

Bharat Heavy Electricals Limited
Heavy Plates & Vessels Plant
Visakhapatnam . 530 012
Andhra Pradesh, INDIA
PAN-AAACB4146P, GSTIN-37AAACB4146P7Z8



Tel. : +91(0) 891 668 1332 /1358 /1359
E-mail : yvrao@bhel.in
dnmurthy@bhel.in
nd@bhel.in

INVITATION TO TENDER

Ref.: OS/21-22/DE/5617, 7908 & 7911/01/005

Date: 11.06.2021

Sub : Cold Forming of CS & SS Dished Ends against S.O. No. 5617, 7908 & 7911

Dear Sir,

Sealed tenders are invited for the subject work in **Two part bid** system from the vendors who are experienced in execution of similar jobs subject to the following eligibility criteria:

- (1) Bidders must have an experience in execution of similar jobs in the past 7 Years as on 31.05.2021. 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.
- (2) Bidders shall have to enclose the documents of Registration of Firm / Factory License/ Certificate of Incorporation, Udyog Aadhar Memorandum / Udyam Registration, PAN & GSTIN Registration.
- (3) The works executed in own name of the individual / firm of the tenderer will only be considered for eligibility criteria.

1) VENDOR'S SCOPE OF WORK:

- a) Details of the Dished Ends to be formed are given in Annexure-II and are briefed below:

S.O. No.	Description of Item	Quantity	Total Wt.
5617	Torispherical D'end - CS	04 Nos.	4.952 MT
5617	2:1 Ellipsoidal D'end - SS	04 Nos.	2.654 MT
7908	2:1 Ellipsoidal D'end - CS	16 Nos.	15.436 MT
7911	Flat D'end - CS	04 Nos.	7.436 MT
Total		28 Nos.	30.478 MT

- b) Collection of cut to size blanks from BHEL-HPVP shops, Visakhapatnam, Transportation of (i) cut to size blanks from BHEL- HPVP to Vendor works and (ii) Formed Dished Ends back to BHEL-HPVP, Visakhapatnam including transit insurance and Delivery at HPVP shops.
- c) Cut to size blanks shall be issued to the Vendor along with all required Test Certificates.
- d) Cold Forming of the Dished Ends with cut to size blanks as per applicable Drawings, approved QAP / ITP and specifications. Wherever blanks are made from segments, cut-to-size blanks will be issued after joint welding with radiography clearance.
- e) The bidder shall verify & confirm in their offer the blank diameter required to meet overall dimensions and minimum thickness to be achieved.
- f) Dimensions, ID & Thickness of formed dished ends shall be strictly within the tolerances given in the respective drawings, QAP / ITP.
- g) DP check on outside and inside surface of the Knuckle Area & SF as per Appendix-8 of ASME Section-VIII Division-I, 2019.
- h) Free issue items i.e. cut to size blanks cleared by QC (HPVP Shops) are to be collected within 5 days from the date of intimation by Outsourcing dept. without any failure. Any delay beyond 5 days shall be considered for levy of LD.
- i) Material identification no. is to be maintained by Dished End Vendor before, during & after forming operation.
- j) Inside templates with Vendor material shall be made as per ASME Section VIII Div. 1-2019.
- k) Offering for Stage wise & Final Inspection as per approved QAP / ITP and obtaining inspection clearance.

Contd...2

- I) After placing of orders, Vendor shall have to submit applicable procedures for Handling, Forming, NDE etc., for approval by BHEL.
- m) NDE procedure should be in line with BHEL NDE procedure and NDE personnel shall be approved by BHEL NDE / TPIA.
- n) Calibration of instruments used for measurement shall be from an NABL approved lab.
- o) Though not mentioned specifically, any activity which is required for completion of the work is deemed to be included in the scope of Vendor.

2) LOCATION OF WORK SPOT:

- a) Cold Forming of D' ends shall be carried out **at Vendor's Works.**

3) BHEL's SCOPE:

- a) Issue of Drawings, Approved QAP/ ITP etc.
- b) Issue of Cut-to-Size Blanks. Wherever blanks are made from segments, Cut-to-Size blanks will be issued after joint welding with radiography clearance.
- c) Loading of Blanks and unloading of finished Dished ends at BHEL – HPVP, Visakhapatnam
- d) Height & TL Marking, Cutting of extra height and Edge Preparation as per the applicable drawings.
- e) Stress Relieving / Normalizing after formation / pressing of Dished Ends.

4) INSPECTION:

- a) Inspection shall be carried out at Vendor's works by M/s. BHEL / M/s. BHEL Authorized Inspection Agency / / Customer as per Approved QAP / ITP.
- b) QAP / ITP enclosed with the tender is tentative only. Changes, if any made during the approval of QAP, shall also be taken care by the Vendor for execution of the job. Approved QAP / ITP issued to the vendor after ordering shall only be followed for execution and inspection of the job.
- c) Dished End Vendor shall furnish soft copy as well as hard copy of the Inspection Reports / Test Certificates including (a) Method of Forming (b) Dimensional Report including minimum thickness (c) Results of Template check, (e) NDE Reports etc. to BHEL as per approved QAP / ITP.
- d) Preparation of all the documentation related to inspection such as BHEL / TPI / Customer Clearance as per BHEL standard formats, Generation of Inspection Reports etc., and submission of soft copy as well as hard copy of the same to BHEL-QA.

5) DELIVERY:

- a) Finished D'ends along with all the relevant inspection documents as per approved QAP / ITP and all other certificates are to be delivered to HPVP, Visakhapatnam progressively **within 6 weeks from the date of issue of blanks.**
- b) The delivery period will be calculated from the date of issue of blanks at HPVP, Visakhapatnam to the date of delivery of finished items at BHEL-HPVP, Visakhapatnam.
- c) In case the delivery period offered by the vendor is more than the tender delivery, Loading for additional delivery period shall be @1/2 % per week or part thereof on the price quoted by the vendor for the purpose of evaluation of L1 status.

6) PRICE:

- a) The prices shall be quoted **only in Annexure-I** for the detailed scope of work mentioned in the tender document. The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of the work.

b) The quoted price shall be inclusive of all applicable taxes & duties **except GST**. Income tax shall be deducted at applicable rates from the vendor's bills. GST shall be reimbursable to the vendor as per applicable guidelines.

7) 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 the 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.

8) 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.

9) REVERSE AUCTION:

- a) BHEL shall be resorting to Reverse Auction (RA) for this tender. RA shall be conducted among the eligible techno-commercially qualified bidders. Business Rules for Reverse Auction are given at Annexure – V and Guidelines for Reverse Auction are available on our website, www.bhel.com.
- b) Sealed envelope / E-mail / 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 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.

10) GENERAL:

- a) The bidders shall study the Tender documents, Drawings, Quality Documents 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, clarifications related to welding 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 Bids and **any deviations mentioned in the Price Bids shall not be considered.**
- 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.

11) Other Terms & Conditions shall be as per Annexure – III enclosed herewith.

12) The following documents shall form part of the tender enquiry: -

- i) Schedule of Rates : Annexure – I
- ii) Details of Dished Ends to be formed : 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) Applicable Drawings & QAP / ITP

13) VALIDITY OF OFFER:

- a) The offer shall be valid for a period of **3 months** from the date of reverse auction.

14) TENDER SUBMISSION (Through E - Mail):

- a) Techno-commercial bids along with the tender document duly signed & stamped by the bidder on all pages along with a covering letter on Company's Letter Head addressed to DGM (Outsourcing), BHEL-HPVP, Visakhapatnam shall be sent through an e-mail to the e-mail ID **technicalbid-hpvp@bhel.in**.
- b) Price bid (i.e., Annexure – I) shall also be sent separately through e-mail to another e-mail ID **pricebid-hpvp@bhel.in**.
- c) Offers completed in all respects along with all the supporting documents shall be sent to the above e-mails only **latest by 14.00 Hrs. on 25.06.2021** duly mentioning the Name of Work, Tender Ref. No. & Date and Technical Bid / Price Bid in the subject of the e-mail.

Note: Don't mark CC and BCC while submitting your offer as the system is designed to reject such mails having more than one recipient. Max. file size of the attachment shall be ≤ 20 MB only. In case, file size is more, bidder can submit their offer through multiple mails within the due date & time.

- d) **TENDERS RECEIVED AFTER THE DUE DATE & TIME ARE NOT ACCEPTABLE.**
- e) **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 at **14.00 Hrs. on 25.06.2021**. The bidders may depute their representatives at the time of opening of Techno-commercial bids.
- b) After evaluation of the Techno-commercial bids, intimation regarding date & procedure of conducting reverse auction shall be given by BHEL authorized service provider to all the eligible techno-commercially qualified bidders through an e-mail in advance at an appropriate time.

For Bharat Heavy Electricals Limited,


D. N. MURTHY
11/06/2021

D. N. MURTHY
Dy. Manager (OS)
Bharat Heavy Electricals Ltd.
HPVP, Visakhapatnam-530 012

SCHEDULE OF RATES

Sl. No.	S.O. No.	Description of Item	Unit	Qty.	Unit Rate (Rs.)	Total Amount (Rs.)
		Cold Forming of CS & SS Dished Ends including DP check on outside & inside surface of KR & SF, NDT etc. as per applicable Drawings, approved QAP, Specifications, Procedures etc. Co-ordination with BHEL / TPI officials for Stagewise & Final inspection and obtaining necessary inspection clearance along with relevant documentation and including Collection & transportation of cut to size blanks from HPVP Shops to Vendor's works, Transportation & Delivery of Finished dished ends back to BHEL-HPVP, Visakhapatnam etc., as per the detailed scope of work mentioned in the tender.				
1		Tori Spherical Dished Ends				
1.1	5617	ID 3400 mm x 9.75 mm (Min.) THK from a blank of Dia. 4050 mm x 12 mm THK of Matl. Specn. IS 2062 E250GR.C - Wt. 1238 Kg each	Nos.	4		
2		2:1 Ellipsoidal Dished Ends				
2.1	5617	ID 2855 mm x 6.5 mm (Min.) THK from a blank of Dia. 3630 mm x 8 mm THK of Matl. Specn. SA 240 TP304 - Wt. 663.5 Kg each	Nos.	4		
2.2	7908	ID 1300 mm x 40 mm (Min.) THK from a blank of Dia. 1850 mm x 50 mm THK of Matl. Specn. SA 516 GR.60 - Wt. 1343.5 Kg each	Nos.	8		
2.3	7908	ID 1650 mm x 16 mm (Min.) THK from a blank of Dia. 2180 mm x 20 mm THK of Matl. Specn. SA 516 GR.60 - Wt. 586 Kg each	Nos.	8		
3		Flat Dished End				
3.1	7911	ID 2313 mm x 29 mm (Min.) THK from a blank of Dia. 2720 mm x 32 mm THK of Matl. Specn. IS 2062 GR.B - Wt. 1859 Kg each	Nos.	4		
		Total			28	
Total Amount (in Words) :						

Notes :

- 1) a) L1 status will be evaluated based on total quoted price.
b) Bidder has to quote for all the items. Part quotation is not acceptable.
- 2) 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.
- 3) The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of work.
- 4) The quoted price shall be inclusive of all applicable taxes & duties except GST. However, GST shall be reimbursed by BHEL on submission of proof of GST payment.
- 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**.
- 7) Tenderer should quote the amount in figures & words. It may be noted that corrections, overwriting etc. are not allowed. If there is a discrepancy between amount in figures & words, the amount in words shall prevail unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail. If there is an error in the total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail and total shall be corrected accordingly.

In case of mismatch between rate and amount in figures, rate in figures shall be taken into consideration for further evaluation and processing.

Signature of the Bidder with Stamp

ANNEXURE - II

DETAILS OF DISHED ENDS TO BE FORMED

Ref: OS/21-22/DE/5617, 7908 & 7911/01/005

Date: 11.06.2021

Sl. No.	S.O. No.	PGMA	DU / Item No.	Drawing No.	Rev. No.	Description of Item	Matl. Spec.	D'end Size in mm	SF (mm)	Blank Size (mm)	Blank Weight (Kg)	Qty. (Nos.)	Total Weight (Kg)
1	5617	CY-010		3-CY-010-U0038	0	Torispherical	IS 2062 E250GR.C	ID 3400 x 9.75 (Min) THK	50	Dia. 4050 x 12 THK	1238	4	4,952
2	5617	CY-010		3-CY-010-U0037	0	2:1 Ellipsoidal Dished End	SA 240 TP304	ID 2855 x 6.5 (Min) THK	50	Dia. 3630 x 8 THK	663.5	4	2,654
3	7908	PV-030	0010101 & 0010103	3-229-01-18501	01	2:1 Ellipsoidal Dished End	SA 516 GR.60	ID 1300 x 40 (Min) THK	66	Dia. 1850 x 50 THK	1343.5	8	10,748
4	7908	PV-040	0010102 & 0010103	0-229-01-18405	02	2:1 Ellipsoidal Dished End	SA 516 GR.60	ID 1650 x 16 (Min) THK	68	Dia. 2180 x 20 THK	586	8	4,688
5	7911	PU-001	0010103	0-61-362-00159	05	Flat Dished End	IS 2062 GR.B	ID 2313 x 29 (Min) THK	53	Dia. 2720 x 32 THK	1859	4	7,436
								TOTAL				28	30,478

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:

Vendors shall have to submit a Bank Guarantee for **10%** of the order value in case of **HPVP ADM site** or **25%** of the material cost in case of Vendor works towards Security Deposit and safe custody of materials within one week from the date of issue of Order. 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 and on submission of Performance BG (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.

8. 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**).

9. 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.

10. 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 the first 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.

11. SCRAP & OFF-CUT NORMS:

SI. 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)	-

12. 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.

13. 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.

14. 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.

15. 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.

16. PENALTY:

If delivery exceeds the stipulated delivery schedule, penalty 1/2 % of the total value of order per week or part thereof subject to a maximum of 10% on the total value of the order 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.

17. PAYMENT TERMS:

Payment shall be made against RA Bills within 45 days 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

18. 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.

19. 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.

20. 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.

21. 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.*

22. 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.,

23. 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.

24. 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.

25. 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.

26. 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.

27. 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.

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 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/21-22/DE/5617, 7908 & 7911/01/005, dated 11.06.2021**. BHEL shall finalize the Rates for **Cold Forming of CS & SS Dished Ends against S.O. No. 5617, 7908 & 7911** 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 Enq. No. **OS/21-22/DE/5617, 7908 & 7911/01/005, dated 11.06.2021**, (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 **except GST** 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 3 months 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/21-22/DE/5617, 7908 & 7911/01/005, dated 11.06.2021**. 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 P0, 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/Warranteer 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

1. DISHED END TO BE COLD FORMED FROM THREE (03) PIECES (MAX) AS SHOWN WITH EDGE PREPARATION AS PER SECTION X-X. FOLLOWING ACTIVITIES NEED TO BE CARRIED OUT BEFORE & AFTER HEAT TREATMENT.

[A] AT THE WORKS OF BHEL : BEFORE HEAT TREATMENT & DISH FORMATION (I.E. DURING BLANK FORMATION)

- (a) BASE PLATE WELD EDGE PREPARATION AS PER SECTION X-X
- (b) WELD EDGE PREPARATION OF BASE PLATE TO BE DP TESTED.
- (c) D.P TEST OF BASE PLATE WELD TO BE CARRIED OUT FOLLOWED BY 100% RT

[B] AT THE WORKS OF DISHED END VENDOR :

FORMATION OF DISH USING COLD FORMING (MEETING THE DIMENSIONS AS SHOWN)

- (a) COMPLETE DISHED END TO BE 100% UT AS PER SA 578 LEVEL-C.
- (b) EDGE PREP. AT SF IS REQUIRED AS PER DETAIL 'A' SHOWN
- (c) KNUCKLE AND EDGE PREPARATION TO BE DP TESTED FOLLOWED BY 100% RT FOR WELD SEAM.
- (d) HEAT TREATMENT AS PER BELOW HEAT TREATMENT TABLE

2. CENTRAL HOLE IF ANY ON DISHED END TO BE PLUGGED FOLLOWED BY 100% RT

3. TOLERANCE (i) QUALITY SHOULD NOT EXCEED 1.0% OF DISHED END ID. (DIFFERENCE MAX & MIN. ID.)
(ii) MEASURED CIRCUMFERENCE SHOULD BE $^{+0}_{-6}$ OF CALCULATED CIRCUMFERENCE BASED ON ID. SPECIFIED.

4. CODE OF CONSTRUCTION ASME SECTION VIII DIV. 1; 2019

5. INSPECTION BY M/S BHEL / BHEL APPOINTED TPIA & END CUSTOMER(IF ANY)

6. TEMPLATE REQUIREMENT AS PER UG-81 (a)
FOR INTERNAL PRESSURE INNER SURFACE OF DISHED END SHALL NOT DEVIATE OUTSIDE OF THE SPECIFIED SHAPE BY MORE THAN 30 mm AND SHALL NOT DEVIATE BY MORE THAN 15 mm INSIDE THE SPECIFIED SHAPE, EXCEPT FOR KNUCKLE RADIUS WHICH SHALL NOT BE LESS THAN THAT SPECIFIED.

7. MATERIAL IDENTIFICATION NO. TO BE MAINTAINED AT D-END SUPPLIER'S END BEFORE DURING & AFTER FORMING OPERATION

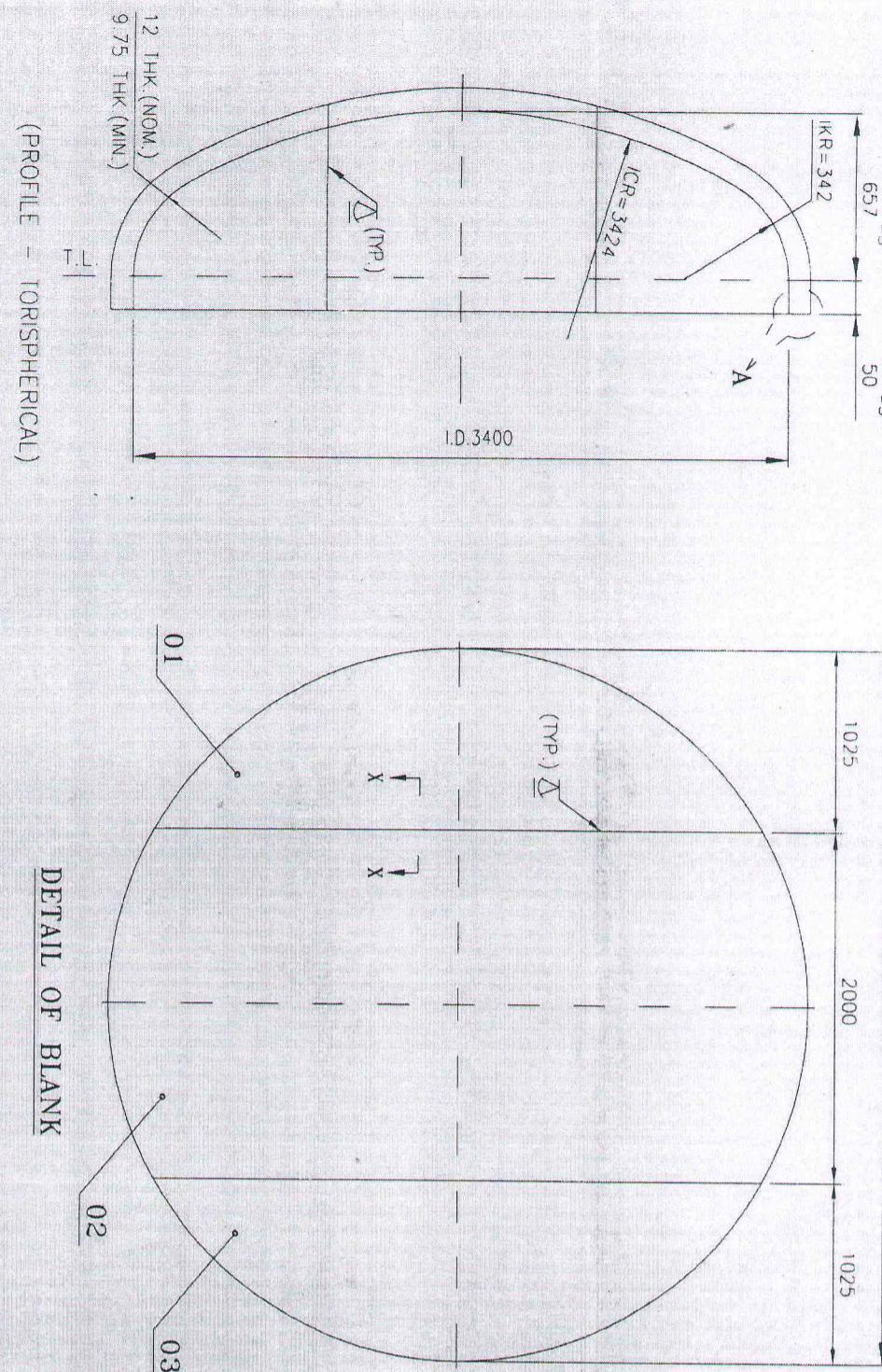
8. *DISHED END SUPPLIER TO FURNISH TEST CERTIFICATES INCLUDING (a) METHOD OF FORMING.

(b) DIMENSIONAL REPORT INCLUDING MINIMUM THICKNESS (c) NDE REPORTS & (d) RESULTS OF TEMPLATE CHECK. QAP DULY APPROVED BY BHEL SHALL ALSO REQUIRED TO BE REFERRED FOR OTHER DOCUMENTS

9. D-END SUPPLIER SHALL CONFIRM THE BLANK DIAMETER TO MEET OVER ALL DIMENSIONS & MIN. THK. TO BE ACHIEVED.

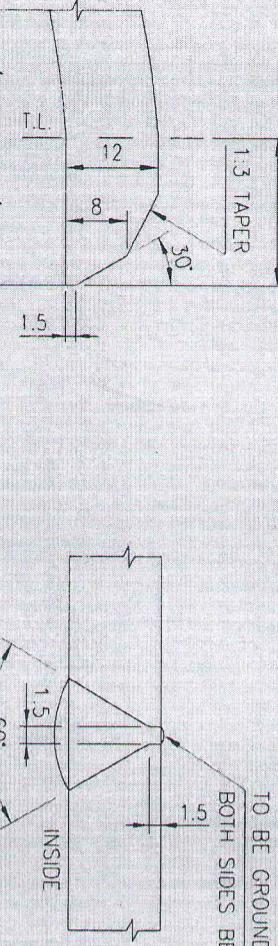
10. DP TEST & RT ALWAYS SHALL BE CARRIED OUT AS PER AS PER APPENDIX-8 & UW-51 RESPECTIVELY OF ASME SECTION VIII DIVISION-i, 2019.

DETAIL OF BLANK



(PROFILE - TORISPHERICAL)

TO BE GROUND FLUSH ON
BOTH SIDES BEFORE FORMING



(WELD DETAIL OF CHORDAL JOINT)

PART D'END OF EQUIPMENT	PROCEDURE STRESS RELIEVING	LOADING TEMP. °C	HEATING TEMP. °C	HEATING RATE °C/hr	HOLDING TIME min	COOLING RATE °C/hr	REMARKS	HEAT TREATMENT		
								IS 2062 E250 GR.C	N	246.5
03	PL 12 x 1025 x 3522									
02	PL 12 x 2000 x 4050									
01	PL 12 x 1025 x 3522									

ITEM NUMBER	DESCRIPTION	DRG. NO.	ITEM NO	MATERIAL CODE	A/C	UNIT WEIGHT	QUANTITY	HEAT TREATMENT		
								VAR NO	MATERIAL SPECN	WT

CAUTION: The information on this document 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.



Bharat Heavy Electricals Ltd
UNIT- HEAVY PLATES & VESSELS PLANT
VISAKHAPATNAM-530012

DEPT. OF
PROD.
PROD.
COST
COST
ITEM
ITEM

DS
SKB
REF TO ASME / ASO DNG

REV NO

ZONE

BRIEF RECORD OF REVISIONS

PPD

CHD

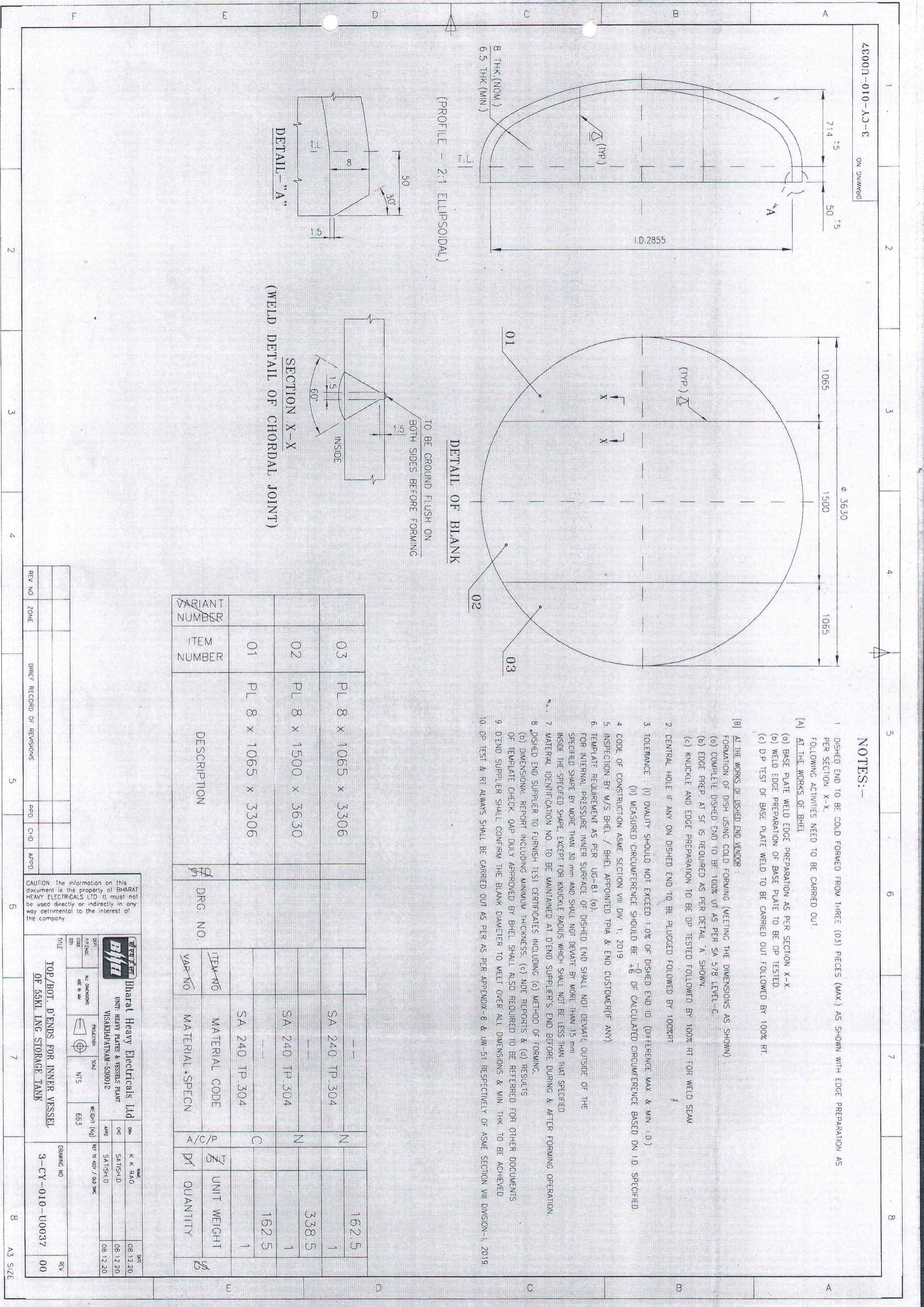
APD

DRAWING NO

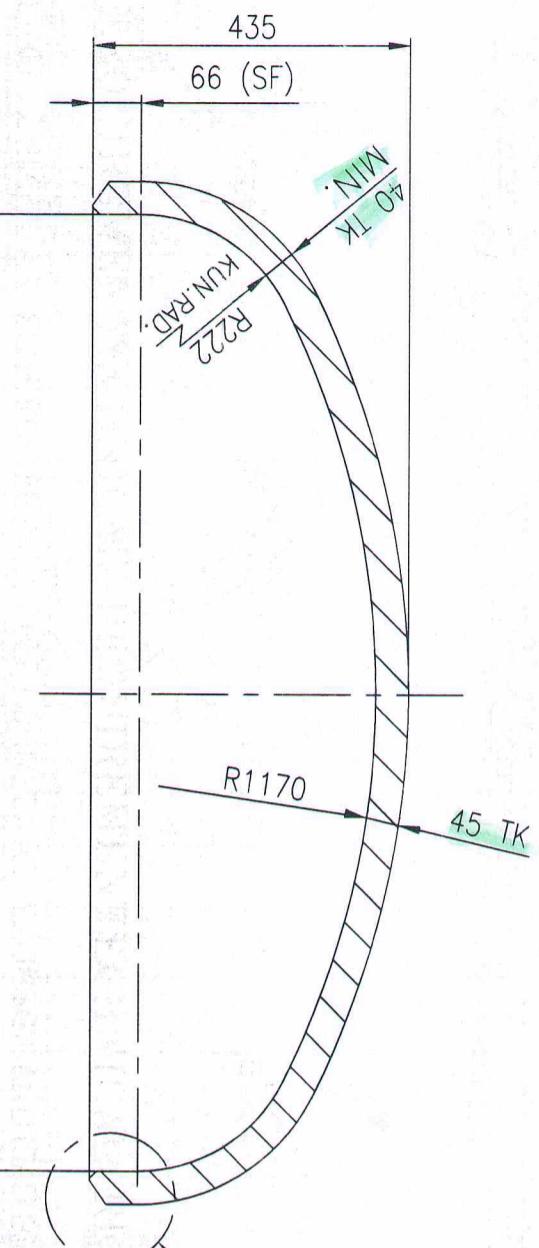
REV

3-CY-010-U0038

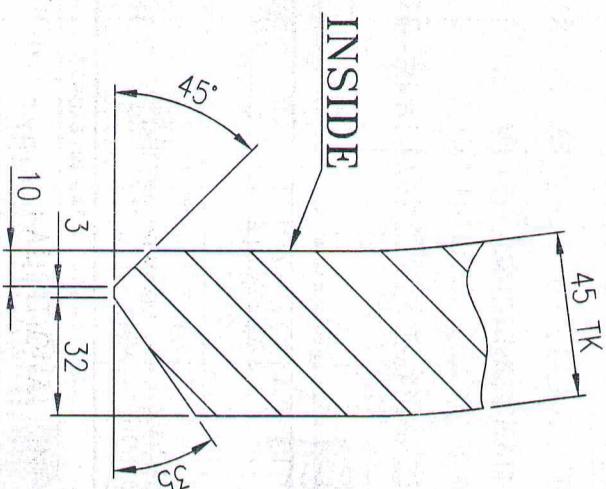
0



DRG. NO. 3 229 01 18501

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.TECHNICAL REQUIREMENTS:-

1. DOME END TO BE FORMED AS ELLIPSOIDAL HEAD OF 2:1.
2. THICKNESS SHOWN IS THE DESIGN THICKNESS OF DOME END AFTER FORMATION.
3. TOLERANCES ON ALL DIMENSIONS EXCEPT THICKNESS IS $\pm 0.5\%$.
4. IF DOME END IS FORMED BY HOT PRESSING. IT SHOULD BE STRESS RELIEVED BEFORE WELD TO OTHER PARTS.
5. IF DOME END IS FORMED BY COLD SPIN METHOD, NORMALISING IS NECESSARY AFTER COLD SPINNING AT 920°C .
6. AFTER STRESS RELIEVING/NORMALISING DOME END TO BE 100% U.T.
7. **WELD PREPARATION** TO BE DONE AS SHOWN PREFERABLY BY MACHINING.
8. DEVELOPED BLANK = OD + $\frac{\text{OD}}{24}$ + $\frac{2}{3}$ (KUN.RAD.+TK) + 2SF + 2TK = 1848 mm

DETAIL-P

SCALE - 1:5

ADDITIONAL INFORMATION			TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		
STATUS OF DRAWING			KISHANGANGA HEP (3x110 MW)		
DISTRIBUTION OF PRINTS			Bharat Heavy Electricals Ltd. Bhopal		

Bharat Heavy Electricals Ltd.
BhopalHTE-2 WTM-5
THX-1 FBM-7KISHANGANGA HEP
(3x110 MW)

INVENTORY NO.

SIGN. & DATE

32290114801
REF. DRG. NO.

REV.	DATE	ALTERED CHECKED	REV.	DATE	ALTERED CHECKED
01	06.11.20	APPD.	01	06.11.20	APPD.

MINIMUM THICKNESS CHANGED TO

40mm.

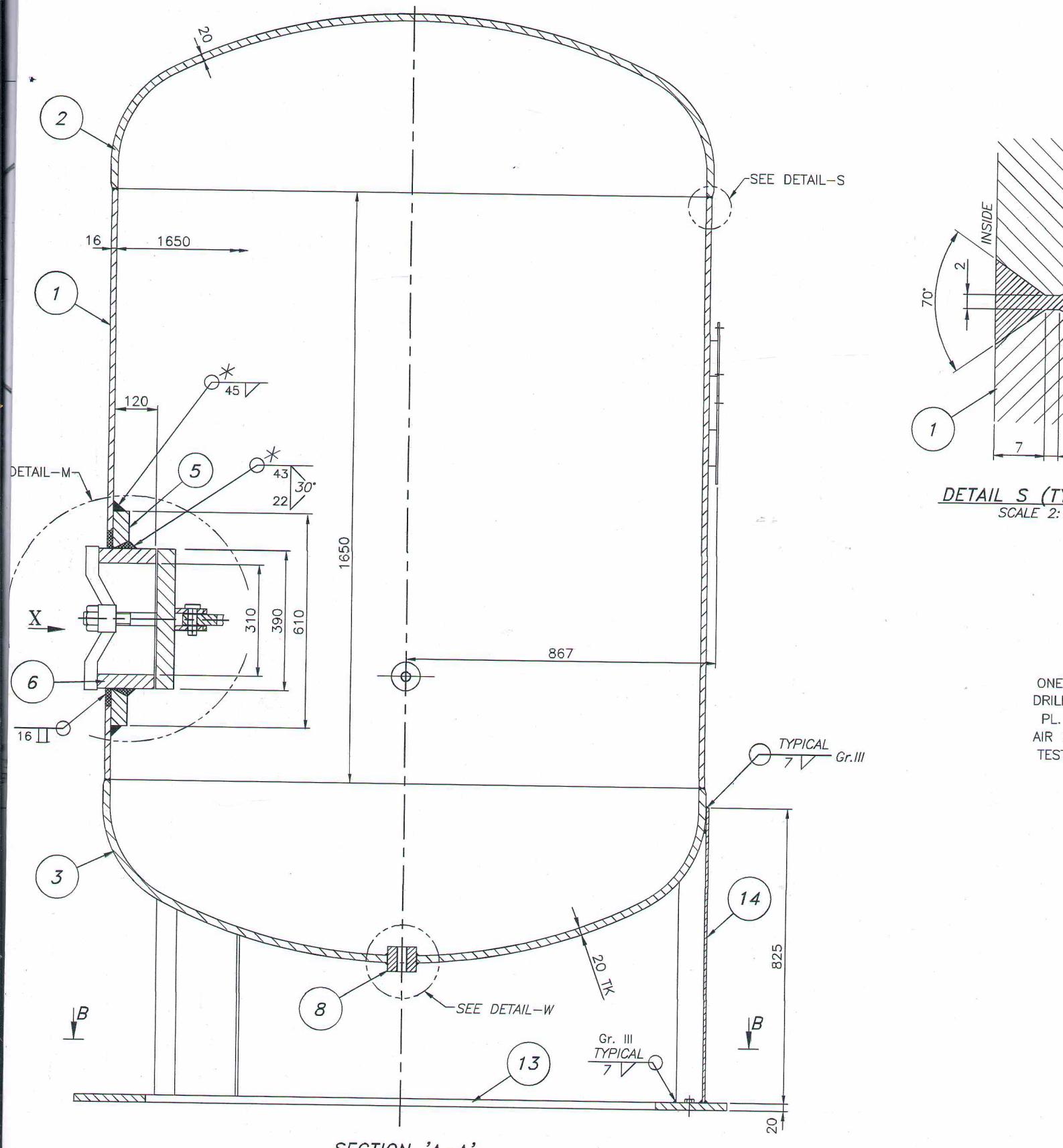
REV.	DATE	ALTERED CHECKED	REV.	DATE	ALTERED CHECKED
01	06.11.20	APPD.	01	06.11.20	APPD.

REV.	DATE	ALTERED CHECKED	REV.	DATE	ALTERED CHECKED
01	06.11.20	APPD.	01	06.11.20	APPD.

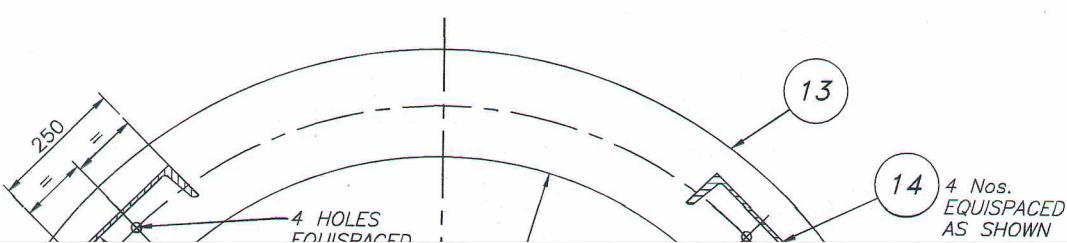
INVENTORY NO.	SIGN. & DATE	32290114801 REF. DRG. NO.
---------------	--------------	------------------------------

REV.	DATE	ALTERED CHECKED	REV.	DATE	ALTERED CHECKED
01	06.11.20	APPD.	01	06.11.20	APPD.

ITEM NO.	ITEM NO.	NO. OF ITEM
001	001	001

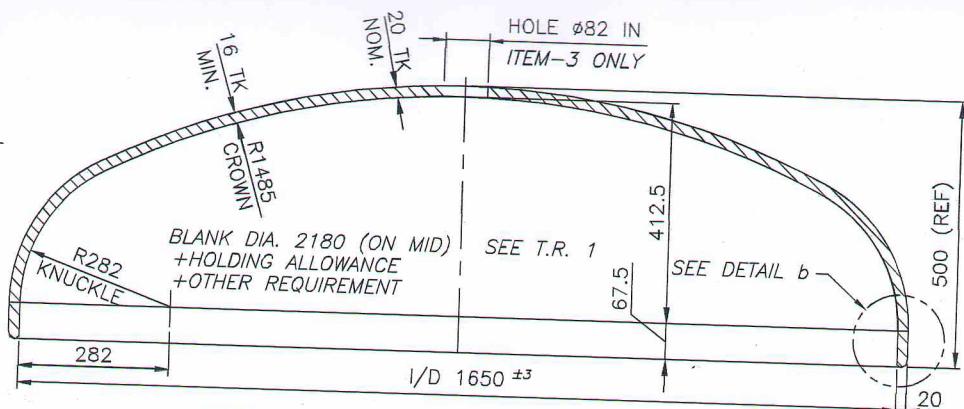
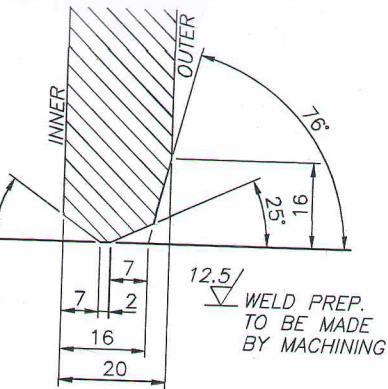


SECTION 'A-A'



DETAIL OF ITEM-13

SCALE 1:20

DETAIL OF ITEM-14DETAIL OF ITEM-19SECTIONAL DETAIL OF ITEM-2 AND 3DETAIL-b

SCALE 1:1

REV.	DATE	ALTERED	REV. D
		CHECKED	
		APPROVED	

5

6

7

8

(ALL DIMENSIONS ARE IN mm)

13	14	15	16
----	----	----	----

A

TECHNICAL REQUIREMENTS :-

1. FOR DOME END :-

1.1. DOME END TO BE FORMED AS ELLIPTOIDAL HEAD OF 2:1 WHERE CROWN RADIUS (0.9x1650) AND KNUCKLE RADIUS (0.1708x1650) ARE AS GIVEN.

1.2. THICKNESS SHOWN IS THE DESIGN THICKNESS OF DOME END AFTER FORMATION.

1.3. TOLERANCES ON ALL DIMENSIONS EXCEPT THICKNESS IS ± 5 .

1.4. IF DOME END IS FORMED BY HOT PRESSING IT SHOULD BE STRESS RELIEVED BEFORE WELD TO OTHER PARTS.

1.5. IF DOME END IS FORMED BY COLD SPIN METHOD NORMALISING IS NECESSARY AFTER COLD SPINNING AT 920°C.

1.6. AFTER STRESS RELIEVING/NORMALISING, DOME END TO BE 100% U.T.

2. CYLINDER DIAMETER 1650 IS NOMINAL AND TO BE FABRICATED TO SUIT DOME ENDS.

3. WELDING, IT'S COMPACTNESS, APPEARANCE, AIR TIGHTNESS, AT TEST PRESSURE SHOULD CONFORM TO BS 5500-1975.

4. HOLES IN DOME ITEM 3 AND CYLINDER ITEM 1 TO BE MADE ON WELDED ASSY.

5. ALL WELDS ARE TO GR.I OF CORP. STD. AA0622101 EXCEPT FILLETS WHICH ARE OF GR.III

5.1. ALL LONGITUDINAL, CIRCUMFERENTIAL AND 'T' JOINTS TO BE 100% RADIOPHOTOGRAPHED.

6. COMPLETE WELDED ASSY. TO BE STRESS RELIEVED TO BP0640299. NO MAJOR WELD REPAIR IS ALLOWED AFTER STRESS RELIEVING. AFTER S.R., RECEIVER TO BE SHOT BLASTED FROM INSIDE AND OUTSIDE ALL MACHINED SURFACES SHOULD BE SUITABLY PROTECTED DURING S.R. AND SHOT BLASTING.

7. AFTER STRESS RELIEVING ALL CIRCUMFERENTIAL WELD, LONGITUDINAL WELDS AND T-JOINTS TO BE 100% ULTRASONICALLY TESTED. REST OF THE WELDS TO BE 100% DYE TESTED.

8. ALL WELDING PROCEDURES AND WELDER SHALL BE QUALIFIED AS PER ASME SECTION IX.

9. CLEANING, PAINTING AND PROTECTION AS PER PROC. SPECN. HT00005 AND CAT. AS FOLLOWS.

9.1. INTERNAL SURFACES TO BE PAINTED TO CAT.- D.

9.2. MACHINED AND THREADED SURFACES TO BE PROTECTED TO CAT.-'G'.

9.3. EXTERNAL SURFACES TO BE PAINTED TO CAT.-'F'.

0. PRESSURE RECEIVER TO BE HYDRAULICALLY PRESSURE TESTED AT TEST PRESSURE OF 15.75 kg/SQ.cm. AND MAINTAINED FOR SUFFICIENT TIME TO PERMIT THOROUGH CHECKING OF WELD JOINTS, IN ANY CASE NOT LESS THAN 30 MINUTES.

B

C

D

E

11. MATERIAL EQUIVALENT :-

11.1. AA10108 = IS 2062 GR. A.

11.2. AA10119 = IS 2062 GR. B

11.3. AA10112 = IS 9550

11.4. AA10501 = IS 5517 / EN24

11.5. AA21503 = IS 2712 GR. 0/2

F

7908

R

(PV-OK)

देशानियन्त्र अपाराद-१
DRAWING STORES-1

20/2/21

			019	CABLE SUPPORT CURVED FLAT 6TKx25x490	SEE DETAIL	AA1010308483 IS:2062 Gr. A	kg. 0.700 No. 001			
			018	CABLE SUPPORT VERTICAL FLAT 6TKx25x1085	SEE DETAIL	AA1010308483 IS:2062 Gr. A	kg. 1.270 No. 001			
			017	CROSS BAR	3 220 01 49055		kg. 5.000 No. 002			
			016	MAN HOLE COVER ASSY.	2 220 01 49010		kg. 57.000 No. 001			
			015	MAN HOLE GASKET	4 220 01 49028		kg. 0.300 No. 001			
			014	SUPPORT CHANNEL 250x80x7.2x14.1x'H'	SEE DETAIL	AA1012708144 IS:2062 Gr. A	kg. 24.000 No. 004			
			013	BASE PLATE 20 TK	SEE DETAIL	AA1011808137 IS:2062 Gr. A	kg. 159.800 No. 001			
			012	MOUNTING PLATE 5 TK	SEE DETAIL	AA1011808013 IS:2062 Gr. A	kg. 6.000 No. 001			
			011	PLATE 5TKx35x100		AA1011808013 IS:2062 Gr. A	kg. 0.140 No. 004			
	BAR Ø80x70		010	BOSS 3/4" BSP FOR SAFETY VALVE	SEE DETAIL	AA1010208241 IS:2062 Gr. A	kg. 2.000 No. 001			
			009	BOSS 3/8"BSP FOR PR. GAUGE	4 229 01 14401		kg. 2.500 No. 002			
	BAR Ø80x70		008	BOSS 1/2"BSP FOR BOTTOM DRAIN	SEE DETAIL	AA1010208241 IS:2062 Gr. A	kg. 2.000 No. 001			
	BAR Ø80x70		007	BOSS 1-1/2"BSP FOR INLET/OUTLET	SEE DETAIL	AA1010208241 IS:2062 Gr. A	kg. 1.760 No. 002			
			006	ELLIPTICAL SHELL PLATE 45 TK	SEE DETAIL		kg. 36.000 No. 001			
			005	COMPENSATING RING PLATE 45 TK	SEE DETAIL		kg. 64.000 No. 001			
			004	LIFTING LUG	3 220 01 49031	003	kg. 6.540 No. 002			
	SEE T.R. 1		003	LOWER DOME END PLATE 20 TK	SEE DETAIL		kg. 545.000 No. 001			
	SEE T.R. 1		002	UPPER DOME END PLATE 20 TK	SEE DETAIL		kg. 545.000 No. 001			
			001	CYLINDER SHELL PLATE 16 TK	SEE DETAIL		kg. 1050.000 No. 001			
59 QTY. 64	65	75	78 79	25 27	29	58 59 60	77 29 31 34 45 IT.NO. MATL. CODE	WEIGHT		
VAR 00.	REMARKS	VAR. NO.	ITEM NO.	DESCRIPTION		STD	32 33 46 VAR.	54 MATL. SPCN.	C UNIT 68 QTY.	ZONE

28 → CARD TYPE-3

28 → CARD TYPE-1

28 → CARD TYPE-2

अतिरिक्त सूचना ADDITIONAL INFORMATION			TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT			PRANAHITA-VI LIS 6X124.4MW							
अभिकल्प का स्तर STATUS OF DRAWING			U										
प्रिंटों का वितरण DISTRIBUTION OF PRINTS			भारत हेवी इलेक्ट्रिकल्स लिमिटेड, भोपाल BHARAT HEAVY ELECTRICALS LIMITED, Bhopal			नाम / NAME इकाई / SIGN दिनांक / DATE वेरिएन्ट NO. OF VARIANTS							
HTE-2, WTM(P)-1, WTM(S)-4 THX-1, FGM-7						रिप्रिकर्न DRAWN BY	RAMESH	09.07.16					
						चेकर्न CHECKED BY	ND	09.07.16					
						संस्थापक APPROVED BY	SK	09.07.16					
ED UK 22/4/2018 ED ND 10/7/2018 VED SK 27/7/2018			REV. 01	DATE 06.8.18	ALTERED CHECKED APPROVED	DEPTT. HTE OND AM	-sd- -sd- -sd-	असंघ विमांशों का कार्य GRADE OF UNTOLERANCED DIMENSION	अनुपात SCALE	भार (कि. ग्रा.) WEIGHT (KG)	असंघीय अभिकल्प का संदर्भ REF. TO ASSY. DRAWING	ग्रंथ क्रमांक ITEM NO.	ग्रंथ की संख्या NO. OF ITEMS
HAS BEEN HPVP FEEDBACK.				T.R. NO.-5.1 ADDED. T.R. NO.-7 REVISED.				32000049014	1:10 & AS STATED	2580	0 22901 184 04	001	020
											अभिकल्प संख्या / DRAWING NUMBER		
											0 229 01 18405		
											पृष्ठ संख्या / SHEET NO.	01	
											पृष्ठों की संख्या / NO. OF SHEETS	01	

 <p>BHEL</p>	MANUFACTURER'S NAME & ADDRESS: BHEL HPVP- VISHAKHAPATNAM	MANUFACTURING QUALITY PLAN					CUSTOMER : M/s BEERENSGAS (INDIA) PVT LTD. PROJECT : for TIRUPUR Project. BHEL SO. No : 5617 CUSTOMER PO No .. PO/2020-21/MH/41 DT:09.11.2020; PO/2020-21/MH/42 DT:09.11.2020				
		ITEM: 55 KL LNG Tank			QP NO.: CQP 2509 REV. 00		DATE: 08.12.2020 Page 1 of 3			* D	AGENCY 10

RAW MATERIALS & BOUGHT OUT ITEMS											
1.1	Pipes & Pipe bends	Mechanical Properties Chemical Properties NDT as applicable	A	TC VERIFICATION	100%	Material specification, internal TDC (as applicable).	Mfg. TC/ Material Data report	✓	-	H	RW
1.2	Forging & Fittings	Mechanical Properties Chemical Properties NDT as applicable	A	TC VERIFICATION	100%	Material specification, internal TDC (as applicable).	Mfg. TC/ Material Data report	✓	-	H	RW
1.3	Plates	Mechanical Properties Chemical Properties NDT as applicable	A	TC VERIFICATION	100%	Material specification, internal TDC (as applicable).	Mfg. TC/ Material Data report	✓	-	H	RW
1.4	Other materials as per respective material specification and BHEL Drawing.					-	-	-	H	-	
2.0	INPROCESS INSPECTION										
2.1	Welding										
A	Welding Qualification	Procedure Qualification	B	WPS/PQR Review	100%	ASME Sec IX/AWS as applicable	WPS PQR	-	P	H	R
B	Welder / Operator Qualification	Procedure Qualification	B	WPQR Review	100%	ASME Sec IX/AWS as applicable	WQR/WPQR	-	P	H	R
C	Edge Preparation of Pressure parts	Soundness	B	Visual & LPI	100%	As per BHEL Drawing	LPI REPORT	✓	P	H	R
D	Fit-up Inspection- LS, Cir Seam, Nozzle to shell / dished end	Weld angle mismatch, root gap	B	Visual & Dimension	100%	As per BHEL Drawing	Inspection Report	✓	P	H	RW

PREPARED BY  P. Gopi Kishore Manager/QA BHEL	REVIEWED& APPROVED BY  A.K. Mandal AGM (Q&BE) BHEL	LEGEND: A: CRITICAL; B: MAJOR; TC: Test Certificate; TDC: Technical Delivery Conditions; QC: Quality Control; P: Perform; R-Review; W-Witness; H-Hold; RW- Random Witness; WPS: Welding Procedure Specification; PQR: Procedure Qualification Record; WPQR: Welder Procedure Qualification Record; AWS: American Welding Society; NDT: Non Destructive Testing; RT: Radiography Testing; LPI: Liquid penetration inspection; DPT: Dye Penetrant Test; M: HPVP/ Approved sub-contractor; C:HPVP/QC/NDT/WT/Authorized Inspection Agency; N: Customer / Customer appointed Authorized Inspector (AI) ; For Items marked in " / " (TICK) IN COLUMN 'D', CERTIFICATES WILL BE INCLUDED IN DOCUMENTATION	APPROVED BY CUSTOMER/AI SIGNATURE & STAMP
---	--	--	--

 <p>BHEL</p>	MANUFACTURER'S NAME & ADDRESS: BHEL HPVP- VISHAKHAPATNAM	MANUFACTURING QUALITY PLAN				CUSTOMER : M/s BEERENSGAS (INDIA) PVT LTD. PROJECT : for TIRUPUR Project. BHEL SO. No : 5617 CUSTOMER PO No .. PO/2020-21/MH/41 DT:09.11.2020; PO/2020-21/MH/42 DT:09.11.2020					
		ITEM: 55 KL LNG Tank			QP NO.: CQP 2509 REV. 00 DATE: 08.12.2020 Page 2 of 3						

FORMING											
A	Shells & Dished Ends	Process of manufacture, profile, dimensions, thickness, surface, check	A	Visual & Dimension	100%	As per BHEL Drawing	History sheet	/	P	H	R
B	Stress Relieving of dished ends after forming	Time & temperature control	A	Review Of charts	100%	As per BHEL Drawing	Chart record	/	P	H	R
2.3	NDE for butt welds										
A	Inner & Outer Dished Ends, Inner shell, pipe & tube welds	Soundness	B	RT	100%	ASME SEC VIII DIV I 2019	RT report	/	P	H	R*
B	Outer shell	Soundness	B	RT	spot	ASME SEC VIII DIV I 2019	RT report	-	P	H	-
2.4	Central hole plug welds of dished ends	Soundness	B	RT	100%	ASME SEC VIII DIV I 2019	RT report	-	P	H	R
2.5	All other welds	Soundness	B	DPT	100%	ASME SEC VIII DIV I 2019	DPT report	/	P	H	R
2.6	Testing										
A	Hydro testing of inner shell, Draining & Drying; Pneumatic testing of outer shell & pressurization coil.	Soundness	B	Visual	100%	As per BHEL Drawing	Pressure test report	/	P	H	H*
B	Perlite filling	Tight fit of perlite powder	B	Visual & moisture check	100%	BHPV-CD/STD/001	History sheet	-	P	H	-
C	Vacuum level	Vacuum level check	B	visual	Min 5 days	BHPV-CD/STD/001 no raise in vacuum at reference temp. for 5 days	Vacuum check record	/	P	H	-

MANUFACTURER'S NAME & ADDRESS: BHEL HPVP- VISAKHAPATNAM	MANUFACTURING QUALITY PLAN						CUSTOMER : M/s BEERENSGAS (INDIA) PVT LTD. PROJECT : for TIRUPUR Project. BHEL SO. No : 5617 CUSTOMER PO No : PO/2020-21/MH/41 DT:09.11.2020; PO/2020-21/MH/42 DT:09.11.2020				
	ITEM: 55 KL LNG Tank			QP NO.: CQP 2509 REV. 00 DATE: 08.12.2020 Page 3 of 3							
SL No	COMPONENTS & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY	REMARKS
1	2	3	4	5	6	7	8	9		M C N	11

2.7	Strengthening of Inner Vessel	Strain rate	A	Visual & Dimension	100%	BHEL Drg & Approved Procedure	Pressure test report	✓	P	H	W	
2.8	Pickling & passivation of all SS parts	Pickling & passivation	B	Visual	100%	As per BHEL Drawing	Inspection report	-	P	H	-	
2.9	Degreasing of all pipes, inner & outer surfaces of inner vessel & inner surface of outer vessel, coil assembly	cleanliness	B	visual	100%	-	Inspection report	-	P	H	-	
3.0 FINAL INSPECTION												
3.1	Visual and dimensional check	Visual and dimensions	B	Visual measurement	100%	As per BHEL Drawing	Inspection report	✓	P	H	W**	** R for Outer Vessel
3.2	Shot / sand blasting of outer shell	Cleanliness	B	Visual	100%	As per BHEL Drawing	Inspection report	-	P	H	-	
3.3	Filling of nitrogen	Nitrogen filling	B	Visual verification	100%	As per BHEL Drawing	Report	-	P	H	-	
3.4	Painting	DFT & Surface finish	B	Visual and DFT	100%	As per painting details in BHEL Drg	Paint report	-	P	H	-	
3.5	Identification & IRN	Name plate	B	Visual	100%	As per BHEL Drawing	Name plate Rub off	✓	P	P	H	



MANUFACTURER'S
NAME & ADDRESS

BHEL-VISAKHAPATNAM
or Approved Sub
Contractor.

STANDARD QUALITY PLAN for

CS/SS/LAS/CLAD Dished Ends of Columns & Pressure Vessels

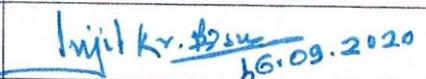
SQP: H: PP:29/00

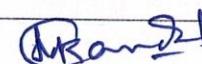
Page 1 of 7

Prepared by

Quality Assurance


P. Gopi Kishore

Reviewed by	Signature
Engineering (S.K. Biswas)	 S.K. Biswas 16.09.2020
Production, Planning & Technology (P.C Kandpal)	 P.C Kandpal 09.10.2020
Outsourcing (Y.V.R Rao)	 Y.V.R Rao
Quality (A.K. Mandal)	 A.K. Mandal

Rev. No	Date	Approved by	Signature
0		AGM (Quality & BE)	

 BHEL	MANUFACTURER'S NAME & ADDRESS BHEL-VISAKHAPATNAM or Approved Sub Contractor.	STANDARD QUALITY PLAN for CS/SS/LAS/CLAD Dished Ends of Columns & Pressure Vessels					SQP: SQP: H: PP:29/00		
							Page 2 of 7		
S. No	Description of Components / Operations	Characteristics	Quantum of Check	Reference Documents	Acceptance Criteria	Format of Record	Agency		Remarks
							V <i>B</i>	B	
1	2	3	4	5	6	7	8		9

RAW MATERIAL									
1.0	Plate Material: Verification & Correlation of Material Spec. & TC	Properties, Material Spec & Heat No. etc.	100%	TDC & Material Specification	TDC & Material Specification	Inspection Report	P	W	H
	Physical Condition of Plates	Visual	Each Plates	Material Specification	Material Specification	Inspection Report	P	W	-
	UT of Plates	Detection of flaws	100%	TDC / Material Spec. / Drawing	TDC / Material Spec. / Drawing	Inspection Report	P	R	-
IN PROCESS INSPECTION									
2.0	Transfer of Marking and Heat Number	Transfer of Stamp	100%	MTC	-	Inspection Report	P	W	-
3.0	Welding Procedure & Welder Qualification (if applicable)	WPS/PQR/WQR	100%	---	ASME Sec IX	ASME Format	P	R	-
4.0	Weld Edge Preparation & DPT(if applicable)	Detection of flaws	100%	Drawing/PT Procedure	Drawing/PT Procedure	Inspection Report	P	R	-
5.0	Fit up & Welding of L-Seam along with PTC as applicable (if applicable)	Fit-up, Dimensions, Welding, PTC	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	Inspection Report	P	R	-

LEGEND: P: Perform, H: Hold, R: Review, B-TPIA: BHEL TPIA, C-TPIA: Customer TPIA, AI-ASME Authorised Inspector, PT: Penetrant Test, RT: Radiographic Test, UT-Ultrasonic Test
 V- Sub Vendor: B-BHEL / BHEL TPIA: C-Customer TPIA / AI

 BHEL	MANUFACTURER'S NAME & ADDRESS	STANDARD QUALITY PLAN for				SQP: SQP: H: PP:29/00		
	CS/SS/LAS/CLAD Dished Ends of Columns & Pressure Vessels BHEL-VISAKHAPATNAM or Approved Sub Contractor.					Page 3 of 7		
S. No	Description of Components / Operations	Characteristics	Quantum of Check	Reference Documents	Acceptance Criteria	Format of Record	Agency	Remarks
1	2	3	4	5	6	7	V B C	8 9

6.0	100% PT on chipped back L-Seam weld (if applicable)	Detection of flaws	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	Inspection Report	P	-	-	
7.0	100% RT of L-Seam weld (if weld is applicable) before forming and heat treatment	Detection of flaws	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	RT Films / Records	P	-	-	Refer enclosed Appendix in case of Clad material
8.0	Forming of Dished End	Dimensional & Template check	100%	As per Drawing	As per Drawing	Inspection Report	P	-	-	Refer enclosed Appendix before forming in case of Clad material
9.0	Heat Treatment (along with PTC if applicable) as applicable	Time & Temperature	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	HT Chart / Report	P	R	-	HT procedure duly approved by BHEL to be followed.

LEGEND: P: Perform, H: Hold, R: Review, B-TPIA: BHEL TPIA, C-TPIA: Customer TPIA, AI-ASME Authorised Inspector, PT: Penetrant Test, RT: Radiographic Test, UT-Ultrasonic Test
V- Sub Vendor: B-BHEL / BHEL TPIA: C-Customer TPIA / AI

	MANUFACTURER'S NAME & ADDRESS BHEL-VISAKHAPATNAM or Approved Sub Contractor.	STANDARD QUALITY PLAN for CS/SS/LAS/CLAD Dished Ends of Columns & Pressure Vessels				SQP: SQP: H: PP:29/00 Page 4 of 7				
S. No	Description of Components / Operations	Characteristics	Quantum of Check	Reference Documents	Acceptance Criteria	Format of Record	Agency			Remarks
							V	B	C	
1	2	3	4	5	6	7	8		9	

FINAL INSPECTION										
10.0	100% PT on entire Knuckle area region (both inside & outside) including welds (if applicable) and weld edge preparation after forming & heat treatment	Detection of flaws	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	Inspection Report	P	W	-	100% MPI for LAS materials
11.0	100% RT of L-Seam weld (if weld is applicable) after forming and heat treatment	Soundness of Welds Detection of flaws	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	RT Films / Records	P	R	-	Review of RT Films only
12.0	100% UT after forming & heat treatment	Detection of flaws In Formed Head	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	UT Reports	P	W	-	Refer enclosed Appendix before Final Inspection in case of Clad material

LEGEND: P: Perform, H: Hold, R: Review, B-TPIA: BHEL TPIA, C-TPIA: Customer TPIA, AI-ASME Authorised Inspector, PT: Penetrant Test, RT: Radiographic Test, UT-Ultrasonic Test
V- Sub Vendor: B-BHEL / BHEL TPIA: C-Customer TPIA / AI

	MANUFACTURER'S NAME & ADDRESS BHEL-VISAKHAPATNAM or Approved Sub Contractor.	STANDARD QUALITY PLAN for CS/SS/LAS/CLAD Dished Ends of Columns & Pressure Vessels				SQP: SQP: H: PP:29/00 Page 5 of 7			
--	--	--	--	--	--	--------------------------------------	--	--	--

S. No	Description of Components / Operations	Characteristics	Quantum of Check	Reference Documents	Acceptance Criteria	Format of Record	Agency			Remarks
							V	B	C	
1	2	3	4	5	6	7	8		9	

13.0	Testing of Test Piece (if applicable)	Mechanical Properties	100%	As per Drawing / Material Specification	As per Drawing / Material Specification	Inspection Report	P	W	-	Refer Note 6
14.0	Final Inspection (minimum thickness, profile, ovality, Depth, Circumference etc.)	Visual & dimensional	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	Inspection Report	P	W	-	Dimensional check including minimum thickness using UT or UT-D meter.
15.0	Shot Blasting & Primer Paint application (if applicable)	Visual & dimensional	100%	Drawing	Drawing	Inspection Report	P	R	-	For CS only
16.0	Pickling & Passivation (if applicable)	Visual & dimensional	100%	Drawing	Drawing	Inspection Report	P	R	-	For AS & SS only.
17.0	Documentation	Record	100%	As per PO	As per PO	Document Book	P	R	R	Refer Note-5

Notes:

- 1) In case of conflict, more stringent requirement shall prevail.
- 2) Check the applicability of this SQP before proceeding.
- 3) All the measuring instruments / equipment shall have valid calibration records as on the date of use, from NABL / equivalent accredited bodies.
- 4) Transfer of identification mark on each part to be ensured before use.
- 5) Documents folder shall comprise reports as per this QP and shall be prefixed with an Index sheet with page numbers.
- 6) Testing of Test Coupon (required if any) to be done at any NABL accredited Laboratory.

LEGEND: P: Perform, H: Hold, R: Review, B-TPIA: BHEL TPIA, C-TPIA: Customer TPIA, AI-ASME Authorised Inspector, PT: Penetrant Test, RT: Radiographic Test, UT-Ultrasonic Test
V- Sub Vendor: B-BHEL / BHEL TPIA: C-Customer TPIA / AI

 બેન્દે ઇન્ડિયા	MANUFACTURER'S NAME & ADDRESS BHEL-VISAKHAPATNAM or Approved Sub Contractor.	STANDARD QUALITY PLAN for CS/SS/LAS/CLAD Dished Ends of Columns & Pressure Vessels					SQP: SQP: H: PP:29/00 Page 6 of 7		
S. No	Description of Components / Operations	Characteristics	Quantum of Check	Reference Documents	Acceptance Criteria	Format of Record	Agency	Remarks	
1	2	3	4	5	6	7	8	9	

APPENDIX SHEET CONTAINING ADDITIONAL REQUIREMENTS APPLICABLE IN CASE OF CLAD MATERIAL:

1.0	Clad Restoration on L-Seam weld & test coupon	Continuity of Clad	100%	Approved procedure	Inspection Report	-	P	R	-	(if weld is applicable in Clad Plate)
2.0	100% PT on Clad restoration each layer	Detection of flaws	100%	ASME Sec VIII Div.1 & Drawing	Inspection Report	-	P	R	-	(if the Material of Construction is Clad Plate)
3.0	Copper Sulphate test on L-seam after barrier layer deposition and preparation before start of deposition of subsequent layers	Detection of flaws	100%	Approved Procedure	Inspection Report	-	P	R	-	(if M O C is from clad Plate)
4.0	Ferroxyl Test after L-seam Clad restoration	No iron contamination	100%	Approved Procedure	Inspection Report	-	P	R	-	As applicable

LEGEND: P: Perform, H: Hold, R: Review, B-TPIA: BHEL TPIA, C-TPIA: Customer TPIA, AI-ASME Authorised Inspector, PT: Penetrant Test, RT: Radiographic Test, UT-Ultrasonic Test
V- Sub Vendor: B-BHEL / BHEL TPIA: C-Customer TPIA / AI

 BHEL	MANUFACTURER'S NAME & ADDRESS BHEL-VISAKHAPATNAM or Approved Sub Contractor.	STANDARD QUALITY PLAN for CS/SS/LAS/CLAD Dished Ends of Columns & Pressure Vessels					SQP: SQP: H: PP:29/00 Page 7 of 7			
S. No	Description of Components / Operations	Characteristics	Quantum of Check	Reference Documents	Acceptance Criteria	Format of Record	Agency		Remarks	
							V	B	C	
1	2	3	4	5	6	7	8		9	

5.0	Disbondment check (100% UT) for rolled sections of clad and weld overlay	Lack of bonding	100%	ASME Sec VIII Div.1 & Drawing	UT Reports	-	R	R	-	
6.0	Ferrite Number (2 spots per seam/overlay)	Microstructure % Delta Ferrite	100%	ASTM	Report	-	P	R	-	Using Ferrite Scope
7.0	Chemical Analysis after Clad Restoration and before forming & heat treatment	Chemical properties	100%	Approved Procedure	Inspection Report	-	P	R	-	

LEGEND: P: Perform, H: Hold, R: Review, B-TPIA: BHEL TPIA, C-TPIA: Customer TPIA, AI-ASME Authorised Inspector, PT: Penetrant Test, RT: Radiographic Test, UT-Ultrasonic Test
V- Sub Vendor: B-BHEL / BHEL TPIA: C-Customer TPIA / AI

QUALITY PLAN FOR HINDUSTAN ZINC PROJECT

FABRICATED & MACHINED COMPONENT (MILD STEEL)

SL.NO.	COMPONENT	CHARACTERISTIC CHECKED	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENTS & ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY		REMARKS
							P	W	
1.0	Raw Material : Plate, Rounds, Pipes (Specns. as applicable)	i.Verification of supplier's certificates for chem. & mech. Properties	Certificate review	100%	IS2062 FOR MS PL. IS226 FOR MS ROD SA106 GR.B FOR seamless stl. PIPE, En8 /En19 FOR RODs	T.C.	3	-	2
		ii. Soundness of plates >25 mm	Ultrasonic testing	100%	AA 0850120	TC	3	-	2
2.0	Fabrication	i. Review of WPS, PQR and WQR	Review of Documents	100%	-	Insp.Report	3	-	2
		ii. Fit up exam	Measurement	100%	Drawing	Dim.report	3	-	2
		iii. Heat Treatment	Review of HT Chart	100%	HY0640763		3	-	2
		iv. D.P. Testing of welded joints	D.P.test	100%	AA0850131 & AA0850129	TC	3	2	-
		v. Soundness of Butt welded joints	Ultrasonic testing	20%	HY0850160	Insp.Report	3	2	-
3.0	In process Inspection	i. Dimensions of components after machining	Measurement	100%	Drawing	Dimension report	3	-	2
4.0	Final Inspection after machining and assly.	i. Dimensions after M/Cing	Measurement	100% by Vendor 10 % by BHEL	Drawing.	Dimension Report	3	2	-
		iii. Painting & preservation	Paint shade and DFT	10% by BHEL on random basis	2 coats of Primer (Specn. AA 56101) to DFT 40 microns	Insp.Report	3	2	-
		iv. Make of fasteners	Review of documents	100%			-	-	2
		v. Identification & Marking	Punching of Drg. No., P.O.No. & Inspector Seal	100% by BHEL		Inspection Report	3/2	2	-
		APPROVED BY			LEGENDS :	P = PERFORM W = WITNESS V = VERIFY 3 = VENDOR 2 = BHEL	T.C. = TEST CERTIFICATE H.T. = HEAT TREATMENT		
QP. NO.	RV/FAB & MCD./30 Rev-01								
DATE	07.07.10								
PG. NO.	1 OF 1								
		SIGNATURE & DATE							

विरेन्द्र कुमार/VIRENDRA
प्रबंधक (योगदि) / Manager
भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Ltd.
हर्ष, वाराणसी
HERP, Varanasi

P = PERFORM
W = WITNESS
V = VERIFY
3 = VENDOR
2 = BHEL