



INVITATION TO TENDER

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Ref: OPS/OS/SC/2020-22/57/42

Date: 30.09.2021

Sub: Contract to carry out Local SR for the joints of C-Seams of Shell, Boot Shell + Main Shell SR nozzle of vessels of SO no 2438 at M/s BHEL-HPVP, Visakhapatnam works – Reg.

Sealed tenders are invited under **two bid system**, Techno-Commercial Bid (Part-I) and Price Bid (Part-II) from the reputed and experienced contractors with sound technical and financial capability for the subject work.

SL. NO.	NAME OF THE WORK	Contract Period
01	Contract to carry out Local SR for the joints of C-Seams of Shell, Boot Shell + Main Shell SR nozzle of vessels of SO no 2438 at M/s BHEL-HPVP, Visakhapatnam works	One Year

1. ELIGIBILITY CRITERIA:

- I) Average annual turnover of the contractor duly certified by a practitioner chartered accountant during the last 3 years ending 31st March 20 should be at least 30% of the estimated value. (i.e. **₹53,100/-**).

Tenderer should enclose EPF, ESI, PAN, GSTIN New registration no., Income tax returns for last three years (AY 2018-19, 2019-20 & 2020-21) and Profit & Loss account and Balance Sheet certified by the Practicing Chartered Accountant for the last 3 years.

- II) The Contractor should have experience of completing similar works during the last 7 years ending 31st **Aug 2021** as given below: -

- (a) Three similar completed works costing not less than the amount equal to 40% of the estimated value (i.e. **₹ 70,800/-** each)

OR

- (b) Two similar completed works costing not less than the amount equal to 50% of the estimated value (i.e. **₹ 88,500/-** each).

OR

- (b) One similar completed work costing not less than the amount equal to 80% of the estimated value (i.e. **₹ 1.42 Lakh**).

Work orders & Job Completion Certificates from the customer shall be enclosed in support of successful and satisfactory completion of the orders.

Note: Similar work means carrying out of Local SR in State / Central Govt. or Undertakings or Private firms.

- III) The works executed in the own name of the tenderer will only be considered for eligibility criteria.

2. VENDOR'S SCOPE OF WORK:

- a) Local SR of C-seam of C-Seams of Shell, Boot Shell + Main Shell SR nozzle of vessels as per relevant HTTS including mobilization of required manpower, equipments like Generator, Transformer, Power Supply cables, Element connecting cables, Glass Fiber wool, Heating Elements, Calibrated Thermocouples, Temperature Recorders, Other materials required for performing the Local SR etc. and submission of necessary documents & charts to BHEL-QC for inspection clearance and records.

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- b) Transportation of SR machinery, tools & tackles from vendor's place to BHEL – HPVP works and back to vendor's place after completion of work.
- c) Qualified manpower shall be deployed for proper execution of the job.
- d) Thermocouples / Equipments being used for this work shall be calibrated.
- e) Though not mentioned specifically, any activity which is required for completion of the work is deemed to be included in the scope of work of vendor.

3. BHEL SCOPE: BHEL shall provide the followings at free of cost:

- a) Drawings and Heat Treatment Technology Sheet.
- b) Area and power at one point. Further distribution to work location is to be carried out by the vendor.
- c) Handling facilities like crane for shifting of job and stands, wherever required.
- d) Job shall be handed over at Shops of HPVP / Lova Garden Site of HPVP, Visakhapatnam

4. LOCATION OF WORK:

Local SR is to be carried out at Production Shops in BHEL – HPVP, Visakhapatnam and Lova Garden Site of HPVP, Visakhapatnam

Note: The intending tenderers are advised to visit the above place, note down the entry procedures, safety requirements, work permit system etc. and satisfy themselves of all conditions prevailing there before submission of their tenders.

5. INSPECTION:

Inspection shall be carried out by M/s. BHEL-HPVP, Visakhapatnam / Authorized Inspection Agency as per applicable QAP and relevant documents.

6. CONTRACT PERIOD:

Contract is valid for a period of one year from the date of work order or intimation from Engineer-in-Charge, whichever is later.

7. DELIVERY:

Local SR is to be completed within **3 days** per joint after handing over of that particular joint by shop / site-in-charge to the vendor.

8. PENALTY:

If delivery exceeds the stipulated delivery schedule, **penalty 0.5%** per week subject to a maximum of **10%** on the value of delayed supplies will be levied. However, time taken for the following will not be considered as delay on the part of the vendor.

- a. Intermediate operations carried out by BHEL (Time Period from the date of Handing over to BHEL to the date of Receipt after completion of intermediate operations will be excluded for the LD Calculation)
- b. Waiting time for BHEL / Third party Inspection beyond a normal time of 3 days.

9. PAYMENT TERMS:

Payment will be made after handing over of the finished items duly inspected & cleared by Inspection Authority along with all inspection documents.

100% Payment shall be made within **30 days** from the date of submission of RA/ Final Bills. Bills are to be submitted to Engineer-in charge along with following documents:

- a) Invoice
- b) Job completion certificate issued by the Engineer-in-charge.
- c) Proof of GST payment as per Annexure - GST.
- d) NEFT/ RTGS form with bank account details of the vendor.
- e) WAM 06 (for RA bills) and WAM 07(for final bill) duly filled & signed.

10. EARNEST MONEY DEPOSIT:

Not Applicable as per OM No. F.9/4/2020-PPD, Dated: 12.11.2020. Bidders to Submit Bid Securing declaration form as enclosed in **Annexure-V.**

11. INCOME TAX:

Income tax as per statutory requirement will be deducted on each payment made to the contractor and TDS certificate will be issued to this effect.

12. TDS ON GST:

TDS on GST amount as per statutory requirement as applicable will be deducted on each payment made to the contractor. Present TDS on GST is 2%.

13. SECURITY DEPOSIT:

Security Deposit: NIL as per OM No: No. F.9/4/2020-PPD, Dated:12.11.2020. EPBG is allowed only for Bid Value greater than 5 Lakhs as per GeM.

14. PRICE SCHEDULE:

- a. Prices shall be quoted in the price schedule attached to the tender for the complete scope of work.
- b. The quoted prices shall be inclusive of all applicable taxes & duties as applicable as on due date of tender submission **including GST**. GST as applicable shall be payable by contractor & the same will be reimbursed as per **Annexure - GST**.
- c. In addition to existing taxes, any new taxes imposed by Central/ State Govt. shall be payable by the contractor and same shall be reimbursed on submission of relevant documents/proof of payment.
- d. In case, any new tax is imposed instead of existing tax, difference of the amount shall be reimbursed/ recovered on submission of documentary evidence.
- e. 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.
- f. All terms & conditions of the contract in respect of taxes & duties are subject to new taxation laws introduced time to time by Govt. and terms & conditions will deemed to be modified in accordance with the provisions of New Laws (i.e., GST).
- g. The quoted prices shall be fixed & firm without any escalation during the entire period of contract and till completion of the work.**

15. 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.

16. FACTORY RULES AND REGULATIONS:

Party shall abide by all the rules and 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.

17. VALIDITY OF OFFER:

The offer shall be valid for a period of **3 months** from the last date for tender submission.

18. RISK PURCHASE:

In case the contractor fails to execute the work due to any reason, BHEL 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.

19. GENERAL:**19.1 Bidders shall confirm their acceptance to all the terms & conditions of the tender enquiry.**

Deviations to the tender conditions are not acceptable and BHEL-HPVP reserves the right to reject such offers which do not meet Technical / Commercial requirements without any / further correspondence.

Bids not accompanied with requisite documents / delayed bids, incomplete / conditional offers, bids not conforming to the terms & conditions specified in the tender documents are liable for rejection.

19.2 BHEL reserves the right to modify or cancel or short close the tender at any stage at its discretion without assigning any reason thereof.**19.3 The bidders shall study the tender documents, drawings and all other relevant documents in detail for understanding the scope of work involved in various items before submission of offers.**

For any clarifications required on this tender document, scope of work etc., the bidders shall depute their authorized representatives to HPVP, Visakhapatnam with prior intimation to get clarifications from concerned authorities.

19.4 DGM (Production) shall be the Engineer-in-charge for herein after referred to as such in the tender. Contact Details: Ph: 0891-668-1343, email: prafullakumar@bhel.in**19.5 Lowest offer need not be the rate acceptable to BHEL-HPVP. BHEL-HPVP reserves the right for negotiation with the L1 bidder.****19.6 The following documents (enclosed) shall form part of the contract including this Notice Inviting Tender: -****PART - I: TECHNO COMMERCIAL BID**

- | | |
|--|------------------|
| a) Details of job and PWHT Schedule & Procedure | : Annexure - I |
| b) Acceptance to the Tender Terms & Conditions | : Annexure – II |
| c) Contractor Information | : Annexure – III |
| d) Check List | : Annexure – IV |
| e) Bid Security Declaration Form | : Annexure – V |
| f) GTC of GeM | |
| g) HT Cycles, GA Drawings & Fabrication Drawings | |

PART - II: PRICE BID

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| h) Price Bid (Schedule of Quantities & Rates) | : Annexure – VI |
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20. Submission of offer by a tenderer implies that all the tender documents were read by the tenderer and the tenderer is aware of the scope and specifications of the work, site condition, local conditions and rates at which stores, tools and plant, free / chargeable materials etc., will be issued to him by BHEL - HPVP and other factors having bearing on the execution of the work.**21. 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.

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

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1. DETAILS OF JOB

SL. NO.	S.O. NO.	DESCRIPTION	QTY in No.	HEADER SPECN.	HTP NO.	PWHT TEMP.	SOAK TIME (IN MIN)
1	2438	LOCAL SR_ JOINT AT ID RANGE 5000-5500 MM	3.	SA516 GR70 (NACE+HIC) SA105	H-104-2021	630±10°C	60
2	2438	LOCAL SR_ JOINT AT ID RANGE 4500-5000 MM	2	SA516 GR70 (NACE+HIC) SA105	H-105-2021	630±10°C	60
3	2438	LOCAL SR_ JOINT AT ID RANGE 1200-1500 MM	7	SA516 GR70 (NACE+HIC)	H-106-2021	610±10°C	70
4	2438	LOCAL SR_ JOINT AT ID RANGE 900-1200 MM	8	SA516 GR70	H-110-2021	610±10°C	70

Note:

- Details of Drawings/PGMA no. and Joints details are given in **Annexure-I A**
- If there is any change in HT Cycles due to revision of drawings, it will be informed accordingly.

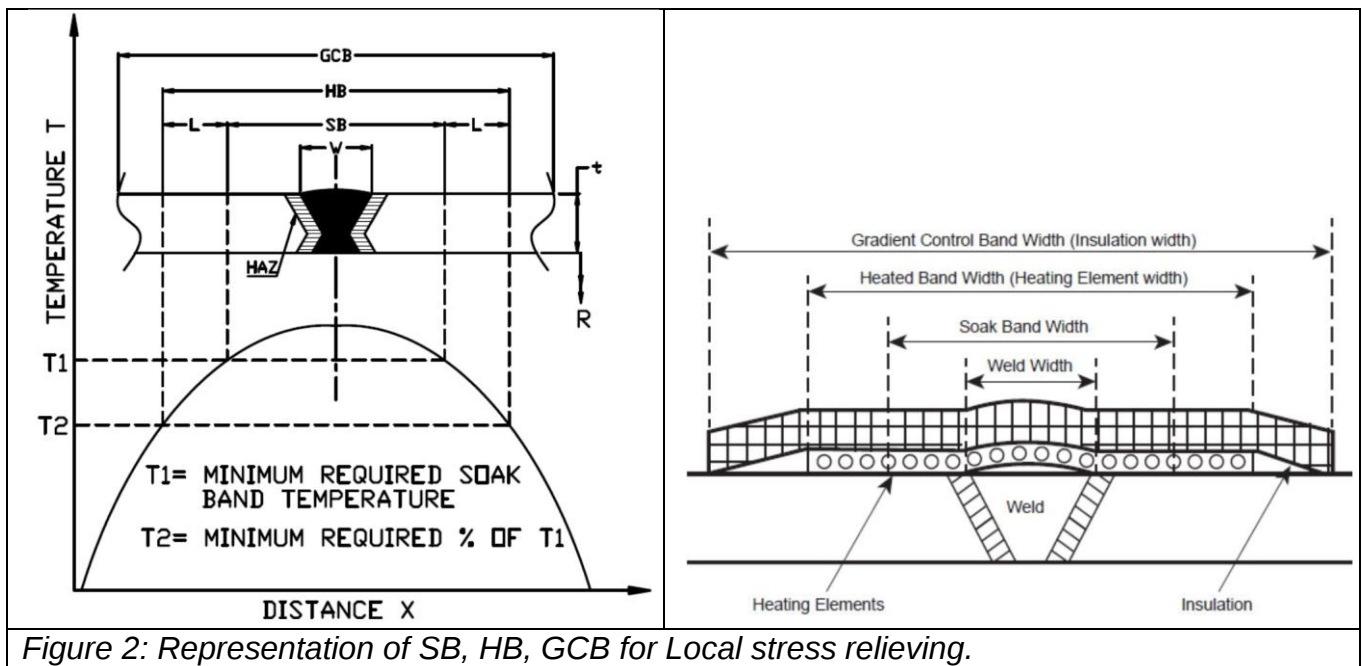
2. PWHT SCHEDULE & PROCEDURE:**2.1 LOCAL PWHT (or) REPAIR WELD STRESS RELIEVING:**

- Local heat treatment shall be followed for circumferential weld seams, complicated welds, weld repairs, if the vessel is not practicable to heat treat the complete vessel (or) as a whole (or) in two (or) more heats by appropriate means like electrical resistance heating assuring the required uniformity.
- For Nozzle (or) attachment welds (or) pipes (or) tubes (or) nozzle attachments on double curvature/ellipsoidal dished ends/spherical shells, the soak band shall be uniformly heated to required temperatures and holding times with soaking band extending edge of attachment welds with 1t (or) 50mm, whichever is less. Where t is nominal weld thickness.
- The portion outside the soak band shall be protected so that the temperature gradient is not harmful.
- The Soak band width (SB), Heating band width (HB), Gradient control band width (GCB) representation are given in below figure-2 & table-2.

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DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

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- W – Widest width of weld
- HAZ – Heat affected Zone
- SB – Soak band
- L – Minimum distance over which the temperature may drop to a 50% percentage of that at the edge of the soak band
- HB – Heated band
- GCB – Gradient control band
- t – Nominal thickness of shell, head or nozzle neck
- R – Inside Radius of shell, head or nozzle neck

Table 2: Representation of SB, HB, GCB widths with Purpose & portion covered for Local stress relieving

Types of Bands to be covered	Purpose	Band Width (for Butt welds)	Band width (for Nozzles or Attachment welds to shell)	Portion to be covered
Soaking band	For Volume of metal required for Heat treatment parameters specified.	2 times the shell thickness on each side of the greatest width of the weld	6 times the plate thickness on either side of the nozzle or attachment weld edge.	Weld, HAZ, Base Metal adjacent to weld

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

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Heating band	For heat source width to ensure minimum temperatures through thickness in soak band	Minimum $2L + SB$; $L = \sqrt{(R * t)}$ SB = Soak band width R is Internal Radius t is shell thickness.	Minimum Shell Side: $2L + SB$; Nozzle Side: $L_n + SB$; $L = \sqrt{(R * t)}$ $L_n = \sqrt{(R_n * t_n)}$ SB = Soak band width R, R_n = Inside radius of Shell or Nozzle. t, t_n = Nominal thickness of Shell or Nozzle. L, L_n = Minimum distance over which the temperature may drop to one half of that at the edge of the soak band.	Soak Band + Adj. Base metal
Gradient Control band	For placing insulation to control axial temperature gradient	minimum $8L + SB$; $L = \sqrt{(R * t)}$ SB = Soak band width R is Internal Radius t is shell thickness.	Minimum Shell Side: $4L + SB$; Nozzle Side: $4L_n + SB$; $L = \sqrt{(R * t)}$ $L_n = \sqrt{(R_n * t_n)}$ SB = Soak band width R, R_n = Inside radius of Shell or Nozzle. t, t_n = Nominal thickness of Shell or Nozzle. L, L_n = Minimum distance over which the temperature may drop to one half of that at the edge of the soak band.	Soak Band + Heat Band + Adj. Base metal

e. For Thermocouple attachments with respect to planes, locations (centreline of weld, Edge of soaking band on either side, Edge of heating band on either side), inner or Outer surface of attachment with no. of Thermocouples (TCs) for local stress relieving are listed for the following combinations –

1. **Cylindrical shell to shell (groove butt weld)** is referred in Figure 3,4 & Table 3
2. **Boot shell/pipe to nozzle (groove butt weld)** is referred in Figure 5,6 & Table 3
3. **Nozzle attachment to shell (groove butt weld)** is referred in Figure 7, 8 & Table 4
4. **Boot / Nozzle & pad attachment to shell (groove + fillet & fillet welds)** is referred in Figure 9, 10 & Table 5
5. **Boot / Nozzle attachment to Insert plate / shell (groove + fillet weld)** is referred in Figure 11, 12 & Table 6

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

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For all above combinations to control axial temperature gradient, two additional planes of thermocouples could be located midway between the edges of soaking and heating bands. Also wherever necessary, sufficient no. of additional thermocouples shall be placed to monitor the requirements specified in this section.

For Cases, e.1 & 2:**Cylindrical shell to shell / Boot Shell to Nozzle combinations for local SR with groove butt weld configuration:**

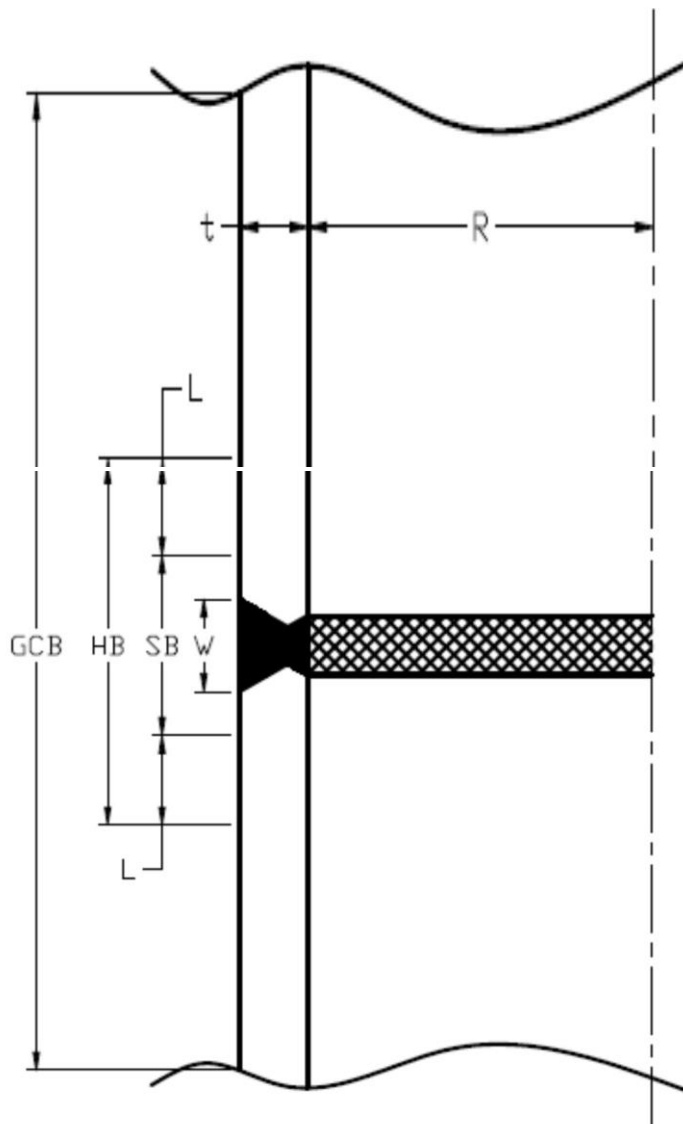
Table 3: Minimum no. of Thermocouples w.r.t planes, locations for Groove Butt Weld type of heating/local SR

Type of heating	Location of TCs	Plane	Inner / Outer surface	Minimum no. of TCs*
Cylindrical Shell to shell (Groove Butt weld) <i>Figure-3 & 4 for schematic representation of TCs)</i> ***** Cylindrical Boot Shell to Nozzle (Groove Butt weld) <i>Figure-5 & 6 for schematic representation of TCs)</i>	Centreline of weld	C	Outer surface	4 no's at 90 deg. angular spacing (12, 3, 6, 9 clock positions)
			Inner surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of the soaking band (one side of weld)	D	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
			Inner surface	1 no located opposite to TC at outer surface in through thickness direction. (6 clock position)
	Edge of the soaking band (other side of weld)	B	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
			Inner surface	1 no located opposite to TC at outer surface in through thickness direction. (12 clock position)
	Edge of the heating band (one side of weld)	A	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of the heating band (other side of weld)	E	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)

*Additional number of thermocouples must be included along the circumferential soak band, head band and weld centreline on each plane as mentioned in table-3 such that the maximum distance between any two thermocouples shall not exceed 4.6 meters in any direction.

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

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W = Widest width of weld.

L = Minimum distance over which the temperature may drop to one half of that at the edge of the soak band.

R = Inside radius of Shell or Head.

t = Nominal thickness of Shell or Head.

SB = Soak Band width, $W+2t$

HB = Heat Band width, $2L+SB$ where $L=\sqrt{Rxt}$

GCB = Gradient Control Band width, $8L+SB$ where $L=\sqrt{Rxt}$

Figure 3: Schematic representation of SB, HB, GCB when heating a Boot shell/Pipe to Nozzle weld (applicable for Nozzle length greater than 4L)

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

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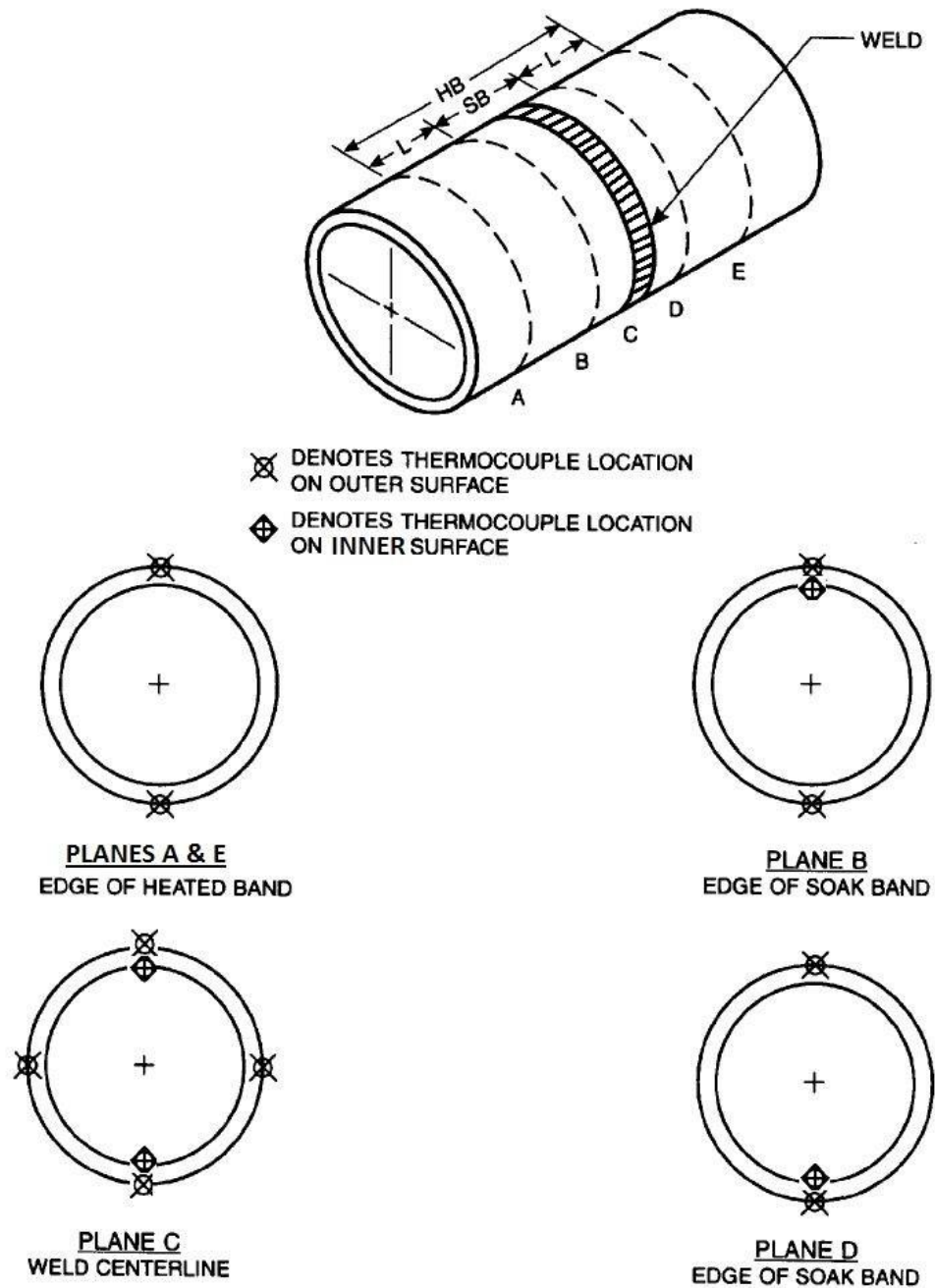
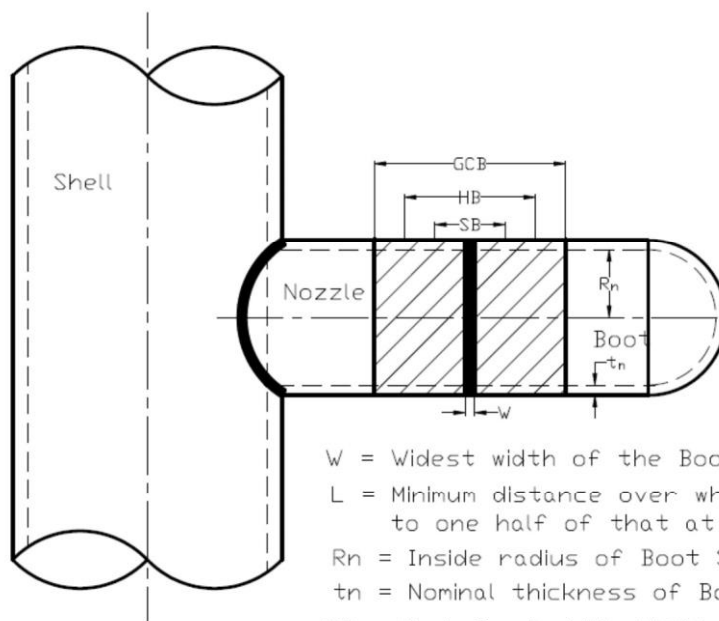


Figure 4: Schematic representation of Minimum no. of thermocouples when heating a cylindrical shell

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

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W = Widest width of the Boot Shell to Nozzle weld
 L = Minimum distance over which the temperature may drop to one half of that at the edge of the soak band.
 R_n = Inside radius of Boot Shell or Nozzle neck.
 t_n = Nominal thickness of Boot Shell or Nozzle neck.
 SB = Soak Band width, $W + 2t_n$
 HB = Heat Band width, $2L + SB$ where $L = \sqrt{R_n \times t_n}$
 GCB = Gradient Control Band width, $8L + SB$ where $L = \sqrt{R_n \times t_n}$

Figure 5: Schematic representation of SB, HB, GCB when heating a Boot shell/Pipe to Nozzle weld (applicable for Nozzle length greater than $4L$)

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

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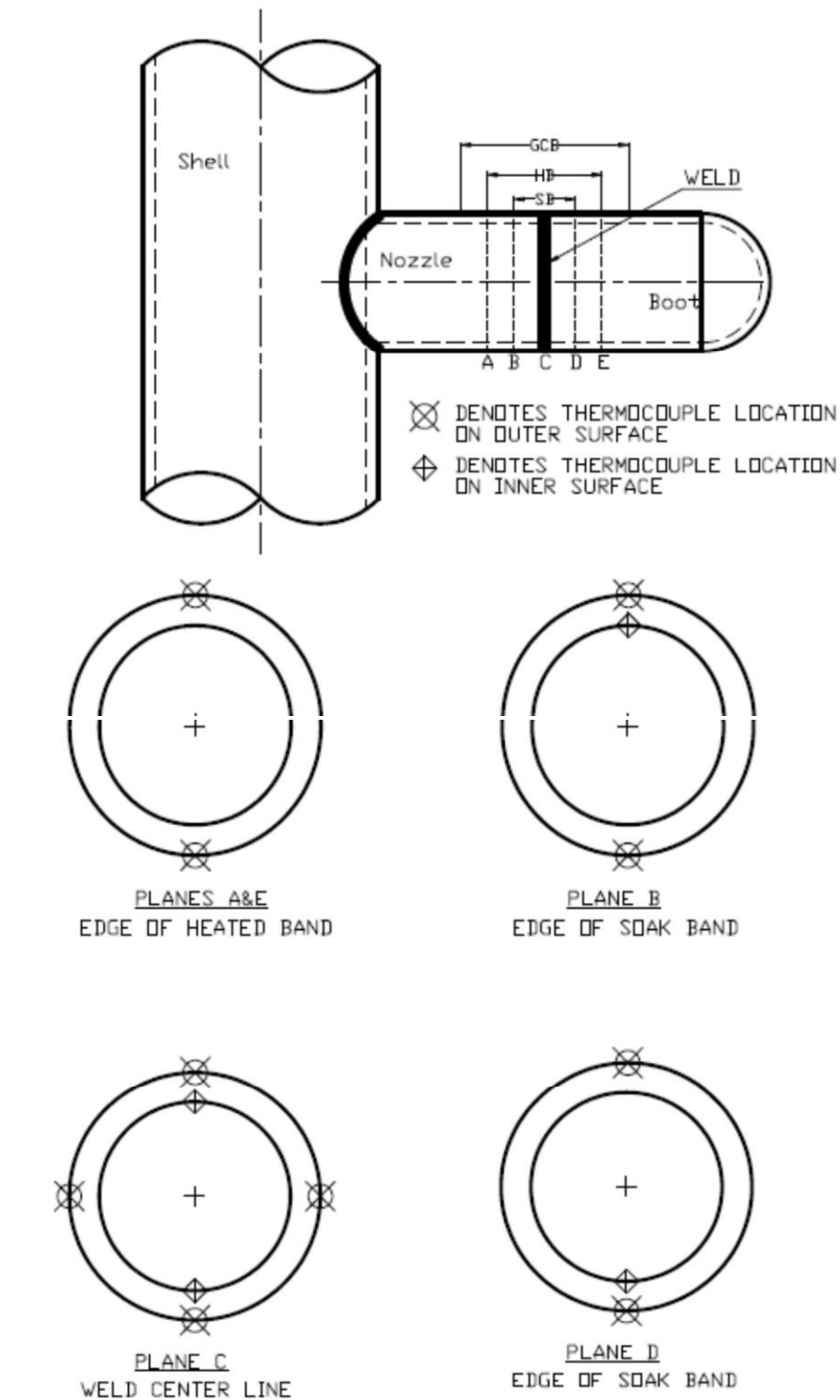


Figure 6: Schematic representation of Minimum no. of thermocouples when heating a Boot shell/Pipe to Nozzle weld

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

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For Case e.3:**Nozzle attachment to shell combination for local SR with groove butt weld configuration:**

Table 4: Minimum no. of Thermocouples w.r.t planes, locations for nozzle attachment to shell (groove butt weld) type of heating/local SR

Type of heating	Location of TCs	Plane	Inner / Outer surface	Minimum no. of TCs
Nozzle attachment to shell (groove weld) (Refer Figure-7, for SB, HB, GCB locations; Figure-8 for schematic representation of TCs)	on weld	C-C	Outer surface	2 no's at 180 deg. angular spacing (3, 9 clock positions)
			Inner surface	1 no. (9 clock position)
	Edge of soaking Band (Shell side)	B-B	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of Soaking Band (Nozzle side)	B-B	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of Heating Band (Shell side)	B-B	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of Heating Band (Nozzle side)	B-B	Outer surface	1 no. (6 clock position)
	Edge of soaking Band (Shell side)	C-C	Outer surface	2 no's at 180 deg. angular spacing (3, 9 clock positions)
	Edge of Heating Band (Shell side)	C-C	Outer surface	2 no's at 180 deg. angular spacing (3, 9 clock positions)

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

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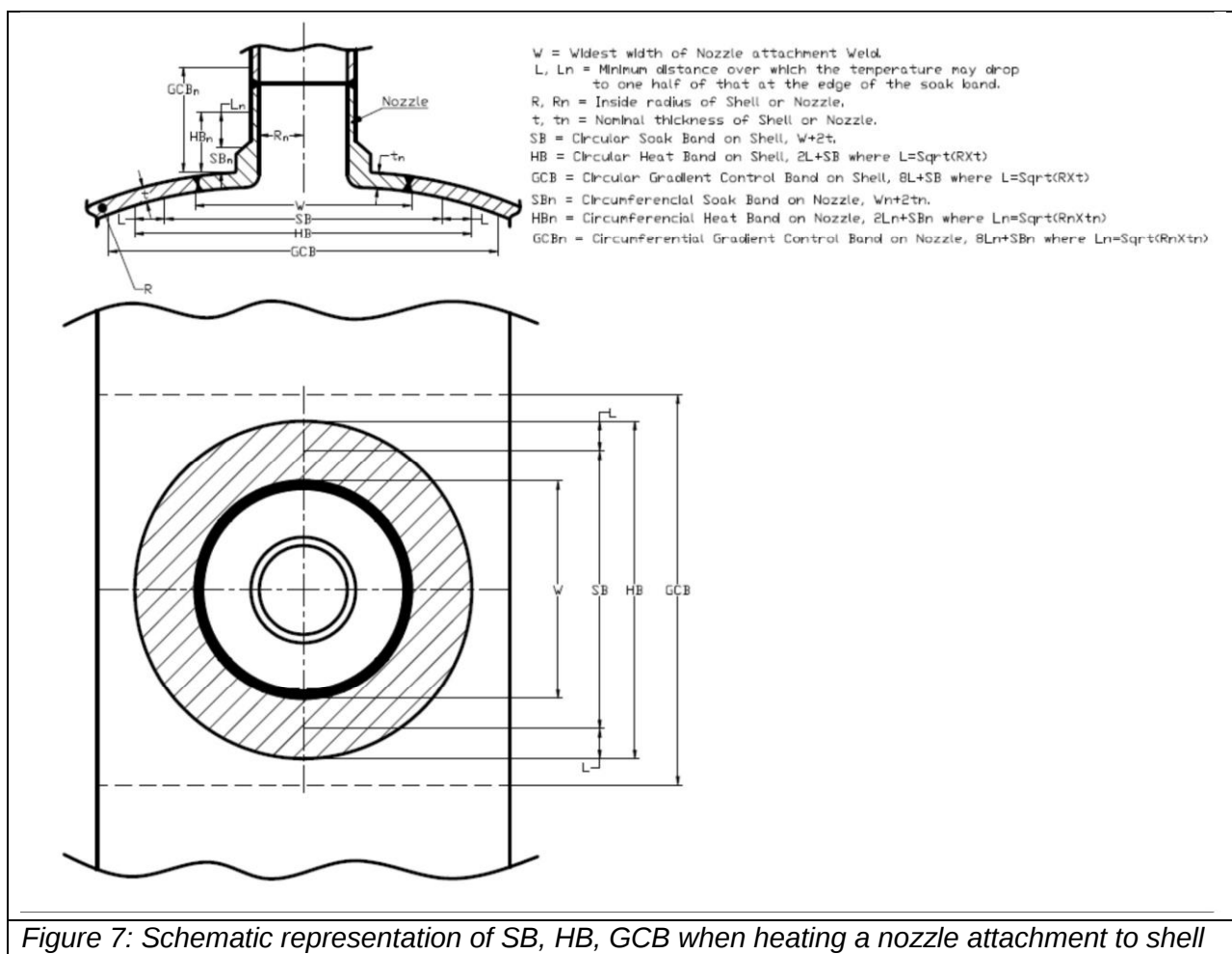


Figure 7: Schematic representation of SB, HB, GCB when heating a nozzle attachment to shell

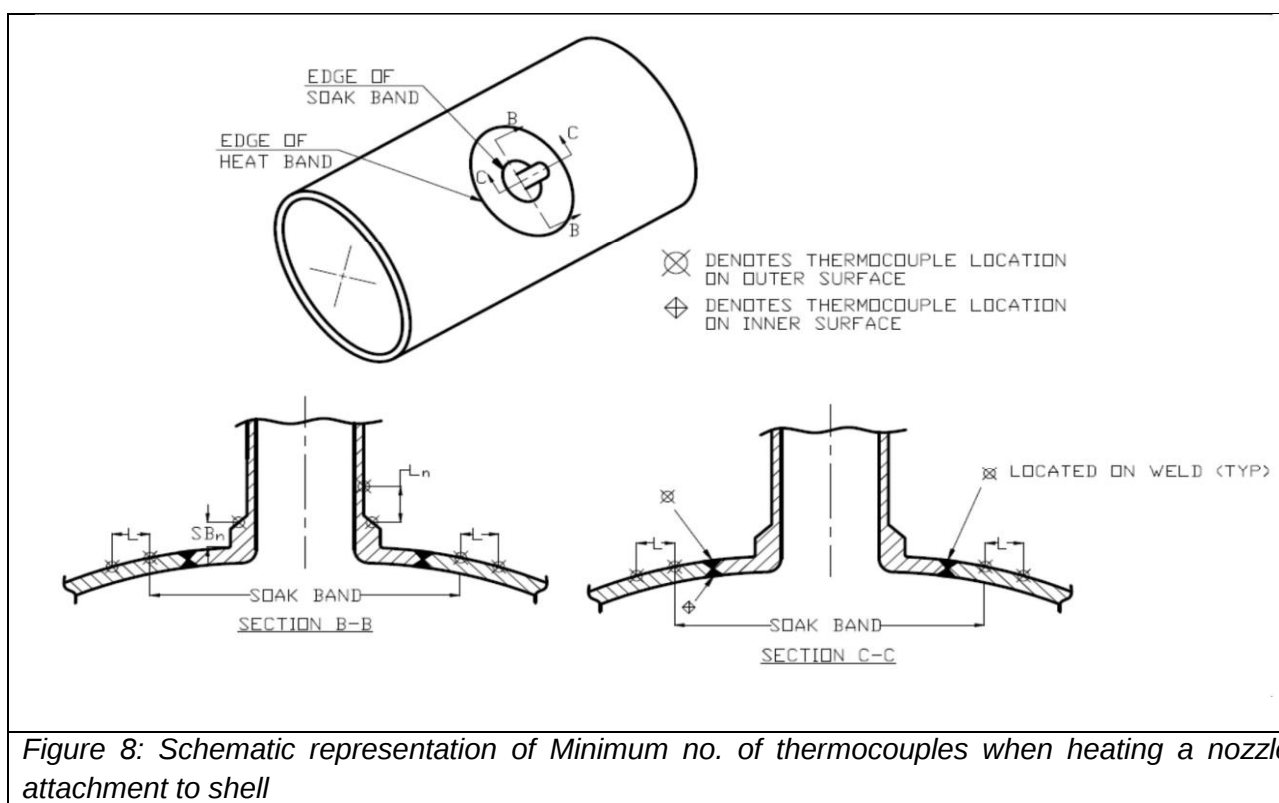


Figure 8: Schematic representation of Minimum no. of thermocouples when heating a nozzle attachment to shell

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

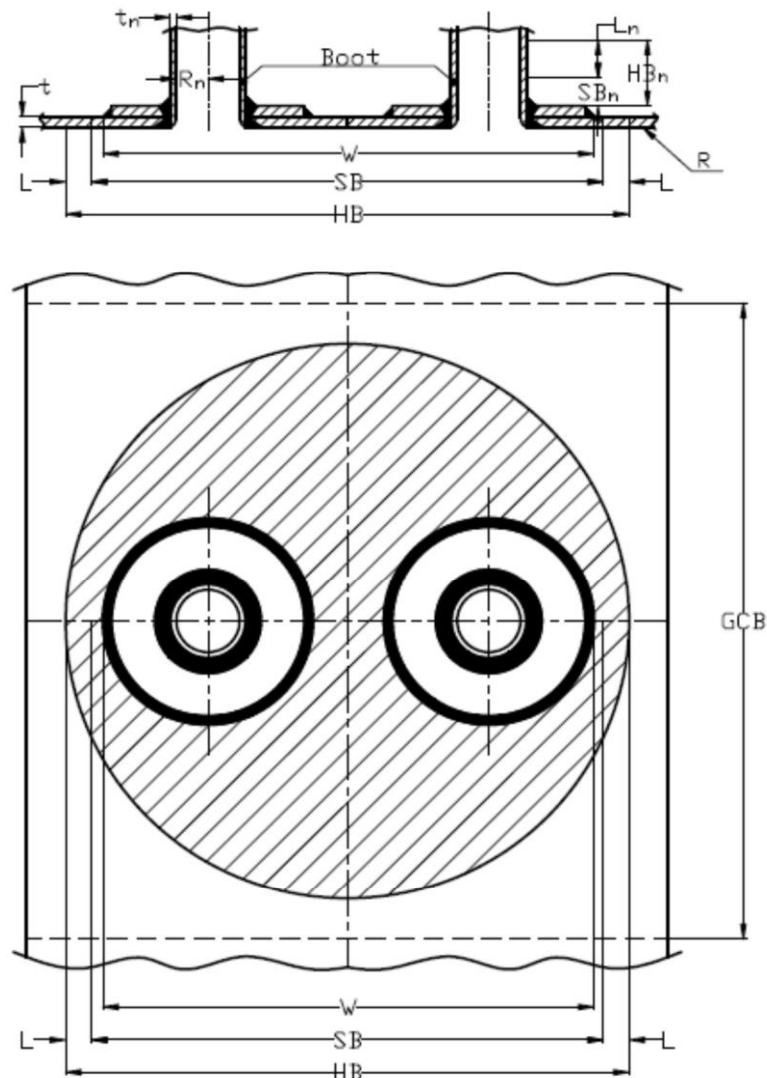
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For Case e.4:**Boot / Nozzle & Pad attachment to shell combination for local SR with groove + fillet & fillet weld configurations:***Table 5: Minimum no. of Thermocouples w.r.t planes, locations for nozzle & pad attachment to shell type of heating/local SR*

Type of heating	Location of TCs	Plane	Inner / Outer surface	Minimum no. of TCs
Nozzle attachment to shell (groove + fillet & fillet welds) <i>(Refer Figure-9, for SB, HB, GCB locations; Figure-10 for schematic representation of TCs)</i>	Weld	C-C	Outer surface of boot shell welds	2 no's at 180 deg. angular spacing (3, 9 clock positions)
			Inner surface of boot shell welds	2 no's at 180 deg. angular spacing (3, 9 clock positions)
			Outer surface of pad attachment welds	2 no's at 180 deg. angular spacing (3, 9 clock positions)
	Edge of soaking Band (Shell side)	B-B	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of Soaking Band (Nozzle side)	B-B	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of Heating Band (Shell side)	B-B	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of Heating Band (Nozzle side)	B-B	Outer surface	1 no. (6 clock position)
	Edge of soaking Band (Shell side)	B1-B1	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of Soaking Band (Nozzle side)	B1-B1	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of Heating Band (Shell side)	B1-B1	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of Heating Band (Nozzle side)	B1-B1	Outer surface	1 no. (6 clock position)
	Edge of soaking Band (Shell side)	C-C	Outer surface	2 no's at 180 deg. angular spacing (3, 9 clock positions)
	Edge of Heating Band (Shell side)	C-C	Outer surface	2 no's at 180 deg. angular spacing (3, 9 clock positions)

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

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W = Widest width of Nozzle & Pad attachment Weld.

L, Ln = Minimum distance over which the temperature may drop to one half of that at the edge of the soak band.

R, Rn = Inside radius of Shell or Nozzle.

t, tn = Nominal thickness of Shell or Nozzle.

SB = Circular Soak Band on Shell, $W+6t$.

HB = Circular Heat Band on Shell, $2L+SB$ where $L=\sqrt{R \times t}$

GCB = Circular Gradient Control Band on Shell, $8L+SB$ where $L=\sqrt{R \times t}$

SBn = Circumferential Soak Band on Nozzle, $Wn+6tn$.

HBn = Circumferential Heat Band on Nozzle, $Ln+SBn$ where $Ln=\sqrt{Rn \times tn}$

Figure 9: Schematic representation of SB, HB, GCB when heating a Boot / nozzle & pad attachment to shell

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

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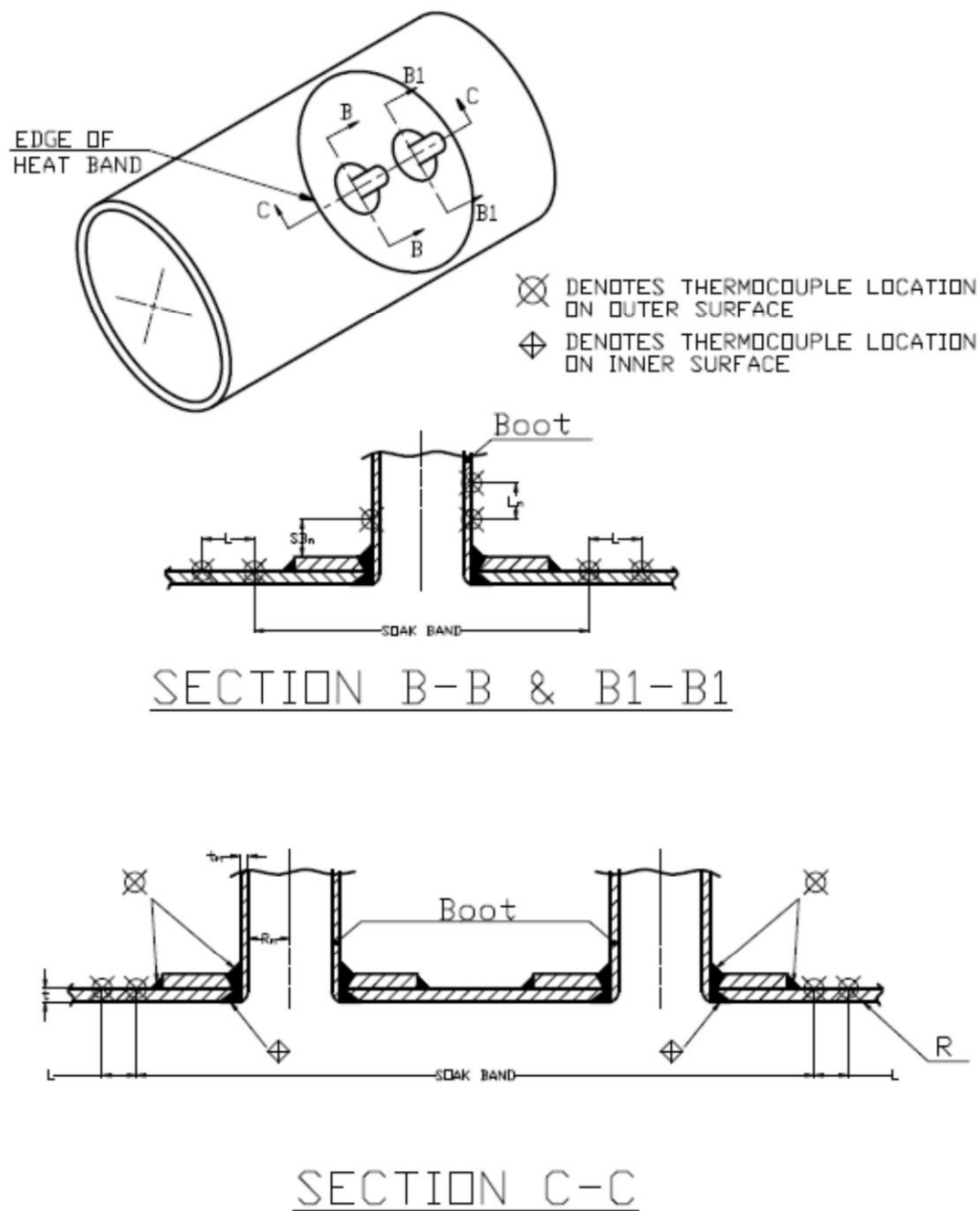


Figure 10: Schematic representation of Minimum no. of thermocouples when heating a Boot / nozzle & pad attachment to shell

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

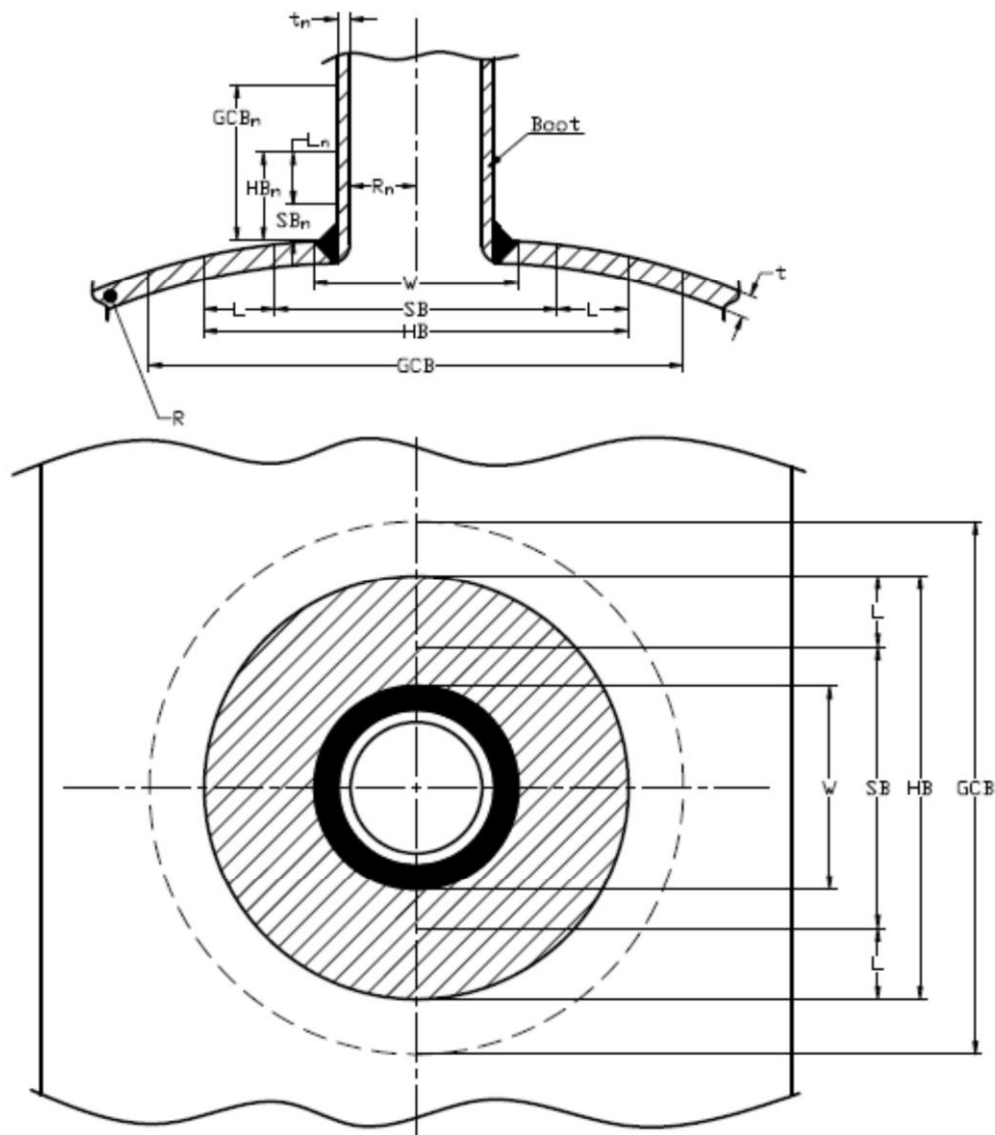
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For case e.5:**Boot / Nozzle attachment to Insert plate / Shell combination for local SR with groove + fillet weld configuration:***Table 6: Minimum no. of Thermocouples w.r.t planes, locations for boot / nozzle attachment to shell (groove + fillet) type of heating/local SR*

Type of heating	Location of TCs	Plane	Inner / Outer surface	Minimum no. of TCs
Nozzle attachment to shell (groove + fillet weld) (Refer Figure-11, for SB, HB, GCB locations; Figure-12 for schematic representation of TCs)	on weld	C-C	Outer surface	2 no's at 180 deg. angular spacing (3, 9 clock positions)
			Inner surface	1 no. (9 clock position)
	Edge of soaking Band (Shell side)	B-B	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of Soaking Band (Nozzle side)	B-B	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of Heating Band (Shell side)	B-B	Outer surface	2 no's at 180 deg. angular spacing (12, 6 clock positions)
	Edge of Heating Band (Nozzle side)	B-B	Outer surface	1 no. (6 clock position)
	Edge of soaking Band (Shell side)	C-C	Outer surface	2 no's at 180 deg. angular spacing (3, 9 clock positions)
	Edge of Heating Band (Shell side)	C-C	Outer surface	2 no's at 180 deg. angular spacing (3, 9 clock positions)

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

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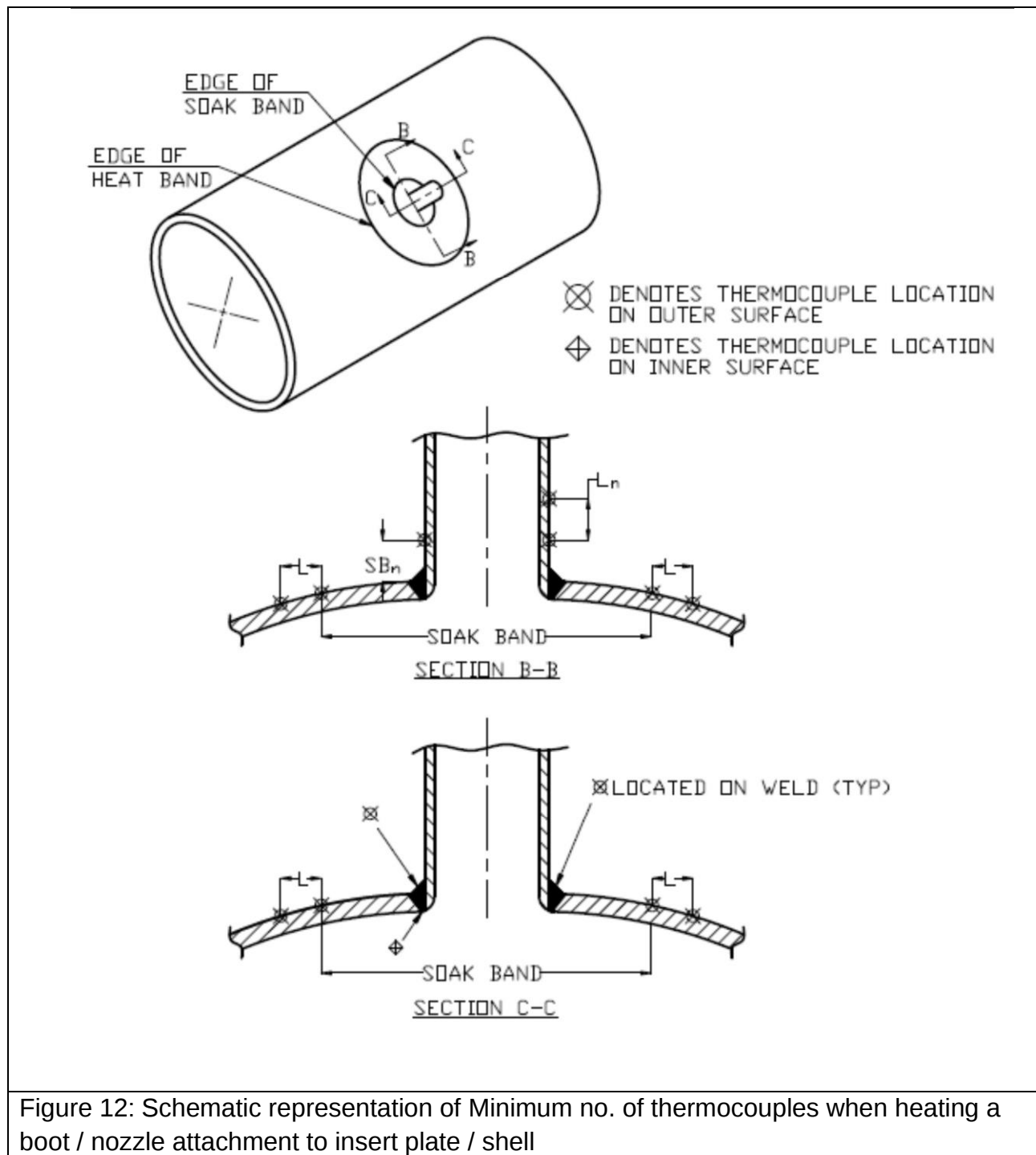


W = Widest width of Boot / Nozzle attachment Weld.
 L, L_n = Minimum distance over which the temperature may drop to one half of that at the edge of the soak band.
 R, R_n = Inside radius of Shell or Boot / Nozzle.
 t, t_n = Nominal thickness of Shell or Boot / Nozzle.
 SB = Circular Soak Band on Shell, $W+2t$.
 HB = Circular Heat Band on Shell, $2L+SB$ where $L=\sqrt{RXt}$
 GCB = Circular Gradient Control Band on Shell, $8L+SB$ where $L=\sqrt{RXt}$
 SB_n = Circumferential Soak Band on Boot / Nozzle, W_n+2t_n .
 HB_n = Circumferential Heat Band on Boot / Nozzle, $2L_n+SB_n$ where $L_n=\sqrt{R_nXt_n}$
 GCB_n = Circumferential Gradient Control Band on Boot / Nozzle, $8L_n+SB_n$ where $L_n=\sqrt{R_nXt_n}$

Figure 11: Schematic representation of SB, HB, GCB when heating a Boot / Nozzle to Insert plate / shell

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

::16::



- f. The temperature difference between the top outside and bottom inside of less than 15deg.C shall be maintained in soaking band by achieving minimum soaking temperatures as per table throughout the thickness.
- g. Recommended to use insulation on the inner surface to reduce the temperature difference to less than 15 deg.C
- h. The axial temperature gradient must be limited by maintaining the temperature (T2) at the edge of the heated band more than 50% of the peak soak band temperature (T1) during heating, hold and cooling.

DETAILS OF JOB AND PWHT SCHEDULE & PROCEDURE

::17::

- i. Glass wool is used as Insulation & K -type of thermocouples are used and Cleate type attachment will be made for thermocouples.
- j. Heat treatment parameters and all other general requirements must be as per section 6.1 of this procedure.
- k. Weld repairs / touch-ups are not allowed after completion of Local S.R & hence inspection on weld quality by Visual & NDT technics should be carried prior to Local S.R by the concerned department.
- l. No weld should undergo more than two H.T cycles i.e., Local S.R / PFHT / PWHT.
- m. The equipment / vessel Tag numbers for which local SR is to be carried are listed in below table –

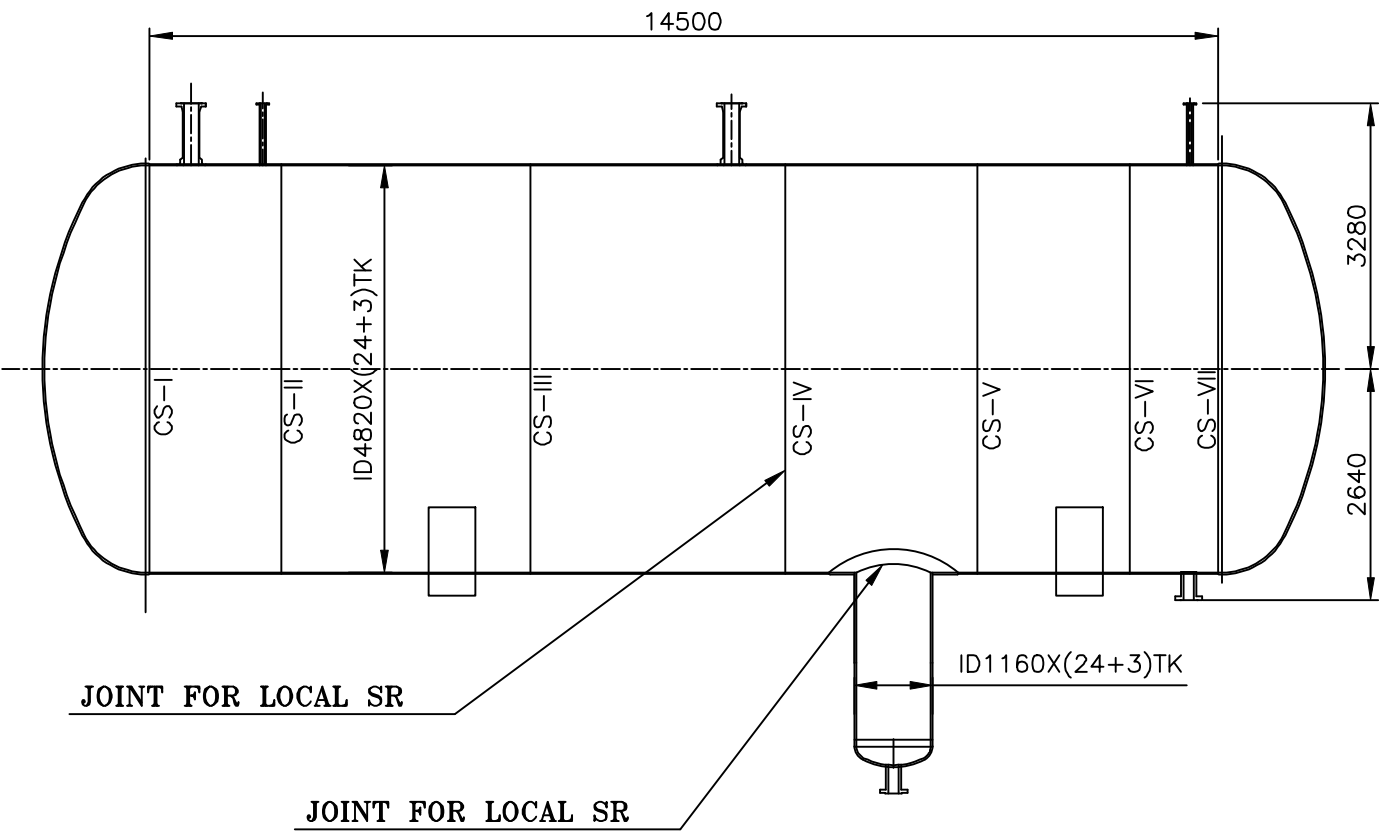
Table 7: List of Equipments / vessel Tag numbers for which Local SR is to be carried

Vessel Tag No.	PGMA	Item Description	Remarks
504-V-201	PV-070	Boot Shell Assembly to SR Nozzle	Refer Table-2 & 3 Figure 5 & 6
504-V-801	PV-140	LHS Dished End to shell	Refer Table-2 & 3 & Figure 3 & 4
		RHS Dished End to shell	Refer Table-2 & 3 & Figure 3 & 4
		Boot Assembly to Main Shell	Refer Table-2 & 4 & Figure 7 & 8
504-V-803	PV-160	Boot Assembly (B01 & B02) & pad attachment to Main Shell	Refer Table-2 & 5 & Figure 9 & 10
504-V-807	PV-190	Boot Assembly (B01 & B02) & pad attachment to Main Shell	Refer Table-2 & 5 & Figure 9 & 10
504-V-809	PV-200	Boot Assembly (B01 & B02) & pad attachment to Main Shell	Refer Table-2 & 5 & Figure 9 & 10
504-V-122	PV-50	Boot Assembly to Insert plate	Refer Table-2 & 6 & Figure 11 & 12
		Joint between Shell Section III & IV	Refer Table-2 & 3 & Figure 3 & 4
701-T-113A/B	PV-220	Joint between Shell Section IV & V	Refer Table-2 & 3 & Figure 3 & 4
		Joint between Shell Section IX & X	Refer Table-2 & 3 & Figure 3 & 4
504-V-315	PV-100	Joint between Shell Section III & IV	Refer Table-2 & 3 & Figure 3 & 4
504-V607ABC	PV-120	Joint between Shell Section III & IV	Refer Table-2 & 3 & Figure 3 & 4
		Joint between Shell Section VII & VIII	Refer Table-2 & 3 & Figure 3 & 4
504-V-802	PV-150	Joint between Shell Section II & III	Refer Table-2 & 3 & Figure 3 & 4
		Joint between Shell Section V & VI	Refer Table-2 & 3 & Figure 3 & 4
504-V-805A	PV-180	Joint between Shell Section III & IV	Refer Table-2 & 3 & Figure 3 & 4
504-V-105	PV-020	All nozzles attachment welds with shell for ISR (Category – D joints)	Refer Table-2 & 6 & Figure 11 & 12

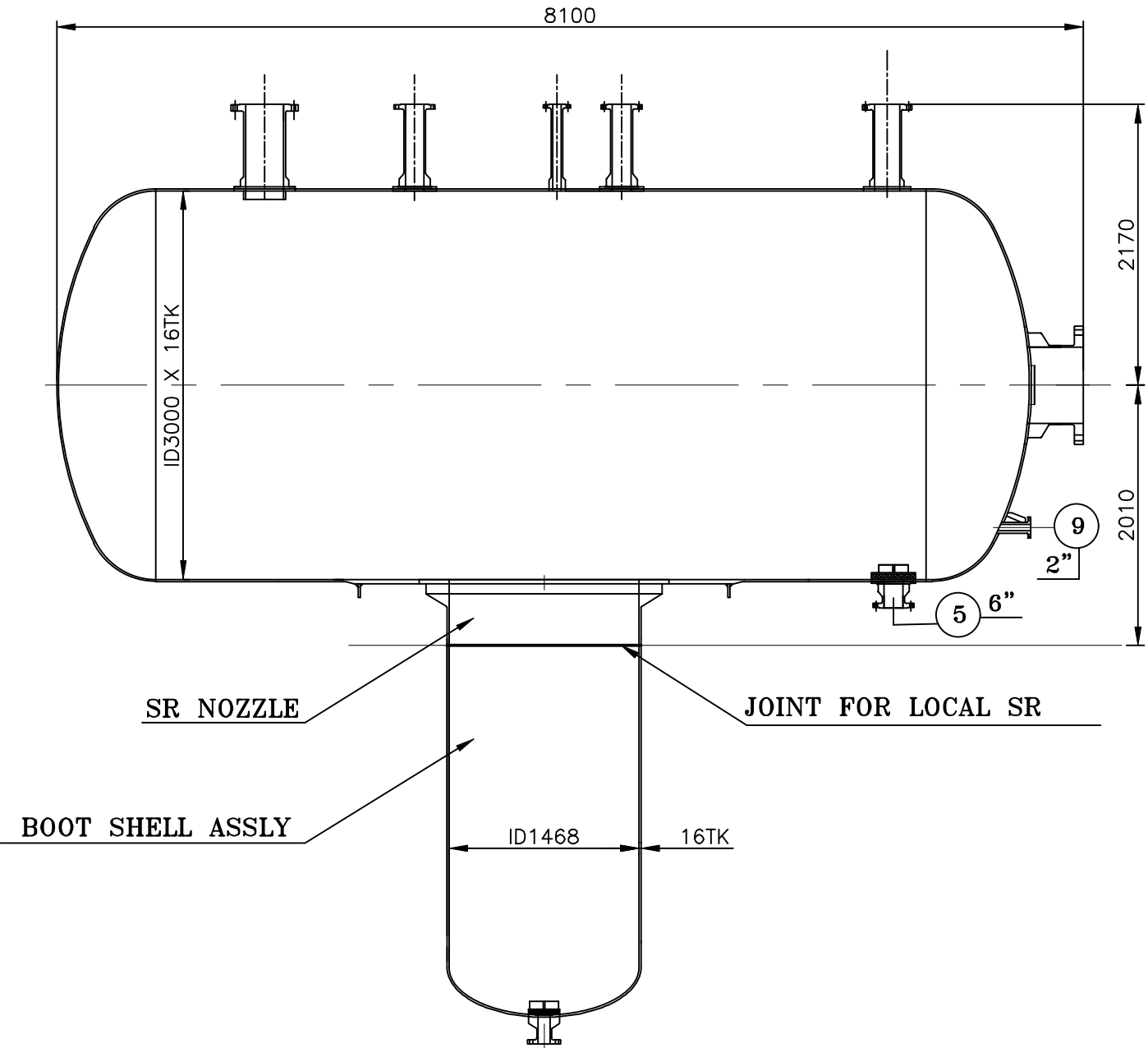
Ref: OPS/OS/SC/2020-22/57/42, Date: 30.09.2021

SI No.	Project	SO NO.	Vessel / Component ID Range in mm where Joints come for Local SR	Total Qty of Joints (NOS.)	DETAILS OF PGMA AND JOINTS (FOR REFERENCE ONLY)			HT CYCLE DETAILS	Remarks
					PGMA	GA Drawing No. / Fab. Drawing	Weld Joint Description where Local SR to be done		
1	L&T VESSELS-HPCL VIZAG	2438	5000-5500	3	PV-140	1-PV-140-U0107 / 1-PV-140-U0108	Refer GA Drawing and Fab. Drawing for the vessel PV-140 having Shell ID5300X20TK. Local SR is to be carried out at the Joint of both dished ends with main shell.	H-105-2021	Local SR to be done strictly as per attached HT cycle and PWHT procedure (Doc. No.: B016-RUF-LT-504-QC-QD-BHEL(1) -02019 Rev.02) in HPVP-Vizag Unit / Lovagarden-Vizag Site.
2	L&T VESSELS-HPCL VIZAG	2438	4500 - 5000	2	PV-050	1-PV-050-U0088 / 1-PV-050-U0089	Refer GA Drawing and Fab. Drawing for the Vessel PV-050 having Shell ID 4820X(24+3). Local SR is to be carried out at the C-seam joint Mark CS-IV.	H-112-2021	
3	L&T VESSELS-HPCL VIZAG	2438	1200-1500	7	(1) PV-070 (2) PV-160 (3)PV-200	(1) 1-PV-070-U0092 / 1-PV-070-U0093 (2) 1-PV-160-U0115 / 1-PV-160-U0116 (3)1-PV-200-U0125 / 1-PV-200-U0126	1. Refer GA Drawing and Fab. Drawing for the Vessel PV-070. Local SR is to be carried out at the joint of SR Nozzle with Boot shell ID1468 X 16TK. 2. Refer GA drawing and Fab Drawing for PV-160. Local SR is to be carried out at the joint of OD1476 of RF pad with main shell. 3. Refer GA drawing and Fab Drawing for PV-200. Local SR is to be carried out at the joint of OD1476 of RF pad with main shell.	(1) H-104-2021 (2) H-106-2021 (3) H-110-2021	
4	L&T VESSELS-HPCL VIZAG	2438	900-1200	8	(1) PV-140 (2) PV-160 (3)PV-200 (4) PV-050	(1) 1-PV-140-U0107 / 1-PV-140-U0108 (2) 1-PV-160-U0115 / 1-PV-160-U0116 (3)1-PV-200-U0125 / 1-PV-200-U0126 (4)1-PV-050-U0088 / 1-PV-050-U0089	1. Refer GA Drawing and Fab Drawing for the vessel PV-140 . Local SR is to be carried out at the joint of SR nozzle B01 (dia 932 x 20TK) with main shell. 2. Refer GA drawing and Fab Drawing for PV-160. Local SR is to be carried out at the joint of Boot shell ID936X20TK with RF Pad + Main shell. 3. Refer GA drawing and Fab Drawing for PV-200. Local SR is to be carried out at the joint of Boot shell ID936X20TK with RF Pad + Main shell. 4. Refer GA drawing and Fab drawing for the vessel PV-050. Local SR is to be carried out at the joint of Boot shell ID1160 X (24+3) with Insert Plate(48+3) TK	(1) H-105-2021 (2) H-106-2021 (3) H-110-2021 (4) H-111-2021	
TOTAL JOINTS			20						

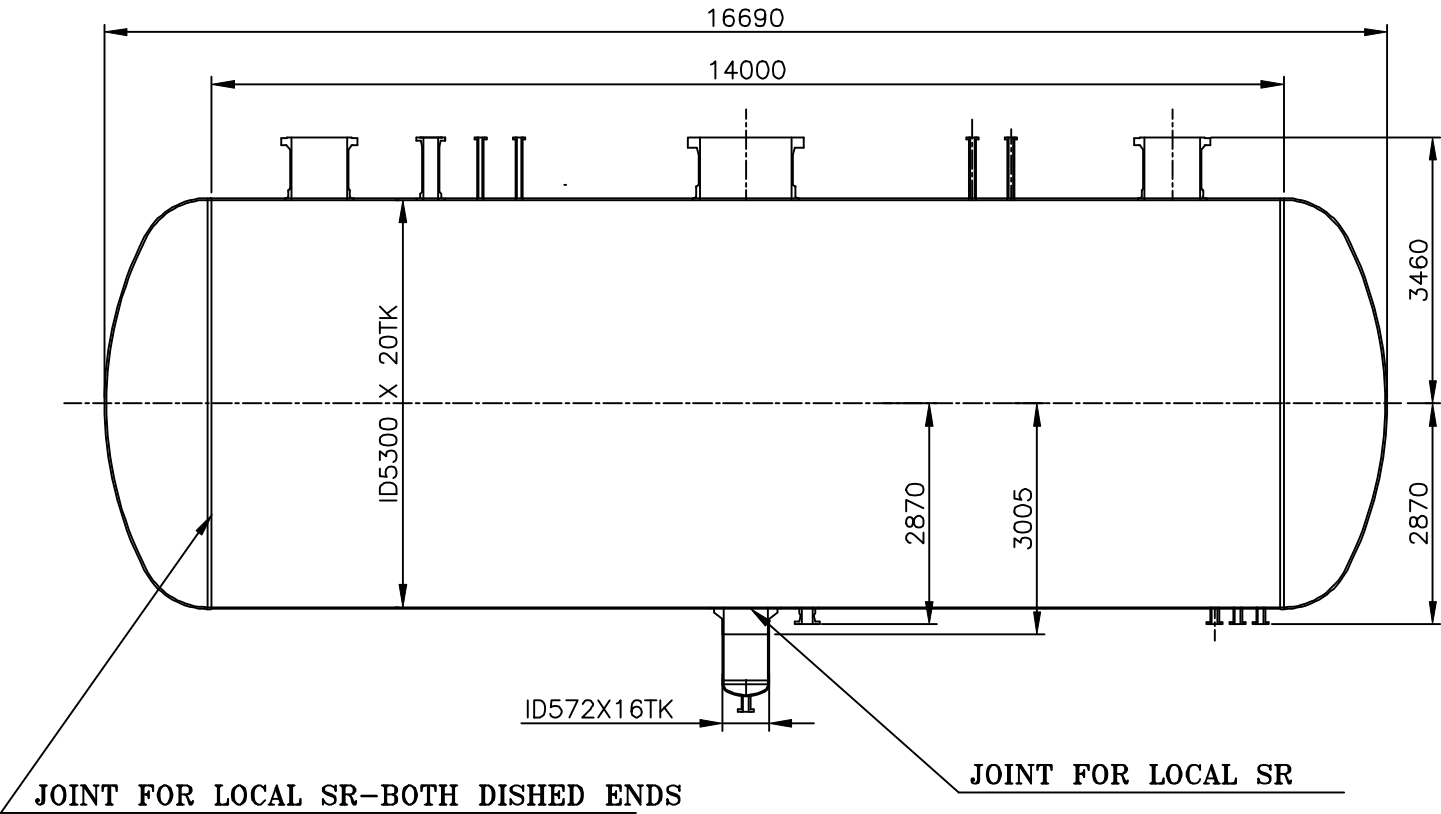
S02438 PV-050 VESSEL NO. 504-V-122



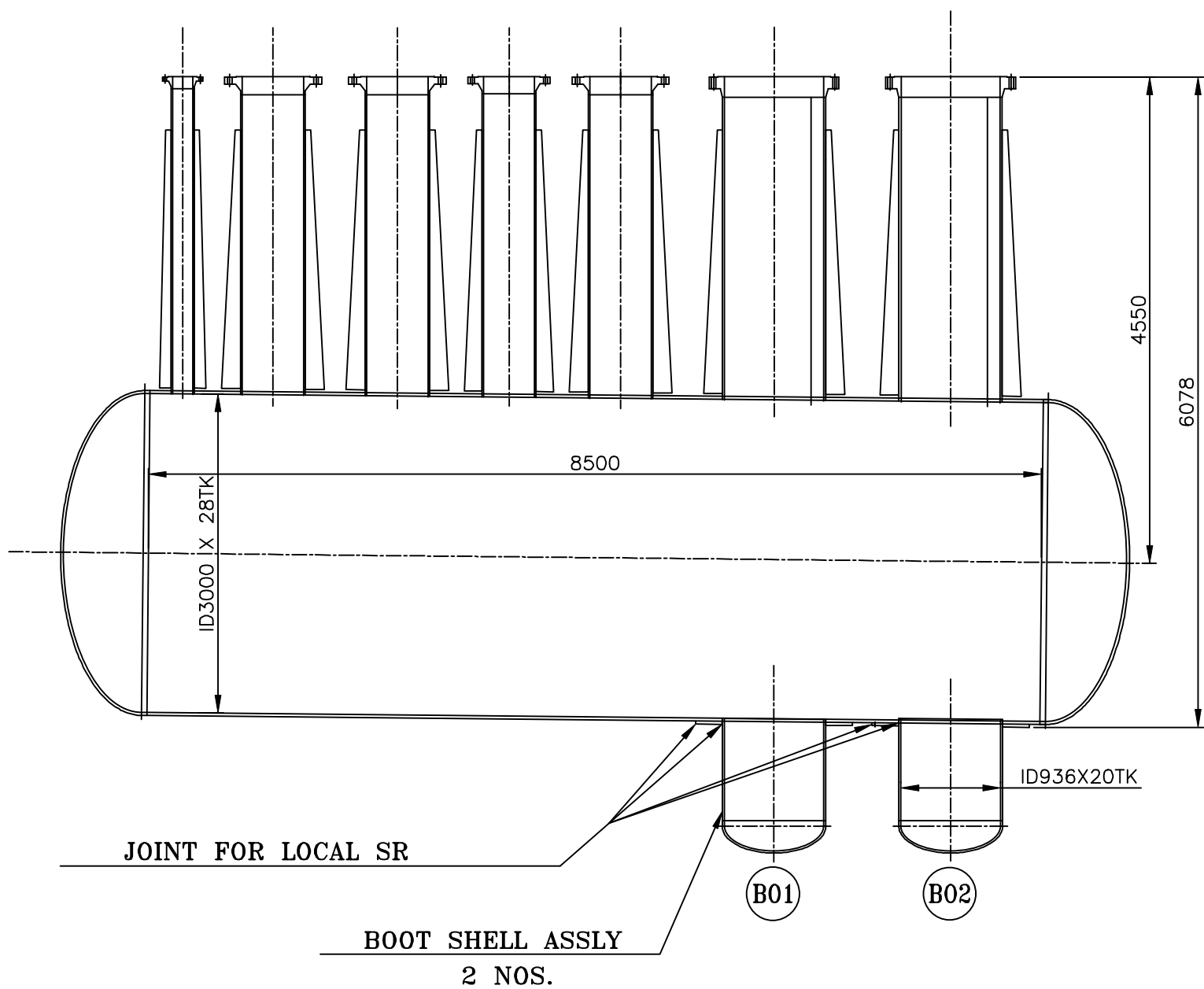
S02438 PV-070 VESSEL NO. 504-V-201



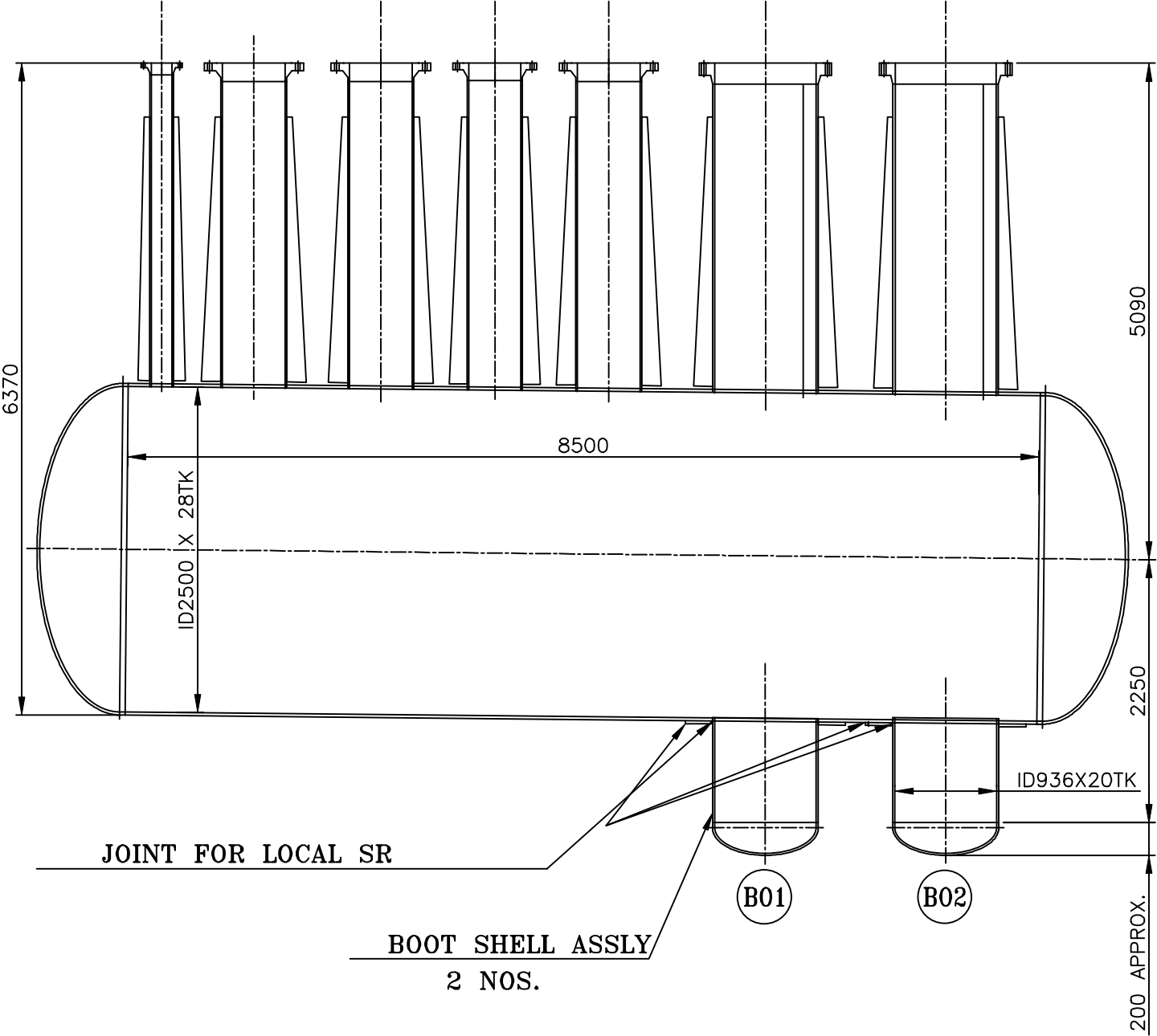
S02438 PV-140 VESSEL NO. 504-V-801



S02438 PV-160 VESSEL NO. 504-V-803



S02438 PV-200 VESSEL NO. 504-V-809



**BHARAT HEAVY ELECTRICALS LIMITED**HPVP-VISAKHAPATNAM 530012
DEPARTMENT OF WELDING TECHNOLOGY

HEAT TREATMENT TECHNOLOGY SHEET				HT CYCLE NO.		H-104-2021	
				DATE		16-08-2021	
Name of the Equipment		S.O.NO.	Assem bly	Drawing no.		Customer	
HOS PRODUCT DRUM (TAG NO.504-V-201)		2438 (PV-070)	---	1-PV-070-U0093, 3-PV-070-U0264		M/S L&T - HPCL,VIZAG	
Part Name	Part No.	Material Spec.	Principle Dimensions (mm)			DESIGN PRESSURE	DESIGN TEMP.
			OD	ID	THK		
Boot Shell, Boot Nozzle	001-02-02 001-03-12	SA516 GR70 (NACE+HIC), SA105	--	1468	16	As per Drawing	As per Drawing

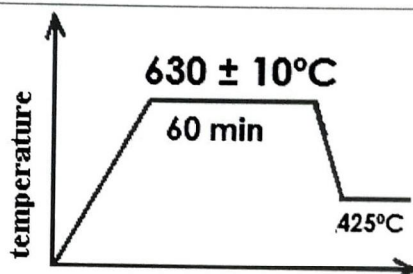
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INSPN. AGENCY: AS PER DRAWING

NOMINAL WELD THICKNESS = 16 mm

TYPE OF HEAT TREATMENT*

LOCAL STRESS RELIEVING:

POSTWELD HEAT TREATMENT AFTER
ASSEMBLY AND C-SEAM WELDING
OF BOOT SHELL WITH BOOT NOZZLE.

- 1) Heat at the rate of 110°C/hr (Max) by electrical means up to the temperature of 630 ± 10°C.
- 2) Soak at 630 ± 10°C for 60 minutes.
- 3) Cool at the rate of 140°C/hr (Max) up to 425°C and controlled cooling rates are not applicable from 425°C.

GENERAL PRECAUTIONS:

- A. Sufficient number of thermocouples shall be placed in consultation with shop inspector / inspection agency on the vessel at bottom, centre and top of the charge by covering the areas of maximum and minimum thickness and other areas as possible variation. It shall be ensured that distance between any two thermocouples along with length of equipment is not more than 4.6 meters.
- B. Thermocouple (TC) shall be tack welded to the plate on consultation with shop inspector / inspection agency and the same TC shall be removed by grinding.
- C. Material temperature shall be recorded with the help of calibrated automatic recorder and calibrated thermocouples only.
- D. During heating period, the temperature difference shall not exceed 140°C over any length of 4.6 metres.
- E. Technology department shall incorporate necessary precautions to be followed in shop floor to avoid distortion.

Issued by:

PVD Ramulu
Dy. Mgr (WT) 16/8/21

CC TO: Sr. Engineer (P&I)

**BHARAT HEAVY ELECTRICALS LIMITED**HPVP-VISAKHAPATNAM 530012
DEPARTMENT OF WELDING TECHNOLOGY**HEAT TREATMENT TECHNOLOGY SHEET****HT CYCLE NO.** H-105-2021
DATE 16-08-2021

Name of the Equipment		S.O.NO.	Assembly	Drawing no.		Customer	
HP FLARE KO DRUM (TAG NO.504-V-801)		2438 (PV-140)	---	1-PV-140-U0107 , 2-PV-140-U0060		M/S L&T - HPCL,VIZAG	
Part Name	Part No.	Material Spec.	Principle Dimensions (mm)			DESIGN PRESSURE	DESIGN TEMP.
			OD	ID	THK		
Shell, Dished ends, Boot Shell	002-03-06	SA516 GR70 (NACE+ HIC), SA105	--	1468	16/20	As per Drawing	As per Drawing
	002-03-33			5300	20		
	002-03-01						
	002-03-02						
	002-03-03						
	002-03-08						

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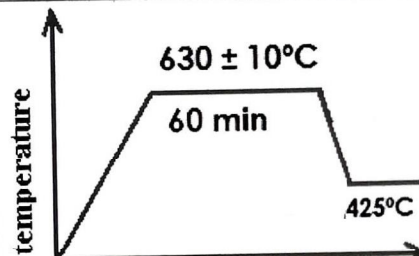
INSPN. AGENCY: AS PER DRAWING

NOMINAL WELD THICKNESS = 20 mm

TYPE OF HEAT TREATMENT*

LOCAL STRESS RELIEVING:POSTWELD HEAT TREATMENT AFTER
ASSEMBLY AND WELDING

- 1) C-SEAMS OF SHELL WITH DISHED ENDS
- 2) BOOT SHELL WITH SHELL.



- 1) Heat at the rate of 110°C/hr (Max) by electrical means up to the temperature of 630 ± 10°C.
- 2) Soak at 630 ± 10°C for 60 minutes.
- 3) Cool at the rate of 140°C/hr (Max) up to 425°C and controlled cooling rates are not applicable from 425°C.

GENERAL PRECAUTIONS:

- A. Sufficient number of thermocouples shall be placed in consultation with shop inspector / inspection agency on the vessel at bottom, centre and top of the charge by covering the areas of maximum and minimum thickness and other areas as possible variation. It shall be ensured that distance between any two thermocouples along with length of equipment is not more than 4.6 meters.
- B. Thermocouple (TC) shall be tack welded to the plate on consultation with shop inspector / inspection agency and the same TC shall be removed by grinding.
- C. Material temperature shall be recorded with the help of calibrated automatic recorder and calibrated thermocouples only.
- D. During heating period, the temperature difference shall not exceed 140°C over any length of 4.6 metres.
- E. Technology department shall incorporate necessary precautions to be followed in shop floor to avoid distortion.

Issued by: [Signature]
Dy. Mgr (WT) [Signature]

CC TO: Sr. Engineer (P&T)

**BHARAT HEAVY ELECTRICALS LIMITED**HPVP-VISAKHAPATNAM 530012
DEPARTMENT OF WELDING TECHNOLOGY

HEAT TREATMENT TECHNOLOGY SHEET				HT CYCLE NO.		H-106-2021	
				DATE		16-08-2021	
Name of the Equipment		S.O.NO.	Assembly	Drawing no.		Customer	
CLOSED BLOWDOWN DRUM (TAG NO.504-V-803)		2438 (PV-160)	---	1-PV-160-U0115		M/S L&T - HPCL,VIZAG	
Part Name	Part No.	Material Spec.	Principle Dimensions (mm)			DESIGN PRESSURE	DESIGN TEMP.
			OD	ID	THK		
Boot shell.	001-02-05	SA516 GR70 (NACE+HIC)	--	936	20,28,32	As per Drawing	As per Drawing
Shell.	001-02-07						
Shell.	001-02-08						
RF pad	001-02-06						
	001-02-10						
	001-02-11						

CODE: AS PER DRAWING

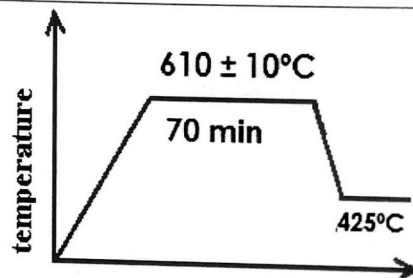
INSPN. AGENCY: AS PER DRAWING

NOMINAL WELD THICKNESS = 28 mm

TYPE OF HEAT TREATMENT*

LOCAL STRESS RELIEVING:

POSTWELD HEAT TREATMENT AFTER ASSEMBLY AND WELDING OF BOOT SHELL WITH RF PAD AND SHELL.



- 1) Heat at the rate of 110°C/hr (Max) by electrical means up to the temperature of 610 ± 10°C.
- 2) Soak at 610 ± 10°C for 70 minutes.
- 3) Cool at the rate of 140°C/hr (Max) up to 425°C and controlled cooling rates are not applicable from 425°C.

GENERAL PRECAUTIONS:

- A. Sufficient number of thermocouples shall be placed in consultation with shop inspector / inspection agency on the vessel at bottom, centre and top of the charge by covering the areas of maximum and minimum thickness and other areas as possible variation. It shall be ensured that distance between any two thermocouples along with length of equipment is not more than 4.6 meters.
- B. Thermocouple (TC) shall be tack welded to the plate on consultation with shop inspector / inspection agency and the same TC shall be removed by grinding.
- C. Material temperature shall be recorded with the help of calibrated automatic recorder and calibrated thermocouples only.
- D. During heating period, the temperature difference shall not exceed 140°C over any length of 4.6 metres.
- E. Technology department shall incorporate necessary precautions to be followed in shop floor to avoid distortion.

Issued by:

P. V. D. Ramulu

Dy. Mgr (WT)

16/8/21

CC TO: Sr. Engineer (P&I)

**BHARAT HEAVY ELECTRICALS LIMITED**HPVP-VISAKHAPATNAM 530012
DEPARTMENT OF WELDING TECHNOLOGY

HEAT TREATMENT TECHNOLOGY SHEET					HT CYCLE NO.	H-110-2021	
					DATE	16-08-2021	
Name of the Equipment	W.O.NO.	Assem bly	Drawing no.	Customer			
CLOSED BLOWDOWN DRUM-2	2438 (PV-200)	---	1-PV-200-U0125	M/S L&T - HPCL,VIZAG			
Part Name	Part No.	Material Spec.	Principle Dimensions (mm)		DESIGN PRESSURE	DESIGN TEMP.	
			OD	ID	THK		
Boot shell, Shell, RF Pad	001-02-05, 001-02-07, 001-02-08; 001-02-06, 001-02-10, 001-02-11	SA516 GR70	---	936	20,28	As per Drawing	As per Drawing

CODE: AS PER DRAWING

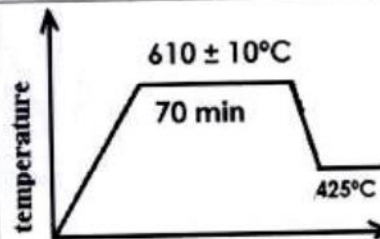
INSPN. AGENCY: AS PER DRAWING

NOMINAL WELD THICKNESS = 28 mm

TYPE OF HEAT TREATMENT*

LOCAL STRESS RELIEVING:

POSTWELD HEAT TREATMENT AFTER ASSEMBLY AND WELDING OF BOOT SHELL WITH RF PAD AND SHELL.



- 1) Heat at the rate of 110°C/hr (Max) by electrical means up to the temperature of 610 ± 10°C.
- 2) Soak at 610 ± 10°C for 70 minutes.
- 3) Cool at the rate of 140°C/hr (Max) up to 425°C and controlled cooling rates are not applicable from 425°C.

GENERAL PRECAUTIONS:

- A. Sufficient number of thermocouples shall be placed in consultation with shop inspector / inspection agency on the vessel at bottom, centre and top of the charge by covering the areas of maximum and minimum thickness and other areas as possible variation. It shall be ensured that distance between any two thermocouples along with length of equipment is not more than 4.6 meters.
- B. Thermocouple (TC) shall be tack welded to the plate on consultation with shop inspector / inspection agency and the same TC shall be removed by grinding.
- C. Material temperature shall be recorded with the help of calibrated automatic recorder and calibrated thermocouples only.
- D. During heating period, the temperature difference shall not exceed 140°C over any length of 4.6 metres.
- E. Technology department shall incorporate necessary precautions to be followed in shop floor to avoid distortion.

Issued by:

Dy. Engineer (WT)

CC TO: Sr. Engineer (P&T)

**BHARAT HEAVY ELECTRICALS LIMITED**HPVP-VISAKHAPATNAM 530012
DEPARTMENT OF WELDING TECHNOLOGY**HEAT TREATMENT TECHNOLOGY SHEET****HT CYCLE NO.****H-111-2021****DATE****16-08-2021**

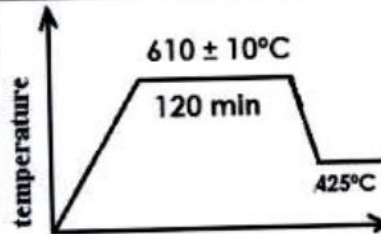
Name of the Equipment		W.O.NO.	Assembly	Drawing no.		Customer	
SEAL OIL RESERVOIR		2438 (PV-050)	—	1-PV-050-U0088		M/S L&T - HPCL,VIZAG	
Part Name	Part No.	Material Spec.	Principle Dimensions (mm)			DESIGN PRESSURE	DESIGN TEMP.
			OD	ID	THK		
Boot shell, Insert plate	002-04-10 002-04-12	SA516 GR70+ 304L	—	1160	48+3	As per Drawing	As per Drawing

CODE: AS PER DRAWING

INSPN. AGENCY: AS PER DRAWING

NOMINAL WELD THICKNESS = 48 mm

TYPE OF HEAT TREATMENT*

LOCAL STRESS RELIEVING:POSTWELD HEAT TREATMENT AFTER
ASSEMBLY AND WELDING OF BOOT
SHELL WITH INSERT PLATE.

- 1) Heat at the rate of 110°C/hr (Max) by electrical means up to the temperature of 610 ± 10°C.
- 2) Soak at 610 ± 10°C for 120 minutes.
- 3) Cool at the rate of 140°C/hr (Max) up to 425°C and controlled cooling rates are not applicable from 425°C.

GENERAL PRECAUTIONS:

- A. Sufficient number of thermocouples shall be placed in consultation with shop inspector / inspection agency on the vessel at bottom, centre and top of the charge by covering the areas of maximum and minimum thickness and other areas as possible variation. It shall be ensured that distance between any two thermocouples along with length of equipment is not more than 4.6 meters.
- B. Thermocouple (TC) shall be tack welded to the plate on consultation with shop inspector / inspection agency and the same TC shall be removed by grinding.
- C. Material temperature shall be recorded with the help of calibrated automatic recorder and calibrated thermocouples only.
- D. During heating period, the temperature difference shall not exceed 140°C over any length of 4.6 metres.
- E. Technology department shall incorporate necessary precautions to be followed in shop floor to avoid distortion.

Issued by:

Dy. Engineer (WT)

CC TO: Sr. Engineer (P&T)

**BHARAT HEAVY ELECTRICALS LIMITED**HPVP-VISAKHAPATNAM 530012
DEPARTMENT OF WELDING TECHNOLOGY

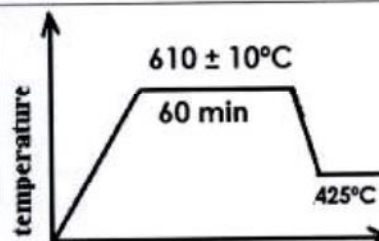
HEAT TREATMENT TECHNOLOGY SHEET				HT CYCLE NO.		H-112-2021	
				DATE		16-08-2021	
Name of the Equipment		W.O.NO.	Assembly	Drawing no.		Customer	
SEAL OIL RESERVOIR		2438 (PV-050)	---	1-PV-050-U0088		M/S L&T - HPCL, VIZAG	
Part Name	Part No.	Material Spec.	Principle Dimensions (mm)			DESIGN PRESSURE	DESIGN TEMP.
			OD	ID	THK		
Shell Sec - III & IV	002-04-05 002-04-06	SA516 GR70+ 304L	--	4820	24+3	As per Drawing	As per Drawing

CODE: AS PER DRAWING

INSPN. AGENCY: AS PER DRAWING

NOMINAL WELD THICKNESS = 24 mm

TYPE OF HEAT TREATMENT*

LOCAL STRESS RELIEVING:POSTWELD HEAT TREATMENT AFTER
ASSEMBLY AND WELDING OF
C-SEAM BETWEEN SHELL SEC-III & IV.

- 1) Heat at the rate of 110°C/hr (Max) by electrical means up to the temperature of 610 ± 10°C.
- 2) Soak at 610 ± 10°C for 60 minutes.
- 3) Cool at the rate of 140°C/hr (Max) up to 425°C and controlled cooling rates are not applicable from 425°C.

GENERAL PRECAUTIONS:

- A. Sufficient number of thermocouples shall be placed in consultation with shop inspector / inspection agency on the vessel at bottom, centre and top of the charge by covering the areas of maximum and minimum thickness and other areas as possible variation. It shall be ensured that distance between any two thermocouples along with length of equipment is not more than 4.6 meters.
- B. Thermocouple (TC) shall be tack welded to the plate on consultation with shop inspector / inspection agency and the same TC shall be removed by grinding.
- C. Material temperature shall be recorded with the help of calibrated automatic recorder and calibrated thermocouples only.
- D. During heating period, the temperature difference shall not exceed 140°C over any length of 4.6 metres.
- E. Technology department shall incorporate necessary precautions to be followed in shop floor to avoid distortion.

Issued by:

Dy. Engineer (WT)

CC TO: Sr. Engineer (P & T)

Ref: OPS/OS/SC/2020-22/57/42

Date: 30.09.2021

Sub: Contract to carry out Local SR for the joints of C-Seams of Shell, Boot Shell + Main Shell SR nozzle of vessels of SO no 2438 at M/s BHEL-HPVP, Visakhapatnam works – Reg.

ACCEPTANCE TO TENDER TERMS & CONDITIONS

I / We hereby confirm that the Tender documents, all Annexures 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 accept to offer valid for a period of **3 months** from the last date for tender submission.

I / We give our acceptance to participate in **Reverse Auction** in case BHEL decides to go for reverse auction for this tender.

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

CONTRACTOR INFORMATION

Sl. No.	Particulars	To be Filled by Bidder
01.	Name of the Contractor	
02.	Nature of Firm / Concern (Proprietor/Partnership/Pvt. Limited/Public Ltd.) Note: In case of partnership concern, please enclose photo copies of the partnership deed	
03.	Full address	
04.	Name of the Proprietor/Partner	
05.	Name of the Person(s) and designation authorized for signing the contract/dealing with BHEL	
06.	Telephone No. of the firm	
07.	Fax No.	
08.	Mobile No.	
09.	E-mail ID	
10.	HSN Code./ SAC Code	
11.	Organizational structure with name and designation	

CHECK LIST

Sl. No.	Particulars	Document Enclosed (Yes / No)	Document No
01.	Name of the Contractor		
02.	Tender Document Signed & Stamped		
03.	GSTIN Registration Certificate		
04.	HSN / SAC Code		
05.	PAN Number		
06.	Income Tax Returns for last 3 years		
07.	Profit & Loss account and Balance Sheet certified by the Practicing Chartered Accountant for the last 3 years		
08.	Work orders & Job Completion Certificates in similar works as mentioned in eligibility criteria.		
09.	MSE Registration Documents for relevant works as per Tender (if applicable) Valid NSIC certificate or Valid MSME registration/ Udyog Aadhaar Certificate Or Valid Udyam Registration Certificate		
10.	Startup India – Certificate of Recognition (if Applicable)		

Ref: OPS/OS/SC/2020-22/57/42

Date: 30.09.2021

BID-SECURING DECLARATION FORM

To,
Dy. Manager
Outsourcing Department,
BHEL- HPVP, Visakhapatnam

I/We, the undersigned, declare that:

I/We understand that, according to your conditions, bids must be supported by a Bid-Securing Declaration.

I/We accept that I/we will automatically be suspended from being eligible for bidding in any contract with BHEL for a period of **10 months** from the date of notification, if I am /we are in breach of any obligation(s) under the bid conditions, because I/we:

- a) have withdrawn/modified/amended, impairs or derogates from the tender, my/our Bid during the period of bid validity specified in the form of Bid; or
- b) having been notified of the acceptance of our Bid by the purchaser during the period of bid validity,
 - (i) fail or refuse to execute the Contract, if required,
 - or
 - (ii) fail or refuse to furnish the Performance Security, in accordance with the Instructions to Bidders.

I/We understand this Bid-Securing Declaration shall expire if I am/we are not the successful Bidder, upon the earlier of (i) our receipt of your notification of the name of the successful Bidder; or (ii) **thirty days** after the expiration of my/ our Bid.

Signature of Tenderer with Company Seal

Date:

Place:

ACCEPTANCE FOR ELECTRONIC FUND TRANSFER / RTGS / NEFT TRANSFER

01	NAME & ADDRESS OF THE SUPPLIER / SUBCONTRACTOR	
02	VENDOR CODE ASSIGNED BY BHEL,HPVP LTD	

DETAILS OF BANK ACCOUNT

03	NAME & ADDRESS OF THE BANK	
04	NAME OF THE BRANCH	
05	BRANCH CODE	
06	MICR CODE	
07	ACCOUNT NUMBER	
08	TYPE OF ACCOUNT	
09	BENEFICIARY'S NAME	
10	IFSC CODE OF THE BRANCH	
11	EMAIL ID	
12	TELEPHONE / MOBILE NUMBER	

CERTIFICATE

I / We here by agree to receive the payments due from M/s Bharat Heavy Electricals Ltd., by the National Electronic Fund Transfer / or RTGS Transfer mode by credit to my / our above mentioned Bank account. I / We also agree that payments made to the above mentioned account are a valid discharge of the liability of M/s Bharat Heavy Electricals Ltd. I / We also agree to bear the applicable Bank charges for the above mode of transfer. A copy of the Cheque leaf/ cancelled Cheque leaf of the above account is sent herewith.

(Authorized Signatories with Name & Seal)

BANKER'S CERTIFICATION

We confirm that we are enabled for receiving RTGS and NEFT credits and we further confirm that the account number of _____
(name of account holder), the signature of authorized signatory and the MICR and IFSC codes of our branch mentioned above are correct.

Place:

Bank Manager / Officer

Date:

Signature with Bank stamp and Name seal

FORWARDED TO ACCOUNTS DEPARTMENT / CASH SECTION

We confirm the above details are verified with the records available with us

Signature of BHEL Official with Name & Seal
Operating the contract / Services

GST COMPLIANCE FOR INDIGENOUS SUPPLIERS / CONTRACTORS

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.

BHARAT HEAVY ELECTRICALS LIMITED
HEAVY PLATES & VESSELS PLANT
VISAKHAPATNAM – 530 012

PRICEBID
PART-II

NAME OF WORK: Contract to carry out Local SR for the joints of C-Seams of Shell, Boot Shell + Main Shell SR nozzle of vessels of SO no 2438 at M/s BHEL-HPVP, Visakhapatnam works – Reg.

Tender Enquiry No: OPS/OS/SC/2020-22/57/42, Date: 30.09.2021

SCHEDULE OF QUANTITIES & RATES (SOQR)

SL. NO	S.O. NO.	DESCRIPTION OF WORK	QTY. in No. (a)	UNIT RATE including GST in ₹ (b)	TOTAL AMOUNT including GST in ₹ (c)= (a) X (b)
1.	2438	Local SR for the joints of C-Seams of Shell, Boot Shell + Main Shell SR nozzle of vessels of SO no 2438 at M/s BHEL-HPVP, Visakhapatnam works as per the detailed scope of work.			
A		LOCAL SR_ JOINT AT ID RANGE 5000-5500 MM	3	25,960.00	77,880.00
B		LOCAL SR_ JOINT AT ID RANGE 4500-5000 MM	2	25,960.00	51,920.00
C		LOCAL SR_ JOINT AT ID RANGE 1200-1500 MM	7	5,900.00	41,300.00
D		LOCAL SR_ JOINT AT ID RANGE 900-1200 MM	8	4,720.00	37,760.00
2.		Total Amount including GST in ₹			2,08,860.00
3.		Discount / Increase offered by Bidder on above total amount in _____ %			₹ _____
4.		Total Amount (Sl. No.2 +Sl. No. 3) (including GST) in ₹			₹ _____

Total Amount in Words:

NOTE:

- The prices shall remain fixed and firm for an entire period of contract & No additional payment shall be made to contractor over and above the quoted price.
- The quoted prices shall be inclusive of all applicable taxes, duties and GST as applicable as on date of tender submission.** However, GST as applicable shall be paid by contractor and same shall be reimbursed on submission of proof of payment.
- The quantity indicated in the schedule is indicative only and may increase/ decrease or be deleted but total value of contract will not exceed the awarded value, unless otherwise order is amended. However, payment shall be made for the actual quantities executed only.
- L1 evaluation shall be done on total amount quoted at sl. No. 4 (same value is to be entered in GEM portal).**
- After L1 evaluation, discount/ increase offered by L1 bidder shall be applied pro-rata basis on each SOQR line item wise.**