10	Approval from competent authority for installation like IBR etc		Yes	
3.1.5	SUBMISSION OF REPORTS			
3.1.5.1	Man power deployment category wise and area wise		Yes	
3.1.5.2	Deployment of tools and plant , area wise		Yes	
3.1.5.3	Consumables used		Yes	
3.1.5.4	Erection log		Yes	
3.1.5.5	Erection data PGMADU wise		Yes	
3.1.5.6	Data on joints welded as per log sheet/ welding schedule		Yes	
3.1.5.7	Materials management reports as per instruction of BHEL		Yes	
3.1.5.8	Meeting between BHEL and bidder at BHEL office every day for monitoring the progress	Yes	Yes	

SECTION – VII APPENDIX - II

WEIGHT SCHEDULE

SL NO	Description	Weight (MT)
01	Castable Refractory	135
02	Pourable insulation	270
03	Fire bricks	0.7
04	Lining & insulation Boiler (Wool mattress)	827
05	Aluminium cladding	131
06	Fixing components for boiler L & S, pipes,tanks	450
07	Calcium Silicate (Ceiling compound)	0.5
	Total weight for One Unit	1814 MT

Note:

1. The weights mentioned above are approximate and are liable to vary as per design consideration of the manufacturing unit. Addition of similar works under other PGs and deletion of any PGs is at the sole discretion of BHEL site. Tenderer may note that payments will be made to them at the quoted / accepted rates for the tonnage actually erected with in a variation of 15 % plus or minus of total tonnage .
2. Besides product group indicated above, there is likelihood of addition of any product groups integral to Boiler / ESP and pipings by manufacturing units or any other agencies. Contractor's quoted unit rates shall be applicable for such product groups also.

SECTION – VII APPENDIX – III

TOOLS & PLANTS PROVIDED BY BHEL

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

S.No	Description	Qty
1	Sky claimer (For Inside Furnace work)	01

NOTE

- 1) All the above T&P shall be given to contractor on sharable basis and the allotment is made by BHEL/Site in Charge, on need basis.
- 2) Incase of non-availability of these equipments, due to any reason ie., unavoidable breakdown, major overhaul or any other reason etc. the contractor should make arrangement at his own cost to meet the erection targets. No extra claim will be admitted due to non-availability of any of the above equipments. No delay in execution of work shall be accepted on this account.
- 3) Sky claimer is only for erection purpose and shall not be available for material handling and for transportation purpose for which contractor shall make his own arrangement.
- 4) The day to day and routine maintenance will be carried out by the contractor at his own cost. However, BHEL shall supply spare parts free of charges.
- 5) Any loss / damage of tools by the contractor shall have to be replaced or other wise cost thereof shall be recovered from the contractor.
- 6) Apart from the above, any other tools and plants required for satisfactory completion of the work has to be arranged by the contractor.

SECTION – VII APPENDIX – III A

MINIMUM TOOLS & PLANTS TO BE PROVIDED BY CONTRACTOR

List of Tools & Plants to be made available by contractor

S.No	Description	Qty
1	Welding transformers with accessories	Qty as needed for work
2	Welding rectifiers with accessories	
3	Chain pulley blocks (various capacities)	
4	Pulling and lifting machines	
5	Hand winch / power winch	
6	Wire rope / D shackles	
7	Drilling machines , grinding machines	
8	Turn buckles	
9	Electrode drying ovens	
10	Painting equipments like sprayer, Elco meter for thickness measurement	
11	All temporary platform, shuttering materials, supports for insulation works	
12	Cladding sheets cutting tools	

SECTION VII

APPENDIX – IV

PAINTING INSTRUCTIONS FOR FIXING COMPONENTS

Two coats of synthetic enamel of DFT 70 microns / coat after a primer coat of colour and make as approved by BHEL site in charge to be procured and painting arranged by the contractor with cost all inclusive.

The contractor must obtain permission in writing from BHEL before applying subsequent coats. The instrument for measuring thickness of painting will be procured by the contractor at his cost and kept calibrated at periodical intervals.

All tubes which are embedded in castable refractory is to be painted with a thick coat of bituminous paint (IS 158)

SECTION VII

APPENDIX – V

List of Major Drawings for Reference

1. Details of Main boiler insulation 0-00-205-222,20223, 20224, 20225- 4 sheets.
2. Sectional details of insulation drawing no 4 – 00-215-08940 to 08948 – 9 sheets.
3. Application & Curing of castable refractory and pourable insulation drawing no 4-00-205-08525 to 08529 – 5 sheets
4. High temperature insulation drawing no 1-00-205-06696 sheet 5 / 5
5. Refractory arrangement for instrument tappings drawing no 0-00-230 -20251

All instrument seal boxes are to be insulated with castable refractory grade C

Details of piping insulation drawings / notes will be made available at site later, but quantity indicated is included.

SECTION VII

APPENDIX – VI

Special notes

1. Lightly bonded wool mattress are 50 mm / 40 mm thick in maximum of 4 layers (3 x 50 mm + 1 x 40 mm)
2. Castable refractory is type C, in the places of mass applications of castable refractory, 1 mm thick card board is to be provided at a pitch of 600 mm approx for expansion purposes by the contractor at no extra cost.
3. Loose wool density approx 150 kg / cum
4. Rods dia 6 mm to retain weld mesh are issued in bulk and required by the contractor to cut to suit at site. Cost of cutting consumables etc., included in the quoted price.
5. Binding wire 1.2 mm dia two windings required for approx 300 t wool mattress in the piping and other material to be supplied by contractor and to be included in quoted price.
- 6 Plain aluminum sheets will be issued which will be required to be bent and fitted at site at no extra cost.
7. For the corrugated ribbed boiler outer casing aluminium sheets supplied by BHEL, self tapping screws M4 x 19 @ 150 mm pitch are to be fixed by the contractor with in quoted rates.
8. In ESP insulation works only inner roof insulation is excluded from this contract scope.

SECTION VII
APPENDIX – VII
DECLARATION SHEET

I, _____ hereby certify that, all the information and data furnished by me with regard to this Tender Specification No.BHEL:PSSR:SCT:1250 are true and complete to the best of my knowledge. I have gone through the specifications, conditions, stipulations in detail and agree to comply with the requirements and intent specifications.

I further certify that I am duly authorized representative of the under mentioned tenderer and a valid power of Attorney to this effect is also enclosed.

TENDERER'S NAME & ADDRESS

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

SECTION VII

APPENDIX – VIII

TENDER SPECIFICATION NO BHEL:PSSR:SCT:1250

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

We,

hereby declare and confirm that we have visited the project site under subject,
namely and acquired full knowledge and information about the site conditions.

We further confirm that the above information is true and correct and we will
not raise any claim of any nature due to lack of knowledge of site conditions.

TENDERER'S NAME AND ADDRESS

Place:

Date :

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

OFFICE SEAL

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

SIGNATURE OF THE TENDERER

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

SIGNATURE OF THE TENDERER

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

BHEL:PSSR:SCT: 1250

FOR

Handling at site stores, storage yard and
Transportation to site of work, Application of
Refractory ,Insulation materials and connected works
for Boiler and its Auxiliaries and Piping works for
Unit –VII of 1 x 500 MW set

at

**VIJAYAWADA THERMAL POWER STATION
STAGE IV , IBRAHIMPATNAM
KRISHNA DISTRICT , VIJAYAWADA
ANDHRA PRADESH**

PART – II PRICE BID

BOOK NO :



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)

Power Sector – Southern Region

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

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

TENDER SPECIFICATION NO:BHEL:PSSR:SCT:1250

NAME OF WORK

Handling at site stores, storage yard and Transportation to site of work, Application of Refractory Insulation materials and connected works for Boiler and its Auxiliaries and Piping works for Unit – VII of 1 x 500 MW set at Vijayawada Thermal Power Station , Stage IV , Krishna District, Vijayawada, Andhra Pradesh.

(PRICE BID)

PART II

Issued to
M/s.

For and on behalf of
BHARAT HEAVY ELECTRICALS LIMITED

Additional General Manager/Contracts

(This tender document is not transferable)

Place: Chennai-600 035.
Date:

SECTION – VIII - APPENDIX -X
RATE SCHEDULE – SCT 1250 – Vijayawada - UNIT -VII

SNO	DESCRIPTION OF WORK	APPROXIMATE WEIGHT (MT)	RATE / MT (Rs)	TOTAL AMOUNT (Rs)
01	Application of all insulation & refractory materials like Cement, mortar standard and shaped bricks refractory, pourable insulation & other similar items as per BHEL Engineers instructions and drawings for Boiler and connected auxiliaries,& equipments, TG Auxiliaries , and piping. Rates quoted shall include all incidental works like chipping, shaping and arranging shuttering if any to suit site conditions & leading these materials from storage yard to place of erection.			
1a	Fire Bricks PG 33-201	0.5		
1b	Castable Refractory PG 33-212	135		
1c	Pourable Insulation PG 33-230	270		

SNO	DESCRIPTION OF WORK	APPROXIMATE WEIGHT (MT)	RATE / MT (Rs)	TOTAL AMOUNT (Rs)
2	Application of Mineral wool insulation including acoustic insulation of fans, Insulation in the specific shapes like mattresses of single or multilayer (with unbonded and bonded wool mattresses) as per drawings, BHEL's specifications & BHEL Engineers instructions for Boiler and their connected auxiliaries, ESP (excluding ESP inner walls) ,piping. These rates shall include preparation of mattresses with specified density and proper shape to suit ducts, vessels, pipes, valves and other similar works. These shall also include leading these materials from storage yard to place of work. List under PG 33-021,321,421,521,526 (537 T Boiler and Aux + 290 T PEM scope)	827		
3	Linking and fixing components iron components like hooks, casing supports , casing strips, omega strips retainers, sheets, channels, including loading of materials from BHEL stores ,lead, lift all temporary	450		

SNO	DESCRIPTION OF WORK	APPROXIMATE WEIGHT (MT)	RATE / MT (Rs)	TOTAL AMOUNT (Rs)
	supports, welding and painting (including paint supply) as BHEL specification			
4	Application of Aluminium sheeting of varying thickness including plain (PG 32) and corrugated sheets (PG 37) and fabrication and installation of connected components used for supporting and reinforcing wool insulation including arc and gas welding, fabrication and installation of these components, painting inner side of the sheets with two coats of anti corrosive paint as per BHEL specification , drawings and site engineers instructions. The rate quoted shall also include fabrication of boxes shaped coverings to suit site conditions and leading these materials from storage yard to place of work.	131		
5	Sealing compound	1		

TOTAL CONTRACT VALUE FOR ONE UNIT (SL NO 01 TO 05) Rs

_____ SIGNATURE OF THE TENDERER

Note :

1. The total weight indicated in rate schedule is only approximate and is liable for variation / alteration at the discretion of BHEL.
2. welding includes welding on pressure parts and non pressure parts of certain places. The accepted rates shall include this also.
3. Tenderers are required to quoted their rates, only in the price bid (part II) provided by BHEL. Quoting of rates in any other form / formats will not be entertained.

SIGNATURE OF THE TENDERER

GENERAL GUIDELINES FOR INSULATION WORKS

ISSUED FOR

TENDER SPECIFICATION
BHEL : PSSR : SCT : 1250

This booklet is given as a general guideline to this tenderers about insulation works, However instructions given in the drawings & other schedule issued during execution of the work shall be final and binding of the contractor.

Book No :



**Bharat Heavy Electricals Limited
(A Govt. Of India Undertaking)
Power Sector Southern Region
690, Anna Salai , Nandanam,
Chennai – 600 035**