



NOTICE INVITING TENDER

Ref.: OS/26-27/8136&8194/Boiler Drum/Rolling/09/009

Date: 23.05.2026

Sub: Rolling of Plates, Fit-up and formation of Shell sections of Boiler Drums against SO Nos. 8136 & 8194 at vendor works with free issue materials

Dear Sir,

Sealed tenders are invited for the subject work in **Two-part bid** system from Vendors who are experienced in execution of similar jobs and fulfil the eligibility criteria specified below in clause-1. Scope of work and techno-commercial terms & conditions are as follows:

1. PRE-QUALIFICATION CRITERIA:

- (1) Bidders must have an experience in execution of similar jobs of Rolling of Plate thickness of 100 mm (Min.) for a minimum of one project during the past 7 Years **as on 30.04.2026**. Bidders shall enclose Work Orders, Work Completion Certificates and all other relevant documents in support of their experience in execution of similar job for at least one project. The works executed in own name of the individual / firm of the tenderer will only be considered for eligibility criteria.
- (2) Bidder shall have Rolling machine capable of rolling plates of 145 mm thickness and required Width / diameter at their works. Bidder shall confirm the availability of the same.
- (3) Bidders shall have to enclose the documents of PAN, GSTIN, Udyam Registration Certificate (if registered with MSME) etc.
- (4) Any Bidder falling under MSE category shall furnish the following details & submit documentary evidence/ Govt. Certificate etc., in support of the same along with their Techno-commercial offer.

Type under MSE	SC/ST Owned	Women Owned	Others (excluding SC/ST & Women Owned)
Micro			
Small			

Note: Tick (✓) mark in the applicable box and mention "NA" wherever not applicable.

If the bidder does not furnish the above in the tender, offer shall be processed construing that the bidder is not falling under MSE category.

2. LOCATION OF WORK SPOT:

The subject job is to be carried out at **Vendor's Works**.

3. VENDOR'S SCOPE OF WORK:

- 3.1) Rolling of plates, Assembly & Fit-up of L-seams and forming of Shell sections of Boiler Drums as per applicable approved drawings, SQP, Procedures, Specifications & Standards etc., and it includes the following activities but not limited to the same:
 - a) Unloading of Plates from Trailers and Loading of Shell sections onto the trailers at vendor's works is in vendor's scope. Necessary manpower, tools & tackles and Welding of temporary supports required for transportation of shell sections shall be arranged by the vendor.
 - b) Rolling of plates provided in pre-bend condition shall be carried out as per approved drawings. Maximum width of the plates provided shall be 2500 mm.
 - c) Assembly & Fit up of L-seams of shell sections in Tack welded condition as per applicable drawings & SQP.
 - d) Tack / Stitch Welding is to be carried out by qualified welders only.
 - e) Shell section details shall be hard stamped, encircled with paint and stenciled in a specific format for identification as per the instructions of the outsourcing department.
 - f) Dimensional check & fit up clearance to be obtained from BHEL / BHEL Authorized Inspection Agency.
 - g) Heat treatment after forming of shell sections shall be carried out as per HT cycle provided by BHEL.

- h) Though not mentioned specifically, any activity which is required for completion of the work is deemed to be included in the scope of bidders without any price implication.

4. BHEL SCOPE:

- a) Issue of Drawings, GMS, Approved SQP, HT cycle etc.
- b) Issue of Plates in pre-bend condition with Edge Preparation as per applicable drawing.
- c) Transportation of (i) Plates from BHEL-HPVP, Visakhapatnam to vendor's works and (ii) Shell sections from vendor works to BHEL-HPVP, Visakhapatnam
- d) Unloading of Shell sections at BHEL-HPVP, Visakhapatnam
- e) Dimensional & fit up clearance from IBR authority after receipt at BHEL-HPVP, Visakhapatnam
- f) Edge preparation and Fit up of C-seams in between the Shell sections

5. INSPECTION:

- a) Inspection shall be carried out at Vendor's works by M/s. BHEL / BHEL Authorized Inspection Agency as per approved SQP.
- b) The drawings and SQP enclosed with the tender are indicative and for tendering purpose only. The approved SQP & drawings issued to the vendor after ordering shall only be followed for execution and inspection of the job.
- c) Vendor shall be solely responsible for preparation of Inspection Reports as per BHEL standard formats and submission of soft copy as well as hard copy of the same duly certified by Inspection Authority to BHEL-QA.

6. DELIVERY:

- a) The delivery period shall be **within One month from the date of receipt of Plates at vendor works.**
- b) The delivery period will be calculated from the date of receipt of Plates at vendor works to the date of dispatch clearance of Shell sections by BHEL-HPVP.
- c) In case the delivery period offered by the vendor is more than the tender delivery, Loading for additional delivery period shall be @ 0.5% per week (or) part thereof on the price quoted by the vendor for the purpose of evaluation of L1 status.

7. PRICE:

- a) L1 status shall be evaluated based on the total quoted value.
- b) The price shall be quoted in the **Price Bid** as per the Schedule of Quantities & Rates for the detailed scope of work and the quoted price shall be inclusive of all applicable taxes & duties except GST.
- c) The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of the work.
- d) Income tax shall be deducted at applicable rates from the vendor's bills. GST shall be reimbursable to the vendor as per applicable guidelines.

8. VALIDITY OF OFFER:

The offer shall be valid for a period of **3 months** from the date of Reverse Auction.

9. GOODS & SERVICES TAX (GST):

Bidders shall make a note of the following points of GST before submission of their offer: -

- a) Vendors shall have to mention their GSTIN no. (15 Digits) in their Technical Bid. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering their offer.
- b) Semi-finished goods are to be delivered by the Vendors in BHEL, HPVP premises within a maximum period of one year from the date of issue of the material, failing which the whole transaction will be considered as Supply and Sale and GST is required to be paid along with interest (calculated @ SBI Base Rate + 6%) along with penalty, if any, from the date of Challan on the whole value of materials. Hence vendors shall have to ensure that materials issued to them are returned within 365 days.
- c) After fabrication, the vendors shall have to deliver the Semi-Finished Goods by fulfilling the following formalities: -

- i) GST invoice should be raised by the vendors by paying GST on job work charges at applicable rates and by incorporating the HPVP GSTIN no. in the invoice for availing the reimbursement of GST from HPVP.
- ii) The vendor shall also have to enter in their GST Return -1 (GSTR-1) the details of invoice raised for payment of GST so as to enable HPVP to avail input credit.

10. REVERSE AUCTION:

- a) BHEL shall be resorting to Reverse Auction (RA) for this tender. RA shall be conducted among the techno-commercially qualified bidders. Business Rules for Reverse Auction are given at Annexure – V. Bidder may refer Guidelines for Reverse Auction on our website, www.bhel.com → supplier registration → Guidelines for Reverse Auction, before submission of their offer.
- b) Sealed envelope / Electronic Price bids of all the techno-commercially qualified bidders shall be opened and the same shall be considered as initial bids of the bidders in RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope / Electronic price bid along with applicable loading, if any, shall be considered for ranking.
- c) BHEL will inform bidders the details of service provider who will provide business rules, all necessary training and assistance before commencement of online bidding. The bidders participating in the Reverse Auction shall have to necessarily submit 'Process Compliance Form' (PCF) to the designated Service Provider.
- d) Bidders are advised to read the 'Business Rules' (Annexure – V) indicating details of RA event carefully, before reverse auction event.

11. RISK PURCHASE:

In case the contractor fails to execute the work within the scheduled time or due to any other reasons, BHEL-HPVP reserves the right to get the same completed through some other party at the risk & cost of the contractor and any additional expenditure incurred due to the same shall be charged to the contractor. Non-performance of contractor attracts penal provisions in line with BHEL Guidelines for Suspension of Business Dealings.

12. GENERAL:

- a) The bidders shall study the Tender documents, Drawings and all other relevant documents in detail for understanding the scope of work and the processes involved before submission of offer. Bidders shall get clarifications, if any, from concerned officials on the scope of work or any other details of the tender document, over phone between 09:00 AM and 04:00 PM on any working day or through e-mail.
- b) **Conditional / Partial Price Bids** and any other deviations to the tender terms & conditions are not acceptable and BHEL reserves the right to reject such offers without further correspondence. Bidders shall confirm their acceptance to all the terms & conditions of the tender enquiry in the Techno-commercial Bid.
- c) BHEL reserves the right to modify (or) cancel the tender enquiry at any stage without assigning any reasons thereof.
- d) The General Terms & Conditions, if any, contradicting with the specific terms & conditions given in the tender, then specific terms & conditions shall only be considered.
- e) Other Terms & Conditions, whichever are applicable, shall be as per Annexure – III enclosed.

13. The following documents shall form part of the tender enquiry including this Notice Inviting Tender:

PART - 1: TECHNO-COMMERCIAL BID

- i) Schedule of Quantities : Annexure – I
- ii) Details of Items to be fabricated : Annexure – II
- iii) General Terms & Conditions : Annexure – III
- iv) Acceptance to tender terms & conditions : Annexure – IV
- v) Business Rules for Reverse Auction : Annexure – V
- vi) GST Compliance for Indigenous Suppliers : Annexure – GST
- vii) Tentative Drawings, SQP etc.,

PART - 2: PRICE BID

- viii) Price Bid (Schedule of Quantities & Rates)

14. TENDER SUBMISSION (Through e-Procurement system):

- a) The tender completed in all respects shall be submitted in **Two parts** (Techno-commercial bid and Price Bid) through online e-procurement portal (<https://eprocurebhel.co.in>) latest by **13:00 Hrs. on 02.06.2026**.
Note: Techno-commercial bid along with all the tender documents shall be duly signed & stamped by the bidder on all pages.
- b) Submission of offer by the bidder implies that all the tender documents were read by the bidder and the bidder is aware of the scope and specifications of the job.
- c) **OFFERS SENT IN ANY OTHER FORM WILL BE TREATED AS INVALID AND WILL BE SUMMARILY REJECTED.**

15. TENDER OPENING:

- a) Techno-commercial Bids will be opened on **02.06.2026 at 15:00 Hrs.** in online e-procurement portal.
- b) After evaluation of the Techno-commercial Bids, intimation regarding date & procedure of conducting reverse auction shall be given by the service provider to all eligible techno-commercially qualified bidders through an e-mail in advance at an appropriate time.

For Bharat Heavy Electricals Limited,


23/05/2026
D. N. MURTHY
Manager (OS)
Bharat Heavy Electricals Ltd
HPVP Visakhapatnam-530017

SCHEDULE OF QUANTITIES

Tender Enquiry ref: OS/26-27/8136&8194/Boiler Drum/Rolling/09/009

Date: 23.05.2026

Sub: Rolling of Plates, Fit-up and formation of Shell sections of Boiler Drums against SO Nos. 8136 & 8194 at vendor works with free issue materials

Sl. No.	S.O. No.	Description of Work	Unit	Qty.
1	8136 & 8194	Rolling of Plates, Fit-up and formation of Shell sections of Boiler Drums	MT	152
		TOTAL	MT	152

Notes :

- 1) **L1 status shall be evaluated based on the total quoted price.**
- 2) The quoted price shall be inclusive of all applicable taxes & duties except GST. Income Tax shall be deducted at applicable rates from Bills and GST shall be reimbursable to the vendor as per applicable guidelines.
- 3) The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of work.
- 4) The quantity indicated above is tentative and may vary subject to the requirement at the time of ordering / execution. However, payment shall be made for the actual quantity only.
- 5) The bidders are advised to go through all the drawings & documents before quoting the tender.
- 6) The evaluation currency for this tender shall be **INR**.

Signature of the Bidder with stamp

Ref.: OS/26-27/8136&8194/Boiler Drum/Rolling/09/009

Date: 23.05.2026

DETAILS OF ITEMS TO BE FABRICATED

Sub: Rolling of Plates, Fit-up and formation of Shell sections of Boiler Drums against SO Nos. 8136 & 8194 at vendor works with free issue materials

Sl. No.	S.O. No.	Description of Item	Approx. Wt.	Unit
1	8136	Rolling of Plates, Fit-up and formation of Shell sections of Boiler Drums	76	MT
2	8194		76	MT
		Total	152	MT

Note : The above weights are approximate and may vary as per the drawings issued at the time of order / during execution.

GENERAL TERMS & CONDITIONS

1. TECHNICAL DELIVERY CONDITIONS:

The work should conform to the technical data given in our drawings, GMS, Shipping List Specifications, QAP, WPS etc.

2. PARTY'S SCOPE:

The scope of the party shall be as follows: -

- a) All welding equipments, baking oven, tools, jigs and fixtures, measuring instruments duly calibrated, handling facilities, testing facilities etc.
- b) All materials other than those mentioned under "Free Issue Materials", which are required for completion of the work.
- c) All consumables such as electrodes, gases, grinding wheels etc.

Note: Electrodes of specification mentioned in the drawings / WPS and of BHEL approved brands only shall be used and MTCs of the same shall be submitted to BHEL for verification before use.

3. REVISION OF DRAWINGS:

There may be minor changes in the drawings during execution. In such a case, party should accommodate the same without any extra claim.

4. WELDING QUALIFICATION: Qualification of required number of Welders is party's responsibility at their cost.

5. X-RAY:

All welding shall be of X-ray quality where specified on drawings. Inspection would specify the quantum of X-ray based on drawings / code requirement. Party should strictly follow the WPS and QAP issued by BHEL during welding. Getting the welds radiographed and getting them cleared by inspection is the responsibility of the party.

6. RECTIFICATIONS / REJECTIONS:

Any rectification due to defective work, if required, shall be done by the party free of charge with a suitable technology approved before hand by BHEL in writing. The cost of material, if any used for rectification work / rejection work, will be estimated by BHEL and the same shall be debited to party's account. In case any rectification / rework is to be carried out due to defective material supplied by BHEL, the replacement material and consumables will be supplied by BHEL free of Cost.

7. SECURITY DEPOSIT:

- a) Vendors shall have to submit a Bank Guarantee for **10%** of the order value in case of **HPVP ADM / Lovagarden site** (or) **25%** of the material cost in case of Vendor works towards Security Deposit and safe custody of free issue materials within 15 days from the date of intimation by Outsourcing dept. The BG shall be valid for the contract period with a claim period of 12 months. This Bank Guarantee shall be released to the contractor after completion of work and on acceptance of the same by BHEL / Owner.

Bidder agrees to submit performance security required for execution of the contract within the time period mentioned above. In case of delay in submission of performance security, enhanced performance security which would include interest (Repo rate + 4%) for the delayed period, shall be submitted by the bidder. Further, if performance security is not submitted till such time the first bill becomes due, the amount of performance security due shall be recovered as per terms defined in NIT/contract, from the bills along with due interest.

- b) **MODE OF DEPOSIT:** Security Deposit may be furnished in the following forms:

- i) Local cheques of Scheduled Banks (subject to realization)/ Pay Order/ Demand Draft/ Electronic Fund Transfer in favour of BHEL.
- ii) Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL.
- iii) Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL).
- iv) Securities available from Indian Post offices such as National Savings Certificates, Kisan Vikas Patras etc. (held in the name of Contractor furnishing the security and duly endorsed/ hypothecated/ pledged, as applicable, in favour of BHEL).
- v) Insurance Surety Bond.

(Note: BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith).

8. PERFORMANCE BANK GUARANTEE:

Vendors shall have to submit Performance Bank Guarantee (claim period of 12 months) for 10% of the order value covering for the defects liability period. If PBG is not submitted, 10% of the order value shall be deducted towards PBG from the final bill and shall be refundable after performance guarantee period, if no defects are found during this period.

9. RAW MATERIALS ISSUE:

Raw materials shall be issued with appropriate processing allowance and invisible wastage over the theoretical requirement of raw materials (**Plates, Sheets, Sections and Pipes**).

10. TRANSFER / RETURN OF LEFT-OVER MATERIALS:

Party should maintain proper records for receipt & use of all free issue materials. The left-over materials & scrap as per the material accounting statement shall be returned to HPVP stores along with finished job. Material Transfer Vouchers (MTV) from one order to another or from one vendor to another and Material Return Vouchers should be submitted immediately after transfer / return. The material reconciliation statement shall be submitted by the contractor after verification and certification by BHEL along with the final bill **within 30 days from the date of completion of work**. Otherwise, recovery for the balance materials shall be made from any of their pending bills without further intimation.

11. MATERIAL RECONCILIATION:

Orders issued to the vendors have to be completed in all respects including Material Accounting within a maximum of **180 days** from the **date of issue of material** from BHEL - HPVP stores.

Maximum of 0.5 % on the requirement of materials (**Plates, Sections and Pipes**) is admitted towards **process allowance and invisible wastage**.

Scrap quantity is permissible up to a **maximum of 1% on Structural (Beams, Channels, Angles, Rods, Pipes etc.), 2% on Sheets, 3% for Plates** on the theoretical requirement of materials.

If wastage and scrap is beyond the above limits, it should be fully justified with cutting diagrams etc. which are to be approved in advance by BHEL. **Otherwise, the cost of raw materials beyond approved limits will be recovered from the contractor as per BHEL recovery rates including applicable taxes & duties.**

Material reconciliation including return of balance materials, off-cuts is to be completed within 20 days from the date of completion of the order. The material reconciliation statement shall be submitted by the contractor after verification and certification by BHEL-HPVP along with the final bill **within 30 days from the date of completion of work**. Otherwise, recovery for the balance materials shall be made from any of their pending bills without further intimation,

Repeated occurrence of inordinate delays in returning and settling the material accounting will entail BHEL the right to terminate the contract forthwith or impose a temporary suspension on further loading at the discretion of BHEL.

12. SCRAP & OFF-CUT NORMS:

Sl. No.	Description	Scrap Size (in mm)	Off-Cut (in MM)
1.	CS/AS Sheets & Plates	Below 500 × 250	500 × 250 & above
2.	Rolled sections Rod, angles etc. (other than -tubes, pipes)	Below 1000	1000 & above
3.	Tubes & Pipes	Below 500	500 & above
4.	Universal column	Below 1000	1000 & Above
5.	SS Sheets & Plates	Below 500 × 250	500 × 250 & above
6.	SS Structural, Rods, Tubes, Pipes	Below 250	250 & above
7.	Non – ferrous: sheets & plates, rods & tubes	Below 500 × 250 (S & PL), Below 250 (Rods & Tubes)	500 × 250 & above, 250 & above
8.	Big size Scrap	(2500 & above) × (150 to 249)	-

13. INSPECTION:

Party shall contact our Quality Control Dept. for stages of inspection before commencement of job and should strictly follow the stages of inspection as per QAP.

14. WORKMANSHIP GUARANTEE:

The vendors should give workmanship guarantee for fabricated items for a period of 18 months from the date of last delivery of the order. Any defects due to incomplete work, faulty workmanship found in the fabricated items after delivery during the defects liability period shall be rectified / replaced by the vendor free of cost. Otherwise, the expenditure incurred towards the same will be recovered from the pending bills of vendors.

15. WORK PROGRESS:

The fabricator shall furnish a weekly report on the progress of work along with the status of availability of free issue materials and requirement of further materials, if any.

Outsourcing dept. personnel will visit vendor's works from time to time to assess and review the work progress. Free access shall be provided to BHEL or its inspection agency at all reasonable times of the day / night.

In case the progress is not satisfactory or supplies are delayed abnormally beyond the contractual delivery date, BHEL-HPVP, Visakhapatnam reserves the right to cancel the order in part or full or get the balance job in as is where is condition completed elsewhere by another agency at the risk and cost of Fabricator. The value of the work carried out by the party will be assessed by BHEL and the same shall be final. No compensation will be given to the fabricator in case of cancellation of order or diversion of balance job even if the jobs have been processed partly.

16. DELIVERY:

Finished items should be handed over to BHEL-HPVP on party's delivery challans along with Job completion certificate / Final Inspection Report from inspection agency / HPVP-QC department.

17. PENALTY:

Penalty calculations will be done on DU wise (Dispatchable Unit) delivery. If delivery exceeds the stipulated delivery schedule, penalty @ 1/2 % of the value of each DU per week (or) part thereof subject to a maximum of 10% of the value of each DU will be levied. However, time taken for the following will not be considered as delay on the part of the Sub-Contractor.

- 1) Intermediate operations, if any, carried out by BHEL.
- 2) Waiting time for BHEL / Third party Inspection beyond a normal time of 3 days.

18. PAYMENT TERMS:

Payment shall be made against RA Bills within 45 days for MSE (Micro & Small Enterprise), 60 days for Medium Enterprise and 90 days for non-MSEs from the date of submission of Bill.

90% payment will be made after handing over of the finished equipments along with all inspection documents to HPVP shops / Logistics dept. / ADM site / Lova Garden site, duly inspected & cleared by Inspection authority. Balance 10% payment shall be made along with the Final Bill against completion of total order in all respects including documentation.

Vendors shall have to submit the bills in the formats specified by HPVP-Outsourcing and the bills submitted in the specified format along with necessary supporting documents are only admitted for processing. The following documents shall be submitted along with the Final Bill:

1. No Claim Certificate from the contractor
2. No Dues Certificate from BHEL
3. Work Completion Certificate from BHEL
4. Material Reconciliation Statement submitted by the Contractor and certified by concerned authority of BHEL (if applicable)
5. Workmanship Guarantee certificate from the contractor

19. SECRECY:

All the documents of BHEL inclusive of Drawings, GMS and Standards made available to the fabricator should be kept in strict confidence and under no circumstance be made available to others or allow others to make use of them. Such documents shall be returned to BHEL on demand after completion of the job. This secrecy clause is binding on the employees of the fabricators also. Violation of the same may lead to suspension of business with the vendor and necessary legal action.

20. SUB-LETTING:

In general, sub-letting of jobs will not be permitted. But in special circumstances, this may be allowed. In such case, the party should obtain written approval from BHEL-HPVP, Visakhapatnam before sub-letting.

21. FACTORY RULES AND REGULATIONS:

Party shall abide by all the rules and statutory regulations in force from time to time as per factories act. It shall be party's responsibility to ensure the safety of their workmen and fulfilling the ESI, PF and other relevant statutory regulations.

22. SAFETY:

- a) Contractor shall adhere to safe construction practices, guard against hazardous & unsafe working conditions and shall comply with the safety rules of BHEL and local authorities. He shall maintain First Aid facilities for all his employees and labour. Contractor's responsibility includes supply of welder kit, all safety items such as safety belts, white and colour glasses, goggles, safety helmets, safety shoes etc.
- b) Contractor and his employees shall follow all fire & safety, security regulations of BHEL.

23. HOUSE KEEPING:

During execution of work, the contractor at all times keep the working place and storage area clean and free from accumulation of waste materials, rubbish etc.,

24. ACCIDENT / DAMAGE / CONDUCT ETC.:

Contractor will be held responsible for any disorderly conduct / misconduct, indiscipline, theft, smoking etc., on the part of his men. He will ensure summarily eviction of such men from his premises failing which BHEL would remove them from the factory on his responsibility. Any damage to and or loss of equipment, machinery, building etc., to BHEL or BHEL employees, visitors or other contractors resulting from his own or any of his men's negligence shall be liable to be made good by him. Contractor shall be solely responsible for any accident in which you or your men or your equipment may be involved during the execution of contract on account of any reason what so ever.

25. TERMINATION OF CONTRACT:

In the event of any failure on the part of the contractor, BHEL reserves the right to terminate the contract by giving a notice of 2 weeks for any of the following lapses and contractual violations: -

- a) Failure to make labour payments in time as per the rules
- b) Failure to progress the job according to the agreed schedule
- c) Failure to mobilize adequate man power, tools & tackles and consumables in time
- d) Failure to adhere to Quality Standards of BHEL
- e) Refused to co-operate with other agencies working in the same area
- f) Failure to resolve labour disputes like strikes etc., within 7 days of occurrence
- g) Failure to comply with statutory regulations applicable at BHEL

BHEL shall also be free to intervene and take necessary remedial measures. All costs incurred with interest and overheads shall be recovered from contractor by such foreclosing or off-loading any part of the contract work.

26. CONFLICT OF INTEREST AMONG BIDDERS / AGENTS:

A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. ***The bidder found to have a conflict of interest shall be disqualified.*** A bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if:

- a) they have controlling partner (s) in common; **or**
- b) they receive or have received any direct or indirect subsidy / financial stake from any of them; **or**
- c) they have the same legal representative / agent for purposes of this bid; **or**
- d) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; **or**
- e) Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ Assemblies from one bidding manufacturer in more than one bid; **or**
- f) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorise only one agent / dealer. There can be only one bid from the following:
 1. The principal manufacturer directly or through one Indian agent on his behalf, and
 2. Indian/foreign agent on behalf of only one principal,
- g) A Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid, **or**
- h) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must proactively declare such sisters' common business/ management units in same/ similar line of business"

27. TAXES & DUTIES:

- a) BOCW Cess if applicable is to be paid by Contractor.
- b) In addition to existing taxes, any new taxes, cess, duties, levies imposed by Central/ State Govt. shall be borne by the contractor.
- b) In case, any new tax is imposed instead of existing tax, difference of the amount shall be reimbursed/ recovered on submission of documentary evidence.
- c) Any new tax is imposed by Central/ State Govt. (or) there is any variation in taxes after expiry of delivery / contract period, the same shall be borne by contractor only.
- d) All terms & conditions of the contract in respect of taxes & duties are subject to new taxation laws introduced from time to time by Govt. and Terms & conditions will deemed to be modified in accordance with the provisions of New Laws.

28. CONTRACTOR's MATERIAL:

Security of Contractor's Equipment, Tools & Tackles, Machinery etc., is in the scope of Contractor. BHEL is not responsible for the same.

29. RETURNING OF BHEL MATERIAL:

All Materials, machinery, equipment etc., of BHEL sent to site from BHEL-HPVP for execution of the Order are to be returned back to BHEL by the Contractor.

30. OVER RUN COMPENSATION (ORC) / IDLE CHARGES:

The contractor shall not be entitled to claim and the company shall not be liable to pay any amount on account of overrun compensation and idle charges, the overrun/ idling may be for whatsoever reasons.

31. DISPUTES:

Head of BHEL- HPVP Unit will be the final authority for any disputes arising out of this contract. The disputes / arbitration / settlement of contractual or legal issues shall be under the Jurisdiction of Visakhapatnam Court.

- 32.** For this procurement, Public Procurement (Preference to Make in India), Order 2017 dated 15.06.2017 & 28.05.2018 and subsequent Orders issued by the respective Nodal Ministry shall be applicable even if issued after issue of this NIT but before finalization of Contract / PO / WO against this NIT.

In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and / or local content in respect of this procurement, same shall be applicable.

- 33.** The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.

34. GRIEVANCE REDRESSAL MECHANISM:

To promote transparency and ensure fair treatment of all bidders, a structured Grievance Redressal Mechanism is in place to address any concerns or issues arising during the tendering process or in subsequent business dealings with the company.

Suppliers/Contractors are requested to follow the below escalation process for grievance resolution:

1. **First Level:** Any grievance should initially be addressed to the designated Dealing Officer, whose contact details are provided in the Notice Inviting Tender (NIT) / Contract.
2. **Second Level:** If the issue remains unresolved, it may be escalated by lodging a formal grievance through the SUVIDHA Portal: <https://suvidha.bhel.in/suvidha/>. Responses will be provided in accordance with the defined escalation matrix."

35. ORDER ACCEPTANCE:

If the order acceptance is not received within 03 days from the date of release of Sub-contract order, it shall be assumed that the same has been accepted by you thereof.

Signature of the Bidder with stamp

Acceptance to Tender Terms & Conditions

I / We hereby confirm that the Tender documents, Drawings, Quality documents etc. have been studied in detail and we have fully understood the scope of work.

I / We accept to all the Terms and Conditions of the Tender Enquiry without any deviations and the prices quoted are in accordance with the same.

I / We give our acceptance to participate in reverse auction for this tender.

Tender documents duly signed on all the pages by the Owner / authorized representative of the bidder are attached herewith.

Signature of the bidder with Stamp

BUSINESS RULES FOR REVERSE AUCTION (RA)

This has reference to tender no. **OS/26-27/8136&8194/Boiler Drum/Rolling/09/009**, dated **23.05.2026**. BHEL shall finalise the Rates for **Rolling of Plates, Fit-up and formation of Shell sections of Boiler Drums against SO Nos. 8136 & 8194 at vendor works with free issue materials** through Reverse Auction mode. BHEL has made arrangement with an authorized Service provider (details will be shared before reverse auction) for conducting RA. Bidders should go through the instructions given below and submit acceptance of the same.

The technical & commercial terms are as per (a) BHEL Tender Enquiry No. **OS/26-27/8136&8194/Boiler Drum/Rolling/09/009**, dated **23.05.2026**, (b) Bidders' technical & commercial bid (in case of two-part bid) and (c) subsequent correspondences between BHEL and the bidders, if any.

1. Procedure of Reverse Auctioning:

- i) Price bids of all techno-commercially qualified bidders shall be opened.
- ii) **Reverse Auction:** The 'bid decrement' will be decided by BHEL.
- iii) The lowest bidder in sealed envelope price bid shall be shown as current L1 automatically by the system and no acceptance of that price is required. System shall have the provision to indicate this bid as current L1.
- iv) Bidders by offering a minimum bid decrement or the multiples thereof can displace a standing lowest bid and become "L1" and this continues as an iterative process. However, no bidder shall be allowed to lower its bid below the current L1 by more than 5 decrements at one go.
- v) After the completion of the reverse auction, the Closing Price shall be available for further processing.
- vi) Wherever the evaluation is done on total cost basis, after Reverse Auction, prices of individual line items shall be reduced on pro-rata basis.

2. Schedule for reverse auction: The Reverse Auction schedule will be intimated to the techno-commercially qualified bidders at a later stage.**3. Auction extension time:** If a bidder places a bid in the last {...} minutes of closing of the Reverse Auction and if that bid gets accepted, then the auction's duration shall get extended automatically for another {...} minutes, for the entire auction (i.e. for all the items in the auction), from the time that bid comes in. Please note that the auto-extension will take place only if a bid comes in those last {...} minutes and if that bid gets accepted as the lowest bid. If the bid does not get accepted as the lowest bid, the auto-extension will not take place even if that bid might have come in the last {...} minutes. In case, there is no bid in the last {...} minutes of closing of Reverse Auction, the auction shall get closed automatically without any extension. However, bidders are advised not to wait till the last minute or last few seconds to enter their bid during the auto-extension period to avoid complications related with internet connectivity, network problems, system crash down, power failure, etc. The above process will continue till completion of Reverse Auction.

Complaints/ Grievances, if any, regarding denial of service or any related issue should be given in writing thru e-mail/ fax to M/s. {Service provider} with a copy to BHEL within 15 minutes prior to initial closing time of Reverse Auction.

4. Bid price: The Bidder has to quote the {.....} Price inclusive of Packing & Forwarding charges, all the routine & type tests as per tender scope, taxes, duties, freight and insurance as specified in tender document including loading (if indicated by BHEL due to deviations in technical/ commercial terms) for the Items specified. Details are as shown in Excel Sheet for calculation of total cost to BHEL (To be specified by Unit as per NIT conditions).**5. Bidding currency and unit of measurement:** Bidding will be conducted in *Indian Rupees per Unit* of the material as per the specifications mentioned in the tender.

In case of foreign currency bids, exchange rate (TT selling rate of State Bank of India) as on scheduled date of tender opening (Part-I bid) shall be considered for conversion in Indian Rupees. If the relevant day happens to be a Bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.

6. **Validity of bids:** Price shall be valid for 90 days from the date of reverse auction. These shall not be subjected to any change whatsoever.
7. **Lowest bid of a bidder:** In case the bidder submits more than one bid, the lowest bid at the end of Reverse Auction will be considered as the bidder's final offer to execute the work.
8. Unique user IDs shall be used by bidders during bidding process. All bids made from the Login ID given to the bidders will be deemed to have been made by the bidders/ bidders' company.
9. **Post auction procedure:** BHEL will proceed with the Lowest Bid in the Reverse Auction for further processing.
10. Any commercial/ technical loading shall be separately intimated to respective bidders prior to RA. The excel sheet provided in this regard shall cover all these aspects. Commercial/ technical loading if any, shall be added by the respective bidder in its price during Reverse Auction. Modalities of loading & de-loading shall be separately intimated to the bidders. The responsibility for correctness of total cost to BHEL shall lie with the bidders.
11. Reverse auction shall be conducted by BHEL (through M/s {*Service Provider*}), on pre-specified date, while the bidders shall be quoting from their own offices/ place of their choice. Internet connectivity shall have to be ensured by bidders themselves.

During the RA process if a bidder is not able to bid and requests for extension of time by FAX/ email/ phone then time extension of additional 15 minutes will be given by the service provider provided such requests come before 5 minutes of auction closing time. However, only one such request per bidder can be entertained.

In order to ward-off contingent situation of connectivity failure bidders are requested to make all the necessary arrangements/ alternatives whatever required so that they are able to circumvent such situation and still be able to participate in the reverse auction successfully. Failure of power or loss of connectivity at the premises of bidders during the Reverse auction cannot be the cause for not participating in the reverse auction. On account of this, the time for the auction cannot be extended and neither BHEL nor M/s. {*Service provider*} is responsible for such eventualities.

12. **Proxy bids:** Proxy bidding feature is a pro-bidder feature to safe guard the bidder's interest of any internet failure or to avoid last minute rush. The proxy feature allows bidders to place an automated bid in the system directly in an auction and bid without having to enter a new amount each time a competing bidder submits a new offer. The bid amount that a bidder enters is the minimum that the bidder is willing to offer. Here the software bids on behalf of the bidder. This obviates the need for the bidder participating in the bidding process until the proxy bid amount is decrementally reached by other bidders. When proxy bid amount is reached, the bidder (who has submitted the proxy bid) has an option to start participating in the bidding process.

The proxy amount is the minimum amount that the bidder is willing to offer. During the course of bidding, the bidder cannot delete or change the amount of a proxy bid.

Bids are submitted in decrements (decreasing bid amounts). The application automates proxy bidding by processing proxy bids automatically, according to the decrement that the auction originator originally established when creating the auction, submitting offers to the next bid decrement each time a competing bidder bids, regardless of the fact whether the competing bids are submitted as proxy or standard bids. However, it may please be noted that if a manual bid and proxy bid are submitted at the same instant manual bid will be recognized as the L1 at that instant.

In case of more than one proxy bid, the system shall bid till it crosses the threshold value of 'each lowest proxy bid' and thereafter allow the competition to decide the final L1 price.

Proxy bids are fed into the system directly by the respective bidders. As such this information is privy only to the respective bidder(s).

13. Bidders are advised to get fully trained and clear all their doubts such as refreshing of Screen, quantity being auctioned, tender value being auctioned etc. from M/s. {*Service provider*}.

14. M/s. {*Service provider*}, shall arrange to demonstrate/ train the bidder or bidder's nominated person(s), without any cost to bidders. M/s. {*Service provider*}, shall also explain the bidders, all the business rules related to the Reverse Auction. Bidders are required to submit their acceptance to the terms/ conditions/ modalities before participating in the Reverse Auction in the process compliance form as enclosed. Without this, the bidder will not be eligible to participate in the event.
15. Successful bidder shall be required to submit the final prices (L1) in prescribed format (Annexure – VI) for price breakup, quoted during the Reverse Auction, duly signed and stamped as token of acceptance without any new condition (other than those already agreed to before start of auction), after the completion of auction to M/s. {*Service provider*} besides BHEL within two working days of Auction without fail.
16. Any variation between the final bid value and that in the confirmatory signed price breakup document will be considered as tampering the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
17. Bidders' bid will be taken as an offer to execute the work/ supplies the item as per enquiry no. **OS/26-27/8136&8194/Boiler Drum/Rolling/09/009, dated 23.05.2026**. Bids once made by the bidder, cannot be cancelled/ withdrawn and bidder shall be bound to execute the work as mentioned above at bidder's final bid price. Should bidder back out and not execute the contract as per the rates quoted, BHEL shall take action as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
18. Bidders shall be able to view the following on their screen along with the necessary fields during Reverse Auction:
 - a. Leading (Running Lowest) Bid in the Auction (only total price of package)
 - b. Bid Placed by the bidder
 - c. Start Price
 - d. Decrement value
 - e. Rank of their own bid during bidding as well as at the close of auction.
19. BHEL's decision on award of contract shall be final and binding on all the Bidders.
20. BHEL reserves the right to extend, reschedule or cancel the Reverse Auction process at any time, before ordering, without assigning any reason, with intimation to bidders.
21. BHEL shall not have any liability to bidders for any interruption or delay in access to the site irrespective of the cause. In such cases, the decision of BHEL shall be binding on the bidders.
22. Other terms and conditions shall be as per bidder's techno-commercial offers and other correspondences, if any, till date.
23. If there is any clash between this business document and the FAQ available, if any, in the website of M/s. {*Service provider*}, the terms & conditions given in this business document will supersede the information contained in the FAQs. Any changes made by BHEL/ service provider (due to unforeseen contingencies) after the first posting shall be deemed to have been accepted if the bidder continues to access the portal after that time.
24. Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action *as per extant BHEL guidelines for suspension of business dealings (as available on www.bhel.com)*, shall be initiated by BHEL.

Signature of the Bidder with Stamp

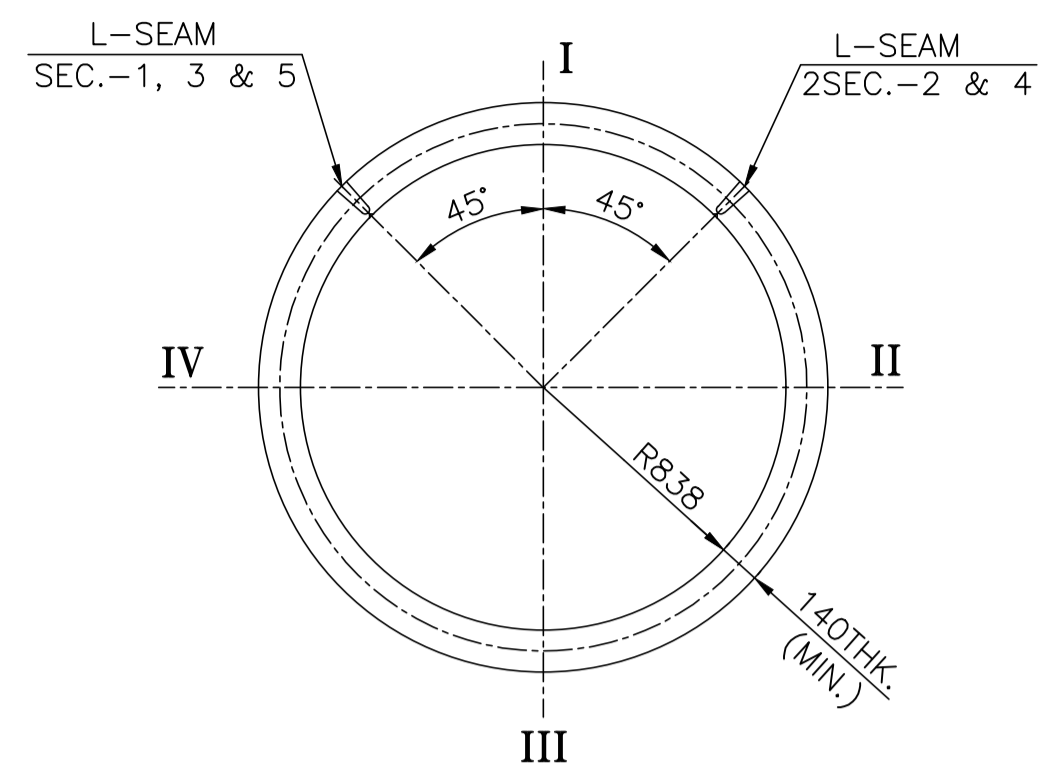
GST COMPLIANCE FOR INDIGENOUS SUPPLIERS

1. In Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GSTIN which should be clearly mentioned in the offer. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.
2. Supplier shall mention their GSTIN in all their invoices and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no etc., then the Invoice No which is linked/uploaded in GSTN network shall be clearly indicated), item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, etc.
3. All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code).
4. A declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL.
5. All documents like Test Certificate, LR copy, Guarantee/Warranty certificate, work completion certificate, any other document mentioned in PO, shall be sent along with the vehicle/consignment where ever applicable. For all consignments received within the calendar month, input credit will be availed within that month in line with monthly returns filing cycle. In case of any discrepancy in the document or non-submission of documents mentioned in the PO, then BHEL will not be able to accept or account the material, in such case availing of tax credit will be deferred to next month or so.
6. In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the suppliers, within the calendar month notified by BHEL.
7. For any such delay in availing of tax credit for reasons attributable to supplier (as mentioned above), interest (calculated @ SBI Base Rate + 6%) along with penalty if any will be deducted for the delayed period i.e. from the month of receipt till the month tax credit is availed, from the running bills.
8. Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers/contractors. Hence applicable GST shall also be recoverable from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice number.
9. This is to inform that GST portion of invoice, shall be released only upon Vendor declaring such invoice in his GSTR-1 and receipt of goods and Tax invoice by BHEL and Confirmation of payment of GST thereon by vendor on GSTN portal. Alternatively, BG of appropriate value may be obtained from vendor which shall be valid At least one month after the confirmation of date of payment of GST by vendor on GSTN portal and receipt of Tax invoice and receipt of goods, whichever is later. Above is subject to receipt of goods/service and tax invoice thereof along with vendor declaring invoice in his return and paying GST within timeline prescribed for availing ITC by BHEL.
10. That in case vendor delays Declaring such invoice in his return and GST credit availed by BHEL is denied or reversed subsequently as per GST law, GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from vendor/contractor along with interest levied/ leviable on BHEL.

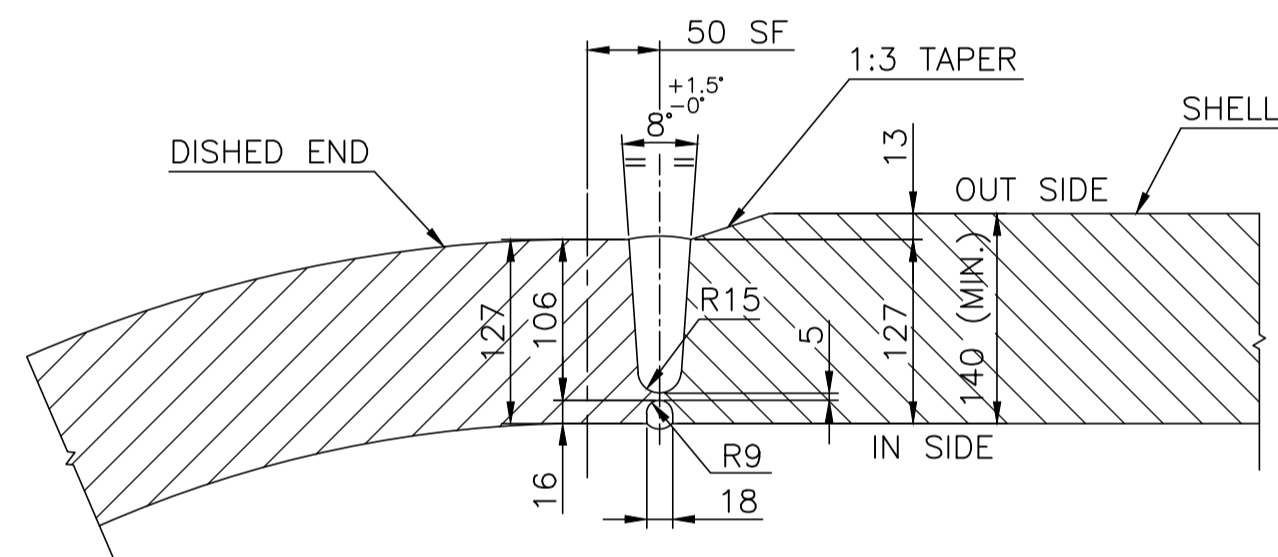
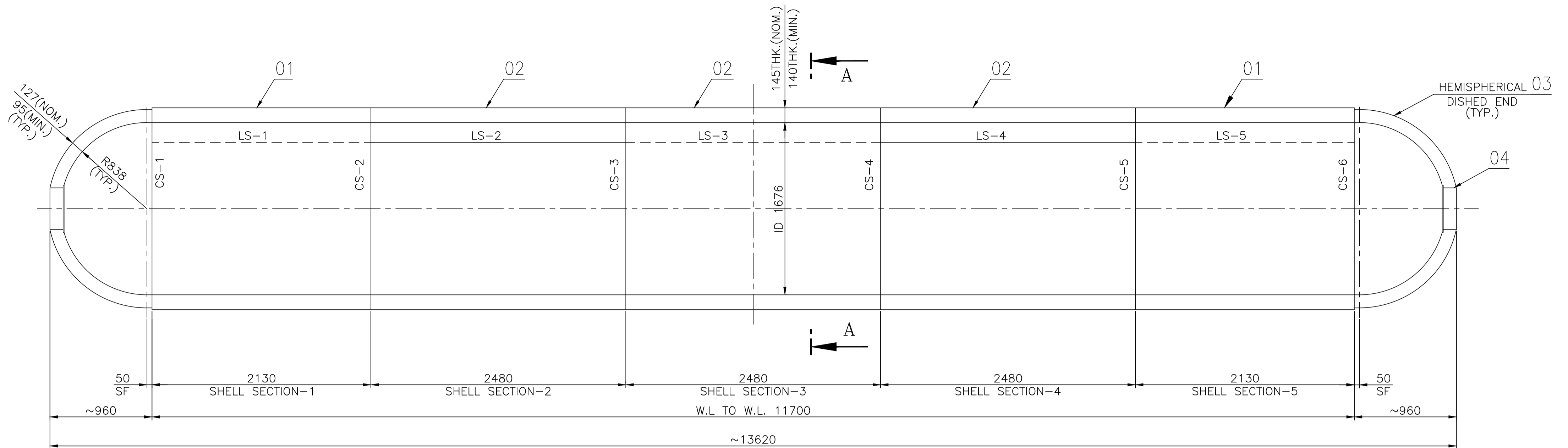
Note: The above will be followed strictly for processing vendor payments to ensure GST Compliance.

Signature of the Bidder with Stamp

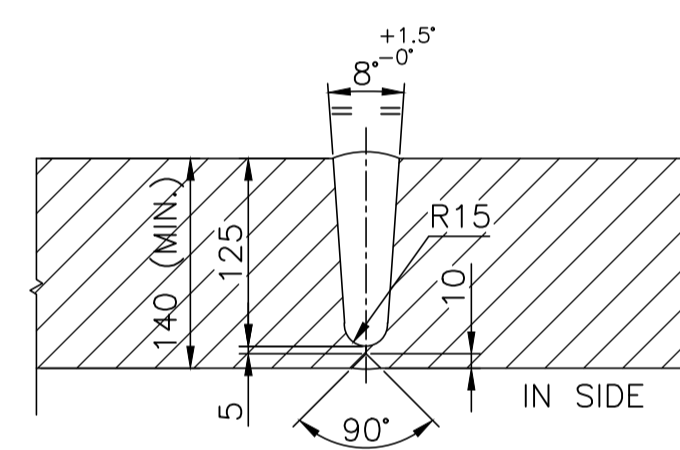
DRG. NO. 1-04-124-U8094



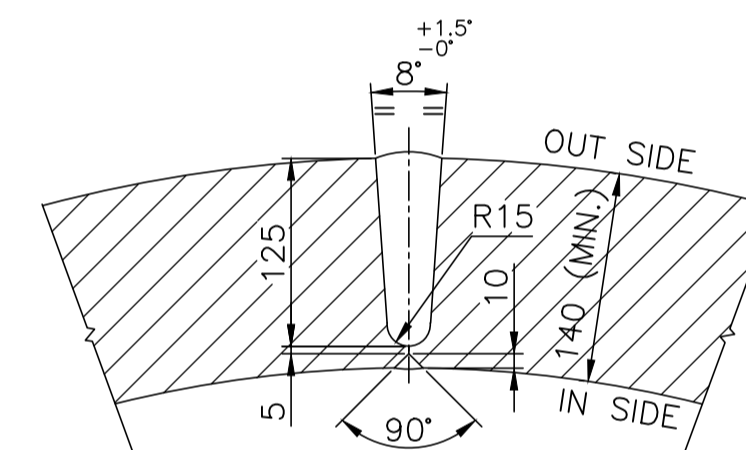
SECTION A-A



C-SEAM WELD DETAIL OF DISHED END TO SHELL SEC.1/SEC.5 (CS-1/CS-6)
FIG. 1 OF IBR REG. 125



C-SEAM WELD DETAIL OF SHELL SEC.1 TO SEC.5 (CS-2 TO CS-5)
FIG. 1 OF IBR REG. 125



L-SEAM WELD DETAIL OF SHELL SEC.1 TO SEC.5 (LS-1 TO LS-6)
FIG. 1 OF IBR REG. 125

ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT	ZONE
04	MH DOOR ASSEMBLY ø406.4		3-04-124-U8095		WELDMNT	A		117.191	
03	HEMISPHERICAL DISHED END PL. 127THK. x ID.1676		3-04-124-U8564		159114300000 SA 299	A		5374.850	
02	SHELL SECTION-2 TO 4, PL. 145 2480x5725LG.+600 ALLOWANCE				159118240000 SA 299	A		16160.000	
01	SHELL SECTION-1 & 5, PL. 145 2130x5725LG.+600 ALLOWANCE				159118240000 SA 299	A		13880.000	

PARAMETERS: -

- 01. DESIGN PRESSURE : 164.0 KG/SQ.CM(G)
- 02. DESIGN TEMPERATURE : 348°C
- 03. HYDRAULIC TEST PRESSURE AT SHOP : 246.0 KG/SQ.CM(G)
- 04. DESIGN, MANUFACTURING AND INSPECTION AS PER IBR

NOTES: -

- 01. CIRCUMFERENTIAL & LONGITUDINAL SEAMS ARE TO BE 100% RADIOGRAPHED.
- 02. TOLERANCE ON THE FINISHED DRUM AND INSPECTION SHALL SATISFY THE I.B.R.
- 03. WELDING SEQUENCE : ACC. TO PROCESS SHEET.
- 04. HEAT TREATMENT SEQUENCE : AS PER I.B.R.
- 05. PLACE THE MAN HOLE COVER INSIDE THE DRUM BEFORE WELDING DISHED END.

REFERENCE DRAWING: -

- 01. ALLOWABLE DRUM TOLERANCES : 0-03-000-U6001

TENDER PURPOSE ONLY

CAUTION: The information on this drawing is the property of Bharat Heavy Electricals Ltd. It must not be used directly or indirectly in any way detrimental to the interest of the company.	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT PROJECT : HINDALCO - SAMBALPUR S.O. NO. : 8136 BOILER MAKER NO. : 8136	DRN : G.DEMUDU DATE : 22-12-2025 CHD : ANVK.KISHORE DATE : 22-12-2025 APPD : TARAKESH KANAKALA DATE : 22-12-2025
	DEPT : HTE ALL DIMENSIONS ARE IN MM PROJECTION : SCALE : 1:25 WEIGHT (Kg) : 87222.382	REF TO ASSY / OLD DWG : 1-04-124-00888
	TITLE : DRUM UNDRILLED	DRAWING NO : 1-04-124-U8094 REV : A

REV 02	DATE	ALTERED : CHD & APPD:	REV 01	DATE	ALTERED : CHD & APPD :
ZONE			ZONE		

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

SIGN. AND DATE REF. DRG. NO. COMPUTER FILE NAME 138101000000-500-000.DWG



BHARAT HEAVY ELECTRICALS LIMITED
TIRUCHIRAPPALLI-620014
QUALITY ASSURANCE DEPARTMENT

AMENDMENT TO QUALITY WORK INSTRUCTIONS (QWI)

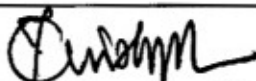
QWI NO: SQP:PP:01 REV:05

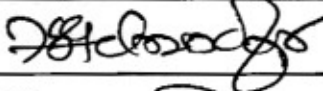
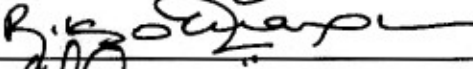
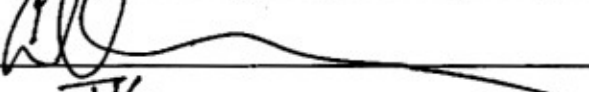

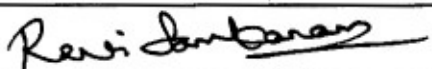
AMENDMENT SL NO: A1 DT: 21/11/2011

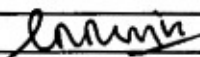
DESCRIPTION: BOILER DRUMS

Clause No	Amended as ...	Remarks/Basis for Amendment															
CI 2.12 Column 7&8: Note 3.1 Table Note 3.9	<p>615 ± 20°C \$ Soaking time: 2.5 minutes per mm for thickness upto 50 mm plus additional 15minutes for every 25mm above 50mm.</p> <table border="1"> <thead> <tr> <th>Material</th> <th>Heating Temp. °C</th> <th>Forming Temp. °C (minimum)</th> <th>Inter stage HT °C Note (b, c)</th> <th>Normalizing °C Note (a, c)</th> </tr> </thead> <tbody> <tr> <td>SA299</td> <td>870-900</td> <td>620</td> <td>615 ± 20°C</td> <td>870-900</td> </tr> <tr> <td>SA 515 Gr. 70</td> <td>870-980</td> <td>620</td> <td>615 ± 20°C</td> <td>870-900</td> </tr> </tbody> </table> <p>INTER STAGE HEAT TREATMENT FOR WELDING: 4. Inter stage stress relieving shall be done at temp 615 ± 20°C, and the holding time shall be ½ hour minimum.</p>	Material	Heating Temp. °C	Forming Temp. °C (minimum)	Inter stage HT °C Note (b, c)	Normalizing °C Note (a, c)	SA299	870-900	620	615 ± 20°C	870-900	SA 515 Gr. 70	870-980	620	615 ± 20°C	870-900	Amended as per IBR and to have uniform PWHT temperature for Carbon Steels.
Material	Heating Temp. °C	Forming Temp. °C (minimum)	Inter stage HT °C Note (b, c)	Normalizing °C Note (a, c)													
SA299	870-900	620	615 ± 20°C	870-900													
SA 515 Gr. 70	870-980	620	615 ± 20°C	870-900													
NOTE	The above changes will be incorporated in the QWI during next revision of the document.																
Prepared By: Venkanna Rupani, Engg/QA		Reviewed & Approved By: S. Selvarajan, DGM/QA															
 Signature & Date: 21/11/2011		 Signature & Date: 21/11/2011															

Prepared by
Quality Assurance


K. Krishnamoorthi

Reviewed by	Signature
Engineering (P.S.Guruchandran)	
Manufacturing Shops (R. Kothandapani)	
O P & C (G. Kumaraguru)	
Quality Control (J. Kannan)	
Quality Assurance (U. Revisankaran)	

Revision No.	Date	Approved by	Signature
00	01/04/93	SM / QA	
01	30/10/93	SM / QA	
02	01/02/95	SM / QA	
03	15/07/96	DGM/QA	
04	01/04/03	SDGM/QA	
05	31/12/05	DGM/QA	

Proprietary Data - For Internal Use Only

RECORD OF REVISIONS

Rev. No.	Details of revision	Remarks
00	This SQP has been prepared by merging SQP 01/01, QCP2:2:045/08, PRQE:166/00, PRQE:186/00 & HT Schedule	
01	Cl. 2.1 to 2.15.1 Cl. 3.1 to 3.12 Notes 1, 2, 3.4.2, 3.4.3, 3.5.1-3.5.3, 3.10.3.3, 3.10.4.1.3, 4, 4.2, 6.3, 9.3, 10.1, Table IA, IB Amendment A1& A2	Altered Nos. altered Altered Issued
02	Totally revised by rearranging and optimising the Information, incorporating amendments.	
03	Revised again by rearranging and optimising the information and incorporating the Amendments A1 & A2 issued.	
04	Cl. 2.1, 2.2.3, 2.2.4, 2.3, 2.6, 2.9, 2.10.2, 2.10.3, 3.4, 3.6, 3.7. Cl. 2.7.1 Cl. 2.10.4 & 2.11 Cl. 2.10.5, 2.10.6, 2.10.7 Cl. 2.12 Cl. 2.13 Cl. 2.14 Cl. 2.15 Note 3.2 Notes 3.1, 3.5, 3.7, 4.3	Modified for clarity Added. Deleted. Modified and renumbered as 2.10.4, 2.10.5, 2.10.6 respectively. Modified and renumbered as 2.11. Modified and renumbered as 2.12. Renumbered as 2.13. Modified incorporating Amendment-A2dt. 04.03.99and renumbered as 2.14. Modified incorporating Amendment A1 dt. 09.12.98. Modified for clarity.
05	Cl. 2.4.1 Cl. 2.10.4 Cl. 2.12 Cl. 2.5, 2.6, 2.10.3, 2.14, 3.5, 3.6 Note 1.0 Note 3.1 Note 3.5, 3.7, 3.9	Added. Type of checks modified HT parameters altered as per IBR Editorial corrections made TDC numbers updated Altered based on Amendment-A1 dated 10/08/04 Modified.

SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									M	C	N	
1	2	3	4	5	6	7	8	9	D*	**	10	11

1.0	MATERIAL											
1.1	Plates, Pipes, Tubes and Forgings	Chemical and Mechanical properties and Soundness		Document review	100%	Matl. Specification andv TDC. See Note` 1.0		TC		QC		
2.0	INPROCESS					Process Control :QCP 001(Latest)						
2.1	Shell plates	Soundness		NDE-UT	100%	BHE:NDT:PB:UT-26 (Normal & Shear UT)		R		ND		As required by the inspecting authority Note 2.0. For repairs
2.1.1	Layout marking	Size, Diagonal		Measurement	100%	Drawing +/- 5mm		-		QC		
2.1.2	Gas cut edges	Surface check		NDE-MPI	100%	BHE:NDT:PB:MT-01		R		ND		
2.2	FORMING											
2.2.1	Heating and Heat Treatment for hot forming	Temp/Time Control		Review of Chart	100%	Note 3.1		R		QC		
2.2.2	Heat Treatment for cold forming	Temp/Time control		Review of Charts	100%	Notes 3.2 & 3.3		R		QC		
2.2.3	Dished Ends	Profile, Dia, Height, Thickness		Measurement	100%	SIP:PP:05, Drawing.		R		QC		
2.2.4	Pressed Half Shells and Rolled Shells	Profile, Dia./Radius Chord length * Bow, Thickness		Measurement	100%	SIP:PP:05 & Drawing Chord : +6.25mm / - 0mm Dia./Radius: +/- 1%		R		QC		* Only for half Shells
2.3	Edge preparation of L/C seams	Surface check Dimensions		NDE-MPI/LPI Measurement	100% #	BHE:NDT:PB:MT-01/ PT-01		R		ND		# Only for EP by gas cutting & grinding.
2.4	Welding	Procedure Qualification Personnel Qualification		Document review	100%	ASME Sec.IX		WPS		QC		
				Document review	100%	IBR		WQR		QC		

LEGEND : CI: Class (A: Critical B: Major , C: Minor) * D : Records for Data folder ** M : BHEL C : Customer N : TPI agency QC :Quality Control ND: NDT Lab., PL: Plant lab, R : Record

SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									M	C	N	
1	2	3	4	5	6	7	8	9	D*	**	10	11

2.4.1	Pre-production test plates	Weld Soundness		NDE – MPI, RT, UT	100%	BHE:NDT:PB:MT-01, RT-01, UT-01		R		ND			Note 3.5
		Mechanical properties		Tensile (Transverse, All weld), Tr. Bend, Impact, Macro & Micro Exam	100%	As per IBR		R		PL			
2.5	Fit up of L seams	Alignment Diameter, Circularity LS numbering		Measurement Visual	100%	Drawing & QCP:001 SIP:PP:05 Note 3.6		R		QC			Note 3.5.1 & 3.6
2.6	Fit up of C seams	Alignment Orientation of nozzles, stubs & attachments CS numbering Axis marking		Measurement Visual	100%	Drawing & QCP:001 See Notes 3.4 & 4.1. Note 3.6		R		QC			Note 3.5.1 & 3.6
2.7	Marking and drilling / Gas cutting for Nozzle openings	Size, location		Measurement	100%	Drawing / SIP:PP:06		R		QC			
2.7.1	Gas cut openings	Surface check		NDE-MPI	100%	BHE:NDT:PB:MT-01		R		ND			
2.8	Fit up of Nozzles & Attachments	Alignment, Orientation, Dimensions		Measurement	100%	Drawing SIP:PP:08 *		R		QC			*As applicable
2.9	Interstage heat treatment for welding	Temp/Time Control		Review of Charts / Log.	*	*		R		QC			*Note 3.9 Ensure all test plates loading
2.10	Weld inspection Before PWHT												
2.10.1	Backgouged areas	Surface check		NDE-MPI/LPI	100%	BHE:NDT:PB:MT-01/ PT-01		R		ND			

LEGEND : CI: Class (A: Critical B: Major , C: Minor) * D : Records for Data folder ** M : BHEL C : Customer N : TPI agency QC :Quality Control ND: NDT Lab., PL: Plant lab, R : Record

SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									M	C	N	
1	2	3	4	5	6	7	8	9	D*	**	10	11

2.10.2	Completed welds including surface	Surface check, Weld size, profile LS/CS numbering		Visual Measurement Visual	100%	SIP:PP:02/Drawing See Note 3.6		R		QC		
2.10.3	Butt welds & Test plates	Soundness		NDE-MPI + RT+UT	100%	BHE:NDT:PB:MT-01, RT-01, UT-01		R		ND		Note 3.5.1
2.10.4	Simulation testing of LS TP- (SHT condition)	Mechanical		Tr.Tensile, All weld tensile, Micro & Macro	100%	BHEL Practice		R		PL		Note 3.7
2.10.5	Full Penetration Nozzle & Lifting lug welds	Soundness		NDE-MPI+UT	100%	BHE:NDT:PB:MT-01, UT-01		R		ND		
2.10.6	Other Nozzles, Stubs & Attachment welds	Weld quality		NDE-MPI/LPI	100%	BHE:NDT:PB:MT-01/ PT-01		R		ND		
2.11	Dimensional inspection	Thickness, Length, Orientation, Nozzle height, pitch, locations		Measurement	100%	Drawing		R		QC		
2.12	Final PWHT	Temperature & Time control		Review of charts	100%	615 +/- 10 deg C \$ Soaking time: 2.5 minutes per mm for thickness upto 50 mm plus additional 15 minutes for every 25mm above 50mm		R		QC		\$ Refer Note 3.7 Ensure all test plates loading
2.13	NDE AFTER PWHT All welds including Test plates	Weld quality		NDE-MPI	100%	BHE:NDT:PB:MT-01		R		ND		Note 3.8
2.14	Test plates	Mechanical Properties		Tensile (Transverse, All weld) Tr. Bend, Impact, Macro & Micro exam	100%	As per IBR		R		PL		

LEGEND : CI: Class (A: Critical B: Major , C: Minor) * D : Records for Data folder ** M : BHEL C : Customer N : TPI agency QC :Quality Control ND: NDT Lab., PL: Plant lab, R : Record

SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
									M	C	N	
1	2	3	4	5	6	7	8	9	D*	**	10	11

3.0	FINAL INSPECTION	Chemical Properties		Weld Metal Chemistry	100%	ASME SEC IIC for relevant consumables spec & Classification						
3.1	Hydraulic test	Strength and Leak tightness		Visual	100%	Drawing / SIP:PP:04	R			QC		
3.2	Machining of Nozzles	EP size, Height		Measurement	100%	Drawing	R			QC		
3.3	Drum internals and assembly	Appearance & Dimensions		Visual and Measurement	100%	Drawing and SIP:PP:09 & 10	R			QC		As applicable
3.4	Marking for Expansion holes Drilling	Location, Pitch		Measurement	100%	Drawing	-			QC		For Bi-drum design only.
3.5	Expansion holes Checking	Hole size Finish Pitch		Gauge check Visual Measurement	100% 100% Random	Drawing	R			QC		For Bi-drum design only.
3.6	Completeness	Final Dimns., Axis marking, Location of suspension, Identification, IBR stamping & Rub off, cleaning, painting, End capping, Silica gel provision		Measurement	100%	Drawing & Note 4.0	R			QC		
				Visual	100%	Drawing, SIP:PP:04, SIP:PP:22 and note:4	R			QC		
3.7	Certification	Compilation of Records		Document review	100%	IBR Forms, TC Extracts, HT chart Extracts, Weld repair details	R			QC		

LEGEND : CI: Class (A: Critical B: Major , C: Minor) * D : Records for Data folder ** M : BHEL C : Customer N : TPI agency QC :Quality Control ND: NDT Lab., PL: Plant lab, R : Record

NOTES:

1.0 The materials normally used and their TDC Nos. are given below. For selection of exact material grades to be used, respective drawings are to be referred.

Material		TDC No.
Plates	SA 515 Gr.70	0:202
	SA 299	0:201
Pipes	SA106 Gr. B & C	0:101, 0:112, E:B:01, E:B:04
Tubes	SA210 Gr.A1& C and	0:102, 0:111, E:B:01
	SA 213 T11 & T22	
Forgings	SA 213 TP 304H/347H	0:102, E:B:01
	SA 105	0:401

2.0 GUIDELINES FOR PREHEATING OF SA 299 PLATES:

2.1 For SA299 Shell plates of thickness more than 150 mm, chemical analysis shall be done for all the elements including trace elements. This shall be done at the middle portion of the plate at the top edge. Calculate the carbon equivalent (CE) as below for deciding the preheat requirements.

$$CE = C + Mn/6 + Si/24 + Ni/40 + Cr/5 + Mo/4 + V/14$$

If CE < 0.58, preheating and interpass temperature shall be as per QCP:001/WPS.

If CE >0.58, preheat to 200°C min. and maintain interpass at 300°C max.

3.0 FORMING:

3.1 The requirements of heating and heat treatment for hot forming, as applicable, are given below:

Material	Heating Temp.°C	Forming Temp.°C (Minimum)	Inter stage HT °C (Note b, c)	Normalising °C (Note a, c)
SA 299	870-900	620	615 ± 10	870-900
SA 515 Gr. 70	870-980	620	615 ± 10	870-900

Note a: Applicable, when heating temperatures exceeds upper limit.

Note b: Applicable if thickness is >= 152 mm or hot forming is continued below 620°C or if the percentage elongation exceeds the limits specified in note 3.2.

Note c: Soaking time for normalising shall be half an hour per inch (1.25 minutes per mm). Soaking time for inter stage heat treatment shall be 2.5 minutes per mm for thickness upto 50mm plus additional 15 minutes for every 25mm above 50mm. But in both cases, the soaking time need not exceed Four hours.

3.2 COLD FORMING OF SHELLS

1. For cold forming, only normalized plates shall be used. Plates received in as rolled condition shall be first normalized as per the cycle given in Note 3.1 and then formed. The edges and corners of plates undergoing bending shall be ground to radius > 6.25 mm.

2. Interstage heat treatment is required under the following conditions.

a).When the outer fiber elongation exceeds 3% for plate thickness above 100 mm.

b).When the outer fiber elongation exceeds 3.5% for plate thickness above 50 mm up to 100 mm.

c).When outer fibre elongation exceeds 5% for plate thickness 50 mm and less.

3. Following are formulae for outer fiber elongation, where:

D = Inside diameter in mm
 E = % Elongation of outer fiber
 T = Thickness in mm

(a) To determine the inside diameter to which a flat plate can be formed to obtain a definite % of outer fiber elongation

$$D = \frac{T(100-E)}{E}$$

(b) To determine the % outer fiber elongation to which a flat plate can be formed to obtain a definite inside diameter

$$E = \frac{T(100)}{D+T}$$

(c) To determine the % outer fiber elongation for cold sizing of a previously formed shell section

$$E = 100 \left| \frac{T}{D_2 + T} - \frac{T}{D_1 + T} \right|$$

Where D1 = Previously formed inside diameter in mm
 D2 = Final desired inside dia in mm

3.3 COLD FORMING OF DISHED ENDS

The dished ends shall undergo the following heat treatment after cold forming.

- a) Up to and including 16 mm thickness - Stress relieving
- b) Above 16 mm thickness. - Normalising

3.4 The quarter lines shall be matched and the orientation of nozzles and locations of attachments shall be checked. Ensure placement of manhole door inside the drum before closing of the last cir seam.

3.5 Before long seam welding, one pre-production test plate [size 800mm (min.) long] x [300mm(150mm+150mm) wide] x [thickness] per shell using the same melts as the shell plates and using the same consumables as envisaged for the seams shall be welded. If all the shells in a drum are of the same melt number combinations, one pre-production test plate per drum is sufficient. This test plate shall be tested by MPI, RT & UT and simulated with all the applicable heat treatments planned for the welded seams and then tested for the mechanical properties as per IBR.

3.5.1 For each drum, one test plate representing all long seams, for each shell, and another test plate representing all circ seams shall be provided. The size of the test plate shall be [1200mm (min.) long] x [300mm(150mm+150mm) wide] x [thickness] for long seam and [size 800mm (min.) long] x [300mm(150mm+150mm) wide] x [thickness] for cir seam. The defects, if any, in the test plate weld shall be marked after NDE and shall not be considered for testing.

3.6 L-seams (LS) shall be numbered from one end beginning with LS1, LS2 etc. and stamped parallel to the L-seam by 150mm and 150mm away from the adjacent C-seam. C-seams (CS) shall be numbered from one end beginning with CS1, CS2 etc. and stamped 150 mm parallel to the C-seam and 150 mm above the L-seam.

3.7 A portion of the long seam test plates (300 mm length) shall be cut and simulated with all the applicable heat treatments planned for the welded seams before testing the SHT test plates. If required, the final PWHT cycle can be altered within the limits specified in IBR, based on the SHT test results, with clearance from QC / QA.

3.8 Areas that may become inaccessible for NDT at later stages shall be subjected to NDT at appropriate stages.

3.9 INTER STAGE HEAT TREATMENT FOR WELDING

1. All full penetration nozzle welds shall be inter stage heat treated when shell thickness exceeds 100 mm and the nozzle thickness exceeds 75 mm.
2. All cross over nozzle welds, regardless of thickness shall be Inter stage heat treated.
3. Extended preheating shall be maintained till the weld area is subjected to interstage stress relieving. The temperature during this period shall not be lower than 100 °C. compared to the preheat levels.
4. Inter stage stress relieving shall be done at temp 615 ± 10 °C, and the holding time shall be 1/2 hour minimum.
5. Inter stage heat treatment may also be accomplished by use of extended preheat. The temperature for extended preheating shall be 150 °C for two hours. This temperature shall be attained without lowering the preheat temperature used for welding.

4.0 FINAL INSPECTION AND PROTECTION

- 4.1 Drum dimensions, center line and the suspension axis shall be checked and recorded. The axis marking shall be verified by water level. The water level difference shall be within 5 mm.
- 4.2 Ensure placing of silica gel inside the drum before man hole door closing.
- 4.2 The expansion holes shall be applied with grease and covered with suitable sheets to protect against damages during transit.

@@@@@#####@@@@@

Product: **BOILER QUALITY PLATES TO SA 299 Gr A (BOILERS)**Document No.: **TDC:0:201**Rev. No.: **06**Effective date: **24-03-08**

Page: 1 of 2

Rev Record: 01: 27.06.95: Modified based on feed back & amendment. Rev:02: text re-written. Rev 05: 27/02/04: Al.% relaxed to 0.05 from 0.03max. Bend test details indicated as supplementary test reference in the material Spec. is deleted. Rev: 06:14/02/08 SA 299 changed to SA 299 Gr A. CI 1.0,3.0,4.0 and CI 6.0 modified.

1.0 MATERIAL SPECIFICATION:

ASME: SA 299 Gr A (Latest as on PO date), Additional Requirements as listed below (supplementary to Specification). Size, and Qty.: As per Purchase order (PO)

2.0 CHEMICAL COMPOSITION & PROCESS:

Killed steel, Final rolling: lengthwise. Vacuum treatment (S1 of SA 20). Plate thick(t)>80mm to be made only from ingots. Plate of t<=80mm. can be made from continuous cast slabs. Reduction ratio in thickness from slab to plate shall be 3:1. Sufficient 'Top of Ingot' to be discarded to ensure plate free of segregation. After top discard, the increase in carbon content at the top-mid width-mid thickness of the plate shall not exceed 20% of the reported ladle analysis value. This value shall be reported in TC. Ladle analysis: 1 sample per cast, Product analysis: minimum one sample per plate as rolled.

Max. Carbon: 0.28%, Max. Al: 0.05%. CE: C + Mn/6 + Si/24 + Ni/40 + Cr/5 + Mo/4 + V/14 <= 0.55% for t<=150mm., 0.58% for > 150mm.

3.0 HEAT TREATMENT (HT):

As rolled or Normalized as per mill practice. If Normalize Temperature:870-900deg.C

4.0 SIMULATION HEAT TREATMENT for test coupons in addition to CI.:3.0:

Normalize: 870-900deg.C for 0.5hr/inch t, SR:615+/-10deg.C,3 hr./inch t, furnace cool to 400deg.C. ROH/ROC for SR: <220/t deg.C/hr.(t in inch), but need not be slower than 55 deg.C/hr.

5.0 MECHANICAL TESTS on simulation Heat Treated coupon:

Extent of test: For each rolled plate. Bend test: The longitudinal axis of the test specimen shall be transverse to the final rolling direction of the plate. The specimen thickness shall be 30 mm and width 45 mm, to be bent on a pin dia. of 3 times the thickness of the specimen. The as rolled surface of the specimen shall be on the outer surface. Two specimens shall be taken to cover the entire thickness of the plate. The angle of bend shall be 180°

High temperature tensile test: S7 of SA 20. Min. yield strength at 350 deg.C: 21.2 Kg/sq.mm.

6.0 NON DESTRUCTIVE TEST:

Ultrasonic test: SA578. Acceptance criterion : Level B.

7.0 DIMENSIONAL TEST:

Tolerance on thickness of plates shall be positive only.

8.0 FINISH AND REPAIRS:

Plates to be free from loose mill scales & injurious defects. Repairs by fusion welding prohibited. Mechanical Removal of defects permitted subject to min. thickness & smooth surface.

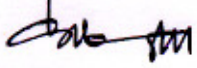


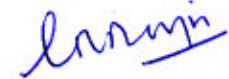
9.0 MARKING:

Specification, grade, Melt number, Plate number, Maker's emblem/code, Inspecting Authority's seal to be stamped with low stress stamp on each plate and bordered by white paint. Rolling direction shall be marked by paint. PO No., "BHEL - Tiruchirappalli" & weight to be painted on the product.

10.0 INSPECTION AND CERTIFICATION:

Products to be inspected at works & test certificates(in ENGLISH)countersigned by Inspecting Authority as below: Imported: Inspecting Authority approved by IBR for country of origin.(to be concurred by BHEL) Indigenously supplied IBR items: Boiler Inspectorate/directorate of Boilers of respective State. Test certificate in English for each product with following details shall accompany the product.(in format approved by Boiler Inspectorate):

1. Purchase Order No.(BHEL),TDC No., Test certificate number & Quantity.
2. Specification and Grade with applicable year of code, Heat Number, Plate number.
3. Steel making process, Chemistry including incidental elements - Ladle and Product analysis.
4. HT details of material and test coupons like temperature, soaking time, cooling medium etc.
5. Mechanical, NDE & other test results with reference, acceptance standards.
6. Print of the stamp of Inspecting Officer, which is used on the plate.

Prepared by  V.Kalyanaraman	Reviewed by <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  U. Revisankaran </div> <div style="text-align: center;">  K.Rengachari </div> </div>		Approved by  C.R.Raju
--	---	--	--