BHARAT HEAVY ELECTRICALS LIMITED

TIRUCHIRAPPALLI-620 014

MAINTENANCE & SERVICES

Dt: 11-09-2014

NOTICE INVITING TENDER

1.	Name of work	Dismantling of old Heat Recovery Boiler (HRB) and Erection of new HRB for CCDP through IBR approved Contractors
2.	Location of work	CCDP shop area
3.	Earnest Money Deposit	Rs. 1,00,000/-
4.	Last Date for Receipt of Tenders	09-10-2014 / 14:00 Hrs
5.	Date of Technical cum Qualification Bid Opening	09-10-2014 / 14:30 Hrs.
6.	Period of contract	4months from the date of award of contract
7.	Date of Price Bid Opening	Will be intimated separately to those who are technically qualified.

The Tender documents can be down loaded from BHEL website / govt. website at free of cost.

Annexure-I

Sub: Tenders are invited from approved IBR contractors for Dismantling of Old Heat Recovery Boiler (HRB) and Erection of New HRB at CCDP located at BHEL, Tiruchirappalli Complex.

The scope of work is that CCDP-Heat Recovery Boiler (HRB) produces 5 tons / hour steam with 220 ºC at 22 ata pressure. Due to repair in this boiler after nearly 18 years of service this boiler is to be replaced with a newly manufactured boiler with improved design in maintenance aspects. Hence the existing HRB will be dismantled and new HRB will be erected in the same location. It is proposed to execute both dismantling and erection work using an IBR approved contractor.

Pre-Qualification Criteria:

The following conditions have to be satisfied by the tenderer and documentary proof to be enclosed along with tender bid.

I)I.T return acknowledged by I.T department for the last 2 years.

A) "TDS certificate in addition to the certificate issued by the organization shall form the basis for considering experience of work executed for private organization".

B) Service Tax Registration document.

C) In case the tenderers not fulfilling the above conditions, the offer is liable for rejection. The semi filled, incomplete Tender Documents will be rejected.

D) IBR approval Certificate

II) Statutory Codes:

1) ESI Code.
2) P. F.Code No.
3) Labour licence (Central / State Government) should be submitted before commencement of work.
4) PAN No. (In case not available, proof of having applied with Acknowledgement from concerned authorities)
5) Service Tax (whether applicable or not should be indicated in the offer); in case applied for Service Tax Registration, proof of having applied with acknowledgement from Concerned authorities)
6) Offer without EMD will be rejected.

III) Tender Submission:

- The tender/bidders are advice to submit their bid well in advance of the tender opening date.
- In case same rates are quoted by more than one contractor ranking will be done on the basis of higher amount of tax paid based on IT return submitted for the financial year 2013-14.

The covers should be addressed to **AGM/M&S/Planning, Maintenance & Service, 2&4 Building, BHEL**, **Tiruchirappalli 620 014,** to reach on or before by 14.00 Hrs. on **09-10-2014** and the same are to be dropped in the **Tender Box which is kept in the** M&S, Ground Floor, 2&4 Bldg., BHEL, Tiruchirapalli-620014. Tenders will be opened by 14.30 (IST) on **09-10-2014** at M&S, Ground Floor, 2&4 Bldg., BHEL, Tiruchirapalli-620014. BHEL is not responsible for any postal delay.

Tender box is available in the M&S, Ground Floor, 2&4 Bldg., BHEL, Tiruchirappalli, from **17-09-2014 to 08-10-2014 - 09.00 hrs to 16.00 hrs & 09-10-2014 up to 14:00 hrs.**

Bidder has to submit both Techno-commercial bid (Part -I), Price bid (Part -II) & (3) EMD draft in separate covers.

The first envelope shall be contained EMD DD, Subscribing EMD with No. & date. The tender offer will be considered only after receipt of EMD.

The second envelope shall be sealed and super scribed as Techno-Commercial Bid for Dismantling of Heat Recovery Boiler (HRB) and Erection of New HRB at CCDP through an IBR approved contractor.

The third envelope shall contain only Price for the above work as per scope and to be quoted as per the format given in price bid. Any other information in price bid will not be considered. The envelope shall be sealed and super scribed as **Price Bid for Dismantling of Old Heat Recovery Boiler (HRB) and Erection of New HRB at CCDP through an IBR approved contractor**.

All the above envelopes shall be kept into another cover and sealed.

BHEL is not responsible for any postal delay. The Techno Commercial Bid will be opened on

09-10-2014 at 14.30 Hrs (IST).

NOTES:

The agencies are advised to visit the work site to understand the nature of work / quantum of work in its true perspective to avoid any complications in future. The Contractor shall carefully study all the terms and conditions as given below:

- The contract will be awarded for a period of Four months from the date of ordering.
- The rates shall be firm for the entire period of the contract.
- If the Contractor is not able to provide the sufficient service as indicated in the bid, the contractor is liable for forfeiture of the security deposit paid.
- Detailed scope of work covering the contract, contractual & legal Obligations of the Contractor, and general conditions of Job contracts are enclosed. (Refer Annexures-I, II, Part-I –Techno Commercial Bid & Part-II-Price Bid)
- As per BHEL circular BHE: HR: W: EW Dt. 08.04.2014, the following additional wages per month has to be paid over and above minimum wages declared by TamilNadu Government to labours:

a) Unskilled : Rs. 3200/-

b) Semi-skilled : Rs. 3700/-

c) Skilled : Rs. 4100/-

d) Bonus @ 8.33 % of total wage to be paid to workmen

- The signature at the bottom of the rate schedule confirms that minimum wages, additional wages, bonus, PF, ESI etc. has been considered by the tenderer while quoting the above rates.
- The committee members will consider PRICE BID only after evaluation of TECHNICAL BID.
- Tender committee's decision is final and canvassing in any form/influencing the committee will be considered as a disqualification and such contractors will not be considered for future enquiry.
- L1 rate will be considered as final for the award of contract.

General Terms:

- The contractors may satisfy themselves by thorough study of scope of proposed job work by visiting the work site. There shall not be at any time dispute / complaint of any nature regarding scope of work and interpretation after awarding the job.
- Tender documents can also be downloaded from BHEL website http:// (www.bhel.com) as well as in Govt. tenders website (http://tenders.gov.in).

Annexure-II

Specification for Dismantling of existing HRB & Erection of new HRB

Description

CCDP-Heat Recovery Boiler (HRB) produces 5 tons / hour steam with 220 ºC at 22 ata pressure. Due to repair in this boiler after nearly 18 years of service & based on Boiler Inspector recommendations, this boiler is to be replaced with a newly manufactured boiler with improved design in maintenance aspects. Hence the existing HRB will be dismantled and new HRB will be erected in the same location. It is proposed to execute both dismantling and erection work using an IBR approved contractor.

Dismantling work list

1. Install winches / hoists, pulleys, ropes and check the working conditions of above items, trial working of winches before starting the work.
2. Structural dismantling (beams, floors, supports of equipments). Strengthening floor openings, temporary supporting & loading of U-pipe, gas outlet pipes - to unload and bring down existing HRB from fifth floor to ground floor.
3. CCDP will arrange to disconnect & remove of cabling, wiring etc. which are connected to the equipments, vessels, panels, pumps & valves for enabling old HRB dismantling & new HRB erection.
4. Dismantling & lowering down of coolers, lock vessels, hoppers, valves etc.
5. Disconnecting gas inlet / outlet pipes.
6. Gas outlet pipe to be cut to the required length and brought down and stocked at stores stock yard.
7. Ensure proper loading of HRB after checking pulleys, ropes and loading winch.
8. Slowly & safely lower HRB to the ground floor.
9. Lead HRB to the stores stock yard and store suitably in coordination with engineers.

Dismantling weight

1.	Dismantling of existing HRB	: 16.50 tons
2.	Dismantling of beams &structural	: 10.00 tons
3.	Dismantling of gas outlet pipes (D406x16)	: 5.00 tons
4.	Vessels/valves/equipments	: 5.00 tons
	Total	: 36.50 tons

Erection of new HRB

1. Strengthen all floor openings with suitable extra supports
2. Erection of HRB hanger supporting beams
3. Welding 4nos of SH 12/160 variable load hangers on the beams to load new HRB
4. Leading the new HRB near gasifier area
5. Dismantling HRB in to three parts. 1. The top portion of shell & tube arrangement, 2. The middle portion of gas entry shell, 3. Bottom transition portion with ash outlet, by disconnecting bolts

6. Apply castable refractory in the bottom transition inner side as per thickness mentioned in the drawing.
7. Apply castable refractory in between gas entering tubes of top HRB shell, for the thickness as per drawing.
8. Refractory application natural air drying, refractory heating using heating coils or other methods as per refractory curing / heating cycle graph for all three top & bottom transition portions of HRB
9. Lifting the top shell assembly of HRB and positioning at its location and hanging it using existing hangers
10. Temporary supporting of top HRB until assembly of middle / bottom portion of HRB lifted and joined
11. Lifting and connecting middle gas entry shell with gas inlet pipe with proper gaskets & fasteners.
12. Confirm the verticality of top shell & middle shell of HRB before connecting bottom transition shell
13. Welding HRB gas inlet flange after properly matching with gas inlet pipe D1148x16
14. Gas inlet flange to HRB is tack welded. If gas inlet flange matching with gas inlet pipe flange, affects the HRB verticality or there is a twisting of flange with respect to HRB, the tack welded HRB flange to be removed and repositioned for straightness in all respects. After positioning the flange full circumferential welding to be completed as per quality procedure. Gas inlet flange welding quality check & stress relieving to be completed after welding
15. Apply castable refractory in the middle shell (gas entry shell) of HRB a) 500mm thick in the gas entry pipe D1148 x 16 b) refractory lining on the inner surface of vessel as per drawing. Drying and curing of refractory after refractory lining (This activity shall be carried out after connecting with top shell & gas inlet connections completed).
16. Lifting and connecting bottom transition shell with middle shell, with proper gaskets & fasteners. Apply recommended torque to connecting bolts using suitable torque wrench
17. Confirm the verticality of top shell & middle shell & bottom transition shell of HRB before connecting HRB cooler & lock
18. Join 2 Nos. of D159 x16 down comer pipes, 4 Nos. riser pipes of D159x16, one vent riser D 63.5x4.8 between drum and HRB.
    a) Proper edge preparation to be carried out for IBR welding
    b) Root TIG welding and then manual arc welding with electrode E-7018-1
    c) Pre heating & post heating as per standard procedure
    d) Quality check for X-ray welding joints
    e) Supporting down comer, risers & Vent riser using existing hangers
19. Checking tube /welding leak on top portion HRB using DM water
20. The old HRB gas outlet pipe D 406x16 is taken out towards west after 2 to 3m horizontal travel and coming down vertically for about 5m and terns horizontally towards north to gas cooler inlet
21. In the new HRB design the gas outlet level is raised to 750mm above the old design, which cannot be taken along the old path and hence the outlet nozzle is kept towards north. From

outlet it travels for about 1m and use 60 degree bend with 30deg rolling downwards (by this it clears the 800mm main load bearing beam) and using one more 60 degree bend it is connected to the old gas outlet pipe with a 90degree bend.

22. All IBR coordination activities and getting approval from Director of Boilers, Chennai
23. All gas pipe welding to be qualified after passing LPI test
24. Old gas outlet pipe hanger removed is used for new gas outlet pipe routing arrangement for loading, as per location indicated in the site drawing.
25. Similarly the hangers removed from old HRB DC's & risers are to be used in DC's & risers of new HRB arrangement
26. Before connecting HRB fly ash cooler and lock system leak checking in the water steam circuit to be carried out. After ensuring no leak, HRB cooler and lock system to be assembled.
27. All equipments removed from its positions for HRB dismantling & erection work are to be put back in its place with proper gasket, tightening and supporting arrangement.
28. Putting back all instruments, panels, wiring, cabling etc. and connecting back to controls.
29. All pipe lines removed for HRB dismantling and erection are to be put back in its position
30. All floor openings made for HRB dismantling and erection are to be closed back ensuring proper welding
31. All temporary supports at various floors and equipments are to be removed.
32. All welding / cutting projections due to removal of temporary supports are to be removed by suitable grinding
33. Removal of temporary support on cyclone to HRB U-pipe and temporary support from HRB to be removed
34. Using LPC compressed air, HRB leak check and pressure test to be carried out
35. Using FWP water circuit to be tested for hydro test.
36. Insulation work for HRB, pipe lines, vessels, equipments etc. to be completed before handing over the site
37. After the erection work, supporting the trial runs, commissioning & modification / rectification work any suggested by BHEL, shall be carried by the contractor using extra man power.
38. After ensuring all activities are completed hand over the site to the site in charge

I. Erection weight

I.	Erection of new HRB	:	20.60 tons
II.	Erection of down comers/ risers & boiler pipes	:	10.15 tons
III.	Gas outlet pipe fabrication &erection	:	5.00 tons
IV.	Dismantled structures	:	10.00 tons
V.	Vessels/equipments/valves	:	5.00 tons
	Total	:	**50.75 tons**

II. Refractory / Insulation work

1. Refractory work inside HRB : 5.00 tons

2. Insulation work with aluminium sheet cladding : 500.00 sq.mm (2.5 tons)

III. Post erection / commissioning support

1. Supervisors required for trials after erection : 50 man-days
2. Fitters required for trials : 100 man-days
3. Welders (IBR approved) : 100 man-days
4. Helpers : 250 man-days

General points related to work

1. The biggest single component to be handled for erection is Heat Recovery Boiler which weighs approx. 20 tons. Coolers, vessels other components weigh approximately 5tons each. All other components weight ranging from 500 kgs to 2000 kgs
2. The overall dismantling and erection height is in between 0.0m to 35.0 m.
3. All erection components listed are to be supported suitably at site by cutting / welding / bolting / assembling, with proper alignment.
4. All erection materials/components are to be moved from stores to site location. The location of stores / store yard is around 300m away from site.
5. All dismantled materials and scrap materials shall be transferred to CCDP stores/stores yard, after getting clearance from the site in-charge.
6. Pipe welding shall be done only after the edge preparation as per standard.
7. The contractor shall arrange a temporary erection shed near the site, for safeguarding their tools/tackles and other items. Erection shed material is contractors scope.
8. All supports / brackets /platforms are to be fabricated and erected to match the site conditions Materials supplied by BHEL.
9. The tools required for erection/dismantling is to be arranged by the contractor

The Contractor shall arrange following tools and machines required for erection work Crane / Hoists , Winches, Derric posts, transporting equipment, ropes and wires, Chain pulley blocks, desackles, drilling machines, hydraulic jacks, grinders, cutting machines, hammers, chisels, cutters, wire brushes, painting brushes, steel tapes, wrenches and erection spanners and regular spanners etc.

11. Safety items: The contract employees shall follow safe working procedures by using appropriate safety equipments like safety belts, safety shoes, gloves, safety goggles, helmets, welding shields, earplugs, nose filters, aprons, etc. All safety equipments mentioned above shall be supplied by the contractor.
12. Completion Time: The total Dismantling & Erection time is Four months
13. Welding consumables: The electrodes used for welding shall be strictly as per drawing. All the welding electrodes are to be properly preheated. Preheating oven is contractor's scope. Welding electrodes supply by BHEL.
14. All pipe lines / pressure vessels root joints shall be done by TIG welding process. TIG welding set with consumables shall be supplied by vendor

15. All weld joints of boiler pipes/vessels above 10" shall be X-Ray tested. For all other joints LP Test shall be carried out. All quality control activities will be carried out by approved agency
16.Consumables: Welding electrodes, TIG wires, oxygen , acetylene, kerosene, paints, rustoline and other consumables, electric power supply, service air supply shall be supplied by BHEL at free of cost.
17. Welding machine, cutting set, TIG welding set and accessories, shall be arranged by the contractor
18. Hydro test: After completion of erection, all vessels and pipe lines are to be leak tested/hydraulic tested at 33 kg / sq. cm
19. Final Painting: After completion of erection work, all pipe lines, vessels / equipments, components, structures, platforms, stairs etc. are to be painted with one coat of primary (Red Oxide) and two coats of Grey paint. Supply of paint is BHEL's scope. Cleaning brushes and painting brushes are contractor's scope.
20. Payment will be made in four installments, 1. After dismantling of existing HRB, 2. After erection of new HRB, 3. After completion of pipe line & IBR approval 4. Final bill payment after completion of trial / commissioning work.
21. Payment shall be made for actual dismantling weight and actual erection weight and on the basis of actual trial / commissioning support man days used.
21. Temporary platform required for erecting the components is not considered for weight calculation. These temporary platforms are to be removed after completing the components erection work.
22. Temporary platform material required for erecting components will be provided by BHEL.

GENERAL TERMS & CONDITIONS

STATUTORY

1. **Minimum Wages** : The contractor shall pay minimum wages to his labourers as per Tamil Nadu govt. norms and additional wages Rs.3200/month for unskilled /Rs.3700 per month for semiskilled &Rs.4100/month for skilled shall be paid and produce copies of attendance records / wage registers.
2. **Labour Licence** : The contractor shall submit valid Labour Licence before starting the work
3. **PF & ESI** :The contract to be covered under PF and ESI for the labourers engaged
4. The contractor shall comply with all state and central laws, statutory rules and regulations, inclusive of labour and industrial laws, which are applicable from time to time.
5. **Gate Pass:** Pass arrangement for labours shall be arranged by the contractor before commencement of the work. The authorized person / supervisor of the contractor is responsible for making the pass arrangement.
6. All IBR related welding work shall be carried out using IBR approved welders. The contractor to produce certificates for skilled workers engaged.
7. **Insurance & workmen compensation**: The contractor shall insure his workmen under Workman compensation Act. It is the sole responsibility of the contractor to ensure his workman against accident and injury while at work. They have to follow relevant pay compensation rules in case of accident/injury.

8. **Service tax** Contractor to quote service tax extra while submitting their offer
9. **Security Deposit:** Contractor shall pay 50% Security deposit before start of work. EMD can be adjusted for the above requirement. Balance 50% will be recovered equally in running bills
10. The contractor shall be an approved IBR contractor

SAFETY

1. **Safety items**: The contract employees shall follow safe working procedures by using appropriate safety equipments like safety belts, safety shoes, gloves, safety goggles, helmets, welding shields, earplugs, nose filters, aprons, etc. All safety equipments mentioned above shall be supplied by the contractor.

   All workers shall compulsorily wear safety shoes and helmets at work site. Contract worker not using safety shoes, safety helmets, safety belts at height and not using other appropriate safety items (PPE) for the respective work will be viewed seriously and they will be sent out.

2. The contractor shall ensure that no damage is caused to any equipment at the site. If any such damage is caused, it is the responsibility of the contractor to make good the losses or compensate for the same.
3. Scaffolding shall be done by the contractor with their own scaffolding materials.
4. They have to strictly follow BHEL Engineers safety instructions whenever pointed out.
5. Height permit shall be obtained from the Engineer In- charge to carry out the work at high elevations.

ERECTION WORK

1. **Man power :** The contractor to engage sufficient skilled workers (Riggers, Fitters, High pressure Welders and structural welders) and helpers to complete the work within three months' time
2. **Supervisor**: The contractor shall engage supervisor / Engineer for achieving overall quality, speedy and smooth work coordination.
3. **Erection Shed** : Contractor shall arrange a temporary erection shed with door/locking arrangement, using his own material for storing his tools and tackles
4. Pipe welding shall be done only after the edge preparation as per standard.
5. Proper electrode shall be used for welding joints based on grade/ type of material.
6. Preheating of electrode as recommended by the electrode manufacturer shall be carried out prior to welding.
7. **Consumables** : Welding electrodes, oxygen cylinders, acetylene cylinders, kerosene, paints, rustolene and other consumables, electric power supply shall be supplied by BHEL at free of cost.
8. Welding machine, cutting set, acetylene gas and accessories shall be arranged by the contractor.
9. All erection materials are to be moved from stores to site location
10. All dismantled materials and scrap materials shall be transferred to CCDP stores after getting clearance from the site in charge.

11. **Tools :** The Contractor shall arrange following tools and machines required for erection work Cranes / Hoists , Winches, Derric posts, transporting equipment, ropes / wires, Chain pulley blocks, desackles, drilling machines, grinders, cutting machines, all types of spanners, hammers, chisels, cutters, wire brushes, steel tapes etc.
12. **Completion Time:** Total work is to be completed within three months. Timely completion of work is very important. Hence the contractor has to engage sufficient no. of workers. As per the instructions of site Engineer, if sufficient workers are not brought to the work spot, penalty will be imposed for the delay caused at 10% of contract value and it may even be extended to termination of the contract.
    Delayed execution: In case work schedule unreasonably delayed because of non-availability of sufficient man power and non-availability of tools, contract will be terminated and balance work will be got done through some other contractor at their risk& cost.
13. **Defective work:** The contractor shall rectify the defective work at free of cost any time during one year from the completion of work.

GENERAL

1. The contractor shall be responsible for the proper behaviour and observing all rules and regulations by the labour employed by them.
2. **Canteen**: BHEL rules will be applicable towards issue of refreshments /food which will be adhered by the contractor. As per existing procedure for Canteen facilities, the lunch / dinner coupon shall be issued @ Rs.5 (Rs. Five) per person. Sufficient and valid coupons are to be tendered for Tiffin, Tea, Coffee, Milk, etc. to the canteen staff.
   Evening snacks will not be provided to the contract employees. In case BHEL is unable to provide canteen facilities, contractor has to arrange from outside.
3. **Offer validity**: Offer validity shall be minimum 90 days from the date of Tender opening.
4. **Advance Payment** : No advance payment shall be arranged for this contract
5. The contractor is directly responsible for the payment of wages to his workmen.
6. Dismantling and erection work shall be carried out normally in general shift. If required working may be extended up to 20.30 hrs, after getting permission from the security Dept. Normally working days are used for erection work. If necessary Sundays and holidays
7. BHEL engineer's instructions to be followed for safe and early completion of work.
8. The contractor should submit an acceptance letter for the above terms and conditions.
9. The entire scope will be awarded as a package to single contractor.
10. Vendor shall sign each and every page of the tender documents and affix seal for having accepted the conditions.

PART-I

(Technical Bid Evaluation criteria – IBR approved contractors)

1. Similar functions executed earlier (If so, cite examples) :
   (In case of experience from private organization, this should be supported by TDS certificate (or) Form 26AS Tax credit statement). Single contract value shall not be less than Rs. 12 Lakhs.

2. IBR approval details :

3. PAN card No.:

4. EMD details :

CONTRACTOR ISSUING OFFICER

PART - II

(Price Bid)

Name & Address of the Contractor:

I. Dismantling work

Sl. No.	Description	Approx. wt. (tons)	Rate/ton	Total (Rs)
01	Dismantling of existing HRB	16.50		
02	Dismantling of beams & structural	10.00		
03	Dismantling of gas outlet pipe (D406x16)	05.00		
04	Dismantling of vessels/equipments & valves	05.00		
	Total	36.50		

II. Erection work

Sl. No.	Description	Approx. wt. (tons)	Rate/ton	Total (Rs)
01	Erection of new HRB	20.60		
02	Erection of down comers/ risers & boiler pipes	10.15		
03	Gas outlet pipe fabrication & erection (D406x16)	05.00		
04	Erection of structures	10.00		
05	Erection of vessels/equipments & valves	05.00		
06	Application of Refractory inside HRB	05.00		
07	Insulation work with aluminium sheet cladding	02.50 tons (500 sq.ft.)		
	Total	58.25		

III. Post Erection / Commissioning support

Sl. No.	Description	Approx. man-days	Rate/man-day	Total (Rs)
01	Helpers	250		
02	Fitters	100		
03	Welders (IBR approved)	100		
04	Supervisors	50		
	Total	500		

Contractor

Issuing Officer

List of the major milestones for old HRB dismantling and new HRB erection contract:

Sl. No.	List of the works/milestones to be performed	Weight (tons)	No. of days for completion
1.	Dismantling of vessels/equipments/gas pipe lines etc.	10	10
2.	Dismantling of beams/structures etc.	10	10
3.	Dismantling of existing HRB	16.5	10
4.	Erection of new HRB	20.6	15
5.	Erection of down comers/riser pipes and other boiler pipes	10.15	10
6.	Application of refractory inside HRB	5	10
7.	Insulation work with cladding	2.5	10
8.	Gas Outlet pipe fabrication and erection	5	10
9.	Erection of structures/beams and related	10	10
10.	Erection of vessels/equipments etc.	5	10
11.	IBR approvals and trial runs	-	15
	Total	**94.75 tons**	**120 (4 months)**