



NOTICE INVITING TENDER

Ref.: OS/25-26/ADANI&NTPC/MitreBends/01/005

Date: 31.05.2025

Sub: Fabrication of Mitre Bends against S.O. Nos. 8096, 8097, 8112, 8113, 8114 & 8115 at Lovagarden site of BHEL- HPVP, Visakhapatnam

Dear Sir,

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

1. ELIGIBILITY CRITERIA:

1.1 Bidders must have an experience of completing similar works during the last 7 years ending **30.04.2025** as given below:

(a) Three (03) similar completed work orders costing not less than the amount equal to ₹ 75 Lakhs each

OR

(b) Two (02) similar completed work orders costing not less than the amount equal to ₹ 100 Lakhs each

OR

(c) One (01) similar completed work order costing not less than the amount equal to ₹ 125 Lakhs

Note:

1) Work orders, Job Completion Certificates and/ other relevant documents from the customer shall be enclosed in support of successful and satisfactory completion of all the orders. The works executed in own name of the individual / firm of the tenderer will only be considered for eligibility criteria.

2) Similar work means carrying out of **Mechanical fabrication works of Vessels / Equipments / Structures** etc., for State / Central Govt. or Undertakings or Private Firms.

3) Work order value shall be considered excluding all Taxes and duties.

4) While scrutiny if it is found that any bidder has made false declaration and/ or provided false information and/ or forged documents or has forged BHEL documents, certificates etc., for securing business, meeting PQR, such offers shall be rejected and action will be initiated as per BHEL extant Guide lines.

1.2 Average Annual Financial Turnover of the bidder for the last 3 financial years should be a minimum of ₹ **150 Lakhs**. Bidders shall enclose Financial turnover certificate for previous three years issued by Chartered Accountant / Audited Profit & Loss Accounts, Balance Sheets and other necessary documents in support of the same.

In case audited financial statements are not available for latest financial year, then the applicable audited statements of preceding three financial years shall be considered.

1.3 Bidders shall also enclose the documents of Registration of Firm/ Factory License/ Certificate of Incorporation, EPF, ESI, PAN, GSTIN, Udyam Registration (if registered with MSME) etc.

1.4 Any Bidder falling under MSE category shall furnish the following details & submit documentary evidence/ Govt. Certificate etc., in support of the same along with their Techno-commercial offer.

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

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

2. LOCATION OF WORK SPOT:

- 2.1 The fabrication work is to be carried out at Lovagarden site (a Sea Front facility of BHEL - HPVP near Hindustan Shipyard Limited - OPF Site), Visakhapatnam, Andhra Pradesh.

3. SCOPE OF WORK:

Fabrication of Mitre Bends, Welded Tees, Pipe with Manhole assembly etc., as per drawings: 1200 MT (approx.)

It may be noted that the weight indicated above is tentative only and may vary on both sides due to revision in the drawings, if any.

- 3.1 Fabrication of Mitre Bends, Welded Tees, Pipe with Manhole assembly etc., which involves Marking, Cutting, Edge preparation, Rolling, Pressing, Machining, Drilling, Assembly, Fit-up, Welding & dressing, NDT as per QAP, drawings, WPS, NDE procedures, Standards & specifications, Surface Preparation by Power Tool / Grit blast cleaning, Application of total no. of coats of Paints as per Painting Schedule, relevant Drawings etc.
- 3.2 Collection & Transportation of all Free issue raw materials, BOCs, Paints etc., from BHEL-HPVP shop / stores to Lovagarden site and Unloading of the same at Lovagarden site.
- 3.3 Mobilization of Rolling machine of suitable capacity.
- 3.4 Rectification of Raw materials such as straightening etc., if any, as per QAP / Drawings and rectification of defects, if any attributable to vendors, found after handing over to HPVP.
- 3.5 NDT (DPT, MPT, RT etc.) is to be carried out as per approved QAP / drawings.
- 3.6 The fabricated items shall strictly conform to the dimensions and tolerances indicated in the drawings. It must be ensured that correct dimensions and deviations, if any, are recorded properly and is made available to BHEL officials or their authorized agencies.
- 3.7 Fabrication & Machining of SOW & Blind Flanges as per drawings.
- 3.8 Spider arrangement shall be provided at the ends after edge preparation. Materials required for the same shall be Free Issue by BHEL. However, Transportation of these materials from HPVP stores to Lovagarden site is in vendor's scope.
- 3.9 Lifting Lug arrangement shall be provided as per the drawings.
- 3.10 Surface preparation by Grit Blast Cleaning and application of total no. of coats of Paints as per approved Painting Schedule / drawings is to be carried out in a closed enclosure. Painting is to be carried out by Painters qualified by HPVP. All tests required as per Project Specifications and BHEL Painting Procedure shall be carried out by a qualified agency for testing of painting and obtaining stage wise inspection clearance from HPVP (QC) / TPIA / customer as per approved drawing / QAP/ ITP.
Paints shall be issued as Free Issue material by BHEL-HPVP.
- 3.11 All the Scaffolding materials like Pipes, Clamps, Jallies, GI sheets etc., required for closed enclosure for blasting & painting of the finished items and during complete course of fabrication are to be arranged by the vendor at their cost.
- 3.12 Free issue materials should be collected within 3 days from the date of intimation by Outsourcing without failure.
- 3.13 Submission of economic cutting plans for all plate materials and sections issued by BHEL and obtaining approval of competent authority is mandatory before taking up fabrication.
Wherever fabrication is done without proper approved cutting plans, any loss of materials arising due to the same will be recovered as per BHEL recovery rates.
- 3.14 No extra rates are applicable for the additional joints to be made in Plates / Rolled sections.
- 3.15 The work is to be executed as per the latest approved Drawings, Group Manufacturing Specification (GMS), Shipping List released for each PGMA, QAP, WPS, Standards & Specifications etc.
- 3.16 All indirect materials, consumables like electrodes, Filler wires, gases, grinding wheels etc. required for fabrication are in the scope of the Vendor.
- 3.17 Identification of all items shall be hard stamped by encircling with paint and Letter painting in a specific format with details of Project name, Customer No., Work Order No., PGMA No., DU No. etc., for identification and dispatch as per the instructions of the concerned. Completed job without proper identification will not be accepted by HPVP.
- 3.18 Vendor has to engage sufficient man power and resources for fabrication to meet HPVP delivery schedules.
- 3.19 Loading of finished items onto the trailer by providing necessary manpower, tools & tackles and Welding of all temporary supports required for transportation.

- 3.20 Vendors shall return the excess / balance materials including off-cuts and total scrap available with them exclusive of process allowance & invisible wastage to HPVP Stores after material reconciliation but before submission of their final bill. In case the same are not returned by the vendors, Recovery shall be made as per BHEL Rates / MSTC rates plus applicable taxes, prevailing at the time of processing of the final bills.
- 3.21 Hydra Cranes along with Chains / Slings preferably Felt slings required for handling of all materials during Pre-fabrication, Fabrication and Post fabrication during handing over to BHEL etc., is in the scope of vendor.
- 3.22 BHEL higher capacity crane shall be provided free of cost to vendor wherever Hydra cranes does not serve the purpose during fabrication and loading of finished items onto the trailers. **Diesel required for the operation of BHEL crane will be Free issue by BHEL. However, transportation of diesel from BHEL-HPVP to Lovagarden site has to be arranged by Vendor.**
- 3.23 Vendor has to provide exclusively 01 No. of Helper for BHEL Crane for regular maintenance and for assistance to Crane operators during the entire contract period.
- 3.24 Experienced Site-in-charge and Qualified Engineers & Supervisors shall be deployed for proper co-ordination of the job. **Vendor shall obtain certification of BHEL Engineer-in-charge for the same and submit along with Bills for processing.**
- 3.25 Vendors should deploy Experienced & Qualified QC personnel for carrying out the inspection activities in coordination with BHEL QC inspector / TPIA. **Vendor shall obtain certification of BHEL Engineer-in-charge for the same and submit along with Bills for processing.**
- 3.26 Vendors should deploy Qualified NDT personnel (Level III / Level II) at site for carrying out the NDT inspection activities in coordination with BHEL QC –NDT / TPIA.
Vendor shall obtain certification of BHEL Engineer-in-charge for the same and submit along with Bills for processing.
- 3.27 Required tools & tackles like Measuring instruments like Tape, Fillet & Butt Weld Gauges, Plumb bobs with magnets etc., shall be calibrated and valid calibration certificates must be presented, whenever required.
- 3.28 Vendor shall deploy sufficient no. of calibrated Welding machines (ARC & MIG), Main Ovens & Portable Ovens required for baking of electrodes, other required machinery at site. All relevant documents shall also be made available for verification & approval by BHEL - HPVP (QC) / TPIA.
Vendor shall obtain certification of BHEL Engineer-in-charge for the same and submit along with Bills for processing.
- 3.29 Any modification work due to revision of the drawings during fabrication is to be carried out by the vendor without any additional cost.
- 3.30 Sufficient Area lighting at the work place shall be arranged by the vendor at their cost in addition of High mast lights presently available at site.
- 3.31 Vendors shall abide by all the rules and statutory regulations in force from time to time as per the Factories Act. It is their responsibility to ensure the safety of their workmen and fulfilling the ESI, PF and other relevant statutory regulations.
- 3.32 Vendor to make necessary arrangements to ensure that work is not hampered during rains or Wind storms by deploying suitable rain / wind protection to maintain the committed manufacturing schedule.
- 3.33 Vendor shall take proper precaution for storage of all free issue materials from damage (or) theft. Any claims for damage (or) theft of materials shall not be allowed. BHEL shall have right to recover the amount for the damaged (or) lost materials due to theft.
- 3.34 Vendor shall submit Detailed Schedule including all resource mobilization like manpower, Tools & Tackles, machinery etc., during the commencement of work and Daily Progress Reports to BHEL. Vendor shall attend monthly progress meetings with BHEL / customer for status review and catch up plan.
- 3.35 Construction Power & Water shall be provided free of charge at one point but further distribution to the desired location is in vendor's scope. Vendor's scope shall include arranging & laying of cables, arranging Distribution Boards with suitable capacity Switch Fuse units as incomer, all outgoings with necessary safe trips like MCB, ELCB etc., as per the industrial safety norms and their installation, all outgoing cables from Distribution Board, termination at the distribution board, arrangement of proper Working Area Lighting as per safety norms. Maintenance of the existing Electrical system is in the vendor's scope. **One Licensed Electrician and one Technician are to be deployed on continuous basis during all the working hours to avoid uninterrupted work due to Power.** Vendor shall mobilize suitable capacity of DG set along with operator as an alternate arrangement in case of Power cut / failure without any extra cost to BHEL.

- 3.36 Area required for fabrication, site office and Stores at Lovagarden site will be provided free of charge. All other arrangements for site enabling including Jungle Clearance & Surface Levelling etc., if required, shall be done by the vendor.
- 3.37 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 vendors without any price implication.

4. BHEL SCOPE: BHEL – HPVP shall provide the following as free issue:

- 4.1 Drawings, GMS, QAP, WPS, Painting Schedule, applicable Procedures, Standards & Specifications.
- 4.2 Raw materials like full / off-cut Plates, Pipes, Round Bars, Structural items etc., Paints and BOCs as per GMS.
- 4.3 Raw materials required for providing temporary spider arrangement.
- 4.4 Area required for fabrication, site office and Stores at Lovagarden site will be provided free of charge. All other arrangements for site enabling including Jungle Clearance & Surface Levelling etc., if required, shall be done by the vendor.
- 4.5 Power and construction Water shall be provided free of charge at one point but further distribution to the desired location is in vendor's scope. Vendor shall mobilize suitable capacity of DG set along with operator as an alternate arrangement in case of Power cut / failure without any extra cost to BHEL.

5. INSPECTION:

- 5.1) Inspection shall be carried out by M/s. BHEL-HPVP, Vizag / BHEL Authorized Inspection Agency (TPIA) / Customer as per approved QAP/ITP. Contractor shall offer for Stage wise and Final inspection as per approved QAP and obtain necessary stage wise & final clearances before proceeding for further operations along with all necessary documentation.
- 5.2) Fabrication Vendor shall be solely responsible for preparation and submission of all Inspection Reports & documents duly certified by Inspection Authority along with the finished items.
- 5.3) All the documentation related to inspection clearance of M/s. BHEL/TPIA/Customer, Generation of Inspection Reports, Preparation of Final Documents as per BHEL standard formats etc., are included in the scope of vendor and scanned copy as well as hard copy of the same is to be submitted to BHEL-QA.

6. DELIVERY:

- 6.1) Finished items along with inspection documents and all other relevant certificates are to be handed over to BHEL-HPVP as per the following schedule:

Within 3 months from the date of issue of First consignment of free issue materials or 6 weeks from the date of issue of Last consignment of materials (Excl. Gaskets, Fasteners & Paints), whichever is later.

Note: a) Time schedule is very stringent and Vendor has to deliver the job as per Customer requirement and schedule which will be meticulously monitored by BHEL/Customer. All necessary steps to reduce the cycle time for the individual sub-activities and main activities will be mutually discussed and Vendor has to mobilize additional resources as per time to time requirement to achieve the same.

- b) In case the delivery period offered by the vendor is more than the tender delivery, Price quoted by the bidder shall be loaded for additional period @1/2 % per week or part thereof for the purpose of evaluation of Bidder Status.

7. SITE MOBILISATION:

- 7.1) Successful bidders shall complete site mobilization within 7 days from the date of receipt of order (or) from the date of intimation for the same by BHEL whichever is later.

8. EARNEST MONEY DEPOSIT (EMD):

- 8.1) The Bidder shall submit EMD for ₹ 6,00,000/- (**Rupees Six Lakhs only**) along with their bids in the following forms only:
- Electronic Fund Transfer credited in BHEL account before tender opening (Bank Mandate is enclosed).
Fund Transfer details to be submitted along with the offer.
 - Banker's Cheque/ Pay Order/ Demand Draft, in favour of BHEL, Visakhapatnam (along with offer)
 - Fixed Deposit Receipt (FDR) issued by Scheduled Banks/ Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Bidder, a/c BHEL)
 - Bank Guarantee from any of the Scheduled Banks
 - Insurance Surety Bonds

- 8.2) EMD by the Bidder will be forfeited, if:
- The bidder withdraws or amends its/his tender or impairs or derogates from the tender in any respect within the period of validity of the tender or if the successful bidder fails to furnish the required performance security within the specified period as per the order.
 - EMD by the bidder shall be withheld in case any action on the bidder is envisaged under the provisions of extant "Guidelines on Suspension of business dealings with suppliers/ contractors" and forfeited/ released based on the action as determined under these guidelines.
- 8.3) EMD given by all unsuccessful bidders shall be returned after expiry of the final bid validity period or within 30 days of award of the contract.
- 8.4) EMD shall not carry any interest.
- 8.5) EMD of successful bidders shall be refunded on conclusion of the order / receipt of Security Deposit.

Note:

- 1) **Micro & Small Enterprises (MSEs) or Start-ups as recognised by Department for Promotion of Industry and Internal Trade (DPIIT) are eligible for exemption of EMD as given below:**

MSE suppliers can avail the intended benefits only if they submit **valid UDYAM Registration for Micro / Small** category and relevant certificate for Start-ups along with the offer. Non-submission of such documents will lead to consideration of their bid at par with other Non-MSE bidders. No benefits shall be applicable against this tender enquiry if the above required document is not submitted before Price bid opening.

- 2) In case of submission of EMD as per 8.1 (b), (c), (d) & (e) above, the original documents are to be sent through Speed Post to the following address:

The DGM (Outsourcing), DAPG Building, HPVP Unit, BHEL, Visakhapatnam – 530012 (AP).

9. PRICE:

- 9.1) The price shall be quoted in the **Price Bid** as per the Schedule of Quantities & Rates for the detailed scope of work and the quoted price shall be inclusive of all applicable taxes & duties except GST.
- 9.2) The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of the work.
- 9.3) GST shall be reimbursable to the vendor as detailed in Clause – 10 and as per Annexure – GST.
- 9.4) Income tax will be deducted at applicable rates from RA & Final bills.

10. GOODS & SERVICES TAX (GST):

- 10.1) Bidders shall make a note of the following points of GST before submission of their offer:
- 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.
 - 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 & 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.
 - After fabrication, the vendors shall have to deliver the Semi - finished Goods by fulfilling the following formalities:
 - 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.
 - 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.

11. REVERSE AUCTION:

- 11.1) BHEL shall be resorting to Reverse Auction (RA) for this tender. RA shall be conducted among the techno-commercially qualified bidders. Business Rules for Reverse Auction are given at Annexure – V. Bidder may refer Guidelines for Reverse Auction on our website, www.bhel.com → supplier registration → Guidelines for Reverse Auction, before submission of their offer.

- 11.2) Sealed envelope / Electronic Price bids of all the techno-commercially qualified bidders shall be opened and the same shall be considered as initial bids of the bidders in RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.
- 11.3) 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.
- 11.4) Bidders are advised to read the 'Business Rules' (Annexure – V) indicating details of RA event carefully, before reverse auction event.

12. **RISK PURCHASE:**

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

13. **VALIDITY OF OFFER:**

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

14. **EVALUATION, COUNTER OFFER & ORDERING:**

- a) **L1 status shall be evaluated based on the total quoted value.**
- b) **For ordering, 02 bidders shall be considered.**
The total tendered quantity comprises the requirement of Adani Projects (SO Nos. 8112 to 8115) and NTPC Projects (SO Nos. 8096 & 8097).
The required qty. for Adani projects shall be ordered on L1 Bidder and the required qty. for NTPC projects shall be ordered on L2 Bidder.
- c) Counter offer of L1 / negotiated rates shall be given to the respective L2 and next lowest bidders for acceptance. Vendor who accept counter offered rates shall only be considered for ordering.
- d) It may be noted that in case any of the next lowest bidders does not accept the counter offered L1 / negotiated rates, Total tendered Quantity shall be ordered on L1 bidder.
- e) BHEL reserves the right to cancel any order partly or in full, in case the performance of any of the vendors is not satisfactory in meeting the quality requirements or committed delivery schedules and to distribute the same quantity among the balance eligible vendors.

15. **GENERAL:**

- 15.1) 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 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.
- 15.2) **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 without any deviations.
- 15.3) BHEL reserves the right to modify or cancel the tender enquiry at any stage without assigning any reasons thereof.
- 15.4) The General Terms & Conditions, if any, contradicting with the specific terms & conditions given in the tender, then specific terms & conditions shall only be considered.
- 15.5) Other Terms & Conditions, whichever applicable, shall be as per Annexure – III enclosed.
16. The following documents shall form part of the tender enquiry including this Notice Inviting Tender:

PART - 1: TECHNO-COMMERCIAL BID

- | | |
|---------------------------------------|------------------|
| i) Schedule of Quantities | : Annexure – I |
| ii) Details of Items to be fabricated | : Annexure – II |
| iii) General Terms & Conditions | : Annexure – III |

- iv) Acceptance to tender terms & conditions : Annexure – IV
- v) Business Rules for Reverse Auction : Annexure – V
- vi) GST Compliance for Indigenous Suppliers : Annexure – GST
- vii) Integrity Pact : Annexure - IP
- viii) Drawings, Painting Schedule, SQP/MQP etc.

PART - 2: PRICE BID

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

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

- 17.1) The tender completed in all respects shall be submitted in **Two parts** (Techno-commercial bid and Price Bid) through online e-procurement portal (<https://eprocurebhel.co.in>) latest by **13:00 Hrs. on 10.06.2025**.

Note: Techno-commercial bid along with all the tender documents shall be duly signed & stamped by the bidder on all pages.

- 17.2) Submission of offer by the bidder implies that all the tender documents were read by the bidder and the bidder is aware of the scope and specifications of the job.

- 17.3) **OFFERS SENT IN ANY OTHER FORM WILL BE TREATED AS INVALID AND WILL BE SUMMARILY REJECTED.**

18. TENDER OPENING:

- 18.1) Techno-commercial Bids will be opened on **10.06.2025 at 15:00 Hrs.** in online e-procurement portal.
- 18.2) After evaluation of the Techno-commercial Bids, intimation regarding date & procedure of conducting Reverse Auction shall be given by the service provider to all the eligible techno-commercially qualified bidders through an e-mail in advance at an appropriate time.

19. INTEGRITY PACT:

- a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

Sl. No.	IEM	E-Mail ID
01	Shri Otem Dai, IAS (Retd.)	iem1@bhel.in
02	Shri Bishwamitra Pandey, IRAS (Retd.)	iem2@bhel.in
03	Shri Mukesh Mittal, IRS (Retd.)	iem3@bhel.in

- b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/three-part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.
- c) Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEMs. All correspondence with the IEMs shall be done through e-mail only.

Note:

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below:

Details of contact person(s):

Name:	1. S N V S Ramesh, DGM	2. D N Murthy, Manager
Dept.:	Outsourcing Dept.	Outsourcing Dept.
Address:	BHEL – HPVP, Visakhapatnam - 12	BHEL – HPVP, Visakhapatnam - 12
Phone:	0891 – 288 1515	0891 – 288 1359
E-mail:	rameshsnvs@bhel.in	dnmurthy@bhel.in

For Bharat Heavy Electricals Limited,



(S N V S Ramesh)

DGM (Comml., & Outsourcing)

इस.एन.वि.एस.रमेश / S.N.V.S. RAMESH

उप महा प्रबन्धक (वाणिज्य, ओ एस & लॉजिस्टिक्स)

Dy. General Manager (Comml., OS & Logistics)

बीएचईएल-एचपीवीपी/BHEL-HPVP

विशाखपट्टणम/VISAKHAPATNAM-530 012

SCHEDULE OF QUANTITIES**Tender Enquiry ref: OS/25-26/ADANI&NTPC/MitreBends/01/005****Date: 31.05.2025****Sub: Fabrication of Mitre Bends against S.O. Nos. 8096, 8097, 8112, 8113, 8114 & 8115 at Lovagarden site of BHEL- HPVP, Visakhapatnam**

Sl. No.	S.O. No.	Description of Work	Unit	Qty.
1	8096, 8097, 8112, 8113, 8114 & 8115	Fabrication of Mitre Bends, Welded Tees, Pipe with Manhole assembly etc. as per drawings	MT	1200
		TOTAL	MT	1200

Notes :

- 1) **L1 status shall be evaluated based on the total quoted price and Load distribution shall be as per clause no. 14 of the tender enquiry.**
- 2) The quoted price shall be inclusive of all applicable taxes & duties except GST. Income Tax shall be deducted at applicable rates from Bills and GST shall be reimbursable to the vendor as per applicable guidelines.
- 3) The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of work.
- 4) The quantity indicated above is tentative and may vary subject to the requirement at the time of ordering / execution. However, payment shall be made for the actual quantity only.
- 5) The bidders are advised to go through all the drawings & documents before quoting the tender.
- 6) The evaluation currency for this tender shall be **INR**.

Signature of the Bidder with stamp

Tender Enquiry ref: OS/25-26/ADANI&NTPC/MitreBends/01/005

Date: 31.05.2025

DETAILS OF ITEMS TO BE FABRICATED**Sub: Fabrication of Mitre Bends against S.O. Nos. 8096, 8097, 8112, 8113, 8114 & 8115 at Lovagarden site of BHEL- HPVP, Visakhapatnam**

Sl. No.	S.O. No.	PGMA	Description of Item	Approx. Wt.	Unit	Remarks
1	8096	83-468	Fabrication of Mitre Bends, Welded Tees, Pipe with Manhole assembly etc. as per drawings	261	MT	
2	8097	83-468		193	MT	
3	8112	83-468		313	MT	
4	8113	83-468		79	MT	
5	8114	83-468		130	MT	
6	8115	83-468		157	MT	

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

GENERAL TERMS & CONDITIONS**1. TECHNICAL DELIVERY CONDITIONS:**

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

2. PARTY'S SCOPE:

The scope of the party shall be as follows: -

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

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

3. REVISION OF DRAWINGS:

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

4. WELDING QUALIFICATION: Qualification of required number of Welders is party's responsibility at their cost.**5. X-RAY:**

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

6. RECTIFICATIONS / REJECTIONS:

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

7. SECURITY DEPOSIT:

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

Bidder agrees to submit performance security required for execution of the contract within the time period mentioned above. In case of delay in submission of performance security, enhanced performance security which would include interest (SBI rate + 6%) for the delayed period, shall be submitted by the bidder. Further, if performance security is not submitted till such time the first bill becomes due, the amount of performance security due shall be recovered as per terms defined in NIT/contract, from the bills along with due interest.

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

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

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

8. PERFORMANCE BANK GUARANTEE:

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

9. RAW MATERIALS ISSUE:

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

10. TRANSFER / RETURN OF LEFT-OVER MATERIALS:

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

11. MATERIAL RECONCILIATION:

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

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

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

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

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

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

12. SCRAP & OFF-CUT NORMS:

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

13. INSPECTION:

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

14. WORKMANSHIP GUARANTEE:

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

15. WORK PROGRESS:

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

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

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

16. DELIVERY:

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

17. PENALTY:

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

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

18. PAYMENT TERMS:

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

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

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

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

19. SECRECY:

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

20. SUB-LETTING:

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

21. FACTORY RULES AND REGULATIONS:

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

22. SAFETY:

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

23. HOUSE KEEPING:

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

24. ACCIDENT / DAMAGE / CONDUCT ETC.:

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

25. TERMINATION OF CONTRACT:

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

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

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

26. CONFLICT OF INTEREST AMONG BIDDERS / AGENTS:

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

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

27. TAXES & DUTIES:

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

28. CONTRACTOR's MATERIAL:

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

29. RETURNING OF BHEL MATERIAL:

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

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

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

31. DISPUTES:

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

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

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

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

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

34. ORDER ACCEPTANCE:

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

Signature of the bidder with Stamp

Acceptance to Tender Terms & Conditions

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

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

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

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

Signature of the bidder with Stamp

BUSINESS RULES FOR REVERSE AUCTION (RA)

This has reference to tender no. **OS/25-26/ADANI&NTPC/MitreBends/01/005, dated 31.05.2025**. BHEL shall finalise the Rates for **Fabrication of Mitre Bends against S.O. Nos. 8096, 8097, 8112, 8113, 8114 & 8115 at Lovagarden site of BHEL- HPVP, Visakhapatnam** through Reverse Auction mode. BHEL has made arrangement with an authorized Service provider (details will be shared before reverse auction) for conducting RA. Bidders should go through the instructions given below and submit acceptance of the same.

The technical & commercial terms are as per (a) BHEL Tender Enquiry No. **OS/25-26/ADANI&NTPC/MitreBends/01/005, dated 31.05.2025**, (b) Bidders' technical & commercial bid (in case of two-part bid) and (c) subsequent correspondences between BHEL and the bidders, if any.

1. Procedure of Reverse Auctioning:

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

2. Schedule for reverse auction: The Reverse Auction schedule will be intimated to the techno-commercially qualified bidders at a later stage.

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

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

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

5. Bidding currency and unit of measurement: Bidding will be conducted in *Indian Rupees per Unit* of the material as per the specifications mentioned in the tender.

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

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

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

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

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

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

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

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

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

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

14. M/s. {Service provider}, shall arrange to demonstrate/ train the bidder or bidder's nominated person(s), without any cost to bidders. M/s. {Service provider}, shall also explain the bidders, all the business rules related to the Reverse Auction. Bidders are required to submit their acceptance to the terms/ conditions/ modalities before participating in the Reverse Auction in the process compliance form as enclosed. Without this, the bidder will not be eligible to participate in the event.
15. Successful bidder shall be required to submit the final prices (L1) in prescribed format (Annexure – VI) for price breakup, quoted during the Reverse Auction, duly signed and stamped as token of acceptance without any new condition (other than those already agreed to before start of auction), after the completion of auction to M/s. {Service provider} besides BHEL within two working days of Auction without fail.
16. Any variation between the final bid value and that in the confirmatory signed price breakup document will be considered as tampering the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
17. Bidders' bid will be taken as an offer to execute the work/ supplies the item as per enquiry no. **OS/25-26/ADANI &NTPC/MitreBends/01/005, dated 31.05.2025**. Bids once made by the bidder, cannot be cancelled/ withdrawn and bidder shall be bound to execute the work as mentioned above at bidder's final bid price. Should bidder back out and not execute the contract as per the rates quoted, BHEL shall take action as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
18. Bidders shall be able to view the following on their screen along with the necessary fields during Reverse Auction:
 - a. Leading (Running Lowest) Bid in the Auction (only total price of package)
 - b. Bid Placed by the bidder
 - c. Start Price
 - d. Decrement value
 - e. Rank of their own bid during bidding as well as at the close of auction.
19. BHEL's decision on award of contract shall be final and binding on all the Bidders.
20. BHEL reserves the right to extend, reschedule or cancel the Reverse Auction process at any time, before ordering, without assigning any reason, with intimation to bidders.
21. BHEL shall not have any liability to bidders for any interruption or delay in access to the site irrespective of the cause. In such cases, the decision of BHEL shall be binding on the bidders.
22. Other terms and conditions shall be as per bidder's techno-commercial offers and other correspondences, if any, till date.
23. If there is any clash between this business document and the FAQ available, if any, in the website of M/s. {Service provider}, the terms & conditions given in this business document will supersede the information contained in the FAQs. Any changes made by BHEL/ service provider (due to unforeseen contingencies) after the first posting shall be deemed to have been accepted if the bidder continues to access the portal after that time.
24. Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action *as per extant BHEL guidelines for suspension of business dealings (as available on www.bhel.com)*, shall be initiated by BHEL.

Signature of the Bidder with Stamp

GST COMPLIANCE FOR INDIGENOUS SUPPLIERS

1. In Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GSTIN which should be clearly mentioned in the offer. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.
2. Supplier shall mention their GSTIN in all their invoices and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no etc., then the Invoice No which is linked/uploaded in GSTN network shall be clearly indicated), item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, etc.
3. All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code).
4. A declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL.
5. All documents like Test Certificate, LR copy, Guarantee/Warrantee 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

INTEGRITY PACT (AGREEMENT FORMAT)INTEGRITY PACTBetween

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

And

.....(description of the party along with address), hereinafter referred to as "The Bidder " which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

PREAMBLE

The Principal intends to award, under laid-down organizational procedures, Contract/s for _____

_____ The Principal values full compliance with relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ .

In order to achieve these goals, the Principal will appoint independent External Monitor(s), who will monitor the tender process and the execution of the Contract for compliance with the principles mentioned above.

SECTION 1- COMMITMENTS OF THE PRINCIPAL

- 1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles
 - 1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a Contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled.
 - 1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
 - 1.1.3 The Principal will exclude from the process all known prejudiced persons.
- 1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

SECTION 2 - COMMITMENTS OF THE BIDDER(S):

- 2.1 The Bidder(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

- 2.2 The Bidder(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
- 2.2.1 The Bidder(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he / she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender Process or during the execution of the contract.
- 2.2.2 The Bidder(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. 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.
- 2.2.3 The Bidder(s) will not commit any penal offence under the relevant IPC/ PC Act; further the Bidder(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.2.4 The Bidder(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the Contract.
- 2.3 The Bidder(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

SECTION 3 - Disqualification from Tender Process and Exclusion from Future Contracts:

If the Bidder(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s) / from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers " framed by the Principal.

SECTION 4 -COMPENSATION FOR DAMAGES

- 4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/Bid Security.
- 4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Bidder liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

SECTION 5 - PREVIOUS TRANSGRESSION

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

SECTION 6 -EQUAL TREATMENT OF ALL BIDDERS

- 6.1 The Bidder(s) undertake(s) to obtain from all Sub Bidders a commitment consistent with this Integrity Pact and report Compliance to the Principal. This commitment shall be taken only from those sub-Bidder whose contract value is more than 20 % of Bidder's contract value with the Principal. The Bidder(s) shall continue to remain responsible for any default by his Sub-Bidders

6.2 The Principal will enter into agreements with identical conditions as this one with all Bidders.

6.3 The Principal will disqualify from the tender process all Bidders who do not sign this pact or violate its provisions.

SECTION 7 - CRIMINAL CHARGES AGAINST VIOLATING BIDDERS

If the Principal obtains knowledge of conduct of a Bidder, or of an employee or a representative or an associate of a Bidder, which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

SECTION 8 -INDEPENDENT EXTERNAL MONITOR(S)

- 8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
- 8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The Bidder(s) accepts that the Monitor has the right to access without restriction to all Contract documentation of the Principal including that provided by the Bidder(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub- Bidder(s). The Monitor is under Contractual obligation to treat the information and documents of the Bidder(s)/ / Sub- Bidder(s) with confidentiality,
- 8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Bidder. The parties offer to the Monitor the option to participate in such meetings.
- 8.5 As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or heal the situation, or to take other relevant action. The Monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.
- 8.6 The Monitor will submit a written report to the CMD, BHFL within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.
- 8.7 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.
- 8.8 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant IPC / PC Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.9 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.
- 8.10 The word 'Monitor' would include both singular and plural.

SECTION 9 - PACT DURATION

- 9.1 This Pact begins and shall be binding on and from the submission of bid(s) by Bidder(s). It expires for the Bidder 12 months after the last payment under the respective contract and for all other Bidders 6 months after the contract has been awarded.

9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as above, unless it is discharged/ determined by the CMD, BHEL.

SECTION 10 - OTHER PROVISIONS

- 10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.
- 10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- 10.3 If the Bidder is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- 10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 10.5 Only those Bidders who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

Ramesh

.....
For & On behalf of the Principal
(Office Seal) **D. N. MURTHY / D.N.V.S. RAMESH**
(वाणिज्य, ओ एस & लोजिस्टिक्स)
Dy. General Manager (Comml., OS & Logistics)
बीएचईएल-एचपीवीपी/BHEL-HPVP
विशाखपट्टणम/VISAKHAPATNAM-530 012

Place-----

Date-----

Witness: *D. N. MURTHY*

D. N. MURTHY
(Name & Address) **Manager. (OS)**
Bharat Heavy Electricals Ltd
HPVP Visakhapatnam-530 012

.....
For & On behalf of the Bidder
(Office Seal)

Place-----

Date -----

Witness:.....

(Name & Address).....
.....
.....



BHARAT HEAVY ELECTRICALS LIMITED
UNIT- HEAVY PLATES & VESSELS PLANT
VISAKHAPATNAM – 530 012
(A Govt. of India Enterprise)

MANDATE FORM

OPTION TO RECEIVE E-PAYMENT THROUGH NEFT & RTGS.

1. NAME : **BHARAT HEAVY ELECTRICALS LTD (HPVP)**
2. ADDRESS : **NATHAYYAPALE,**
VISAKHAPATNAM
3. PARTICULARS OF BANK ACCOUNT
 - a) BANK NAME : **STATE BANK OF INDIA**
 - b) BRANCH NAME : **BHPV BRANCH**
 - c) BRANCH ADDRESS : **BHPV POST, VISAKHAPATNAM**
 - d) IFSC CODE : **SBIN0001675**
 - e) ACCOUNT NUMBER ; **33276118389**
 - f) E-MAIL ID FOR RECEIVING SYSTEM GENERATED PAYMENT ADVICE :
rsprakash@bhel.in

I hereby declare that the above account details are of our Receipts Bank Account and this is issued in lieu of cancelled cheque as we are not availing cheque facility for our Receipts Bank Account.

I hereby further declare that particulars furnished above are correct.

FOR **BHARAT HEAVY ELECTRICALS LIMITED**


(Authorised Signatory) **SURYA PRAKASH**
Manager (Finance)
HPVP Unit, BHEL
VISAKHAPATNAM-530 012

Bank Certification

This is to certify that the particulars furnished at Point (3), above are correct and complete as per our records.

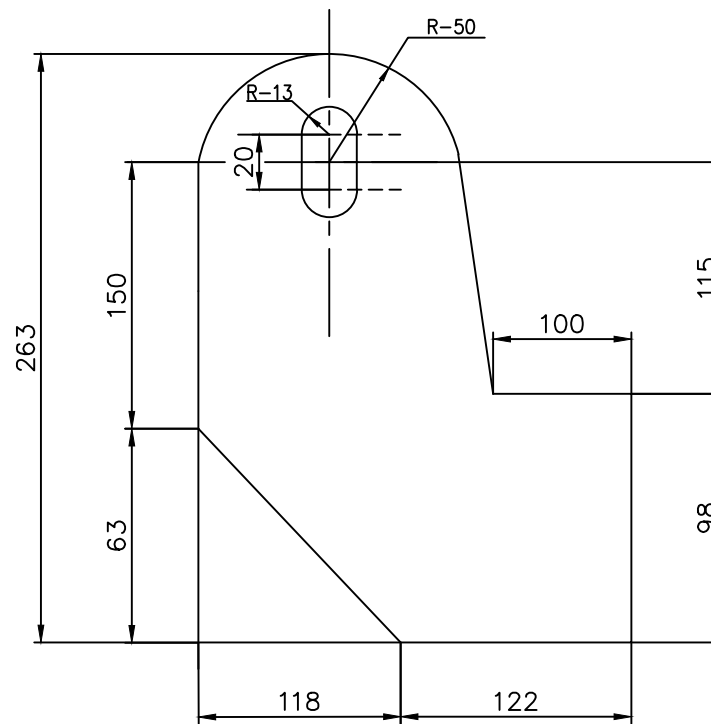
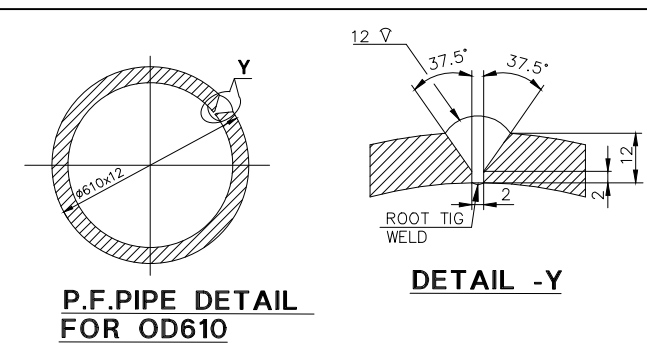
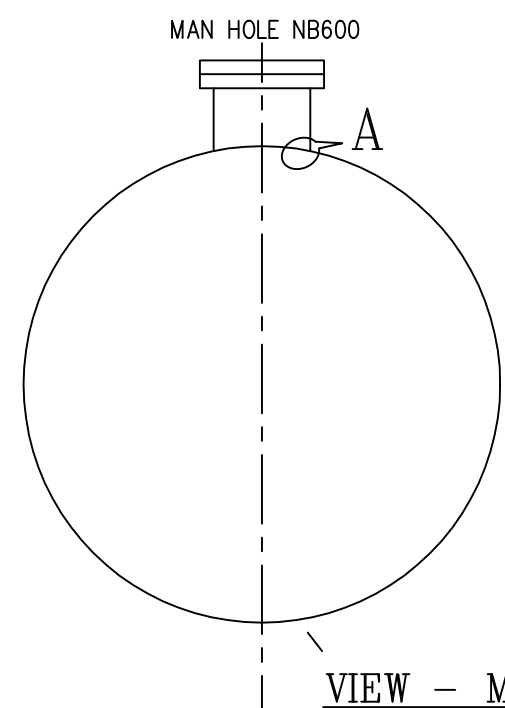
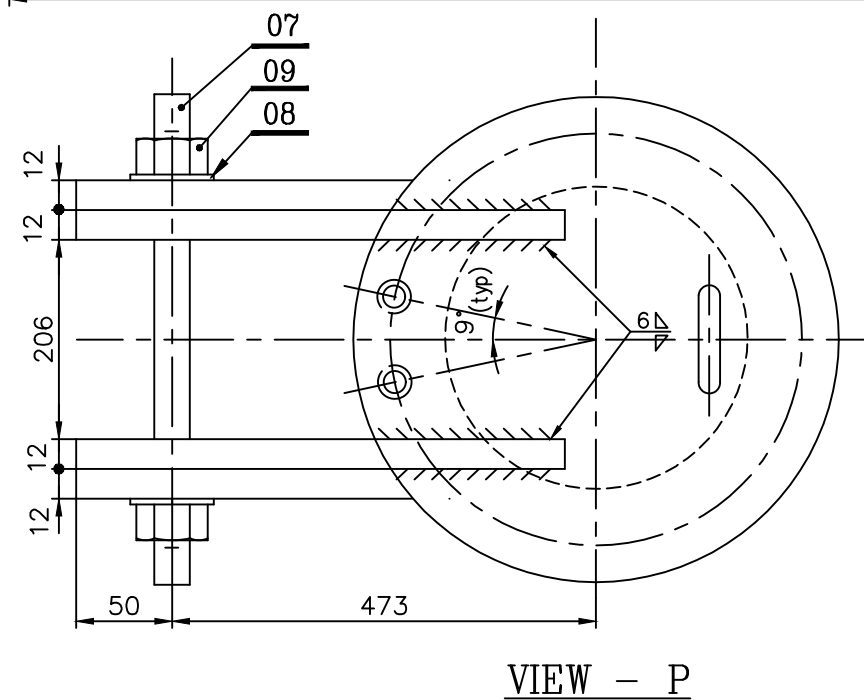
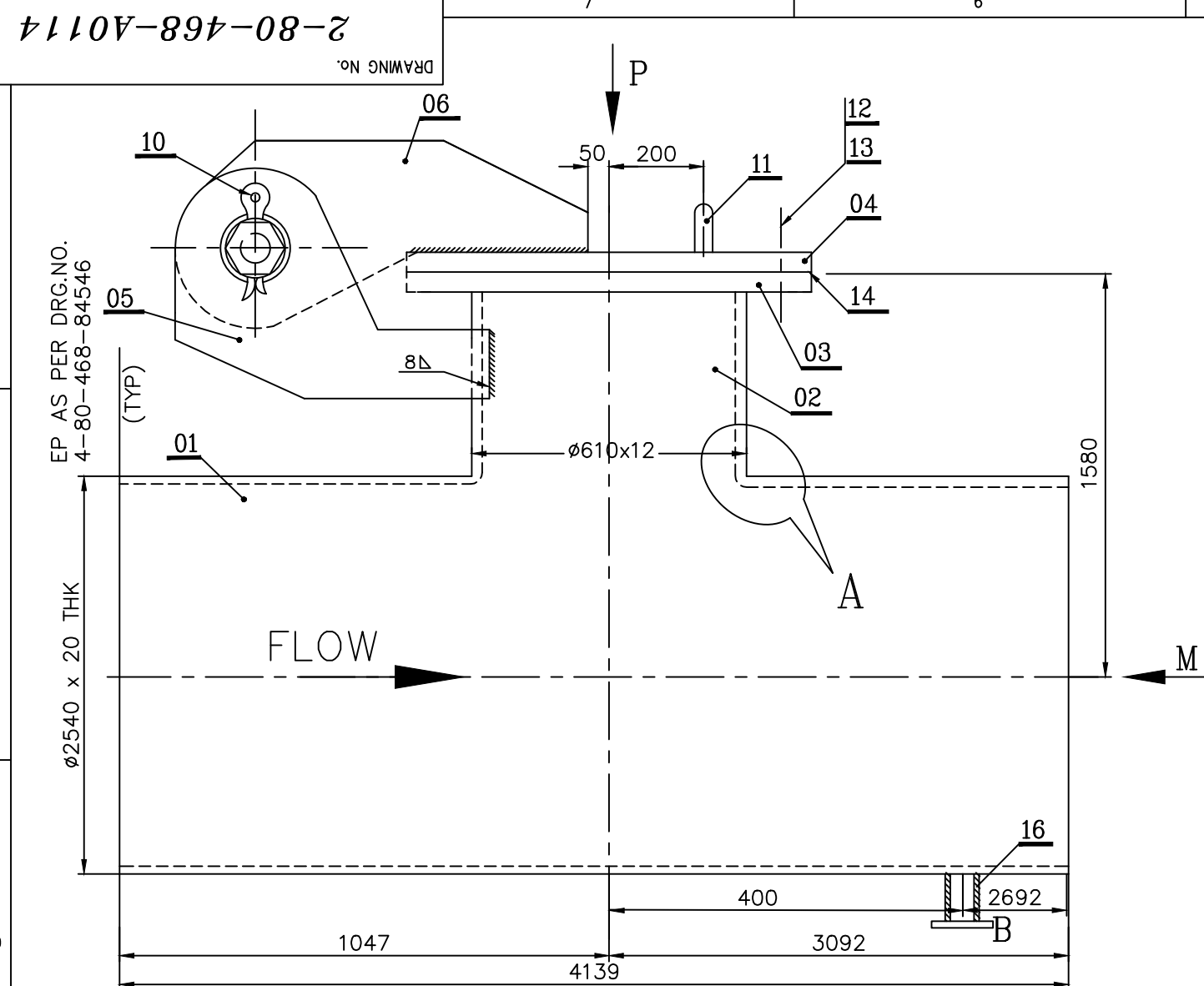
09/01/24



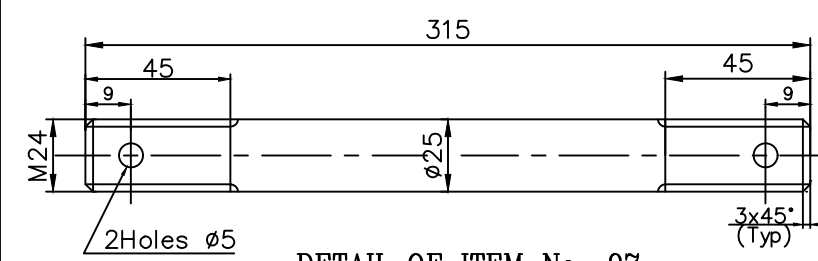

Murali Krishna Sunkari
PF No. 5533805 SS.No. S-30284
Dy. Manager
Seal & Signature of **Authorized Bank Official**
State Bank of India, BHPV Branch 01675

05-228/C

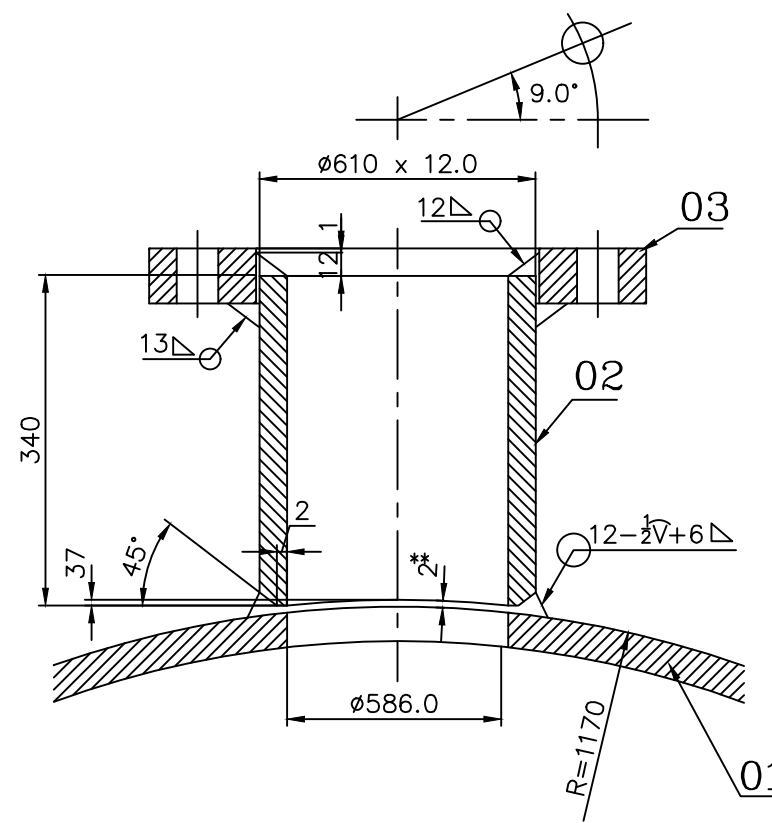
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DETAIL OF ITEM No.-05



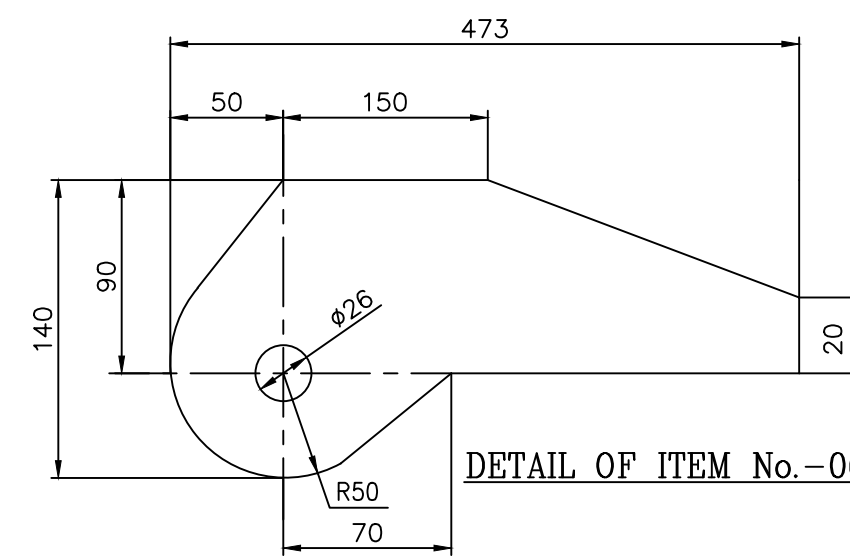
DETAIL OF ITEM No.-07



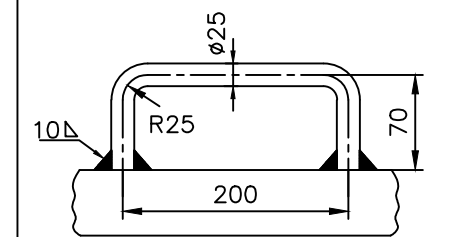
** BRANCH PIPE SHALL BE CUT TO SUIT THE OUTER SURFACE OF THE MAIN PIPE SUCH THAT A UNIFORM GAP OF 2mm IS MAINTAINED THROUGHOUT

DETAIL – A

REV	DATE	ALTD	REV	DATE	ALTD
		APPD			APPD
ZONE			ZONE		



DETAIL OF ITEM No.-06



DETAIL OF ITEM No.-11

NOTE:

1. WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH TOOL FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
2. FULL PENETRATION OF WELDS TO BE ENSURED
3. FOLLOW APPLICABLE QUALITY PLAN & TDG FOR MANUFACTURING.
4. FOR COATING/PAINTING DETAILS, REFER APPROVED PAINTING SCHEME.
5. PIPES/FITINGS ARE TO BE SUPPLIED WITH LIFTING LUG ARRANGEMENT AS PER DRAWING NUMBER: 3-80-468-34607/R01
6. SPIDER ARRANGEMENT HAS TO BE WELDED AT THE ENDS AFTER EDGE PREPARATION. REFER DWG.NO. 4-80-999-93078
7. SA515GR70 PLATE (SA672 GR.B70 PIPE) IN PLACE OF IS 2062-GRB PLATE IS ACCEPTED

14	NON ASBESTOS SHEET OD780 x ID617 x 3THK	2-80-468-A0114	22 021 030 0000 -	C	3 462 1	D
13	HEX NUT M27	41301 27000	41301 0002700	C	0 170 20	
12	HEX BOLT M27 x 120	41215 27120	41215 2712000	C	0 690 20	
11	HANDLE DIA25x340	2-80-468-A0114	15 339 139 0000 SA 105	C	1 310 1	
10	SPLIT PIN Ø4 x 40	41704 04025	41704 0402500	C	0 003 2	
09	HEX NUT M24	41301 24000	41301 0002400	C	0 110 20	
08	PUNCHED WASHER A24	41408 24000	41408 0002400	C	0 030 2	C
07	STUD M24 x 315Long	2-80-468-A0114	15 339 139 0000 SA 105	C	1 210 1	
06	HINGE PLATE(INNER) 473 x 140 x 12THK	2-80-468-A0114	152110030000 IS2062E250GRBR	C	3 100 2	
05	HINGE PLATE(OUTER) 263 x 240 x 12THK	2-80-468-A0114	152110030000 IS2062E250GRBR	C	3 320 2	
04	BLANK FLANGE NB600	4-81-004-01956/02	15 942 119 0000 SA515 Gr70	C	15 387 1	
03	SOW FLANGE NB600	4-81-004-01955/02	15 942 119 0000 SA515 Gr70	C	51 700 1	
02	P.F. PIPE (OG) ØD610x12 ;L=340	2-80-468-A0114	152110030000 IS2062E250GRBR	C	42 435 1	
01	P.F. PIPE (OG) ØD2540x20 ;L=4139	3-80-468-A0490	15 011 201 0200 IS2062E250GRBR	C	5102 527 1	B
ITEM NO	DESCRIPTION	DRAWING NO	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPECN	A C QUANTITY	

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

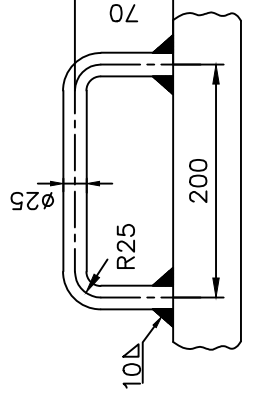
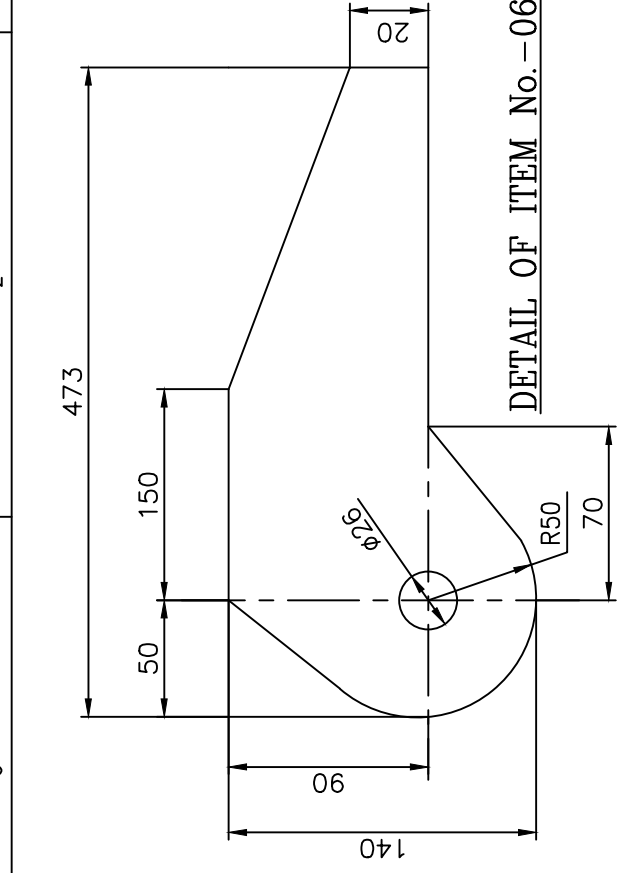
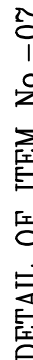
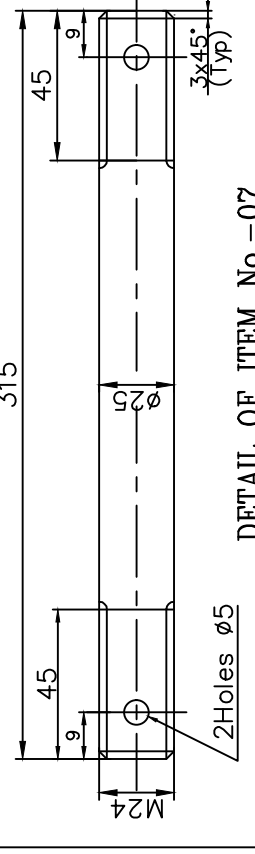
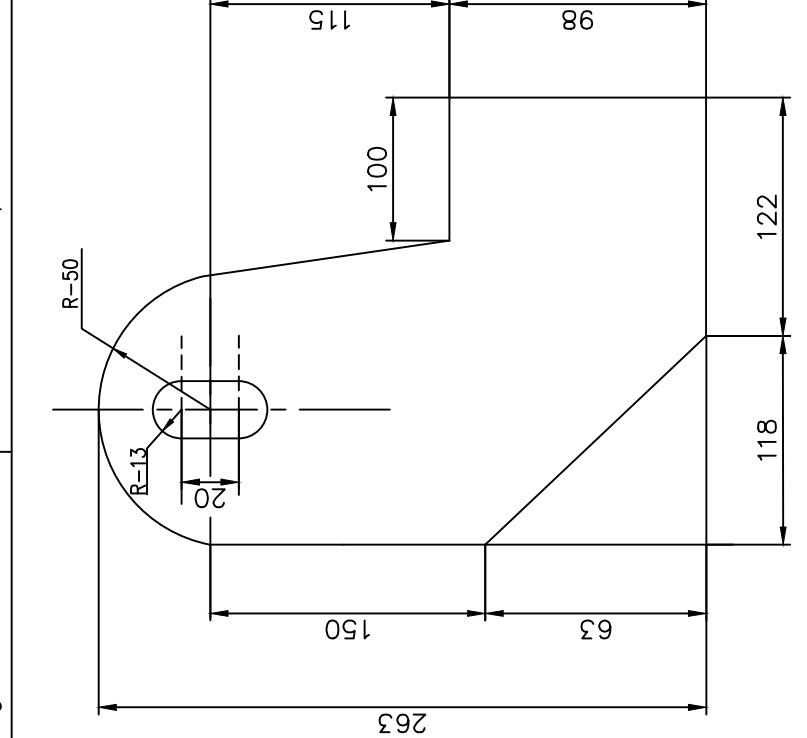
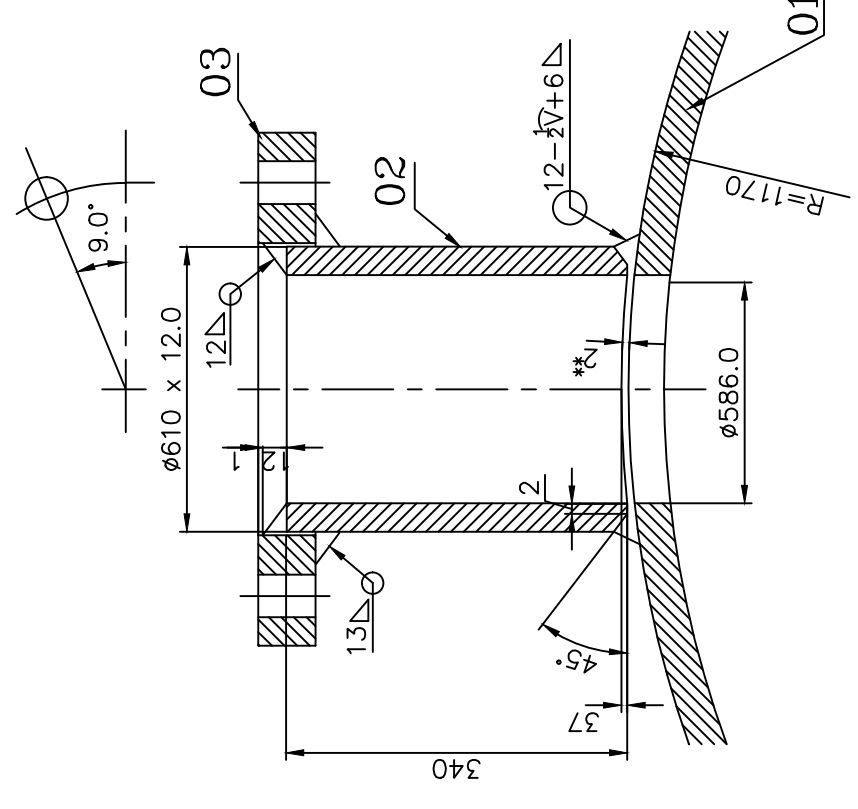
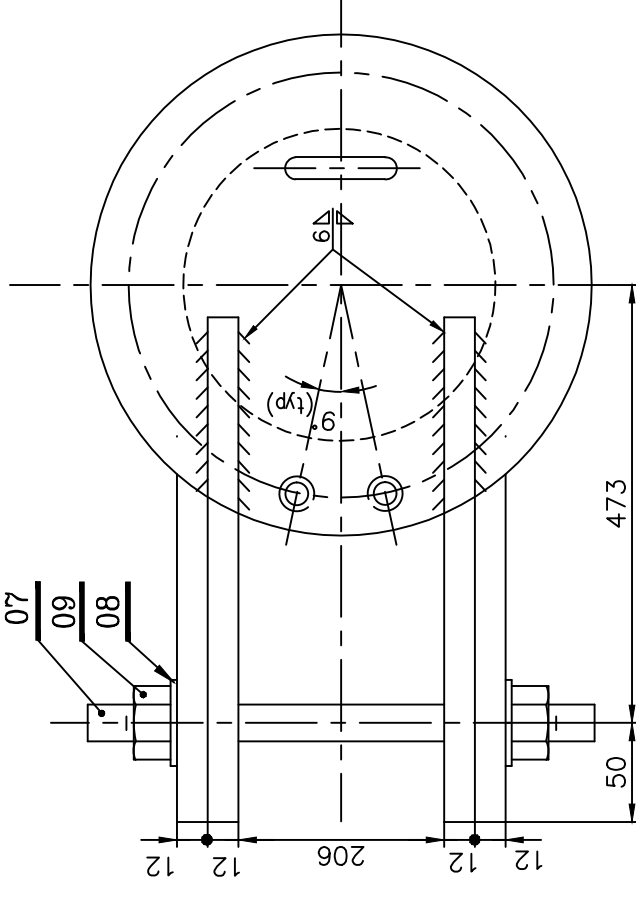
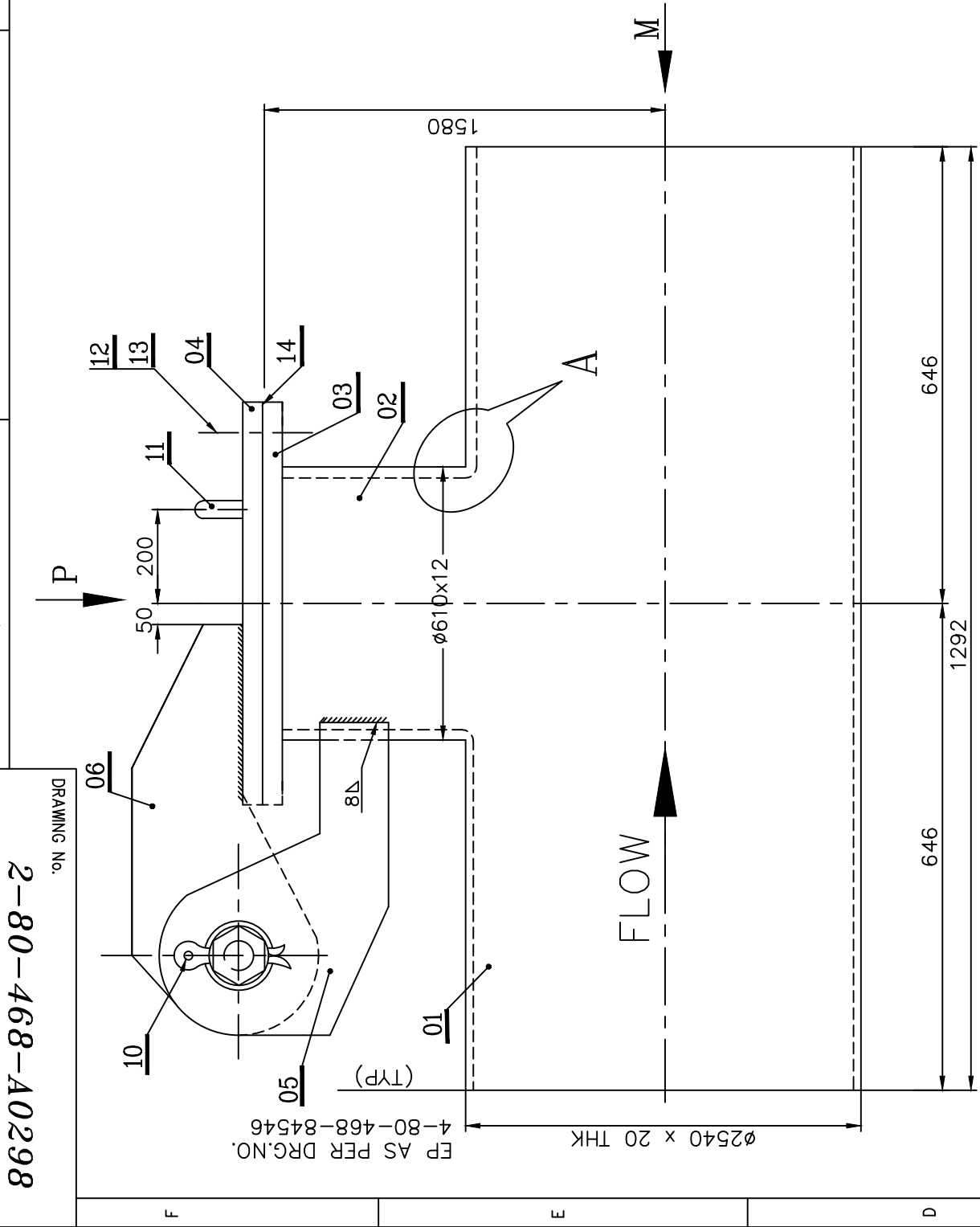
BHARAT HEAVY ELECTRICALS LTD.,
PIPING ENGG, HPBP
TRICHY-620014

	NAME	SIGN	DATE	NO OF ITEMS
DRN	DHARMENDRA		30.05.24	
CHD	I.D.B. RAJU		30.05.24	
APPD	SARAVANAN		30.05.24	

DEPT. PIPING ENGG	GRADE OF UN TOL DIM C/M/F		SCALE N.T.S	WEIGHT (Kg).	REF TO ASSY / OLD DRG	ITEM No.
CODE 121						
TITLE <i>PIPE NB2500 WITH MH NB600</i>				CARD CODE U 01	DRAWING No. <i>2-80-468-A0114</i>	REV <i>00</i>

SIZE A2

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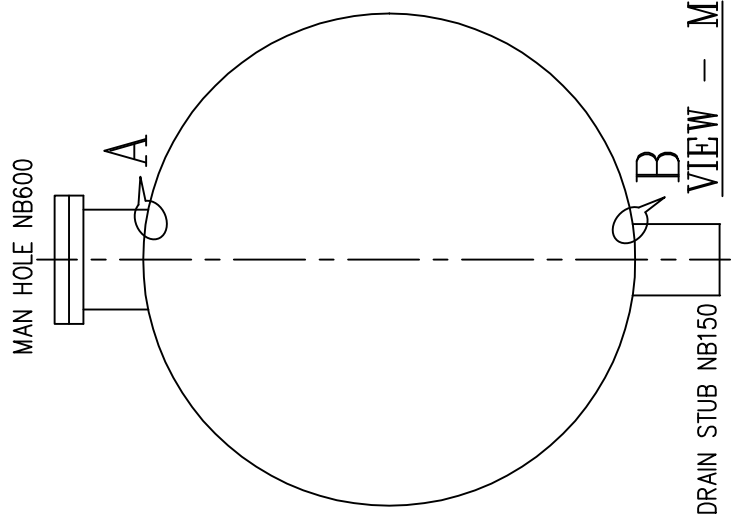
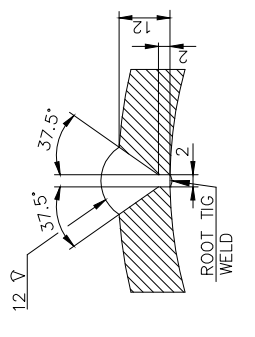
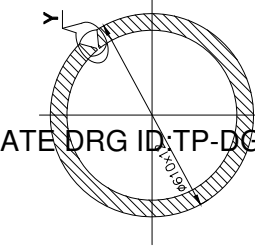


NOTE:

1. WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH TOOL FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
2. FULL PENETRATION OF WELDS TO BE ENSURED
3. FOLLOW APPLICABLE QUALITY PLAN & TDG FOR MANUFACTURING.
4. FOR COATING/PAINTING DETAILS, REFER APPROVED PAINTING SCHEME.
5. PIPES/FITTINGS ARE TO BE SUPPLIED WITH LIFTING LUG ARRANGEMENT
6. DRAWING NUMBER: 3-80-468-34607/R01
SPIDER ARRANGEMENT HAS TO BE WELDED AT THE ENDS AFTER
EDGE PREPARATION. REFER DWG.NO. 4-80-999-93078
7. SA515GR70 PLATE (SA672 GR.B70 PIPE) IN PLACE OF IS 2062-CRB PLATE IS ACCEPTED

[illegible]TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

		BHARAT HEAVY ELECTRICALS LTD., PIPING ENGG, HPBP TRICHY-620014				NO OF ITEMS	
DEPT. PIPING ENGG CODE 121		GRADE OF UN TOL. DIM C/M/ F				SCALE N.T.S	
WEIGHT (kg) 1914.457		REF TO ASSY / OLD DRG		DATE 30.05.24 30.05.24 30.05.24		NO OF ITEMS	
ITEM No.		REV		DRAWING No. 2-80-468-A0298		REV 000	
TITLE PIPE NB2500 WITH MH NB600		CARD CODE U 01		NAME DHARMENDRA J.D.B. RAJU APPD.SARAVANAN		SIGN	



2080V-894-08-2

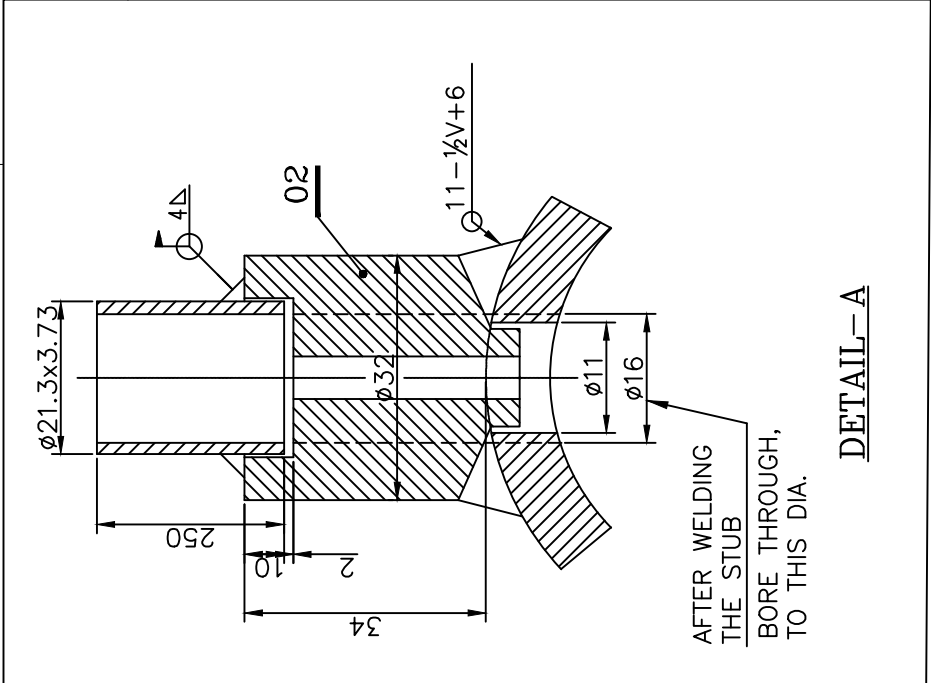
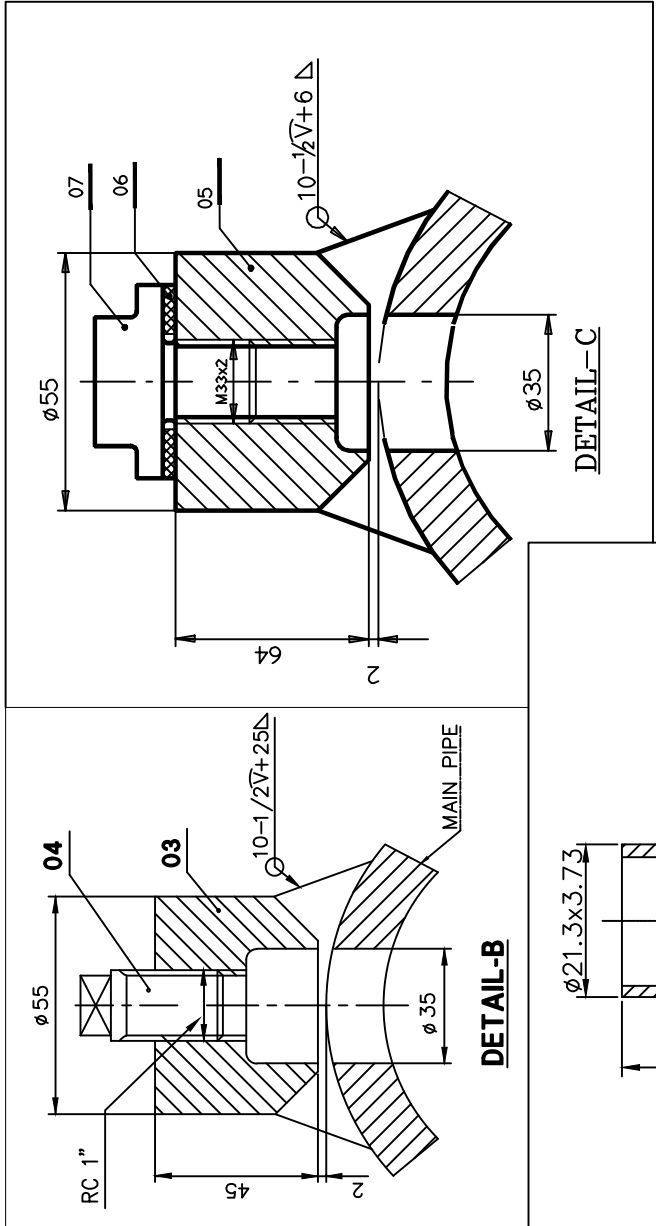
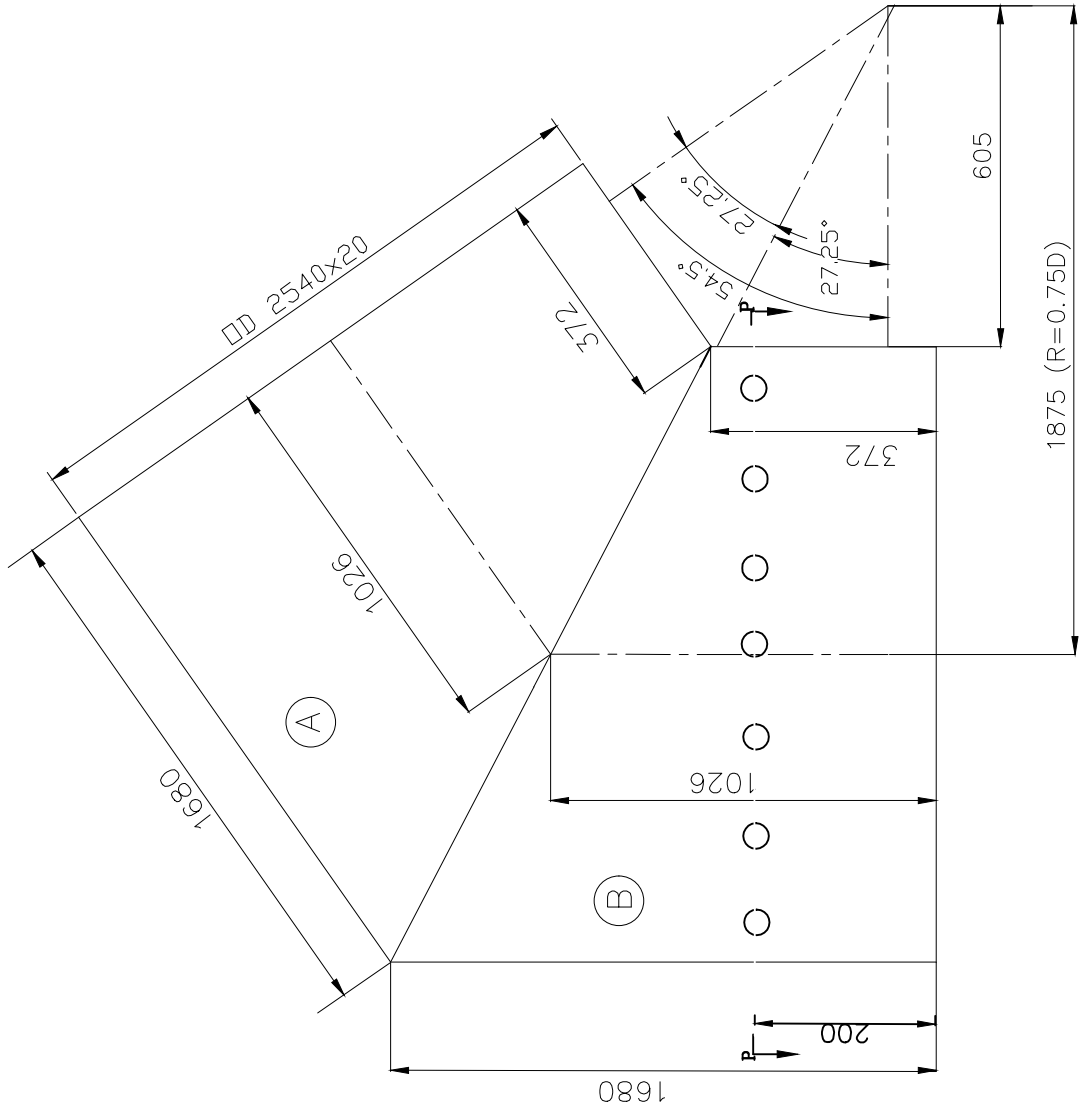
ON DRAWING

FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)

1 2 3 4 5 6 7

NOTE:

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- PIPES/FITINGS ARE TO BE SUPPLIED WITH LIFTING LUG ARRANGEMENT AS PER DRAWING NUMBER: 3-80-468-34607/R01
- FOLLOW APPLICABLE QUALITY PLAN & TDG FOR MANUFACTURING.
- FOR COATING/PAINTING DETAILS, REFER APPROVED PAINTING SCHEME.
- SAS15GR70 PLATE (SA672 GR.B70 PIPE) IN PLACE OF IS 2062 PLATE IS ACCEPTED



07	SCREW PLUG M33X2 (CS)	2-80-468-A0302	9635333900000	C	0	800
06	COPPER PACKING RING M33X2 (CS)	2-80-468-A0302	SA105	C	0	010
05	TEMP STUB M33X2 (CS) L=64	4-80-468-84584	153391430000	C	0	1700
04	SCREW PLUG RC 1" (CS)	4-80-468-84581	SA105	C	0	1200
03	TEMPERATURE STUB RC 1" (CS)	4-80-468-84580	SA105	C	0	1500
02	ASME B16.11 SW STUB NB15 CL 3000	3-80-999-97333/01	153392800000	C	0	180
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ITEM NO	DESCRIPTION	DRAWING NO	ITEM NO.	MATERIAL CODE	UNIT WEIGHT	QUANTITY

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

DEPT. PIPING ENGG CODE 121

GRADE OF UN TOL DIM C/M/F

SCALE N.T.S

WEIGHT (Kg) 2560

REF TO ASSY / OLD DRG

NAME SIGN

DATE 28.11.24

NO OF ITEMS 28.11.24

ITEM No. 28.11.24

BHARAT HEAVY ELECTRICALS LTD., PIPING ENGG.HPBP-TRICHY-620014

DRN DHARMENDRA CHD IDB RAJU APPD P SURESH

CARD CODE U 01

DRAWING No. 2-80-468-A0302

REV 00

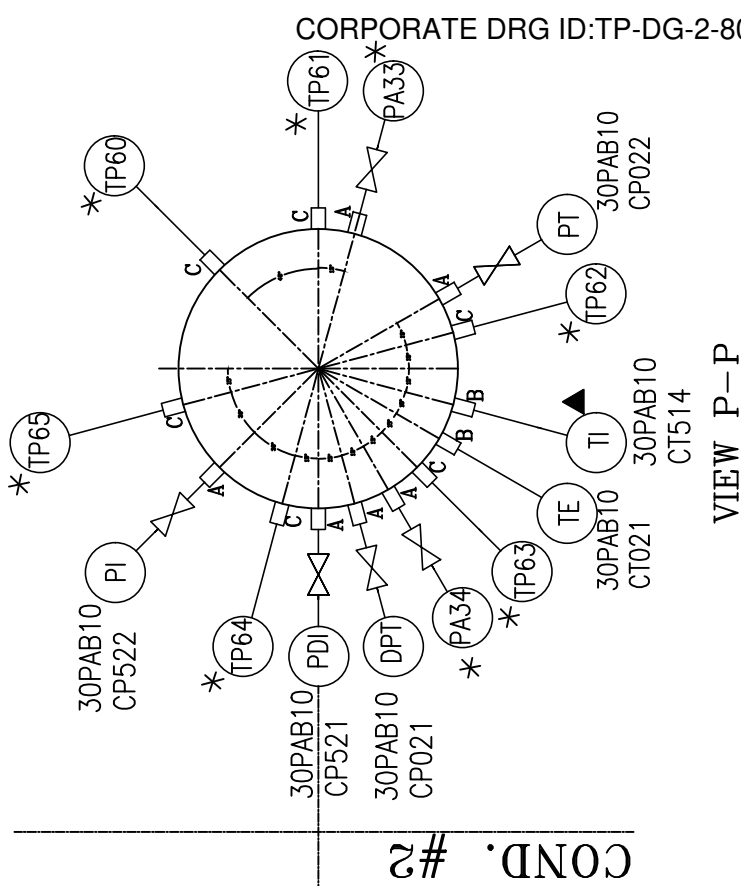
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0.10X20 WITH STUBS

0.10X20 WITH STUBS

0.10X20 WITH STUBS

TURBINE SIDE



VIEW P-P

COND. #2

COND. #2

COND. #2

COND. #2

COND. #2

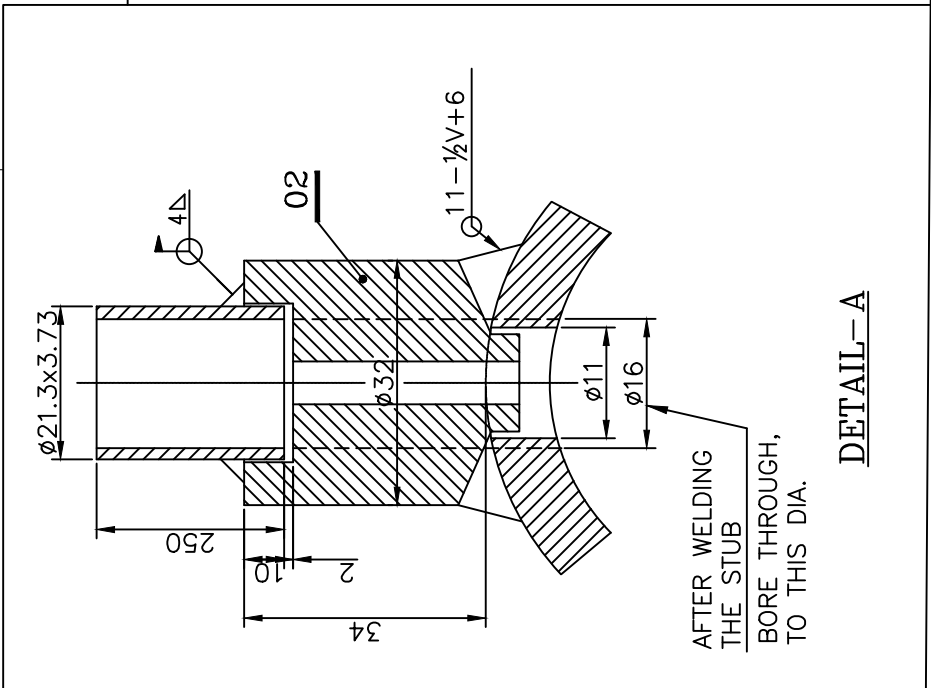
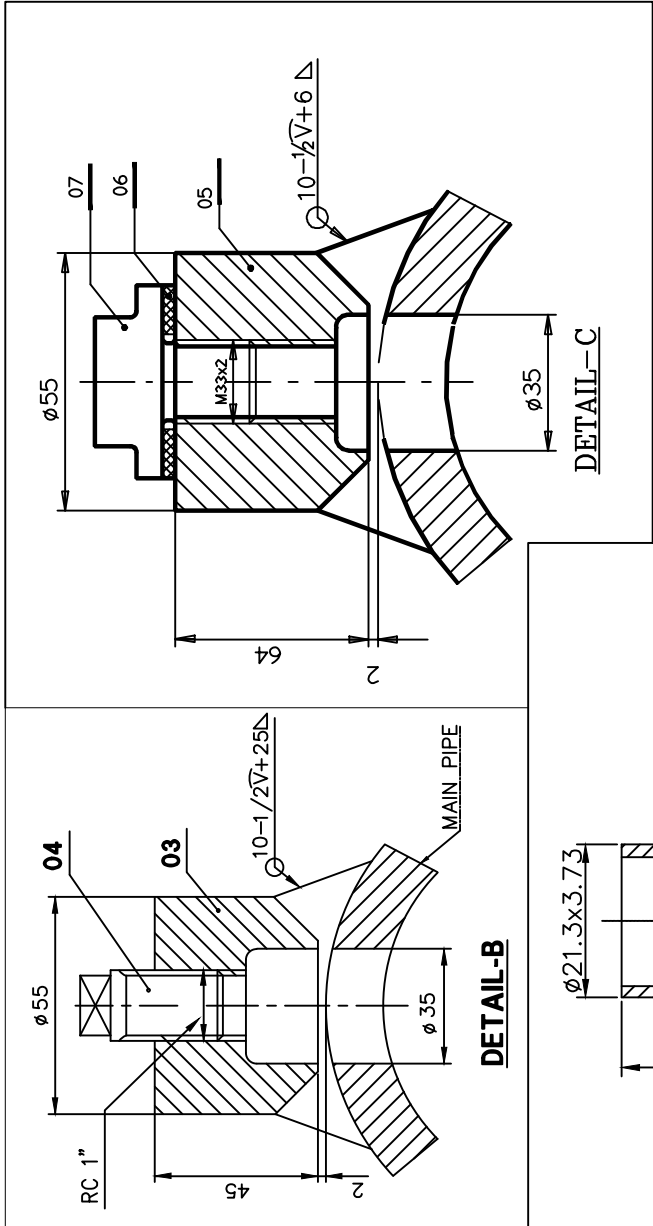
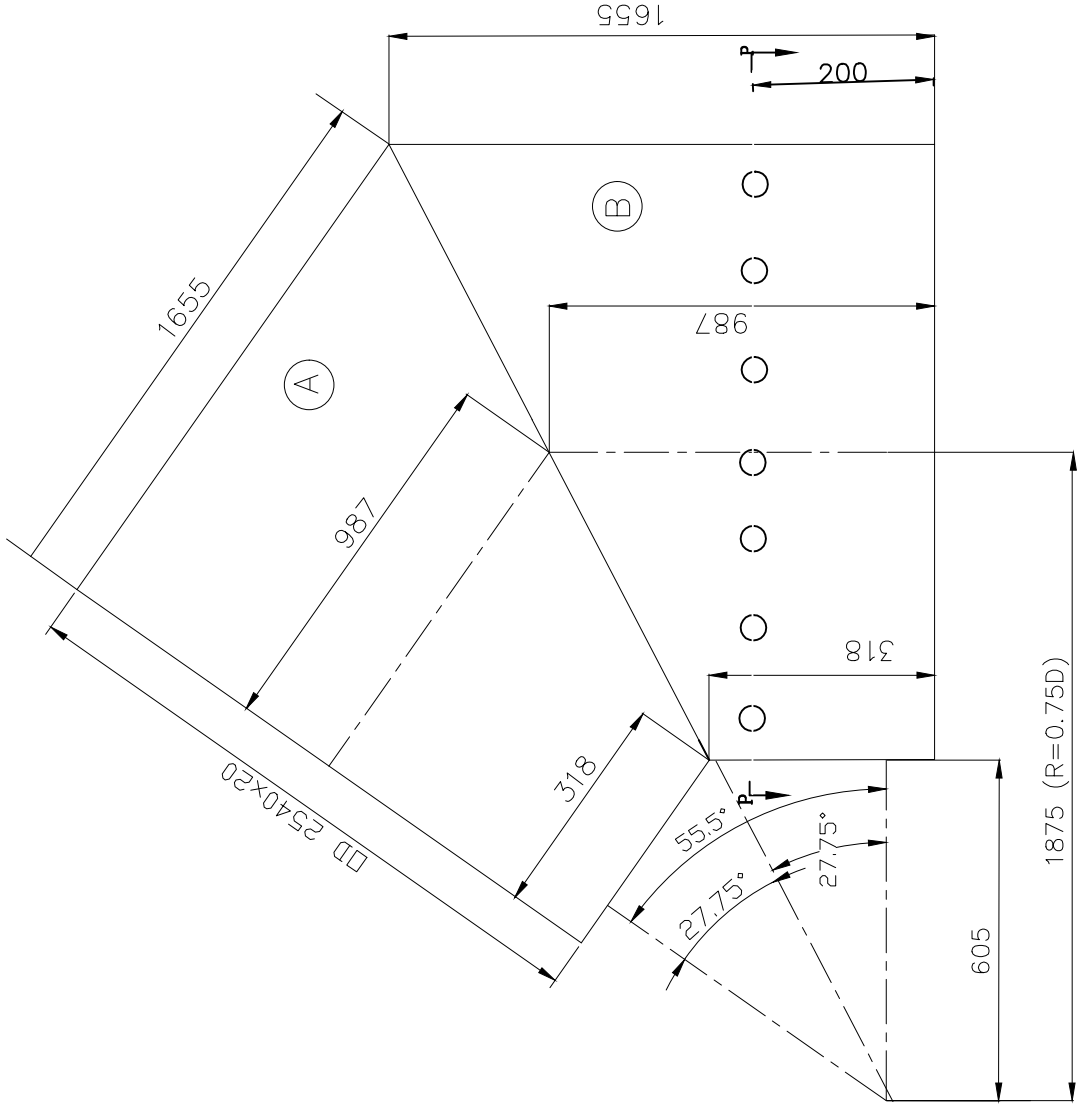
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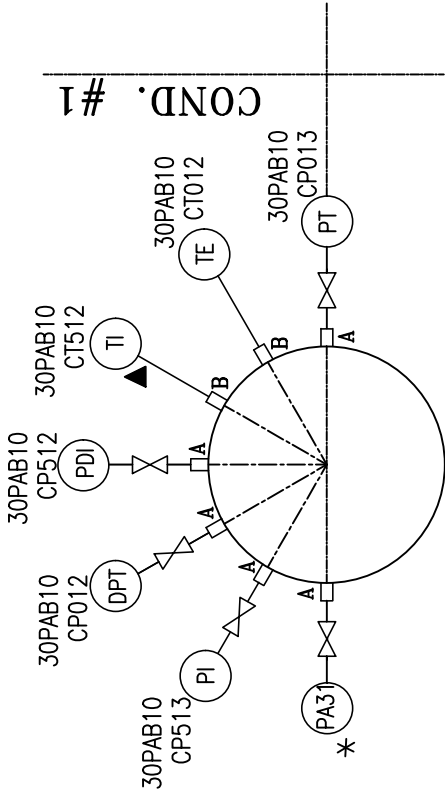
SIZE A2

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- NOTE:
- 1 WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH TOOL FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
 - 2 FULL PENETRATION OF WELDS TO BE ENSURED
 - 3 SPIDER ARRANGEMENT HAS TO BE WELDED AT THE ENDS AFTER EDGE PREPARATION. REFER DWG.NO. 4-80-999-93078
 - 4 PIPES/FITTINGS ARE TO BE SUPPLIED WITH LIFTING LUG ARRANGEMENT AS PER DRAWING NUMBER: 3-80-468-34607/R01
 - 5 FOLLOW APPLICABLE QUALITY PLAN & TDG FOR MANUFACTURING.
 - 6 FOR COATING/PAINTING DETAILS, REFER APPROVED PAINTING SCHEME.
 - 7 SA516GR70 PLATE (SA672 GR.B70 PIPE) IN PLACE OF IS 2062 PLATE IS ACCEPTED



GENERATOR SIDE



VIEW P-P

04	SCREW PLUG RC 1" (CS)	4-80-468-84581	15 339 141 0000	C	0 200
03	TEMPERATURE STUB RC 1" (CS)	4-80-468-84580	15 339 143 0000	C	0 500
02	ASME B16.11 SW STUB NB15 CL 3000	3-80-999-97333/01	153392800000 01 SA105	C	0 180
01	55.5 DEG MITRE BEND NB2500	3-80-468-A0641	15012180000 IS2062E250GRBR	C	2476 000
ITEM NO	DESCRIPTION	DRAWING NO	ITEM NO.	MATERIAL CODE	UNIT WEIGHT
				MATERIAL SPECN	QUANTITY
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT					
BHARAT HEAVY ELECTRICALS LTD., PIPING ENGG.HPBP-TRICHY-620014					
DEPT. PIPING ENGG CODE 121	GRADE OF UN TOL DIM C/M/F	SCALE N.T.S	WEIGHT (Kg.) 2480	NAME DHARMENDRA CHD IDB RAJU	DATE 28.11.24
REV	DATE	ALTD APPD	NO OF ITEMS	SIGN	DATE
ZONE			ITEM No.	REF TO ASSY / OLD DRG	DATE
TITLE 55.5DEG MITRE BEND R=1875 OD 0X20 WITH STUBS			CARD CODE U 01	DRAWING No.	REV
			2-80-468-A0303 00		

4080V-894-08-2

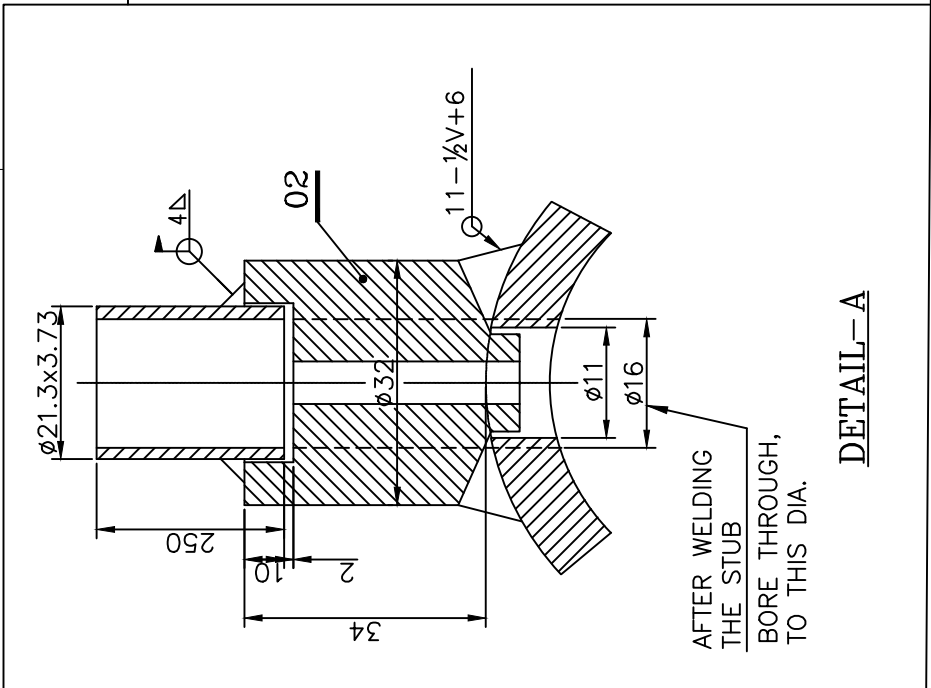
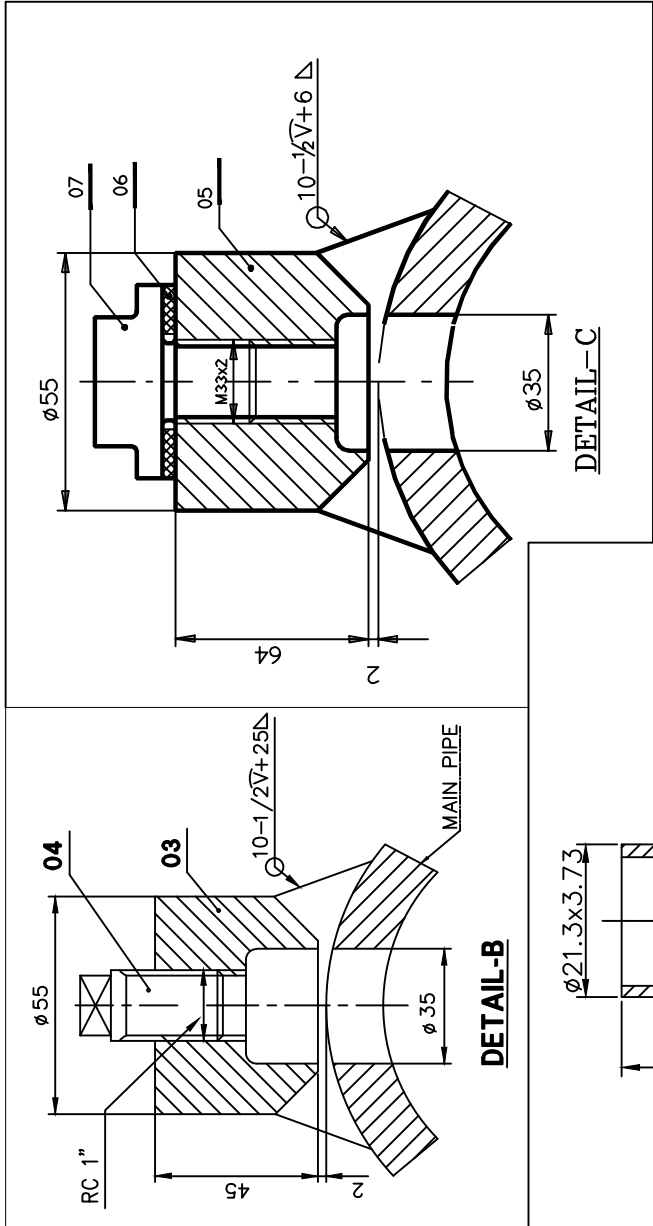
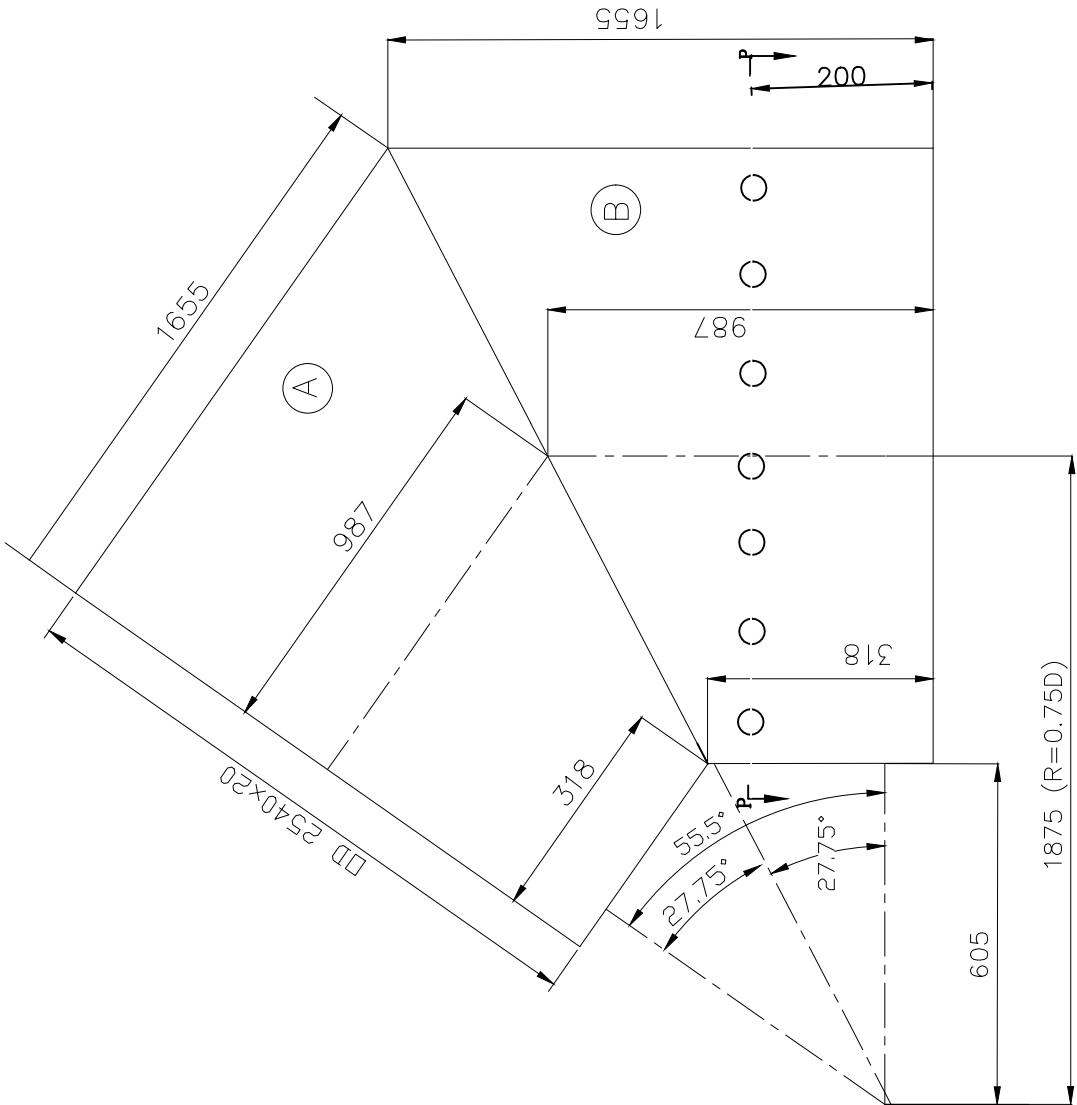
ON DRAWING

FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)

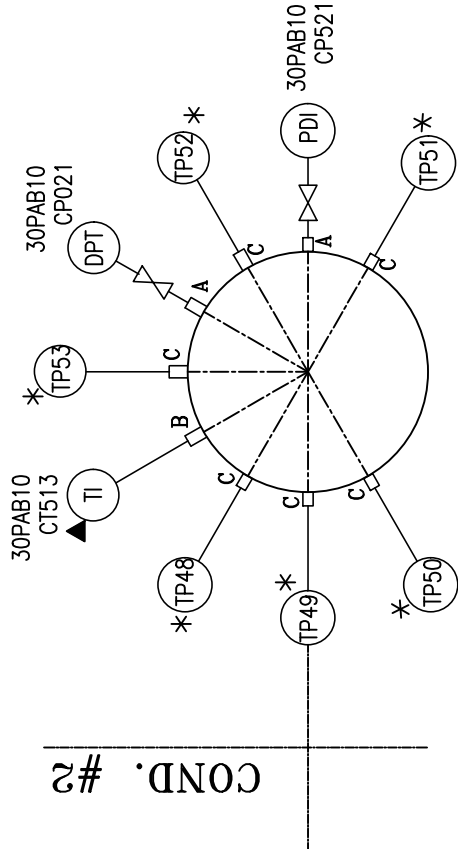
1 2 3 4 5 6 7

NOTE:

- 1 WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH TOOL FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
- 2 FULL PENETRATION OF WELDS TO BE ENSURED
- 3 SPIDER ARRANGEMENT HAS TO BE WELDED AT THE ENDS AFTER EDGE PREPARATION. REFER DWG.NO. 4-80-999-93078
- 4 PIPES/FITINGS ARE TO BE SUPPLIED WITH LIFTING LUG ARRANGEMENT AS PER DRAWING NUMBER: 3-80-468-34607/R01
- 5 FOLLOW APPLICABLE QUALITY PLAN & TDG FOR MANUFACTURING.
- 6 FOR COATING/PAINTING DETAILS, REFER APPROVED PAINTING SCHEME.
- 7 SA516GR70 PLATE (SA672 GR.B70 PIPE) IN PLACE OF IS 2062 PLATE IS ACCEPTED



TURBINE SIDE



07	SCREW PLUG M33X2 (CS)	2-80-468-A0304	96353339000000	C	0	800
06	COPPER PACKING RING M33X2 (CS)	2-80-468-A0304	SA105 9482400100000	C	0	010
05	TEMP STUB M33X2 (CS) L=64	4-80-468-84584	153391430000 SA105	C	0	1700
04	SCREW PLUG RC 1" (CS)	4-80-468-84581	15 339 141 0000 SA105	C	0	1200
03	TEMPERATURE STUB RC 1" (CS)	4-80-468-84580	15 339 143 0000 SA105	C	0	1500
02	ASME B16.11 SW STUB NB15 CL 3000	3-80-999-97333/01	153392800000 SA105	C	0	180
01	55.5 DEG MITRE BEND NB2500	3-80-468-A0641	150112180000 IS2062E250GRBR	C	1470	519
ITEM NO	DESCRIPTION	DRAWING NO	ITEM NO. V&P	MATERIAL CODE	A	UNIT WEIGHT
				MATERIAL SPECN	C	QUANTITY

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LTD., PIPING ENGG.HPBP-TRICHY-620014

DRN DHARMENDRA CHD IDB RAJU APPD P SURESH

NAME SIGN DATE NO OF ITEMS 28.11.24 28.11.24 28.11.24

DEPT. PIPING ENGG CODE 121 GRADE OF UN TOL DIM C/M/F SCALE N.T.S WEIGHT (Kg) 1480.639

REV DATE ALT D APPD ZONE

TITLE 55.5DEG MITRE BEND R=1875 01 01

CARD CODE U 01 DRAWING No. 2-80-468-A0304

REV 00

DRAWING No.

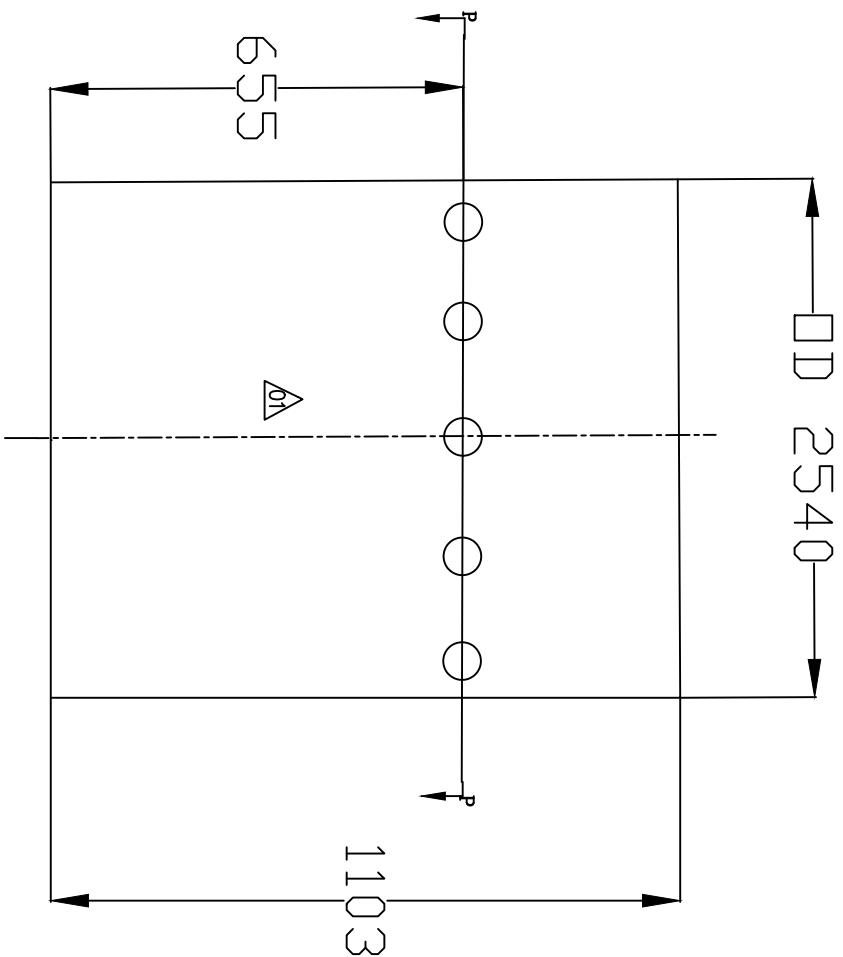
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TURBINE SIDE



NOTE:



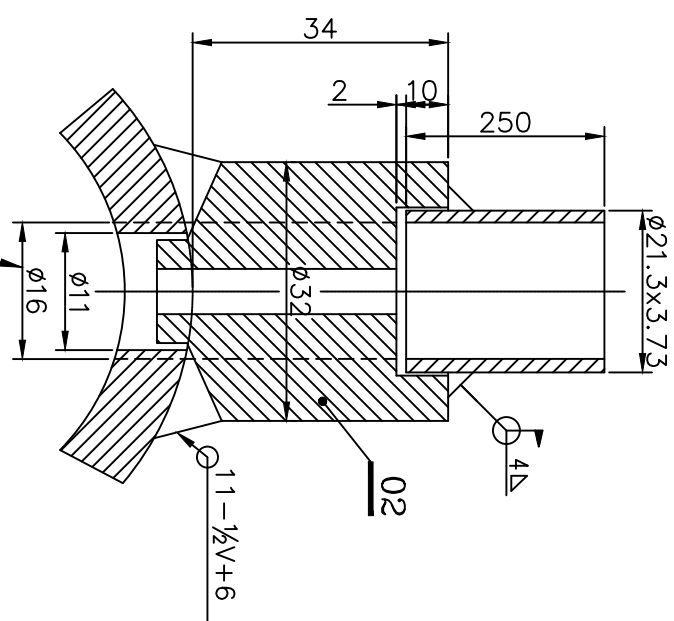
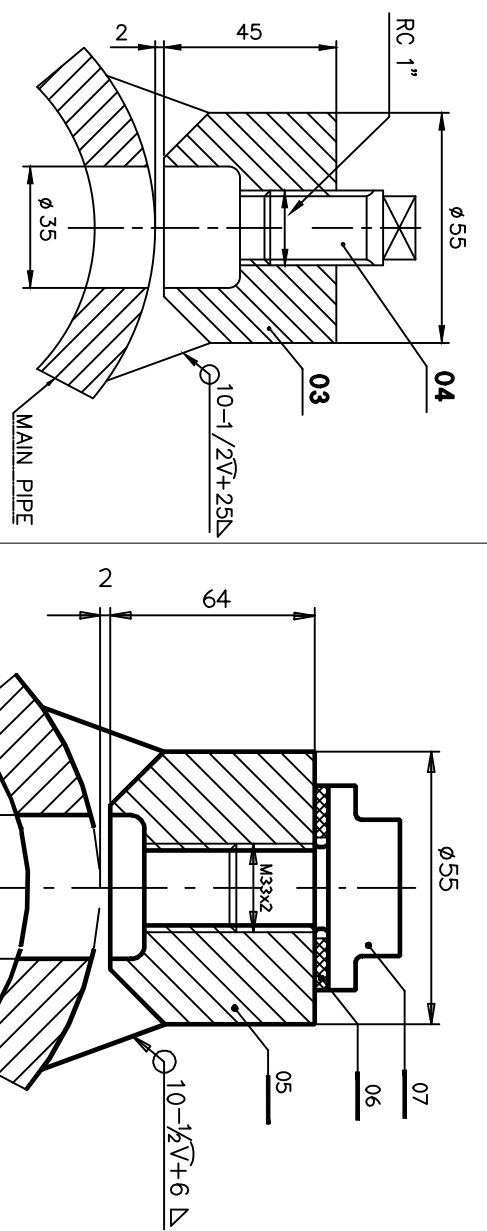
BHARAT HEAVY ELECTRICALS LTD.
 PIPING ENGG,HPBP-TRICHY-62001

2-80-468-A0306

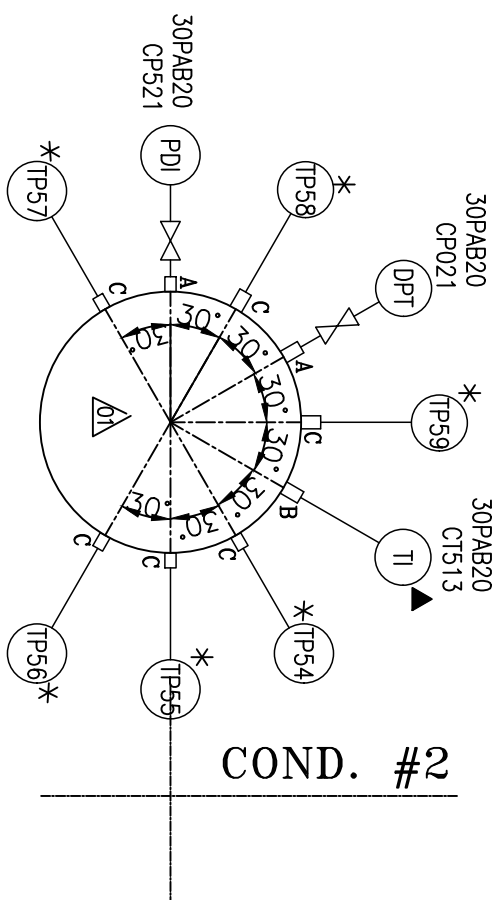
DRAWING No.

NOTE:

- 1 WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH TOOL FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
- 2 FULL PENETRATION OF WELDS TO BE ENSURED
- 3 SPIDER ARRANGEMENT HAS TO BE WELDED AT THE ENDS AFTER EDGE PREPARATION. REFER DWG.NO. 4-80-999-93078
- 4 PIPES/FITTINGS ARE TO BE SUPPLIED WITH LIFTING LUG ARRANGEMENT AS PER DRAWING NUMBER:3-80-468-34607/R01
- 5 FOLLOW APPLICABLE QUALITY PLAN & TDG FOR MANUFACTURING.
- 6 FOR COATING/PAINTING DETAILS, REFER APPROVED PAINTING SCHEME.
- 7 SA515GR70 PLATE (SA672 GR.B70 PIPE) IN PLACE OF IS 2062 PLATE IS ACCEPTED



GENERATOR SIDE



REV	DATE	ALT-DHAMENDRA KUMAR
01	15.02.2025	APPO-SHIV RAHUL

ZONE B-7

REVISION IS MARKED AS 

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
BHARAT HEAVY ELECTRICALS LTD., PIPING ENGG, HDBP- TRICHY-620014									
DEPT. PIPING ENGG CODE 121 GRADE OF UN TOL. DIM C/M/F SCALE N.T.S WEIGHT (Kg.) 1381 REF TO ASST / OLD DRG ITEM No.									
TITLE									
P.F. PIPE L=1103 WITH STUBS CARD CODE U 01 DRAWING No. 2-80-468-A0306 REV 01									
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
BHARAT HEAVY ELECTRICALS LTD., PIPING ENGG, HDBP- TRICHY-620014									
DEPT. PIPING ENGG CODE 121 GRADE OF UN TOL. DIM C/M/F SCALE N.T.S WEIGHT (Kg.) 1381 REF TO ASST / OLD DRG ITEM No.									
TITLE									
P.F. PIPE L=1103 WITH STUBS CARD CODE U 01 DRAWING No. 2-80-468-A0306 REV 01									

2030V-894-08-2

DRAWING NO.

FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)

1

2

3

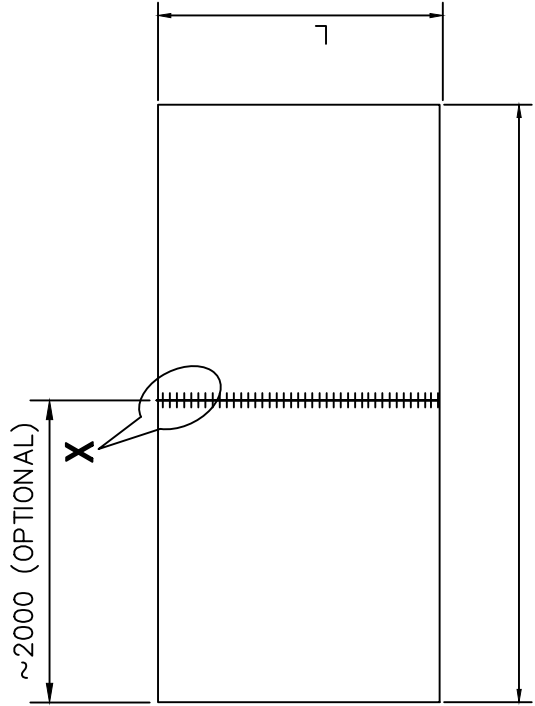
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5

6

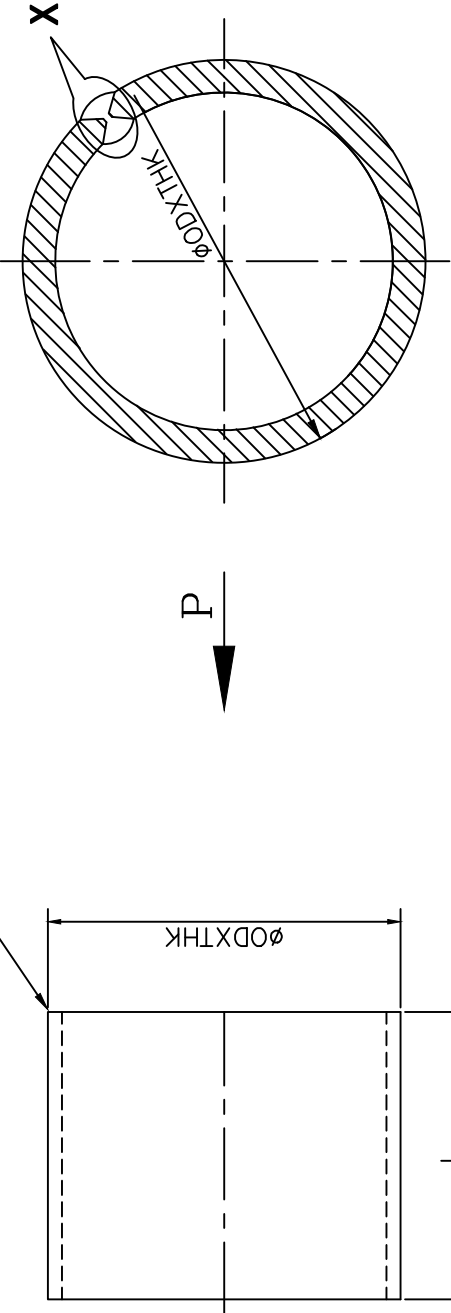
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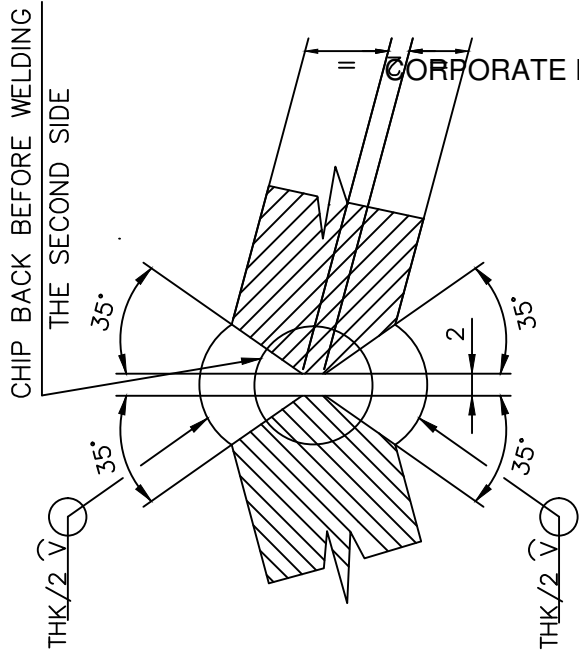


DEVELOPMENT

EP AS PER DRG. NO.
4-80-468-84546



VIEW-P



DETAIL -X

NOTES:-

- 1 WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH SURFACE FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
- 2 FULL PENETRATION OF WELDS TO BE ENSURED
- 3 IF SINGLE PLATE OF GIVEN SIZE IS NOT AVAILABLE, THEN TWO PLATES (MAXIMUM) CAN BE JOINED AND ROLLED AS SHOWN.
4. PIPE LENGTH INDICATED WITH CUTTING ALLOWANCE TO BE CUT AS PER THE CUTTING PLAN
5. FOR SHOP PAINTING/COATING REFER APPROVED PAINTING SCHEDULE & Q.P
6. LIFTING LUG/SPIDER ARRANGEMENT HAS TO BE WELDED AT THE ENDS AFTER EDGE PREPARATION.
- 7 Follow Applicable QP & TDG for the Project
- 8 EP shall be done at Vendor Works. Follow BHEL Standard EP drawing no-4-80-468-84546. Inside Bevel is required, only if D1 value is higher than Inside diameter
- 9 Spider arrangement shall be provided at the pipe ends after Edge preparation for Diameter greater than 1000NB as per BHEL drawing no-4-80-999-93078
- 10 Lifting Lug arrangement shall be provided as per BHEL drawing no-3-80-468-33334
- 11 Weight indicated is for bare pipe only. Shall not include the Weight of Paint/coating, Lifting lug, Spider arrangement ,etc.,.
- 12 PLATE SPEC SA515GR60/70 IS ALSO ACCEPTABLE INPLACE OF IS3589/IS2062 E250GRB

VAR.NO	PIPE	ODXTHK	PLATE DEVELOPED LENGTH	WT/M in KG
01	OD2540X20	2072	2574.78	
02	OD2540X20	4139	5144.3	
03	OD2540X20	1292	1605.8	
04	OD2540X20	3151	3916.3	
05	OD2540X20	2303	2862.3	
06	OD2540X20	6015	7476.0	
07	OD2540X20	1103	1371.0	
08	OD2540X20	3867	4806.15	
09	OD2540X20	4149	5177.0	
10	OD2540X20	1952	2425.0	
11	OD2540X20	1993	2476.0	

11	PLATE 20 X 7915 X 1993	2-80-468-A0307	15 011 201 0200 IS 2062 E250 BR	2476.3	
10	PLATE 20 X 7915 X 1952	2-80-468-A0307	15 011 201 0200 IS 2062 E250 BR	2425.0	
09	PLATE 20 X 7915 X 4149	2-80-468-A0307	15 011 201 0200 IS 2062 E250 BR	5177.3	
08	PLATE 20 X 7915 X 3867	2-80-468-A0307	15 011 201 0200 IS 2062 E250 BR	4806.15	
07	PLATE 20 X 7915 X 1103	2-80-468-A0307	15 011 201 0200 IS 2062 E250 BR	1371.0	
06	PLATE 20 X 7915 X 6015	2-80-468-A0307	15 011 201 0200 IS 2062 E250 BR	7476.0	
05	PLATE 20 X 7915 X 2303	2-80-468-A0307	15 011 201 0200 IS 2062 E250 BR	2862.3	
04	PLATE 20 X 7915 X 3151	2-80-468-A0307	15 011 201 0200 IS 2062 E250 BR	3916.3	
03	PLATE 20 X 7915 X 1292	2-80-468-A0307	15 011 201 0200 IS 2062 E250 BR	1605.8	
02	PLATE 20 X 7915 X 4139	2-80-468-A0307	15 011 201 0200 IS 2062 E250 BR	5144.3	
01	PLATE 20 X 7915 X 2072	2-80-468-A0307	15 011 201 0200 IS 2062 E250 BR	2574.78	
VAR NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE A C	UNIT WT. QTY.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.,
PIPING ENGG,HPBP-TRICHY-620014

DRN	NAME	SIGN	DATE	NO OF ITEMS
CHD	M PRADEEP		30.05.24	
APPD	IDB RAJU		30.05.24	
	P SURESH		30.05.24	

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (kg).	REF TO ASSY / OLD DRG	ITEM No.
PIPING ENGG	C/M/F				
CODE 121					
ZONE					
REV 01	DATE	ALTD			
		APPD			

DRAWING No.

2-80-468-A0307

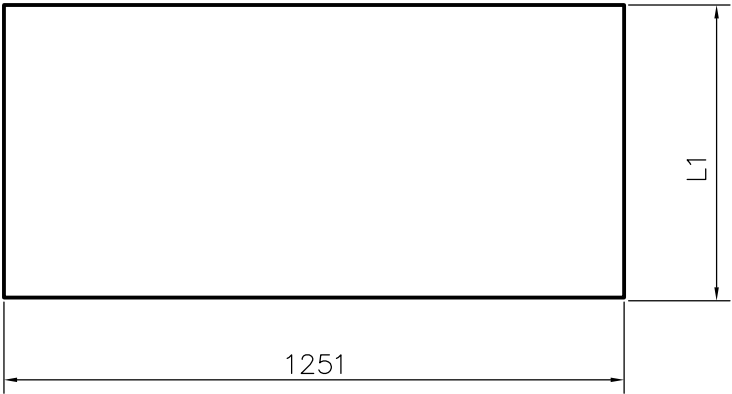
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SIZE A2

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3-80-468-26685

DRAWING No

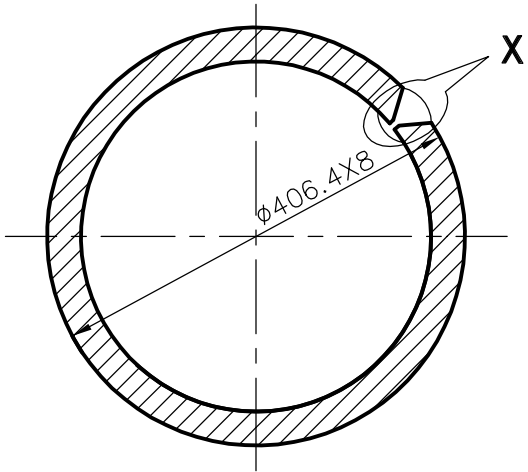
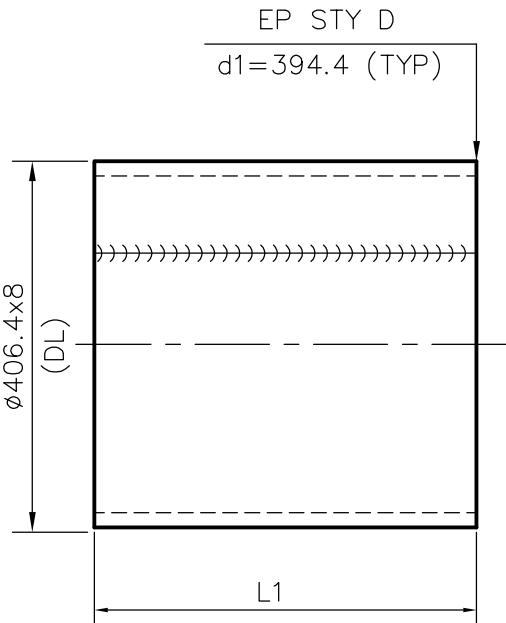


DEVELOPMENT

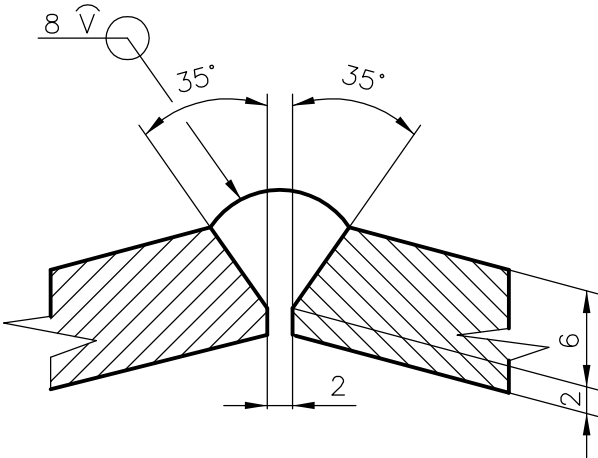
VAR.NO	L1	REMARKS
01	1011	--
02	800	--
03	337	--
04	202	--
05	506	--
05	263	--

NOTES: -

- 1 DESIGN PRESSURE : 7.5 Kg/Cm²
- 2 DESIGN TEMPERATURE : 50° C
- 3 IF SINGLE PLATE OF GIVEN SIZE IS NOT AVAILABLE, THEN TWO PLATES (MAXIMUM) CAN BE JOINED AND ROLLED AS SHOWN.
- 4 FULL PENETRATION OF WELDS TO BE ENSURED
- 5 WELD JOINTS TO BE 100% RADIOGRAPHED.
- 6 FABRICATION AND INSPECTION SHALL BE AS PER IBR 1950.



VIEW-P



DETAIL - X

01	PLATE 8x1251x263	3-80-468-26685		15 011 027 0000	C	20	662
			06	IS 2062 FE410			1
01	PLATE 8x1251x506	3-80-468-26685		15 011 027 0000	C	39	752
			05	IS 2062 FE410			1
01	PLATE 8x1251x202	3-80-468-26685		15 011 027 0000	C	15	870
			04	IS 2062 FE410			7
01	PLATE 8x1251x337	3-80-468-26685		15 011 027 0000	C	26	475
			03	IS 2062 FE410			2
01	PLATE 8x1251x800	3-80-468-26685		15 011 027 0000	C	62	850
			02	IS 2062 FE410			2
01	PLATE 8x1251x1011	3-80-468-26685		15 011 027 0000	C	79	426
			01	IS 2062 FE410			11
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	A	UNIT WT.	
			VAR NO.	MATERIAL SPEC.	C	QTY.	

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT



BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE, CHENNAI.

	NAME	SIGN	DATE	NO OF ITEMS
DRN	V PAVAN		02.11.09	
CHD	V PAVAN		02.11.09	
APPD	C K N		02.11.09	

REV 01	DATE 13.11.09	ALTERED V PAVANKUMAR	ZONE	VAR NO. 5 ADDED
		APPROVED C KARUNAKARAN		

DEPT.	GRADE OF UN TOL DIM		SCALE	WEIGHT (Kg).	REF TO ASSY / OLD DRG	ITEM No.
CODE	C/M/F		N.T.S			
TITLE			CARD CODE	DRAWING No.	REV	
PLATE FORM PIPE				3-80-468-26685	01	
ø406.4 x 8			U 01			

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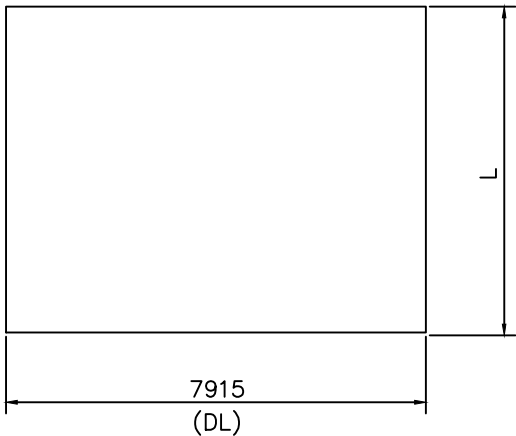
3-80-468-31237

DRAWING No

NOTES: -

- 1 WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH SURFACE FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
- 2 FULL PENETRATION OF WELDS TO BE ENSURED
- 3 IF SINGLE PLATE OF GIVEN SIZE IS NOT AVAILABLE, THEN TWO OR MORE PLATES CAN BE JOINED AND ROLLED
- 4 *** L1 TO BE DECIDED BY FABRICATOR BASED ON AVAILABLE RAW MATERIAL PLATE SIZE.

VAR NO.	L	L1	REMARKS
01	3072	***	90DEG MITRE BEND
02	3126	***	90DEG MITRE BEND
03	1784	---	50DEG MITRE BEND



RAW MATERIAL PLATE

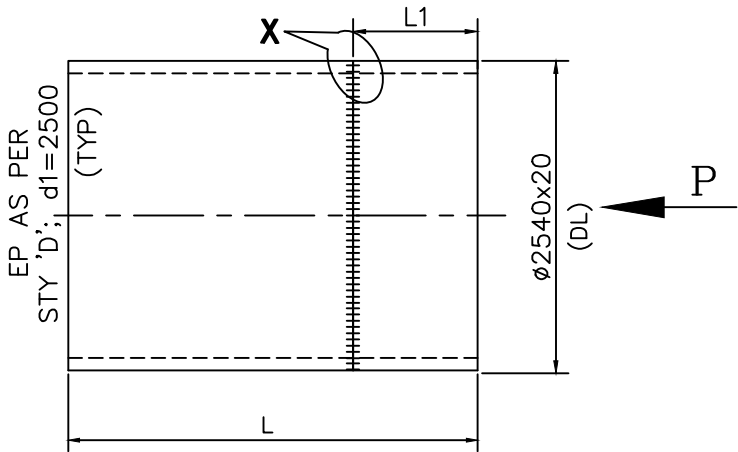
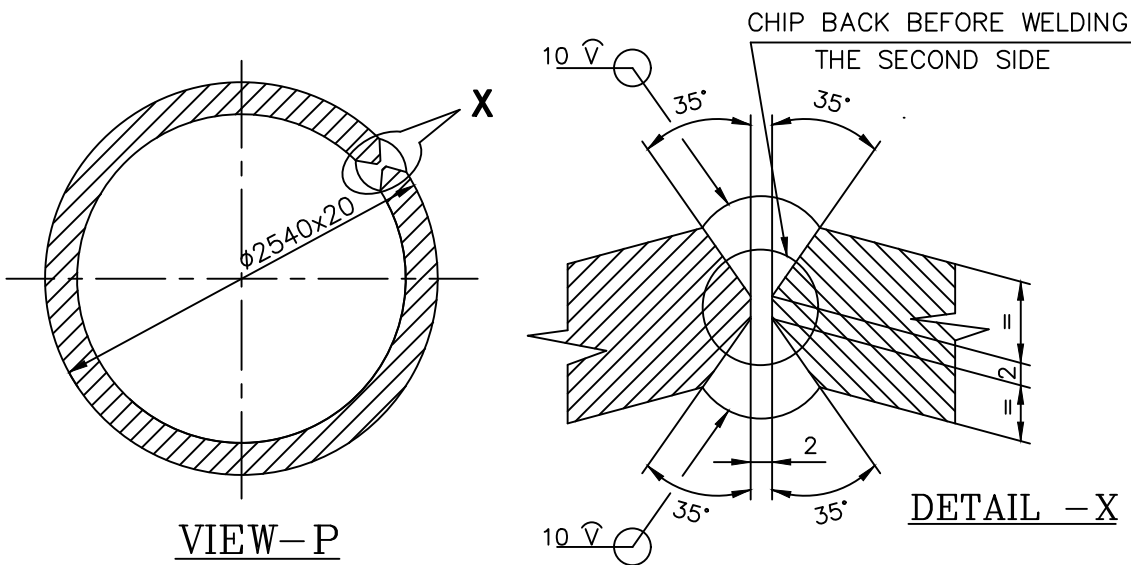
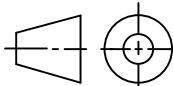


PLATE FORMED PIPE



03	PLATE 20 x 7915 x 1784	3-80-468-31237		15 011 150 0000 IS 2062 Fe410A		2168	000		
02	PLATE 20 x 7915 x 3126	3-80-468-31237		15 011 150 0000 IS 2062 Fe410A		3810	000		
01	PLATE 20 x 7915 x 3072	3-80-468-31237		15 011 218 0000 IS 2062 E250 GRB		3745	000		
VAR. NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	A	UNIT WT.			
			VAR NO.	MATERIAL SPEC.	C	QTY.			
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
			BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI 600 017		DRN	NAME C KUMAR	SIGN -Sd-	DATE 03.02.14	NO OF ITEMS
				CHD	R.SESHAGIRI	-Sd-	12.02.14		
				APPD	K.V.RAMANI	-Sd-	12.02.14		
DEPT. PIPING ENGG	GRADE OF UN TOL DIM		SCALE N.T.S	WEIGHT (Kg).	REF TO ASSY DRG			ITEM No.	
CODE 121	C/M/F								
TITLE PLATE FORMER PIPE (OD2540 x 20)				CARD CODE U 01	DRAWING No. 3-80-468-31237			REV 01	

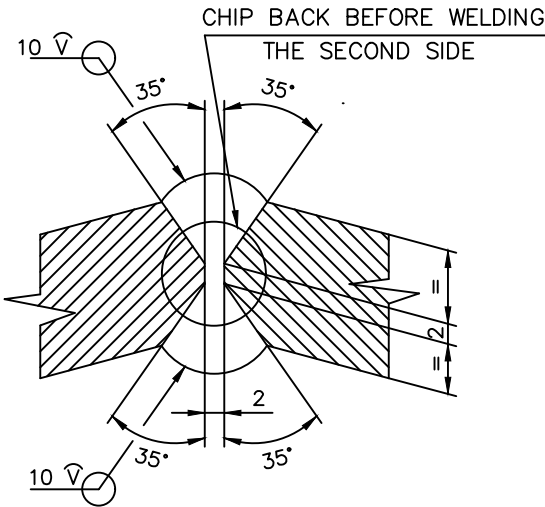
REV 01	DATE	ALTERED	K.JAYAPAL
	06.01.25	APPROVED	K.SAHITHYA
ZONE	ITEM NO.01 MATERIAL CODE REVISED.		
	REVISION MARKED AS 		

SIZE A3

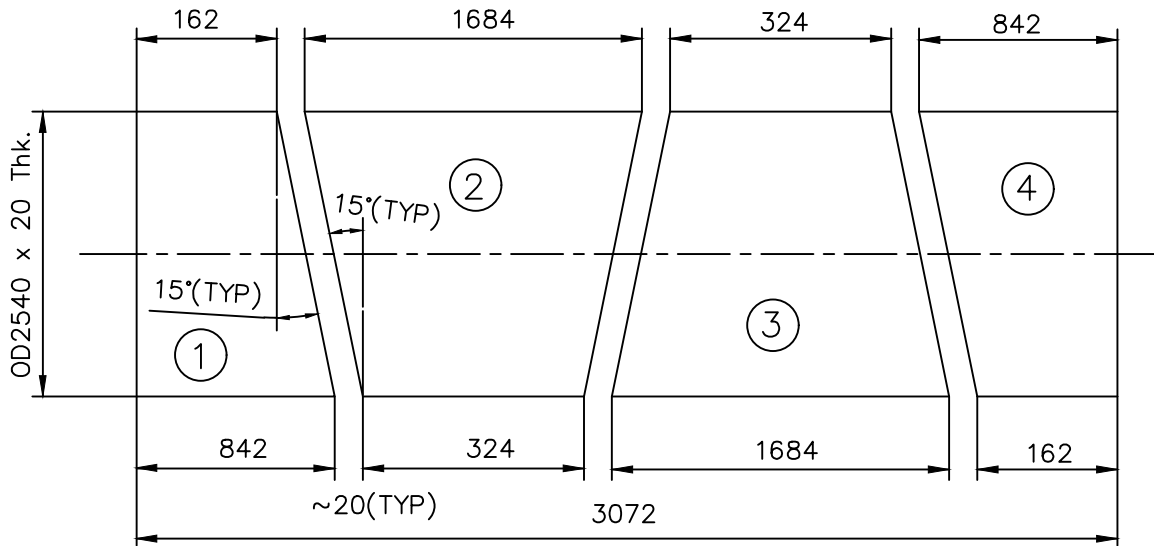
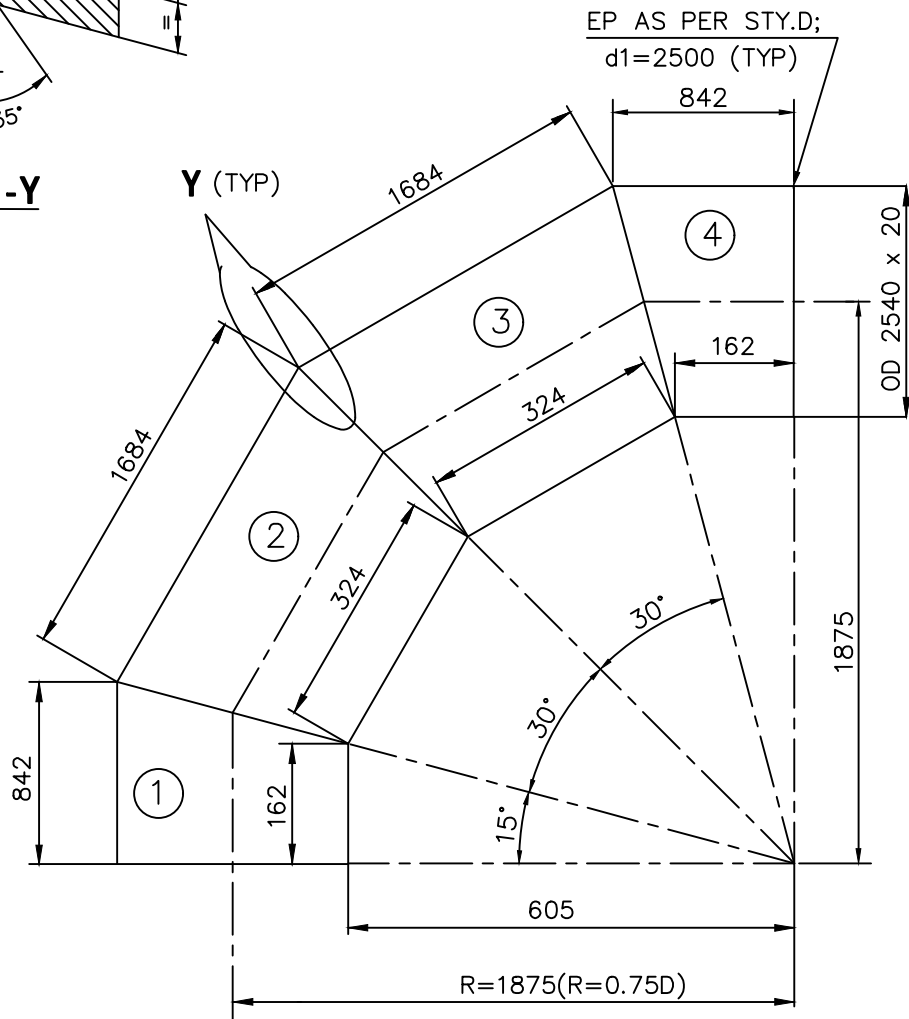
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3-80-468-31246

DRAWING No



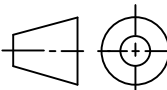
DETAIL -Y



NOTE:

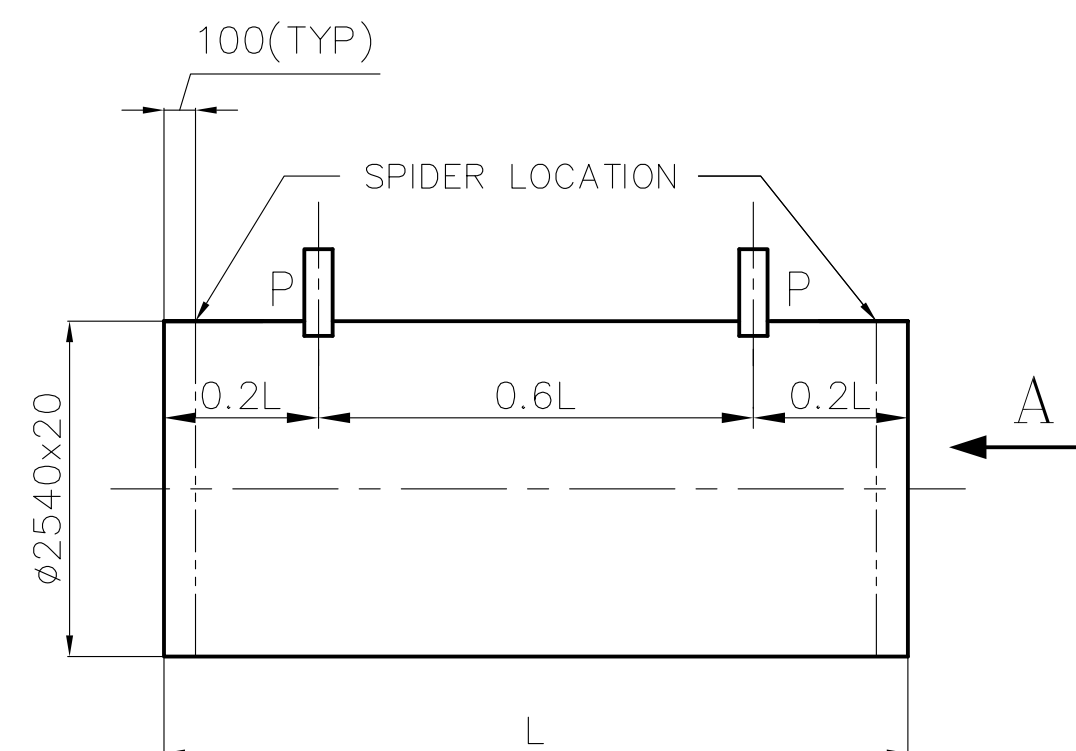
- PIPE LENGTH INDICATED WITH CUTTING ALLOWANCE TO BE CUT AS PER CUTTING PLAN
- WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH TOOL FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
- FULL PENETRATION OF WELDS TO BE ENSURED
- COATING DETAILS REFER APPROVED PAINTING SCHEDULE & QP.
- SPIDER/LIFTING LUG HAS TO BE WELDED AT SHOP AFTER EDGE PREPARATION. FOR DETAILS REFER DWG.NO. 3-80-468-31263

01

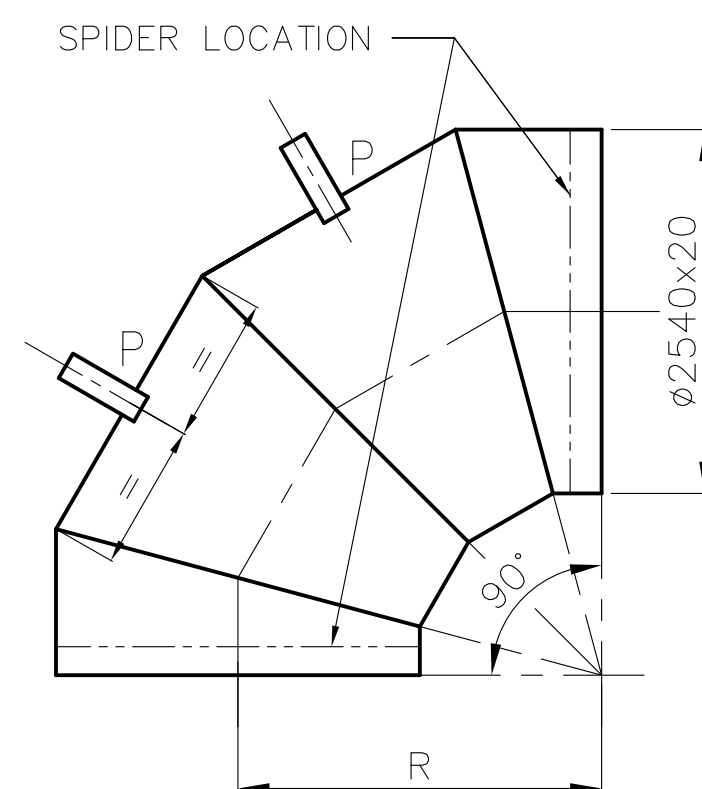
01	P.F.PIPE ø2540x20 : L=3072	3-80-468-31237		15 011 218 0000		3745	000		
			01	IS 2062 E250 GRB					
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	A	UNIT WT.			
			VAR NO.	MATERIAL SPEC.	C	QTY.			
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
 BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, MADRAS			DRN	NAME	SIGN	DATE	NO OF ITEMS		
			CHD	R.SESHAGIRI	-Sd-	03.02.14			
			APPD	K.V.RAMANI	-Sd-	12.02.14			
DEPT. PIPING ENGG	GRADE OF UN TOL DIM		SCALE	WEIGHT (Kg).	REF TO ASSY DRG		ITEM No.		
CODE 121	C/M/F		N.T.S	3745.000					
TITLE			CARD CODE	DRAWING No.			REV		
90DEG MITRE BEND OD2540x20; R=75			U 01	3-80-468-31246			02		

SIZE A3

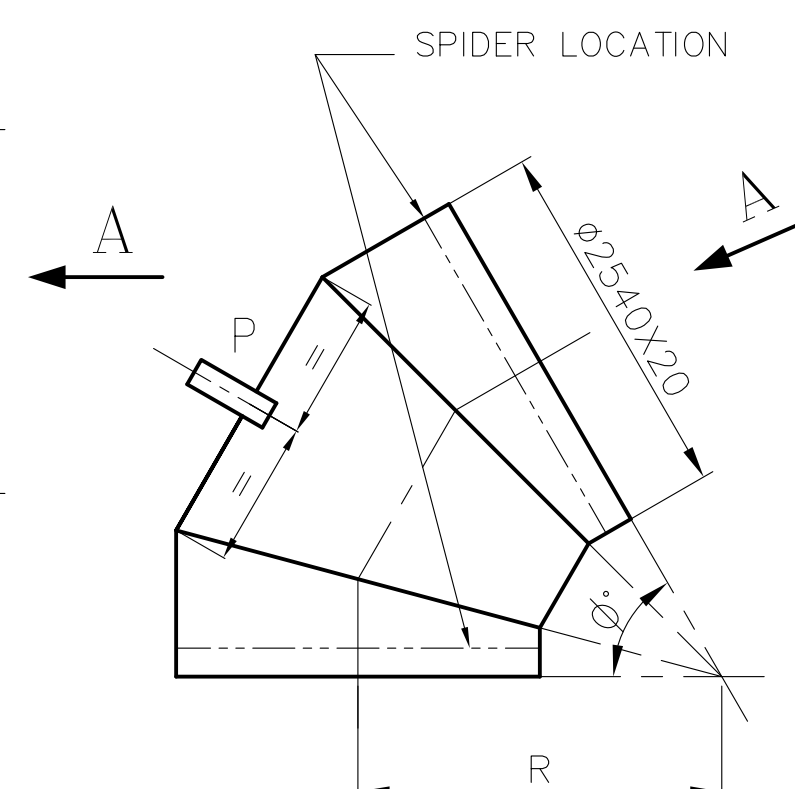
DRA WING No



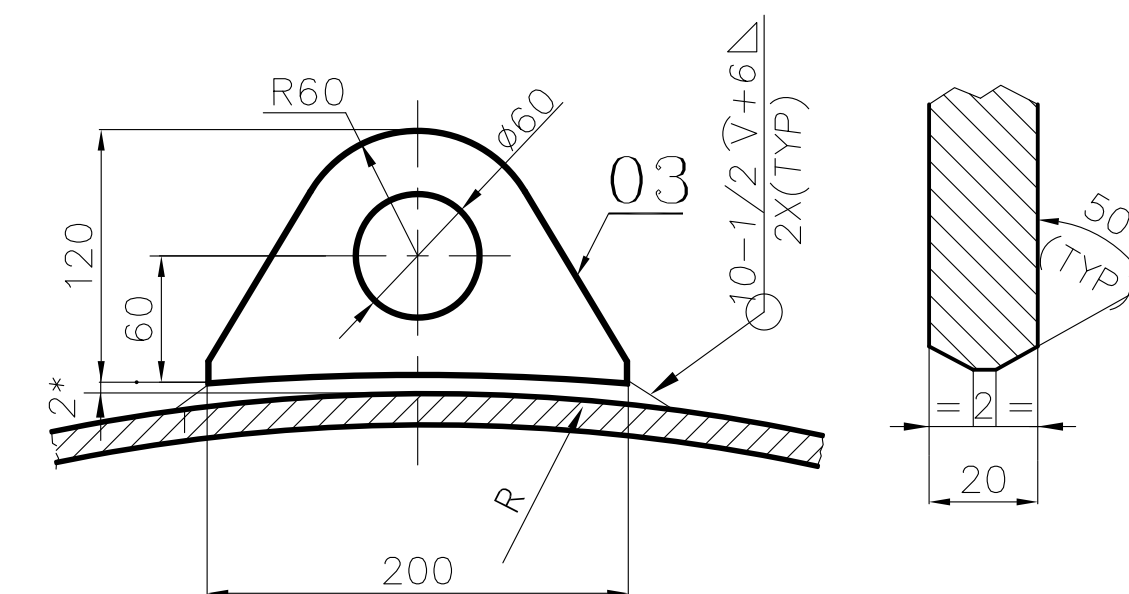
SPIDER 2 LOCATIONS
LIFTING LUG 2 LOCATIONS



SPIDER 2 LOCATIONS
LIFTING LUG 2 LOCATIONS

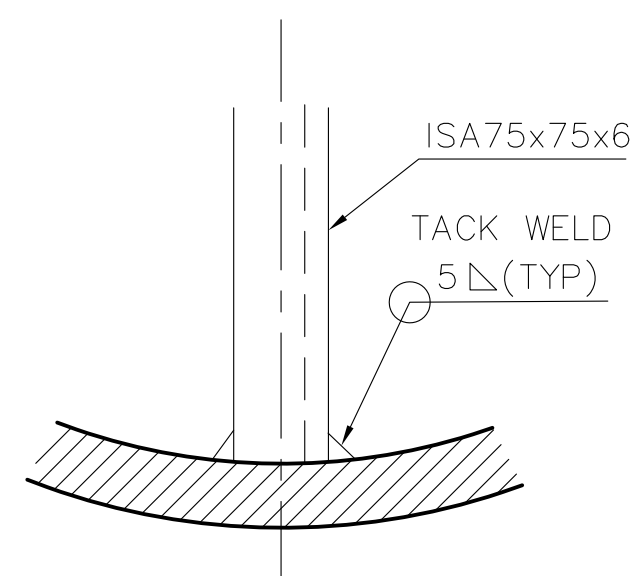
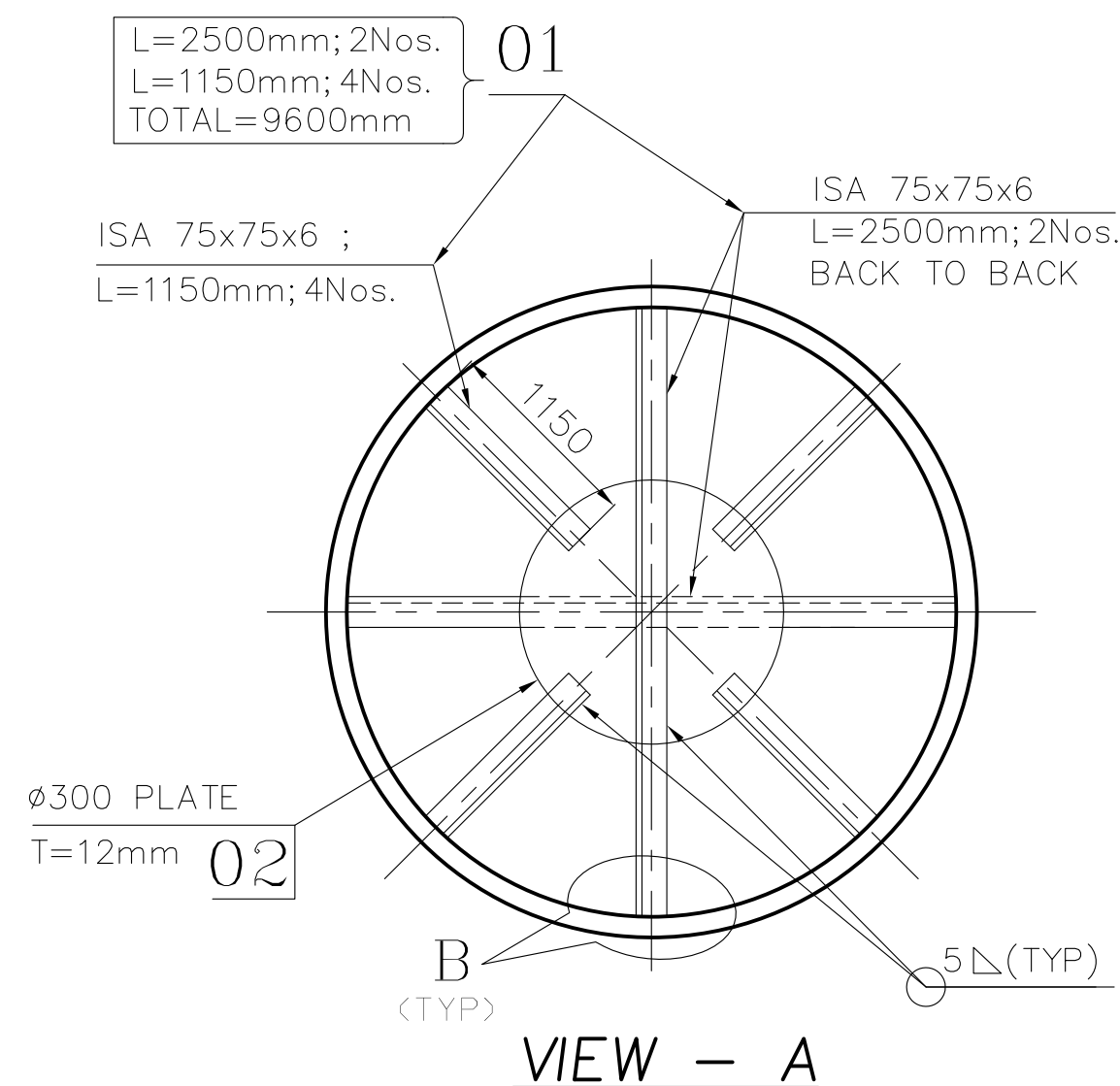


SPIDER 2 LOCATIONS
LIFTING LUG 1 LOCATION



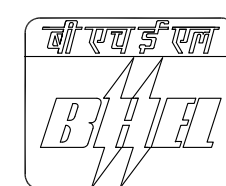
DETAIL — P

* LIFTING LUG SHALL BE CUT TO SUIT THE OUTER SURFACE OF THE MAIN PIPE SUCH THAT A UNIFORM GAP OF 2MM IS MAINTAINED THROUGHOUT



DETAIL – B

03	LIFTING LUG PLATE 20x200x120	3-80-468-31263		15 011 150 0000		2	500
				IS 2062 FE 410A			1
02	PLATE T=12mm DIA 300	3-80-468-31263		15 011 132 0000		6	660
				IS 2062 Fe 410A			1
01	ISA 75x75x6 L=9600mm	3-80-468-31263		15 013 005 0000		65	280
				IS 2062 Fe 410W			1
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	A C	UNIT WT.	
			VAR NO.	MATERIAL SPEC.		QTY.	

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

BHARAT HEAVY ELECTRICALS LTD.,
PIPING CENTRE,
CHENNAI 600 017

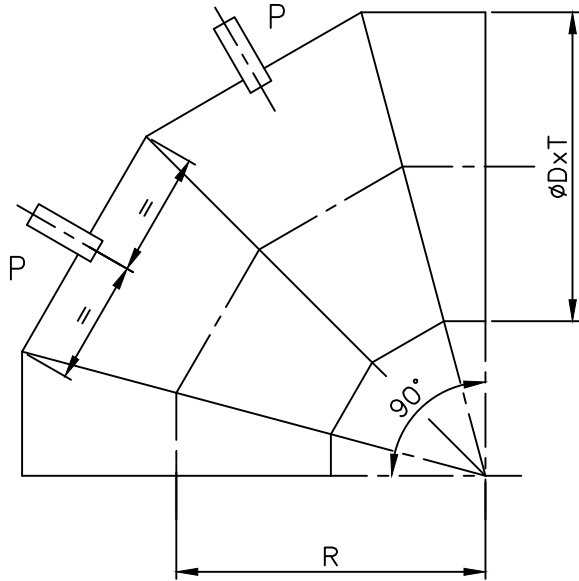
DRN	NAME C.KUMAR	SIGN -SD.-	DATE 17.02.14	NO OF ITEMS
CHD	R.SESHAGIRI	-SD.-	17.02.14	
APPD	K.V.RAMANI	-SD.-	17.02.14	

DEPT.	GRADE OF UN TOL DIM		SCALE	WEIGHT (Kg).	REF TO ASSY / OLD DRG	ITEM No.
CODE	C/M/F		NTS			
TITLE				<u>CARD</u> CODE	DRAWING No.	REV
SPIDER/LIFTING LUG ARRGT. FOR OD 2540x20				U 01	3-80-468-31263	00

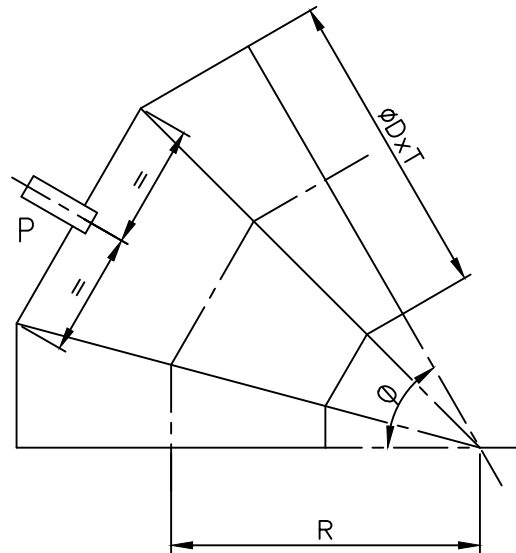
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3-80-468-34607

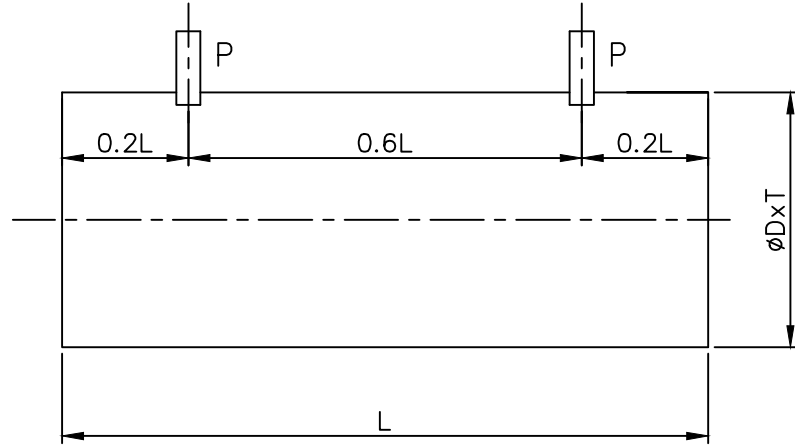
DRAWING No



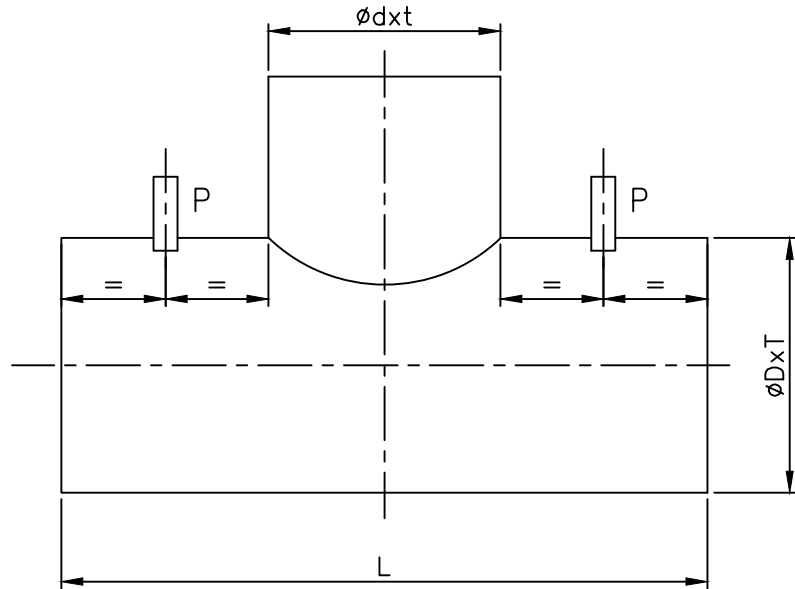
90° MITRE BEND



45°/60° MITRE BEND

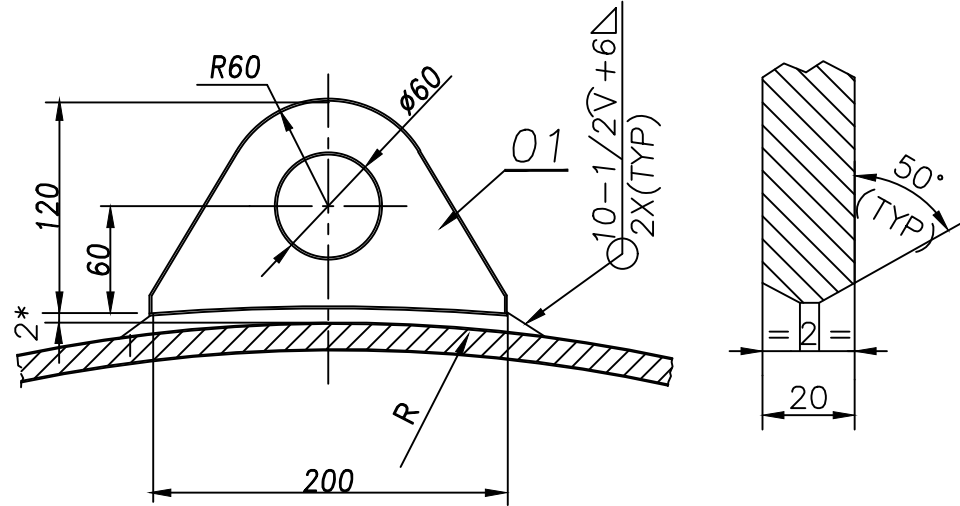


STRAIGHT PIPE



UN EQUAL TEE/EQUAL TEE

* LIFTING LUG SHALL BE CUT TO SUIT THE OUTER SURFACE OF THE MAIN PIPE SUCH THAT A UNIFORM GAP OF 2MM IS MAINTAINED GAP THROUGHOUT



DETAIL - P

NOTES:-

1. MATERIAL FOR LIFTING LUG IS TEMPORARY MATERIAL WHICH WILL BE CUT AND REMOVED AT SITE.HENCE THIS MATERIAL IS NOT COVERED IN GMS AND HAS TO BE PROVIDED BY SUB CONTRACTOR.
2. THIS LIFTING LUG SHALL BE PAINTED WITH YELLOW COLOUR

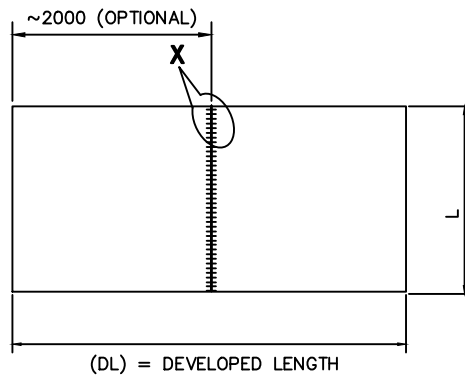
01	LIFTING LUG PLATE 20x200x120	3-80-468-27927	15 011 150 0000 IS 2062 FE 410A	2	500
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPEC.	UNIT WT. QTY.
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT					
BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, CHENNAI, 600 017			DRN	NAME M.R.KRISHNA	SIGN
			CHD	I.D.B.RAJU	DATE 24.06.18
			APPD	SESHAGIRI	DATE 24.06.18
DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	NAME OF ORIGINAL ORGANISATION	
CODE	C/M/F	N.T.S			
TITLE LIFTING LUG ARRANGEMENT FOR PIPE DIA > NB1500			CARD CODE	DRAWING No. 3-80-468-34607	REV 00
			U 01		

05-228/C

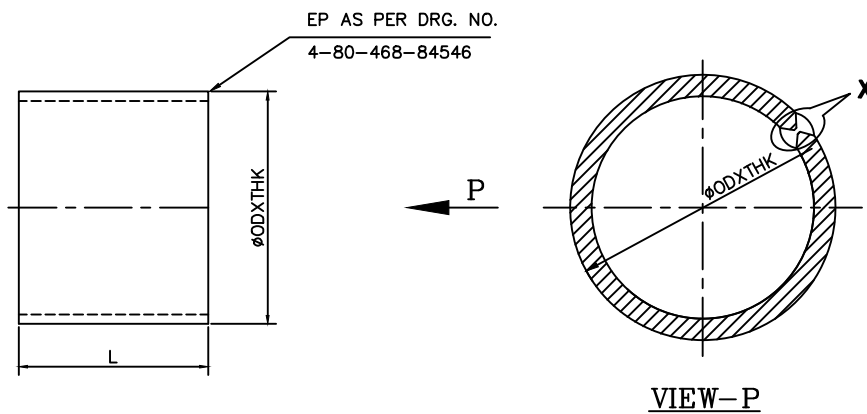
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3-80-468-A0490
DRAWING NO.

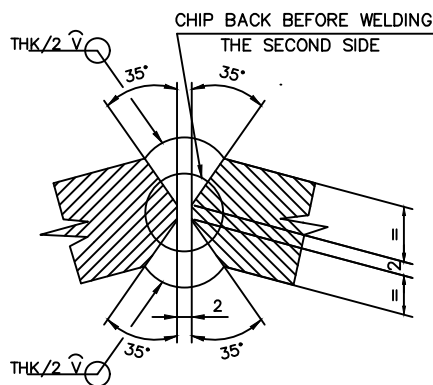
FIRST ANGLE PROJECTION (ALL DIMENSIONS IN MILLIMETRES)



DEVELOPMENT



VIEW-P



DETAIL - X

VAR.NO	PIPE ODXTHK	PLATE DEVELOPED LENGTH	WT/M in KG
01	OD2540X20	1972	2450.9
02	OD2540X20	4139	5144.3
03	OD2540X20	1292	1605.8
04	OD2540X20	3151	3916.3
05	OD2540X20	2303	2862.3
06	OD2540X20	6015	7476.0

NOTES:-

- 1 WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH SURFACE FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
- 2 FULL PENETRATION OF WELDS TO BE ENSURED
- 3 IF SINGLE PLATE OF GIVEN SIZE IS NOT AVAILABLE, THEN TWO PLATES (MAXIMUM) CAN BE JOINED AND ROLLED AS SHOWN.
4. PIPE LENGTH INDICATED WITH CUTTING ALLOWANCE TO BE CUT AS PER THE CUTTING PLAN
5. FOR SHOP PAINTING/COATING REFER APPROVED PAINTING SCHEDULE & Q.P
6. LIFTING LUG/SPIDER ARRANGEMENT HAS TO BE WELDED AT THE ENDS AFTER EDGE PREPARATION.
- 7 Follow Applicable QP & TDG for the Project
- 8 EP shall be done at Vendor Works. Follow BHEL Standard EP drawing no-4-80-468-84546. Inside Bevel is required, only if D1 value is higher than Inside diameter
- 9 Spider arrangement shall be provided at the pipe ends after Edge preparation for Diameter greater than 1000NB as per BHEL drawing no-4-80-999-93078
- 10 Lifting Lug arrangement shall be provided as per BHEL drawing no-3-80-468-33334
- 11 Weight indicated is for bare pipe only. Shall not include the Weight of Paint/coating, Lifting lug, Spider arrangement ,etc.,
- 12 PLATE SPEC SA515GR60/70 IS ALSO ACCEPTABLE INPLACE OF IS3589/IS2062 E250GRB

06	PLATE 20 X 7915 X 6015	3-80-468-A0490	15 011 201 0200 IS 2062 E250 BR	7476.0
05	PLATE 20 X 7915 X 2303	3-80-468-A0490	15 011 201 0200 IS 2062 E250 BR	2862.3
04	PLATE 20 X 7915 X 3151	3-80-468-A0490	15 011 201 0200 IS 2062 E250 BR	3916.3
03	PLATE 20 X 7915 X 1292	3-80-468-A0490	15 011 201 0200 IS 2062 E250 BR	1605.8
02	PLATE 20 X 7915 X 4139	3-80-468-A0490	15 011 201 0200 IS 2062 E250 BR	5144.3
01	PLATE 20 X 7915 X 1972	3-80-468-A0490	15 011 201 0200 IS 2062 E250 BR	2450.9
VAR NO.	DESCRIPTION	DRAWING NO.	ITEM NO. MATERIAL SPEC.	UNIT WT. QTY.

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

DRN	NAME M PRADEEP	SIGN	DATE 30.05.24	NO OF ITEMS
CHD	IDB RAJU		30.05.24	
APPD	P SURESH		30.05.24	

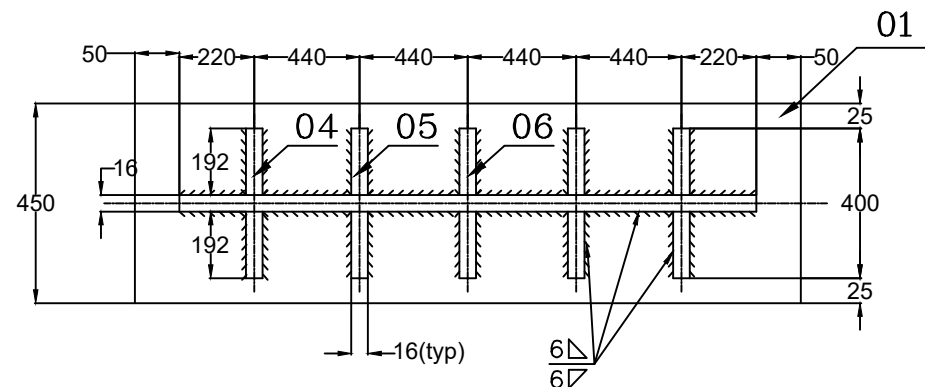
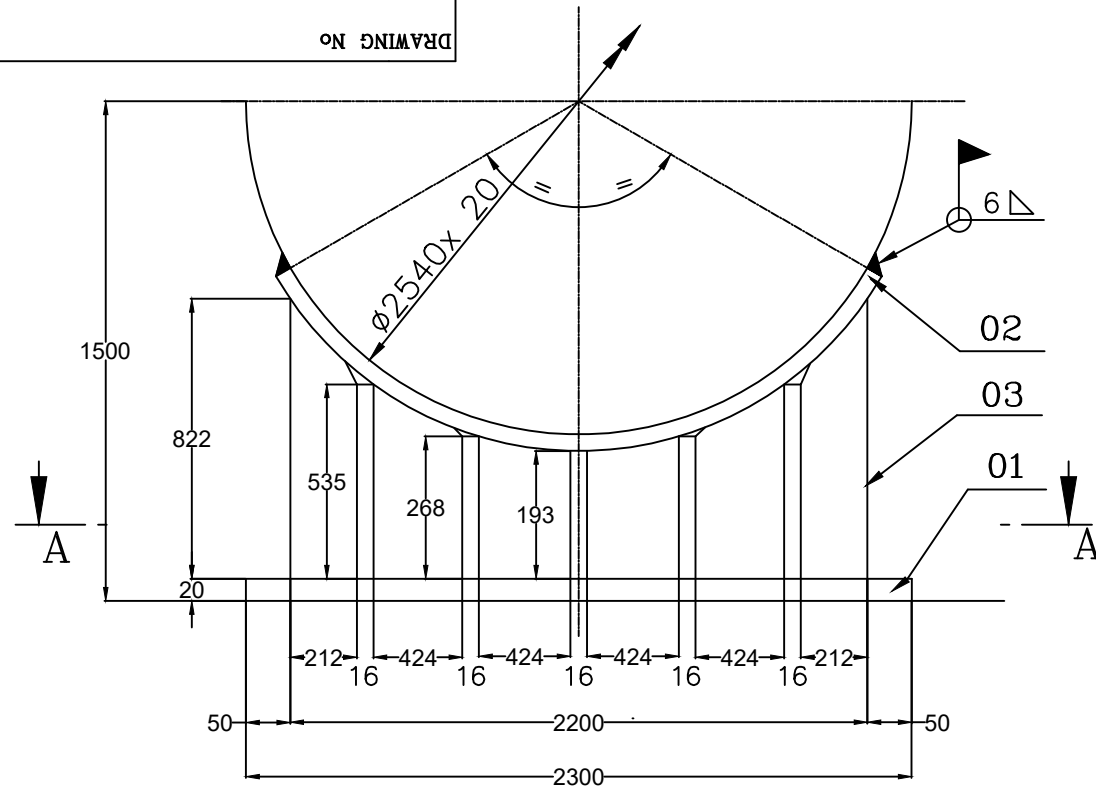
DEPT. PIPING ENGG CODE 121	GRADE OF UN TOL DIM C/M/F	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DRG	ITEM No.
TITLE PLATE FORMED PIPE NB2500			CARD CODE U 01	DRAWING No. 3-80-468-A0490	REV 00



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CAUTION

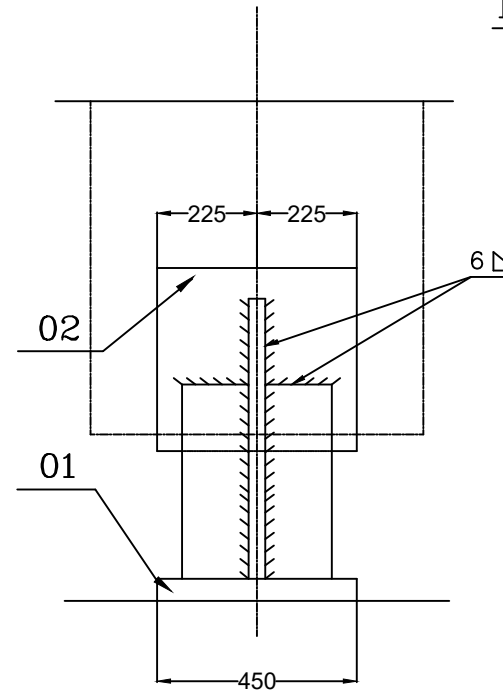
DRAWING NO



SECTION – AA

NOTES: –

01. ALL WELDS ARE 6 FILLET
02. FOLLOW APPLICABLE QUALITY PLAN & TDG FOR MANUFACTURING.
03. SA515GR70 PLATE (SA672 GR.B70 PIPE) IN PLACE OF
IS 2062 PLATE IS ACCEPTED
04. FOR COATING/PAINTING DETAILS, REFER APPROVED PAINTING SCHEME.



06	STIFFNER PLATE-3 16 x 192 x 193	3-80-468-A0491		150112170000	C	4	654
				IS2062E250GRBR			2
05	STIFFNER PLATE-2 16 x 192 x 268	3-80-468-A0491		150112170000	C	6	463
				IS2062E250GRBR			4
04	STIFFNER PLATE-1 16 x 192 x 535	3-80-468-A0491		150112170000	C	12	902
				IS2062E250GRBR			4
03	MIDDLE PLATE 16 x 822 x 2200	3-80-468-A0491		150112170000	C	150	870
				IS2062E250GRBR			1
02	PAD PLATE 12x 450 x 2750	3-80-468-A0491		152110030000	C	116	572
				IS2062E250GRBR			1
01	BOTTOM PLATE 20x 450 x 2300	3-80-468-A0491		150112180000	C	162	495
				IS2062E250GRBR			1
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	A C	UNIT WT.	
			VAR NO.	MATERIAL SPEC.		QTY.	

TYPE OF PRODUCT
OR NAME OF
CUSTOMER/PROJECT

	BHARAT HEAVY ELECTRICALS LTD.,	DRN	NAME C VENKAT	SIGN -Sd-	DATE 29.04.2024	NO OF ITEMS
	PIPING ENGG,HPBP-TRICHY-620014	CHD	IDB RAJU	-Sd-	29.04.2024	
		APPD	SARAVANAN	-Sd-	29.04.2024	

REV 01	DATE	ALTERED	DEPT. PIPING ENGG.	GRADE OF UN TOL DIM		SCALE NTS	WEIGHT (Kg).	REF TO ASSY / OLD DRG	ITEM No.
ZONE		APPROVED	CODE 121	C/M/F		TITLE SADDLE SUPPORT FOR PIPE NB2500	CARD CODE U 01	DRAWING No. 3-80-468-A0491	REV 00

SIZE A3

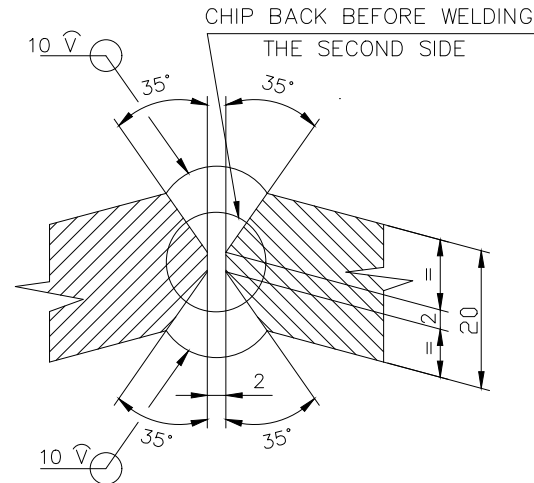
V:A3

CORPORATE DRG ID:TP-DG-3-80-468-A0491/00CORP

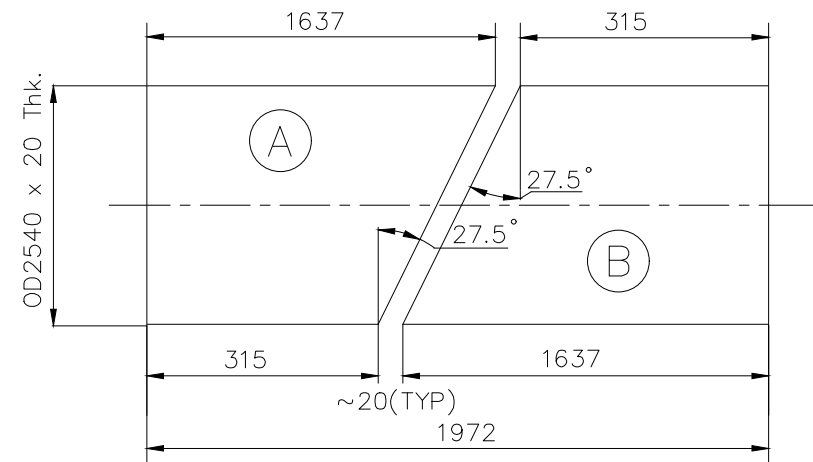


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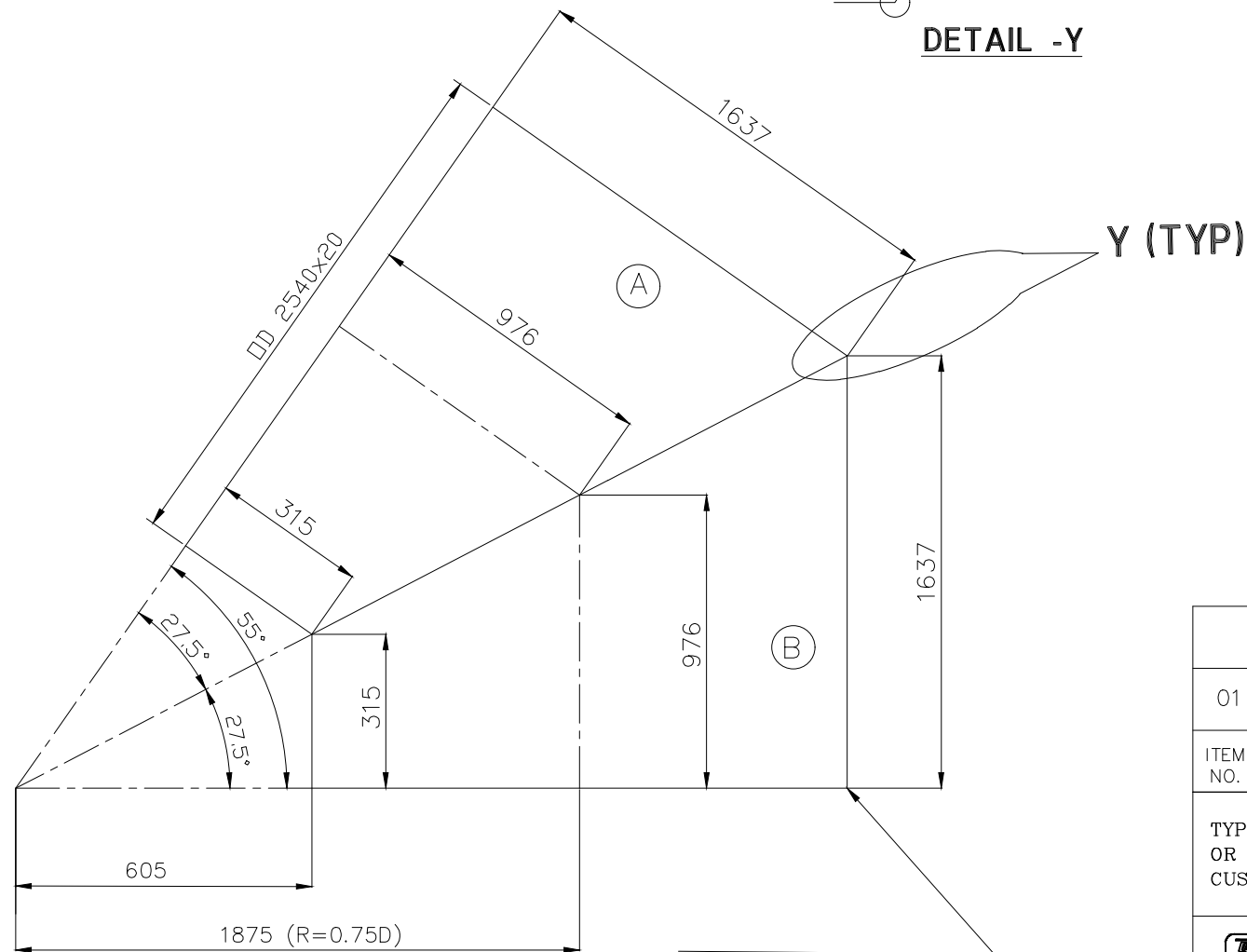
DRAWING NO



DETAIL -Y



- 1 PIPE LENGTH INDICATED WITH CUTTING ALLOWANCE TO BE CUT AS PER THE CUTTING PLAN.
- 2 WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH SURFACE FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
- 3 FULL PENETRATION OF WELDS TO BE ENSURED.
- 4 FOR SHOP PAINTING/COATING REFER APPROVED PAINTING SCHEDULE & Q.P.
- 5 SPIDER ARRANGEMENT HAS TO BE WELDED AT THE ENDS AFTER EDGE PREPARATION. REFER DWG.NO. 4-80-999-93078 .
6. LIFTING LUG/SPIDER ARRANGEMENT HAS TO BE WELDED AT THE ENDS AFTER EDGE PREPARATION.



REV	DATE	ALTERED
		APPROVED
ZONE		

[illegible]

SIZE A3

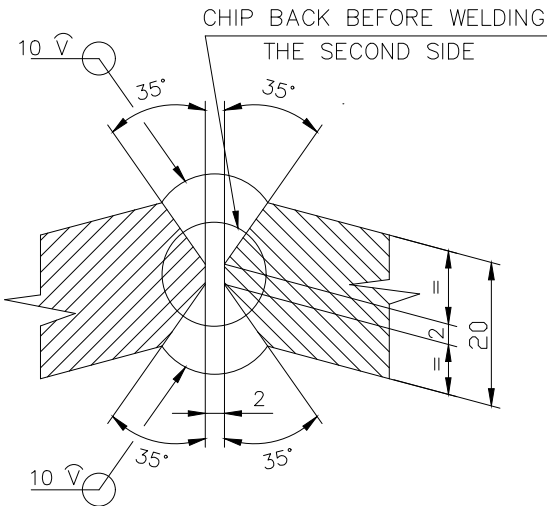


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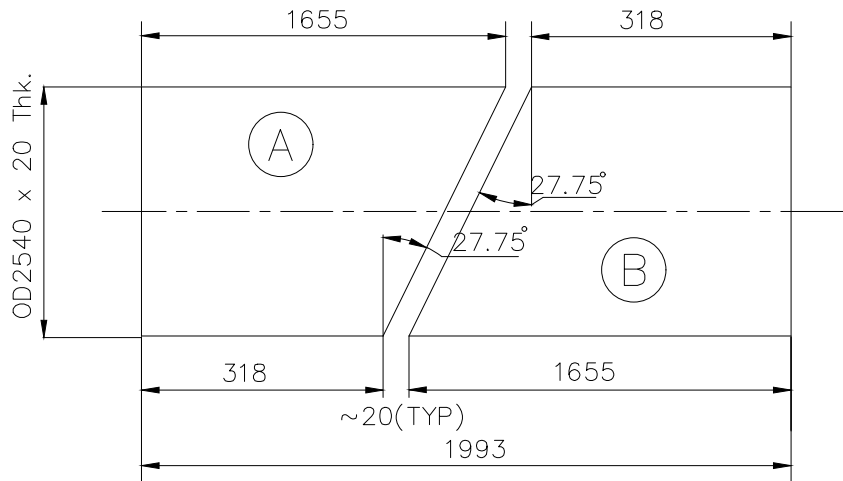
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3-80-468-A0641

DRAWING No

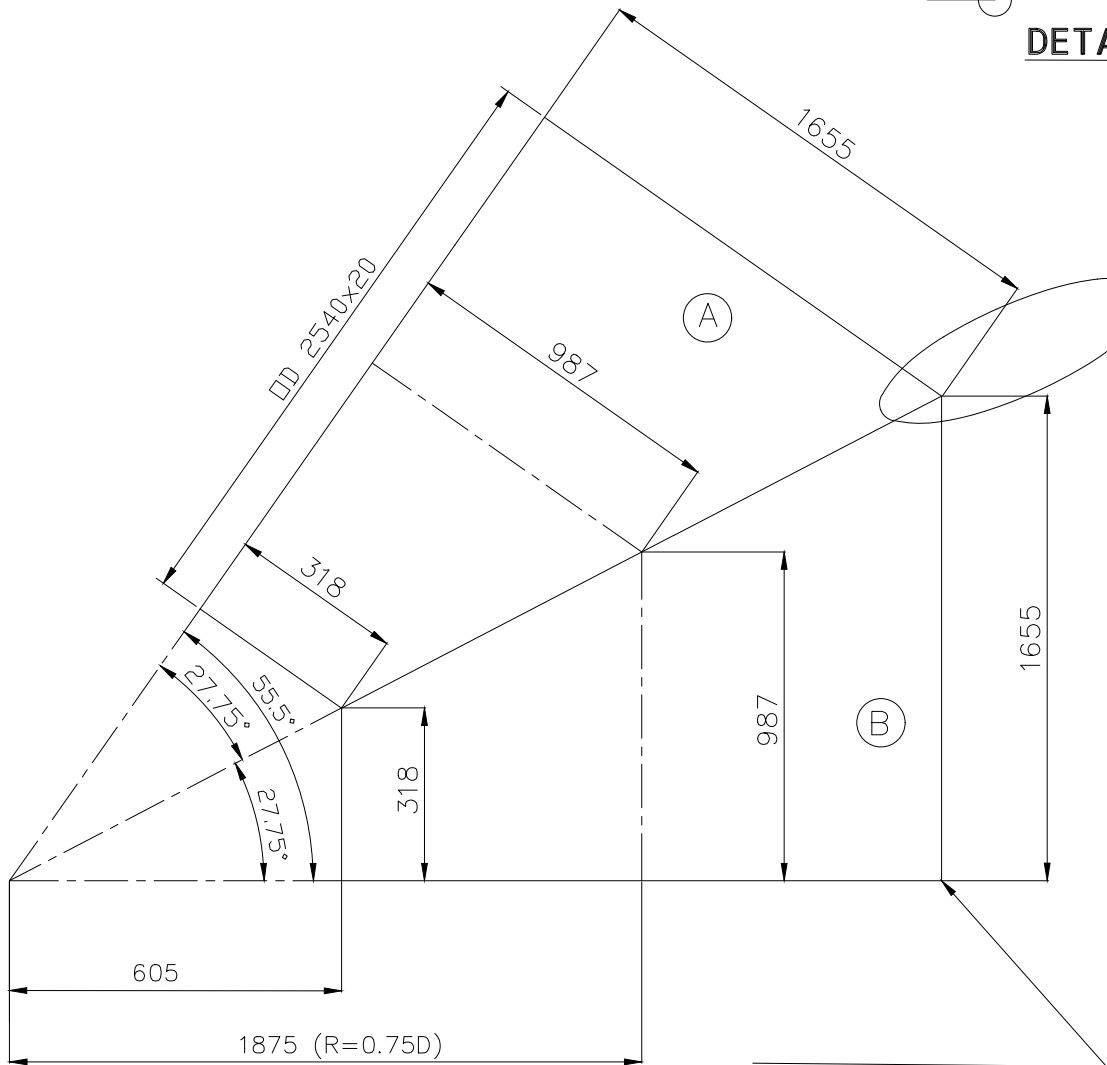


DETAIL -Y

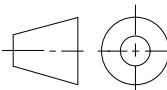


NOTE:

- 1 PIPE LENGTH INDICATED WITH CUTTING ALLOWANCE TO BE CUT AS PER THE CUTTING PLAN.
- 2 WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH SURFACE FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
- 3 FULL PENETRATION OF WELDS TO BE ENSURED.
- 4 FOR SHOP PAINTING/COATING REFER APPROVED PAINTING SCHEDULE & Q.P.
- 5 SPIDER ARRANGEMENT HAS TO BE WELDED AT THE ENDS AFTER EDGE PREPARATION. REFER DWG.NO. 4-80-999-93078 .
6. LIFTING LUG/SPIDER ARRANGEMENT HAS TO BE WELDED AT THE ENDS AFTER EDGE PREPARATION.



EP AS PER DRG. No.
4-80-468-84546

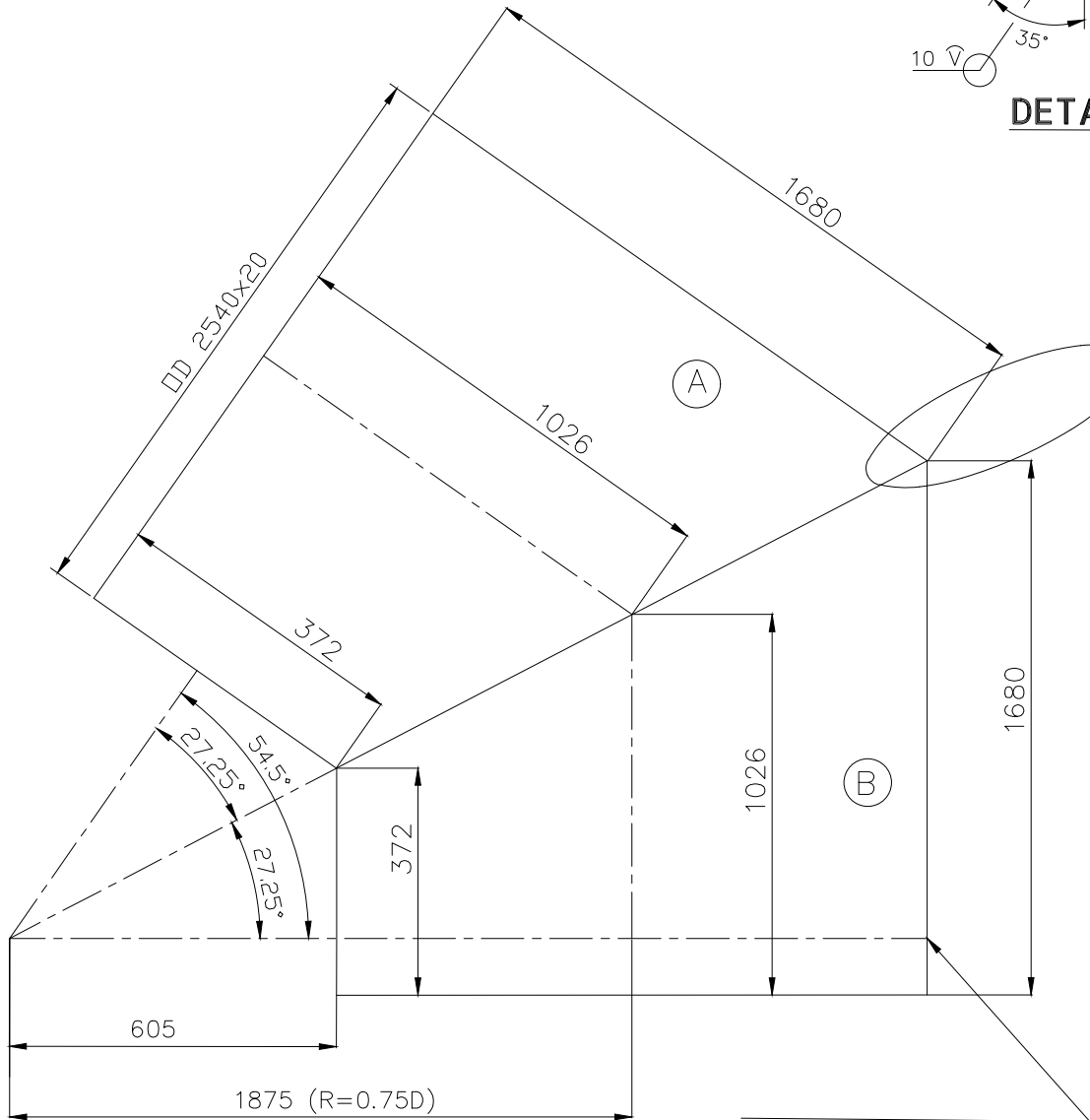
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ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	A	UNIT WT.			
			VAR NO.	MATERIAL SPEC.	C	QTY.			
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
 BHARAT HEAVY ELECTRICALS LTD., PIPING ENGG,HPBP-TRICHY-620014			DRN	NAME	SIGN	DATE	NO OF ITEMS		
			CHD	IDB RAJU	-Sd-	18.11.24			
			APPD	P SURESH	-Sd-	18.11.24			
DEPT. PIPING ENGG	GRADE OF UN TOL. DIM		SCALE	WEIGHT (Kg).	REF TO ASSY DRG				ITEM No.
CODE 121	C/M/F		N.T.S						
TITLE				CARD CODE	DRAWING No.				REV
55.5DEG MITRE BEND R=1875 FOR SIZE NPS300				U 01	3-80-468-A0641				00

SIZE A3

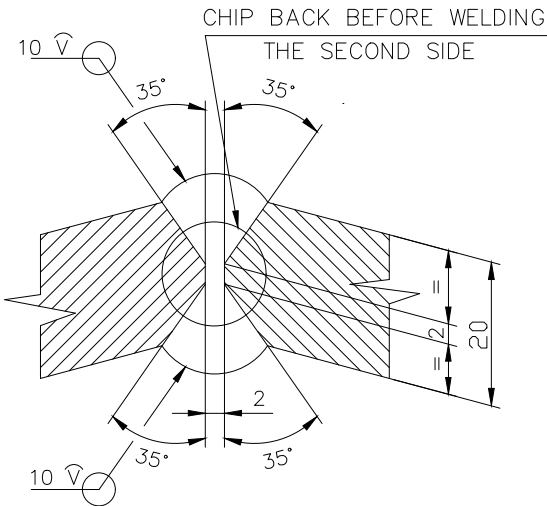
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3-80-468-A0642

DRAWING No

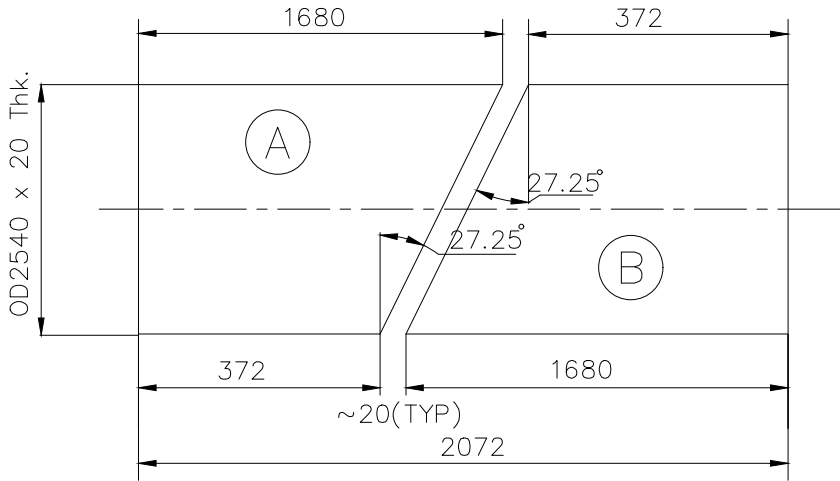


EP AS PER DRG. No.
4-80-468-84546



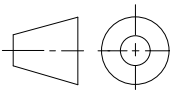
DETAIL -Y

Y (TYP)



NOTE:

- PIPE LENGTH INDICATED WITH CUTTING ALLOWANCE TO BE CUT AS PER THE CUTTING PLAN.
- WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH SURFACE FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
- FULL PENETRATION OF WELDS TO BE ENSURED.
- FOR SHOP PAINTING/COATING REFER APPROVED PAINTING SCHEDULE & Q.P.
- SPIDER ARRANGEMENT HAS TO BE WELDED AT THE ENDS AFTER EDGE PREPARATION. REFER DWG.NO. 4-80-999-93078 .
- LIFTING LUG/SPIDER ARRANGEMENT HAS TO BE WELDED AT THE ENDS AFTER EDGE PREPARATION.

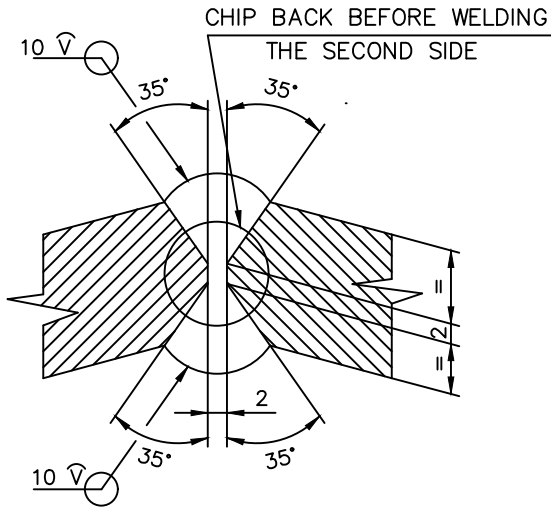
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ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO.	MATERIAL CODE	A	UNIT WT.			
			VAR NO.	MATERIAL SPEC.	C	QTY.			
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT									
 BHARAT HEAVY ELECTRICALS LTD., PIPING ENGG,HPBP-TRICHY-620014			DRN	NAME DHARMENDRA	SIGN -Sd-	DATE 18.11.24	NO OF ITEMS		
			CHD	IDB RAJU	-Sd-	18.11.24			
			APPD	P SURESH	-Sd-	18.11.24			
DEPT. PIPING ENGG CODE 121	GRADE OF UN TOL. DIM C/M/F		SCALE N.T.S	WEIGHT (Kg).	REF TO ASSY DRG				ITEM No.
TITLE 54.5DEG MITRE BEND R=1875 FOR SIZE NB 2540				CARD CODE U 01	DRAWING No. 3-80-468-A0642				REV 00

SIZE A3

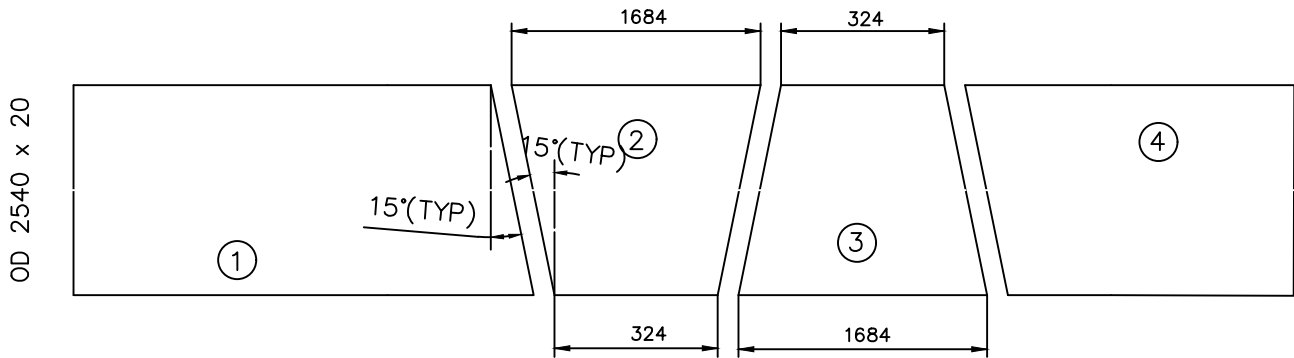
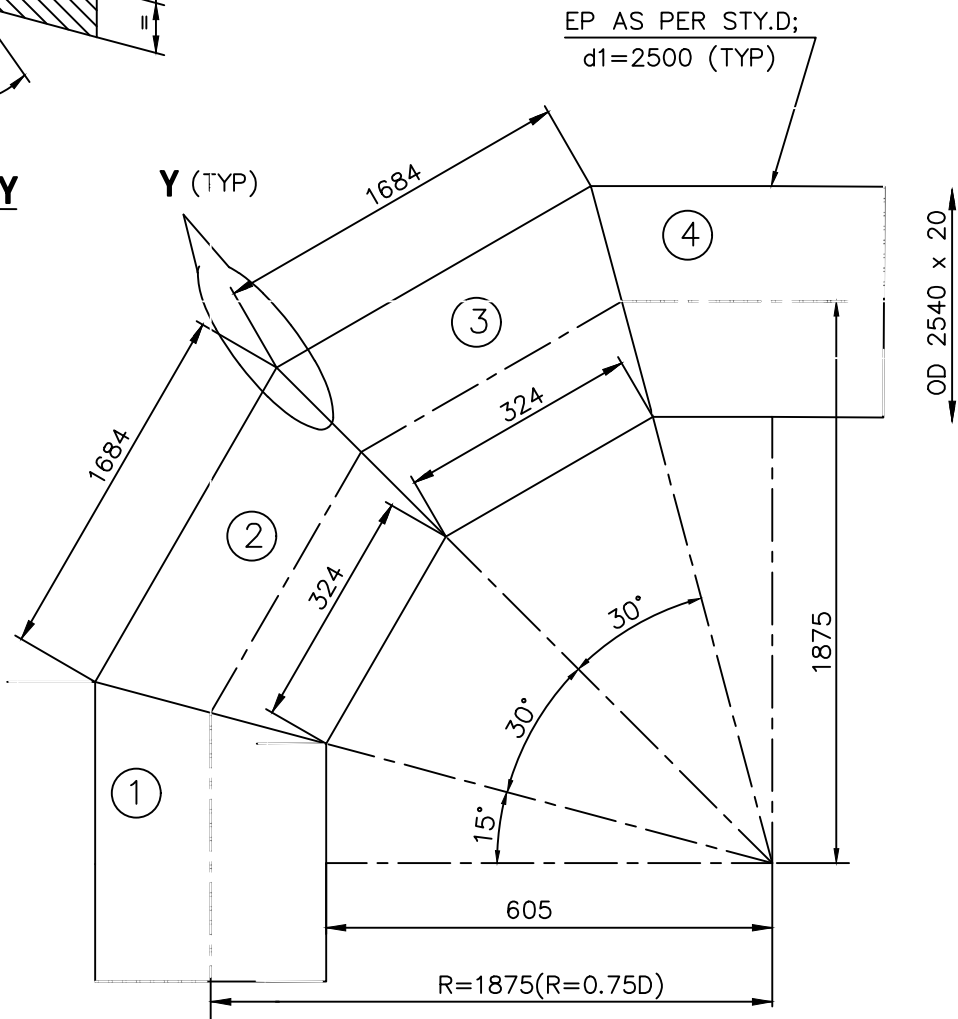
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3-80-468-A0643

DRAWING No

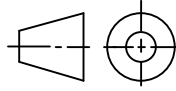


DETAIL -Y



NOTE:

- PIPE LENGTH INDICATED WITH CUTTING ALLOWANCE TO BE CUT AS PER CUTTING PLAN
- WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH TOOL FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
- FULL PENETRATION OF WELDS TO BE ENSURED
- COATING DETAILS REFER APPROVED PAINTING SCHEDULE & QP.
- SPIDER/LIFTING LUG HAS TO BE WELDED AT SHOP AFTER EDGE PREPARATION. FOR DETAILS REFER DWG.NO. 3-80-468-31263

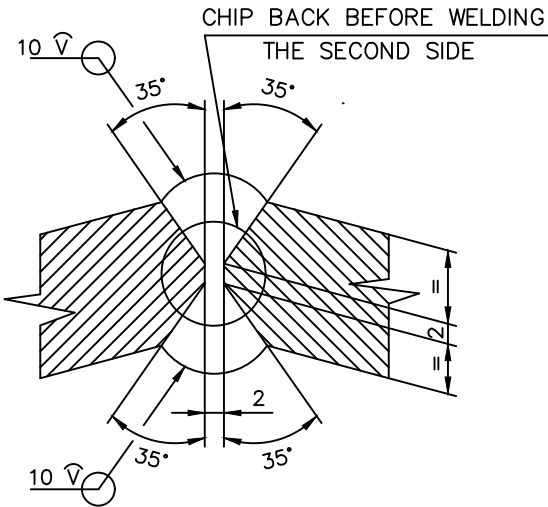
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			08	IS 2062 E250 GRB		
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPEC.	A C	UNIT WT. QTY.
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT						
 BHARAT HEAVY ELECTRICALS LTD., PIPING CENTRE, MADRAS			DRN	NAME	SIGN	DATE
			CHD	IDB RAJU	-Sd-	19.11.24
			APPD	P SURESH	-Sd-	19.11.24
DEPT. PIPING ENGG	GRADE OF UN TOL DIM		SCALE	WEIGHT (Kg).	REF TO ASSY DRG	
CODE 121	C/M/F		N.T.S	4805.299		
TITLE				CARD CODE	DRAWING No.	REV
90DEG MITRE BEND OD2540x20; R=1875				U 01	3-80-468-A0643	01

SIZE A3

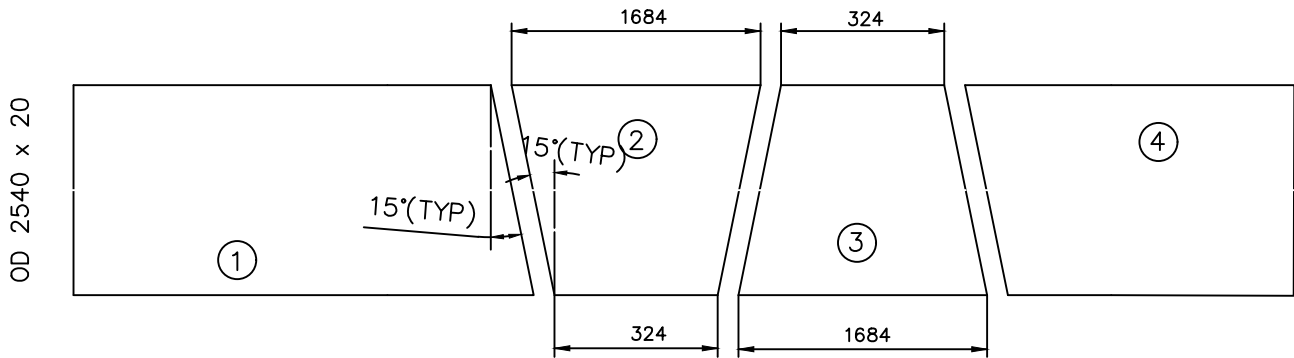
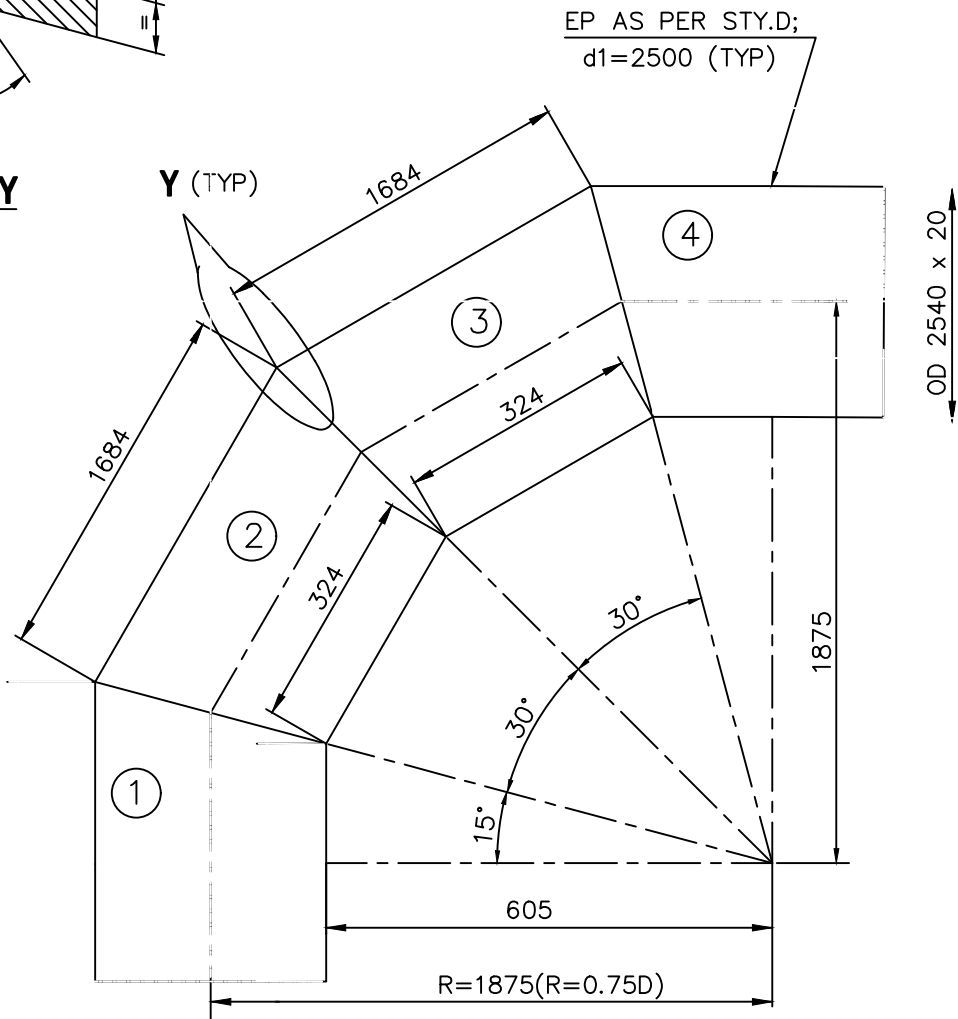
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3-80-468-A0644

DRAWING No

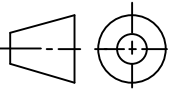


DETAIL -Y



NOTE:

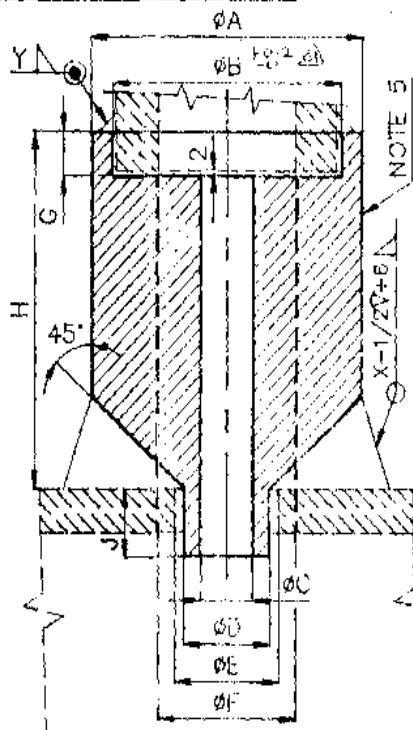
- PIPE LENGTH INDICATED WITH CUTTING ALLOWANCE TO BE CUT AS PER CUTTING PLAN
- WELDED PORTIONS SHALL HAVE A UNIFORMLY SMOOTH TOOL FINISH WITHOUT BURRS, WELD SPATTER, CRACKS ETC.
- FULL PENETRATION OF WELDS TO BE ENSURED
- COATING DETAILS REFER APPROVED PAINTING SCHEDULE & QP.
- SPIDER/LIFTING LUG HAS TO BE WELDED AT SHOP AFTER EDGE PREPARATION. FOR DETAILS REFER DWG.NO. 3-80-468-31263

01	P.F.PIPE ø2540x20 : L=4149	3-80-468-A0490		15 011 218 0000	5155	723
			09	IS 2062 E250 GRB		
ITEM NO.	DESCRIPTION	DRAWING NO.	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPEC.	A C	UNIT WT. QTY.
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT						
 BHARAT HEAVY ELECTRICALS LTD., PIPING ENGG,HPBP-TRICHY-620014			DRN	NAME	SIGN	DATE
			CHD	IDB RAJU	-Sd-	19.11.24
			APPD	P SURESH	-Sd-	19.11.24
DEPT. PIPING ENGG	GRADE OF UN TOL DIM		SCALE	WEIGHT (Kg).	REF TO ASSY DRG	
CODE 121	C/M/F		N.T.S	5155.723		
TITLE 90DEG MITRE BEND				CARD CODE	DRAWING No.	REV
OD2540x20; R=5				U 01	3-80-468-A0644	01

SIZE A3

22276-666-08-2

ON DRAWING



VAR NO.	NB	CLASS	CONN. PIPE SIZE	ØA	ØB	ØC	ØD	ØE	ØF	G	H	J	RAW MATL SIZE	MATL CODE	WEIGHT (kg)	X	Y
01	15	3000	21.3x3.73	32	21.8	6	10	11	16	10	34	10	36	15 339 280 0000	0.18	11	4
02	15	6000	21.3x4.78	34	21.8	4	7	8	12	10	34	10	36	15 339 280 0000	0.21	14	6
03																	
04	20	3000	26.7x3.91	38	27.2	10	15	16	21	13	38	10	40	15 339 141 0000	0.26	12	5
05	20	6000	26.7x5.56	42	27.2	6	10	11	16	13	38	10	50	15 339 142 0000	0.35	16	6
06																	
07	25	3000	33.4x4.55	46	33.9	16	22	23	27	13	44	10	50	15 339 142 0000	0.43	12	5
08	25	6000	33.4x6.35	50	33.9	10	15	16	21	13	44	10	63	15 339 143 0000	0.57	18	7
09	25	9000	33.4x9.09	58	33.9	6	11	12	15	13	44	10	63	15 339 143 0000	0.81	24	10
10	40	3000	48.3x5.08	62	48.8	30	35	36	41	13	48	15	63	15 339 143 0000	0.75	14	6
11	40	6000	48.3x7.14	68	48.8	22	28	29	34	13	48	15	80	15 339 144 0000	1.07	20	8
12	40	9000	48.3x10.15	76	48.8	16	22	23	28	13	48	15	80	15 339 144 0000	1.46	27	11
13	50	3000	60.3x5.54	76	61.2	40	46	47	53	16	60	15	80	15 339 144 0000	1.33	15	6
14	50	6000	60.3x8.74	84	61.2	32	37	38	43	16	60	15	100	15 339 134 0000	1.96	24	10
15	50	9000	60.3x11.07	90	61.2	26	32	33	38	16	60	15	100	15 339 134 0000	2.44	28	12

NOTES:

- 1) TOLERANCE ON DIAMETERS $\pm 0.1\text{mm}$, EXCEPT ON ØB.
- 2) TOLERANCE ON LENGTH: $+1\text{mm}$, -0mm .
- 3) BORES SHALL BE CONCENTRIC WITHIN $\pm 0.4\text{mm}$.
- 4) COINCIDENCE OF AXES: THE MAXIMUM ALLOWABLE VARIATION IN THE ALIGNMENT OF FITTING BORE AND SOCKET BORE AXES SHALL BE 0.5%.
- 5) STAMP IDENTIFICATION MARK: Ex. FOR VAR. NO. 01: "SA105 A B16 CL 3000-15".
- 6) DRILL TO ØF AFTER WELDING.
- 7) THE WELDMENTS SHOWN ARE ONLY FOR THE PURPOSE OF INFORMATION AND GUIDANCE ONLY.
- 8) RAW MATERIAL OF DIFFERENT SIZE IS ACCEPTABLE IF THE FINAL DIMENSIONS ARE MAINTAINED.
- 9) THE ABOVE STUBS ARE IN LINE WITH ASME B16.11 (HALF COUPLING).

MATERIAL: SA105(A)

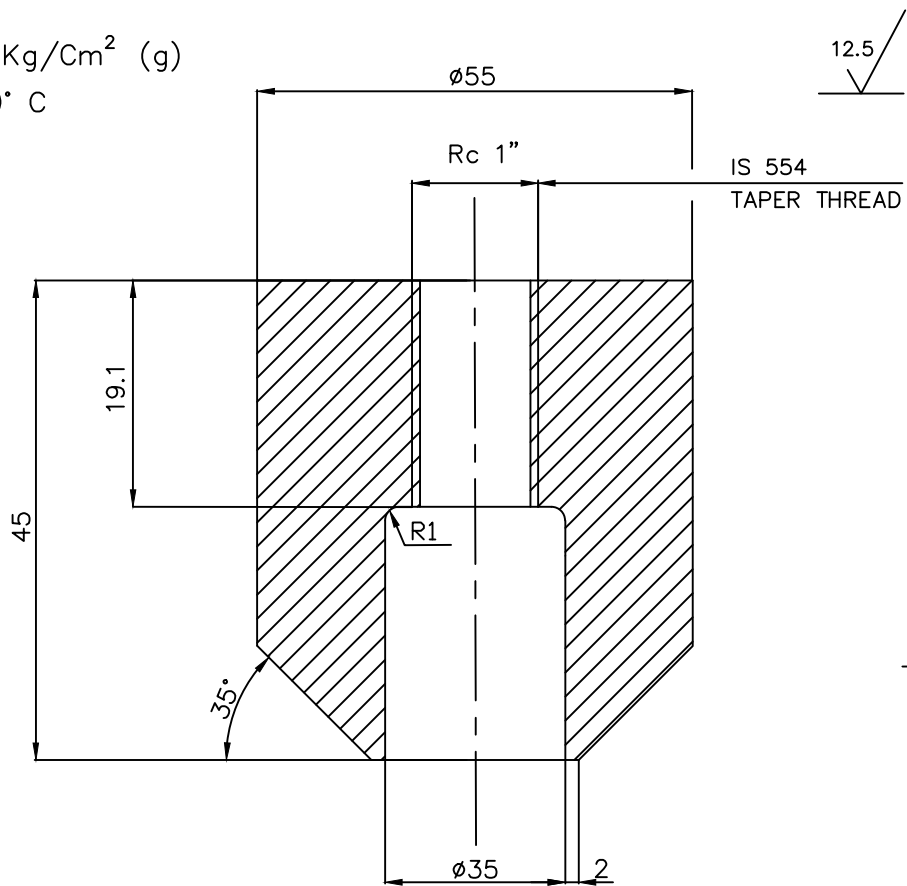
STANDARD

Bharat Heavy Electricals Ltd.		NAME	DATE
DRN	R. ANANTH	R. Ananth	15-08-95
CRD	R. ANANTH	R. Ananth	15-08-95
APPD	S. JAYAJUMAR	S. Jayajumar	15-08-95
PIPING CENTRE, MADRAS, 600 017			
REV	DATE	ALTERED BY	APPROVED
01	15/08/95	R. Ananth	[Signature]
ZONE	NOTE 1: ALTD TOLERANCE ON ØB ALTD STAMP ØB ± 0.1 TO ØB $+0.2$		
SCALE	N.T.S.	WEIGHT (kg)	REV
SOCKET WELDED STUBS GS		DRAWING No.	01
U 01		3-80-999-97333	

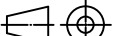
ALL DIMENSIONS ARE IN MILLIMETRES

REV 01	DATE	ALTERED	REV 02	DATE	ALTERED
		APPROVED			APPROVED

1. PRESSURE : 5 Kg/Cm² (g)
2. TEMPERATURE : 50° C



	ROD Ø63; L=45		15 339 143 0000	C		0 500
			SA 105			
VAR NO.	DESCRIPTION	STD	MATL. CODE	AC	UNIT	UNIT.WT.(Kg)
			MATL. SPECN.	CD	DI	QTY.

 BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017				DRN JITENDRA	NAME JITENDRA	SIGN	DATE 26.04.22	NO.OF VAR	
				CHD	IDB RAJU		26.04.22		
				APPD	VENKAT		26.04.22		
DEPT	GRADE OF UNTOL.DIM		SCALE N.T.S	WEIGHT (KG). 0.500	REF. TO ASSY./OLD DRG.			ITEM NO.	NO. OF ITEMS
CODE	C / M / F								
TITLE TEMPERATURE STUB Rc 1" L=45 CS					CARD CODE U 01	DRAWING NO. 4-80-468-84580			REV 00

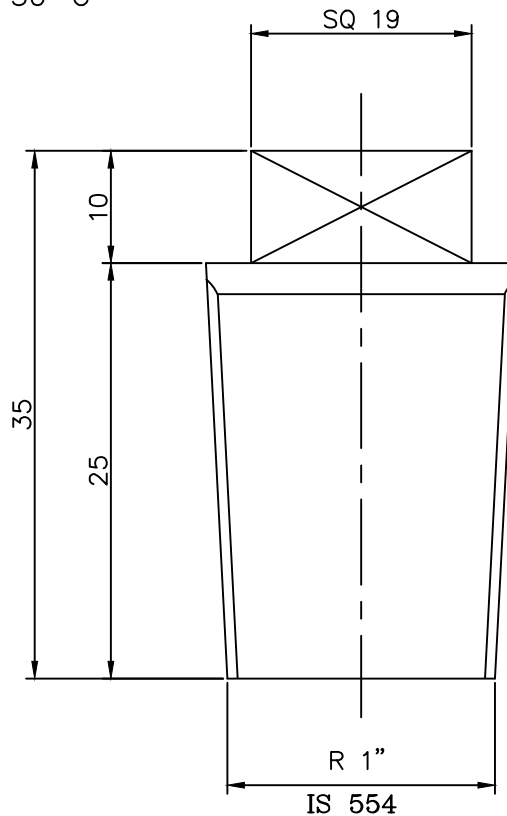
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ALL DIMENSIONS ARE IN MILLIMETRES

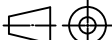
REV	DATE	ALTERED	REV	DATE	ALTERED
01		APPROVED	02		APPROVED

NOTE: -

- 01 ALL SHARP CORNERS ARE TO BE ROUNDED OFF.
02. PRESSURE : 5 Kg/Cm²(g)
03. TEMPERATURE : 50° C



	ROD ø40 ; L=35		15 339 141 0000	A		0	200
			SA 105				
VAR NO.	DESCRIPTION	STD	MATL. CODE	A	UNIT	UNIT.WT.(Kg)	
			MATL. SPECN.	C	DI	QTY.	

 BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017				DRN	NAME	SIGN	DATE	NO.OF VAR
				CHD	IDB RAJU		26.04.22	
				APPD	SARAVANAN		26.04.22	
DEPT	GRADE OF UNTOL.DIM		SCALE	WEIGHT (KG).	REF. TO ASSY./OLD DRG.		ITEM NO.	NO. OF ITEMS
CODE	C / M / F		N.T.S	0.200				
TITLE				CARD CODE	DRAWING NO.			REV
PLUG R 1" CS				U 01	4-80-468-84581			00

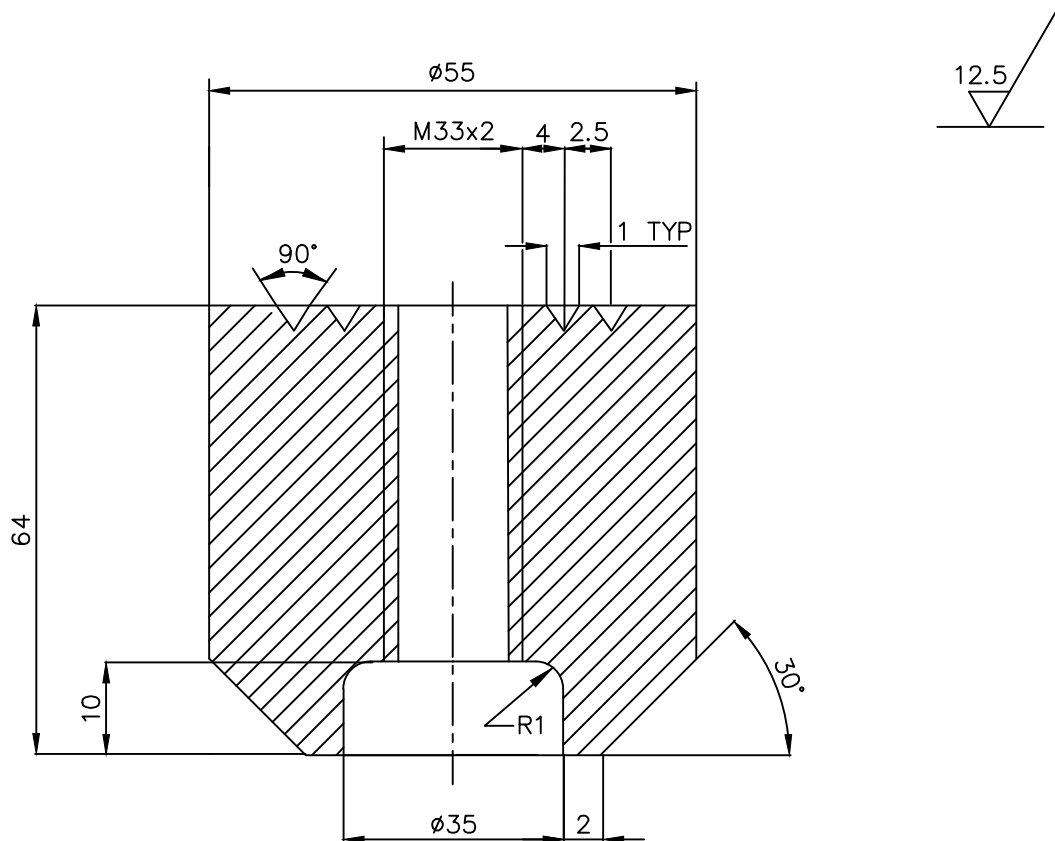
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ALL DIMENSIONS ARE IN MILLIMETRES

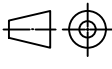
REV	DATE	ALTERED
01		APPROVED

NOTES:-

DESIGN PRESSURE : 5 Kg/Sq.Cm (g)
DESIGN TEMPERATURE : 50° C



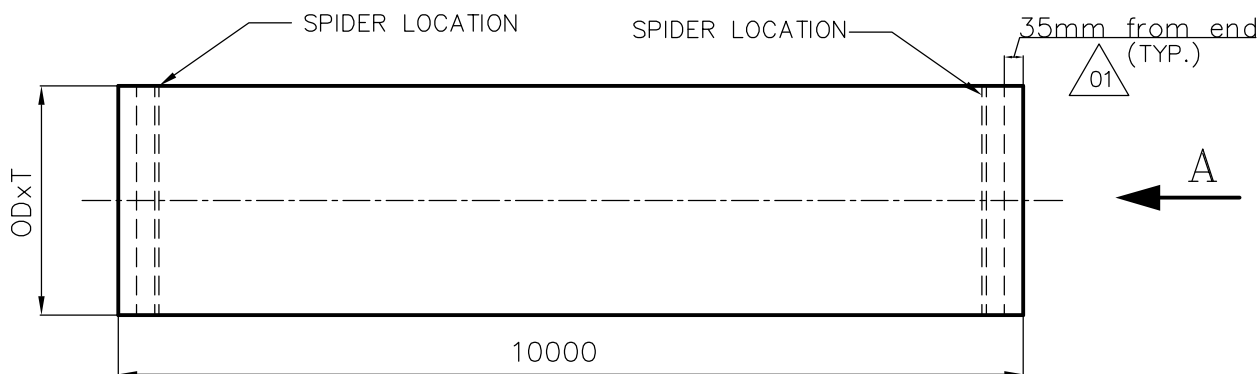
	ROD ϕ 63 L=64	15 339 143 0000	C	0 700
		SA 105		
VAR NO.	DESCRIPTION	MATL. CODE	A	UNIT
		MATL. SPECN.	C	DI
				QTY.

		BHARAT HEAVY ELECTRICALS LIMITED		DRN	NAME	SIGN	DATE	NO. OF
		PIPING CENTRE		JITENDRA		-SD-	05.05.22	VAR
		CHENNAI 600 017		CHD	IDB RAJU	-SD-	05.05.22	
				APPD	SARAVANAN	-SD-	05.05.22	
DEPT	GRADE OF		SCALE	WEIGHT (KG).	REF. TO ASSY./OLD DRG.		ITEM NO.	NO. OF
CODE	UNTOL. DIM		N.T.S	0.700				ITEMS
		C / M / F						
TITLE				CARD	DRAWING NO.			REV
TEMPERATURE STUB				CODE	4-80-468-84584			00
M33x2 L=64 (CS)				U 01				

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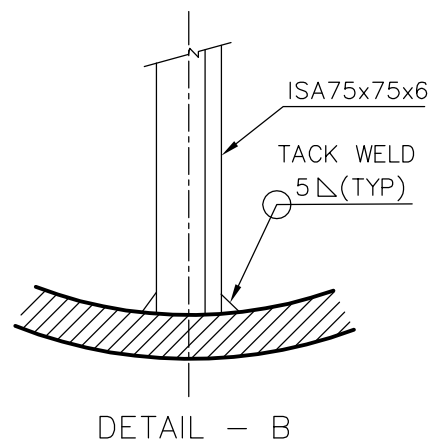
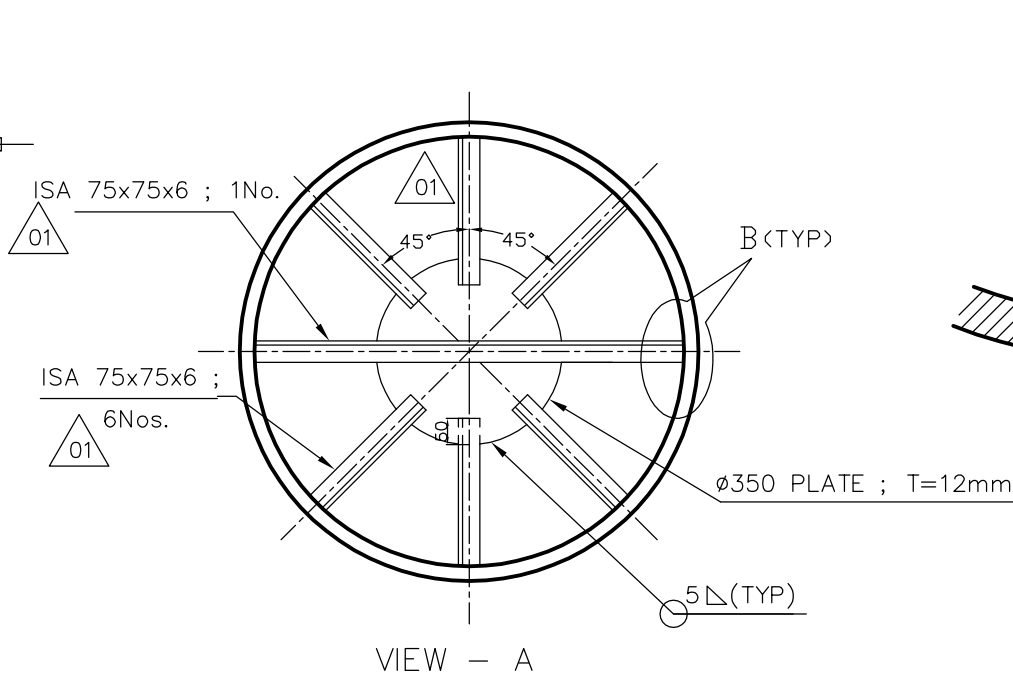
REV	DATE	ALTERED	P SURESH
01	31.03.18	APPROVED	R SESHAGIRI
SPIDER DETAIL VIEW-A MODIFIED			
REVISIONS MARKED AS 			

ALL DIMENSIONS ARE IN MILLIMETRES

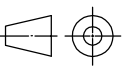


SPIRAL/LONGITUDINAL WELDED PIPE

(2 LOCATIONS IN A PIPE)



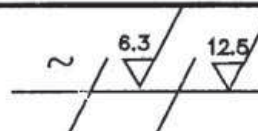
STANDARD

		BHARAT HEAVY ELECTRICALS LIMITED PIPING CENTRE CHENNAI 600 017		DRN	NAME C.KUMAR	SIGN	DATE 11.04.08	NO. OF VAR
				CHD	C.K.KARAN		11.04.08	
				APPD	C.K.KARAN		11.04.08	
DEPT	GRADE OF UNTOL. DIM		SCALE N.T.S	WEIGHT (KG.) 	REF. TO ASSY./OLD DRG.		ITEM NO.	NO. OF ITEMS
CODE	C / M / F							
TITLE SPIDER ARRANGEMENT FOR FOR PIPE DIA >1000				CARD CODE U 01	DRAWING NO. 4-80-999-93078 01			RE

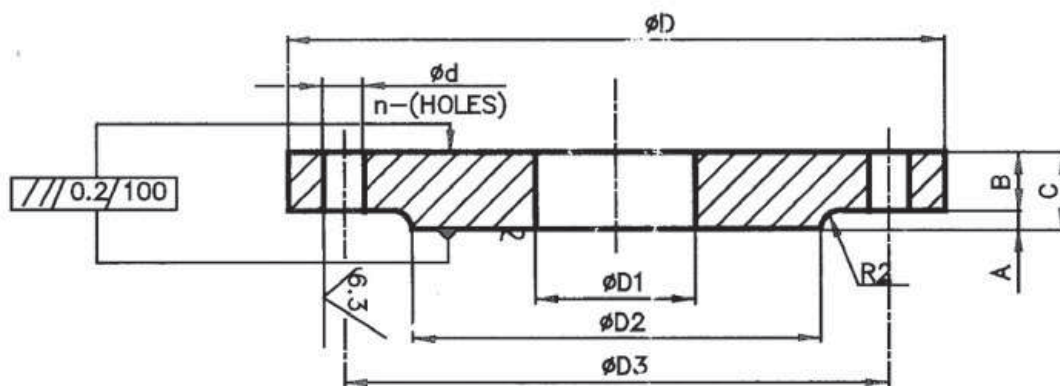


ALL DIMENSIONS ARE IN MILLIMETRES

REV	DATE	ALTERED	JGM	REV	DATE	ALTERED	TA
C:	17.07.99	APPROVED	BC	02	07.02.97	APPROVED	PG
VARIANT - 02 ADDED				THICKNESS ALTERED.			



VAR No.	D	D1	D2	D3	d	n	A	B	C	REMARKS
01	780	614	685	725	30	20	5	37	42	
02	780	614	685	725	30	20	2	42	44	



RETRACED

02	PL 50x780/614	15 942 119 0000	A	51	700
		SA 515 Gr. 70			
01	PL 50x780/614	15 942 119 0000	A	51	700
		SA 515 Gr. 70			
VAR NO.	DESCRIPTION	MATL. CODE	A/C	UNIT	UNIT.WT.(Kg)
		MATL. SPECN.		DI	QTY.



BHARAT HEAVY ELECTRICALS LIMITED

PIPING CENTRE
CHENNAI 600 017

NAME	SIGN	DATE	NO. OF VAR
DRN S.KUMARAN	<i>S. Kumaran</i>	31.7.99	
CHD S.D.MOORTHY	<i>S.D. Moorthy</i>	02.7.98	
APPD B.CHINNAPPA	<i>B. Chinnappa</i>	02.7.98	

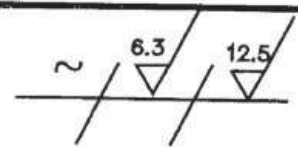
DEPT	GRADE OF UNTOLODIM	SCALE	WEIGHT (KG)	REF. TO ASSY./OLD DRG.	ITEM NO.	NO. OF ITEMS
CODE	C / M / F	N.T.S				
TITLE	CARD CODE	DRAWING NO.	REV			
S.O.W FLANGE Nb.600	U 01	4-81-004-01955	02			

Size A4

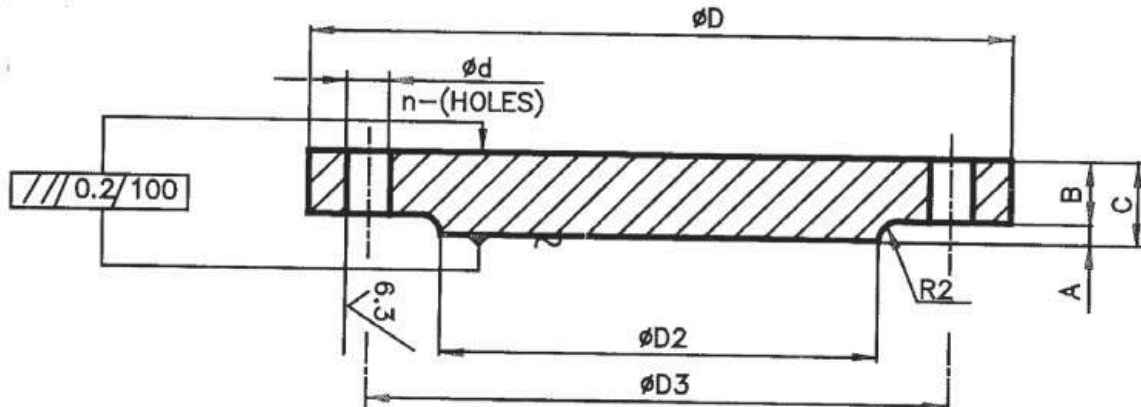
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ALL DIMENSIONS ARE IN MILLIMETRES

REV	DATE	ALTERED	SD	REV	DATE	ALTERED	TA
01	12.07.96	APPROVED	RDC	02	07.07.97	APPROVED	PG
VARIANT - 02 ADDED				THICKNESS ALTERED.			



VAR No.	D	D2	D3	d	n	A	B	C	REMARKS
01	780	685	725	30	20	2	30	32	
02	780	685	725	30	20	2	42	44	



RETRACED

02	PL 50x780x780	15 942 119 0000	A	151	387
		SA 515 Gr. 70			
01	PL 35x780x780	15 942 116 0000	A	114	980
		SA 515 Gr. 70			
VAR NO.	DESCRIPTION	MATL. CODE	A	UNIT	UNIT.WT.(Kg)
		MATL. SPECN.	C	DI	QTY.



BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE
CHENNAI 600 017

NAME	SIGN	DATE	NO. OF VAR
DRN S.KUMARAN	<i>[Signature]</i>	01/07/95	
CHD S.D.MOORTHY	<i>[Signature]</i>	02/07/95	
APPD B.CHINNAPPA	<i>[Signature]</i>	02/07/95	

DEPT	GRADE OF UNTO. DIM	SCALE	WEIGHT (KG).	REF. TO ASSY./OLD DRC	NO. OF DIM
CODE	d / M / F	N.T.S			
TITLE	CARD CODE			DRAWING NO.	REV
BLANK FLANGE Nb.600	U 01			4-81-004-01956	02

Size A4

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MANUFACTURER'S NAME & ADDRESS: BHEL THIRUCHIRAPALLI /BHEL SUBCONTRACTORS		MANUFACTURING QUALITY PLAN							PROJECT NAME: MAHAN ENERGEN LIMITED (ADANI POWER) 2x800MW PACKAGE: SG BHEL CUST NO: 1832, 1833					
		ITEM: LP Piping Fabrication (Circulating water, Cooling water, Misc water, Instrument Air, Service Air etc)					QP No: 1832 QPC 03 REV: 00 DATE: 08.11.23 Page 1 of 2							
														SUB SYSTEM: STG
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CATEGORY OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		INSPECTION AGENCY			REMARKS
					M	C/A					M	C	A	
1	2	3	4	5	6		7	8	9	*D	**10			11

 			LEGEND: D* Records identified with tick (√) shall be essentially included by supplier & manufacturer in Quality Documentation package. ** M: Manufacturer/Sub-Supplier, C: BHEL/BHEL TPIA , A: ADANI or their authorized representative. Use the following term as appropriate in columns 10. P: Perform, W : Witness , V: Verification and H: Customer Hold Point to be witnessed and work shall not proceeded till it is witnessed and cleared in writing.	FOR CUSTOMER USE
PREPARED BY	REVIEWED BY	APPROVED BY		
BHEL				

MANUFACTURER'S NAME & ADDRESS: BHEL THIRUCHIRAPALLI /BHEL SUBCONTRACTORS		MANUFACTURING QUALITY PLAN						PROJECT NAME: MAHAN ENERGEN LIMITED (ADANI POWER) 2x800MW PACKAGE: SG BHEL CUST NO: 1832, 1833						
		ITEM: LP Piping Fabrication (Circulating water, Cooling water, Misc water, Instrument Air, Service Air etc)				QP No: 1832 QPC 03 REV: 00 DATE: 08.11.23 Page 2 of 2								
		SUB SYSTEM: STG												
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CATEGORY OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	INSPECTION AGENCY			REMARKS	
					M	C/A				M	C	A		
1	2	3	4	5	6		7	8	9	*D	**10			11

2.4	NDE for Root Weld back gouging	Weld Defects	Major	PT	100%	100%	ASME Sec V, Article 6	ASME B31.1 Cl 136.4.4	TP	√	P	V	V	TP: Test Report
2.5	NDE for Butt welds, Mitre joints	Weld Defects	Critical	RT	*10%	*10%	ASME Sec V, Article 2	ASME B31.1 Cl 136.4.5	TP	√	P	V	V	*-Inclusive of all T-Joints
2.6	Rolled & Welded pipe using plates.	NDE for Longitudinal Seam Welds	Critical	RT	**10%	**10%	ASME Sec V, Article 2	ASME B31.1 Cl 136.4.5	TP	√	P	V	V	** -Inclusive of ends
		NDE for Circumferential seam Welds	Critical	RT	*10%	*10%	ASME Sec V, Article 2	ASME B31.1 Cl 136.4.5	TP	√	P	V	V	*-Inclusive of all T-Joints
2.7	NDE for Fillet Welds	Weld Defects	Critical	PT/MT	100%	10%	ASME Sec V, Article 6 / Article 7	ASME B31.1 Cl 136.4.4 / 136.4.3	TP	√	P	W	V	
2.8	Dimension, Visual & EP	Surface, Dimensions (including ovality) Edge preparation	Major	Visual & Measure	100%	10%	BHEL Drawing		HC	√	P	W	V	
3.0	IDENTIFICATION, PAINTING AND DOCUMENTATION													
3.1	Surface preparation and painting	Visual & DFT	Major	Visual & Measure	100%	10%	Customer Approved LP Piping Painting Scheme		HC	√	P	W	V	
3.2	Identification & Marking	Work Order/DU Number, Maker's Identification	Major	Visual	100%	10%	As per BHEL PO/GMS		HC	√	P	W	V	

 PREPARED BY	 08/11/23 REVIEWED BY	 09/11/23 APPROVED BY	LEGEND: D* Records identified with tick (√) shall be essentially included by supplier & manufacturer in Quality Documentation package. ** M: Manufacturer/Sub-Supplier, C: BHEL/BHEL TPIA , A: ADANI or their authorized representative. Use the following term as appropriate in columns 10. P: Perform, W : Witness , V: Verification and H: Customer Hold Point to be witnessed and work shall not proceeded till it is witnessed and cleared in writing.	FOR CUSTOMER USE

BHEL

MANUFACTURER'S NAME & ADDRESS: BHEL THIRUCHIRAPALLI /BHEL SUBCONTRACTORS		MANUFACTURING QUALITY PLAN						PROJECT NAME: MAHAN ENERGEN LIMITED (ADANI POWER) 2x800MW PACKAGE: SG BHEL CUST NO: 1832, 1833						
		ITEM: LP Piping Fabrication (Circulating water, Cooling water, Misc water, Instrument Air, Service Air etc)											QP No: 1832 QPC 03 REV: 00 DATE: 08.11.23 Page 3 of 2	
		SUB SYSTEM: STG												
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CATEGORY OF CHECK	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		INSPECTION AGENCY			REMARKS
					M	C/A					M	C	A	
1	2	3	4	5	6		7	8	9	*D	**10			11
3.3	Protection and Packing	Packing	Minor	Visual	100%	100%	As per PO/BHEL Std	COC	√	P	V	V		
3.4	Despatch Clearance	Verification of Reports , COC	Major	Review	100%	100%	As per PO/Approved MQP	MDCC		P	V	H	BHEL shall submit COC and IR/TC.	

	J. N. S. R. 08/11/23	 09/11/23	LEGEND: D* Records identified with tick (√) shall be essentially included by supplier & manufacturer in Quality Documentation package. ** M: Manufacturer/Sub-Supplier, C: BHEL/BHEL TPIA , A: ADANI or their authorized representative. Use the following term as appropriate in columns 10. P: Perform, W : Witness , V: Verification and H: Customer Hold Point to be witnessed and work shall not proceeded till it is witnessed and cleared in writing.	FOR CUSTOMER USE	
PREPARED BY	REVIEWED BY	APPROVED BY			
BHEL					



BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE CHENNAI – 17
QUALITY DEPARTMENT.

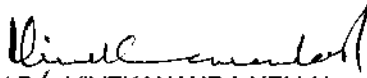
QA 03

**STANDARD QUALITY PLAN FOR
LP PIPING FABRICATION**

QP NO : QPG : 75
Rev : 00
DATE : 24.11.2010
Page 1 of 2

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

1.0	RAW MATERIAL										
1.1	WELDED PIPE -IS:3589, (longitudinal / Spiral) IS -1239 . (Black / Galvanised) or as per drawing.	Correctness of Material Specn.	Minor	Verification of Specification	100%	Material Specification as per BHEL Drawing.	HC		P	V	Material procured as per specification
1.2	FITTINGS										
1.2.1	IS 1239 Fittings Black/Galvanised Screwed & Socketed. or as per drawing.	Correctness of Material Specn.	Minor	Verification of Specification	100%	Material Specification as per BHEL Drawing.	HC		P	V	Material procured as per specification
1.2.2	Forged / BW Fitting/ Flanges as per IS-1239 Part-II, SA 234, SA105, SA182 or as per drawing.	Correctness of Material Specn.	Minor	Verification of Specification	100%	Material Specification as per BHEL Drawing.	HC		P	V	Material procured as per specification
1.3	Plates:IS2062 or as per drg.	Correctness of Material Specn.	Minor	Verification of Specification	100%	Material Specification as per BHEL Drawing.	HC		P	V	Material procured as per specification
2.0	INPROCESS CONTROL										
2.1	Welding	Procedure and performance Qualification details.	Major	Verification @	Each welder	ASME SEC - IX		WPS / PQR	P	V	@Review of WPS /PQR by BHEL.
2.1.1	NDE for Edge Preparation	Surface defects	Major	LPI	10%	ASME Sec V/ASME B 31.1 CI . 136.4.4		HC	P	W	


Prepared By. VIVEKANANDA YELLU.
Engr/QA

LEGEND: M : BHEL/BHEL Approved Vendor P : Perform
B: BHEL/BHEL Authorized Inspection Agency W : Witness
WPS – Welding procedure Specification V : Verification
PQR – Procedure Qualification Report R : Review of RT film.
HC – History Card / Register.


Reviewed and Approved By G.PANNEER SELVAM.
DGM / QA



BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE CHENNAI – 17
QUALITY DEPARTMENT.

QA 03

STANDARD QUALITY PLAN FOR LP PIPING FABRICATION

QP NO : QPG : 75
 Rev : 00
 DATE : 24.11.2010
 Page 2 of 2

SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY		REMARKS
									M	B	
1	2	3	4	5	6	7	8	9	10		11
2.2.	Mitre bends, Branch Reducer, Tees, Flange.	Fit-up	Major	Dimension & Root-gap	100%	BHEL Drawing		HC	P	V	
2.2.1	NDE: for Weld	a) Weld fusion	Major	Root back Chip and LPI for OD 1000mm and above.	100%	No linear indication		HC	P	V	
		b) Weld Profile & Surface defects	Major	Visual	-do-	ASME Sec V/ASME B 31.1 CI . 136.4.2		HC	P	W	
		c) Butt, mitre joints	Major	RT	10%*	ASME Sec V/ASME B 31.1 CI 136.4.5.		HC	P	R	*Inclusive of all T- Joints.
2.3	Rolled and Welded Pipe Spools using IS 2062 plates	a) Circumferential Seam welds	Major	RT	10%*	-do--		HC	P	R	
		b) Long Seamwelds	Major	RT	10%**	-do--		HC	P	R	** Including ends.
						-do--					
2.4	Piping Fabrication	a) Butt Joints	Major	RT	10%*	-do--		HC	P	R	
		b) Fillet Welds	Major	LPT/MPT	100%	ASME B 31.1 CI .136.4.4/ ASME B 31.1 CI .136.4.3		HC	P	R	
2.5	Dimension	Measurement (including ovality)	Major	Visual & Measurement	100%	BHEL Drawing		HC	P	W	
3.0	Surface preparation and painting	Painting & DFT	Major	Visual & Measurement	100%	AS PER BHEL STANDARD		HC	P	W	
4.0	Marking & Identification	Workorder DU Number. Maker's Identification	Major	Visual	100%	Paint stenciling & Hard Stamping as per BHEL drg./ GMS		HC	P	V	
5.0	Documentation Review	Verification of Reports	Major	Visual	100%	QP no : QPG:75		IR, Report , HC*	P	V	BHEL will Submit certificate of Compliance (COC)


 Prepared By: VIVEKANANDA YELLU.
 Engr/QA

LEGEND: M: BHEL/BHEL Approved Vendor P: Perform
 B: BHEL/BHEL Authorized Inspection Agency W: Witness
 WPS – Welding procedure Specification V: Verification
 PQR – Procedure Qualification Report R: Review of RT film.
 HC – History Card / Register.


 Reviewed and Approved By G.PANNEER SELVAM.
 DGM / QA

	STG	OWNER: 552H-E-BTG-BOA-BM-O-V-0004
		CONTRACTOR: 1832 QPC 12
MAHAN ENERGEN LTD. (PHASE-II)	POWER PIPING	PAGE 1 of 1
BHEL		

STG

	OWNER MAHAN ENERGEN LIMITED (MEL) 2x800 MW ULTRA SUPER CRITICAL THERMAL POWER PROJECT, MAHAN (PHASE-II), SINGRAULI, M.P.
	OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED
	BTG CONTRACTOR BHARAT HEAVY ELECTRICALS LTD.
	SUB-CONTRACTOR / SUB-SUPPLIER Not Applicable



Digitally signed by Bhavesh Patel
Date: 2024.11.21 14:51:59 +05'30'

Reviewer
Anbu R

Approver

Categories:
☒ Cat-I Approved. Good for Manufacturing/Construction/Fabrication.
☐ Cat-I* Approved with minor comments. No resubmission is required. To be incorporated in As-Built. Good for Manufacturing/ Construction/ Fabrication subject to incorporation of comments.
☐ Cat-II Resubmission is required. Approved & Released for Manufacturing/ fabrication/ construction subjected to incorporation of comments.
☐ Cat-III Not Approved. Revise & Resubmit for Approval
☐ Cat-IV For Information & Records.
☐ Cat-IV* Incorporate Comments & resubmit for Information & records.

Note: "Approval of this document does not absolve the Contractor/ Supplier/Fabricator from fulfilling Contractual obligations in any way"

PLANT	HIGH PRESSURE BOILER PLANT, TIRUCHIRAPPALLI	
DOCUMENT TITLE	LP PIPING - PAINTING SCHEME	
OWNER DOC. NO.	552H-E-BTG-TGA-DM-O-V-0008	
CONTRACTOR / SUPPLIER DOC. NO.	1832 QPC 12	TATA CONSULTING ENGINEERS LIMITED CONTRACTOR DOCUMENT REVIEW STATUS ☒ 1 Approved, Further work can Proceed ☐ 1* Approved with minor comments. No resubmission is required. To be incorporated in As-Built. Good for Manufacturing/Construction / Fabrication subject to Incorporation of comments. ☐ 2 Approved with comments. Work can proceed subject to incorporation of comments ☐ 3 Not Approved. Revise according to comments & resubmit ☐ 4 Retained for Information ☐ 4* Incorporate Comments & resubmit for Information & records
PACKAGE DISCIPLINE	STG	
PREPARED BY	M MANOJ PANDI	
REVIEWED BY	K SARANYA	
APPROVED BY	S JEGAN	

Approval conveyed herein neither relieves CONTRACTOR of his contractual obligations and his responsibilities for correctness of dimensions, materials of construction, weights, quantities, design details, assembly fits, system / performance requirements and conformity of supplies with National / international statutory laws as may be applicable , nor does it limit the Employer's rights under the contract.

Reviewed by: PMJ

Date: 21-11-2024

Revision Control History

Sr. No.	Revision No.	Date	Reasons for Change
1	00	03.11.2023	First issue
2	01	12.12.2023	Revised based on Customer comments.
3	02	22.05.2024	Revised based on Customer comments.
4	03	28.05.2024	Revised based on Customer comments.
5	04	06.06.2024	Revised based on Customer comments.
6	05	11.06.2024	Revised based on Customer comments.
7	06	14.11.2024	Revised based on Customer comments.

 BHARAT HEAVY ELECTRICALS LIMITED HPBP, TRICHY		LP PIPING - PAINTING SCHEME									
		PROJECT NAME : MAHAN ENERGEN LIMITED (ADANI POWER) 2x800MW							QP No:	1832 QPC 12	
		PACKAGE : STG							Rev No:	06	
		BHEL CUSTOMER Nos : 1832, 1833							Date:	14.11.2024	
Sl. No	PGMA / Description	Surface preparation / Profile	Primer coat		Intermediate coat		Finish coat		Shade	Total DFT Microns (Min.)	Remarks
			Primer	No of coats & Min.DFT	Paint	No of coats & Min.DFT	Paint	No of coats & Min.DFT			
1	2	3	4	5	6	7	9	10	11	12	13
1	(a) Internal Surface - CW & ACW Pipe (for pipe dia 1000mm and above)	Blast Cleaning SSPC SP-10 SA 2½	Epoxy based Zinc rich Primer	1 (50 Microns per coat)	-----	-----	Coal tar epoxy	3 (150 Microns per coat)	-----	500	Refer Note 1 & 2
	(b) Hoilday test for Internal surface coating	Holiday testing by low voltage (75 Volts Min.) Wet sponge Holiday detector or by High voltage (Votage per micron of DFT is as recommended by Paint Manufacturer subjected to minimum of 5V/Micron). Holiday Equipment to be calibrated before testing.									Refer Note 3
	(c) Internal Surface - ACW pipe (for pipe diameter greater than 800 NB): i) ACW Supply line from terminal point to SCS and PHE ii) ACW Return line from PHE to terminal point.	Blast Cleaning SSPC SP-10 SA 2½	Epoxy based Zinc rich Primer	1 (50 Microns per coat)	-----	-----	Coal tar epoxy	3 (150 Microns per coat)	-----	500	Refer Note 1 & 2
2	External Surface of ACW - Buried Piping/ Encased in concrete (For pipe dia 1000mm and above)	Blast Cleaning SSPC SP-10 SA 2½	Epoxy based Zinc rich Primer	1 (50 Microns per coat)	-----	-----	Coal tar epoxy	2 (75 Microns per coat)	-----	200	Refer Note 1 & 2
3	External Surface (Over Ground piping) of ACW- all diameters)	Blast Cleaning SSPC SP-10 SA 2½	Inorganic ethyl self curing zinc silicate primer to IS14946	1 (75 microns per coat)	High build epoxy MIO coating cured with polyamide	1 (100 microns per coat)	One coat of High Build Gloss Aliphatic Acrylic Polyurethane	1 (50 microns per coat)	-----	225	Refer Note 1
4	External Surface of ECW, Plant water (For all diameters)	Blast Cleaning SSPC SP-10 SA 2½	Inorganic ethyl self curing zinc silicate primer to IS14946	1 (75 microns per coat)	High build epoxy MIO coating cured with polyamide	1 (100 microns per coat)	One coat of High Build Gloss Aliphatic Acrylic Polyurethane	1 (50 microns per coat)	-----	225	Refer Note 1
5	Stainless steel / Galvanized piping	No painting									
Notes:											
1. Blast cleaning to near white metal to obtain roughness as per epoxy paint data sheet.											
2. Application of Epoxy based Zinc rich Primer, Coal Tar Epoxy shall be done as per manufacturer's data sheet /recommendation, meeting the thickness requirements as per this doc.											
3. Witness by BHEL / BHEL nominated inspection agency											
4. Flange Face, Machined surfaces, Threaded surfaces shall be coated with rust preventive oil.											
5. The paints shall be procured from the tender spec's list of paint manufacturer viz. Asian paints India Ltd, Shalimar paints, Jotun, Akzonobel, Berger Paints, Good lass Nerolac Paints, Bombay Paints, Jenson & Nicholson											
 PREPARED BY :		 REVIEWED BY:		 APPROVED BY:		For Customer Use:					
M Manoj Pandi, Mgr/Piping Quality		K Saranya, Mgr/Piping Quality		S Jegan, Sr. Mgr/Piping Quality							

BTG & AUXILIARIES

	OWNER MTE(UP)PL MIRZAPUR PHASE I, ULTRA SUPER CRITICAL THERMAL POWER PROJECT - 2X800MW
	OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED
	BTG CONTRACTOR BHARAT HEAVY ELECTRICALS LTD. CUSTOMER NO: U8-1846/1847, UNIT – I & II
	SUB-CONTRACTOR / SUB-SUPPLIER NOT APPLICABLE

PLANT	HIGH PRESSURE BOILER PLANT, TIRUCHIRAPPALLI
DOCUMENT TITLE	LP Piping Painting scheme
OWNER DOC. NO.	5981-E-BTG-TGA-DM-O-V-0008
CONTRACTOR / SUPPLIER DOC. NO.	1846 QPC 12
PACKAGE DISCIPLINE	BTG
PREPARED BY	MANOJ PANDI
REVIEWED BY	K SARANYA
APPROVED BY	S JEGAN

Revision Control

Sr. No.	Revision No.	Date	Reasons for Change
1	0	13-02-2025	First issue
2	1	19-03-2025	Revised based on Customer Comments

		BHARAT HEAVY ELECTRICALS LIMITED		LP PIPING - PAINTING SCHEME								
		HPBP, TRICHY		PROJECT NAME : MTE(UP)PL Mirzapur Phase I, Ultra Super Critical Thermal Power Project - 2x800MW						QP No:	1846 QPC 12	
				PACKAGE : BTG						Rev No:	1	
				BHEL CUSTOMER Nos : 1846, 1847						Date:	19.03.2025	
Sl. No	PGMA / Description	Surface preparation / Profile	Primer coat		Intermediate coat		Finish coat		Shade	Total DFT Microns (Min.)	Remarks	
			Primer	No of coats & Min.DFT	Paint	No of coats & Min.DFT	Paint	No of coats & Min.DFT				
1	2	3	4	5	6	7	9	10	11	12	13	
1	(a) Internal Surface - CW & ACW Pipe (for pipe dia 1000mm and above)	Blast Cleaning SSPC SP-10 SA 2½	Epoxy based Zinc rich Primer	1 (50 Microns per coat)	-----	-----	Coal tar epoxy	3 (150 Microns per coat)	-----	500	Refer Note 1 & 2	
	(b) Hoilday test for Internal surface coating	Holiday testing by low voltage (75 Volts Min.) Wet sponge Holiday detector or by High voltage (Votage per micron of DFT is as recommended by Paint Manufacturer subjected to minimum of 5V/Micron). Holiday Equipment to be calibrated before testing.									Refer Note 3	
	(c) Internal Surface - ACW pipe (for pipe diameter greater than 800 NB): i) ACW Supply line from terminal point to SCS and PHE ii) ACW Return line from PHE to terminal point.	Blast Cleaning SSPC SP-10 SA 2½	Epoxy based Zinc rich Primer	1 (50 Microns per coat)	-----	-----	Coal tar epoxy	3 (150 Microns per coat)	-----	500	Refer Note 1 & 2	
2	External Surface of ACW - Buried Piping/ Encased in concrete (For pipe dia 1000mm and above)	Blast Cleaning SSPC SP-10 SA 2½	Epoxy based Zinc rich Primer	1 (50 Microns per coat)	-----	-----	Coal tar epoxy	2 (75 Microns per coat)	-----	200	Refer Note 1 & 2	
3	External Surface (Over Ground piping) of ACW- all diameters)	Blast Cleaning SSPC SP-10 SA 2½	Inorganic ethyl self curing zinc silicate primer to IS14946	1 (75 microns per coat)	High build epoxy MIO coating cured with polyamide hardener	1 (100 microns per coat)	One coat of High Build Gloss Aliphatic Acrylic Polyurethane	1 (50 microns per coat)	-----	225	Refer Note 1	
4	External Surface of ECW, Plant water (For all diameters)	Blast Cleaning SSPC SP-10 SA 2½	Inorganic ethyl self curing zinc silicate primer to IS14946	1 (75 microns per coat)	High build epoxy MIO coating cured with polyamide hardener	1 (100 microns per coat)	One coat of High Build Gloss Aliphatic Acrylic Polyurethane	1 (50 microns per coat)	-----	225	Refer Note 1	
5	Stainless steel / Galvanized piping	No painting										
Notes:												
1. Blast cleaning to near white metal to obtain roughness as per epoxy paint data sheet.												
2. Application of Epoxy based Zinc rich Primer, Coal Tar Epoxy shall be done as per manufacturer's data sheet /recommendation, meeting the thickness requirements as per this doc.												
3. Witness by BHEL / BHEL nominated inspection agency												
4. Flange Face, Machined surfaces, Threaded surfaces shall be coated with rust preventive oil.												
5. The paints shall be procured from the tender spec's list of paint manufacturer viz. Asian paints India Ltd, Shalimar paints, Jotun, Akzonobel, Berger Paints, Good lass Nerolac Paints, Bombay Paints, Jenson & Nicholson												
						For Customer Use:						
PREPARED BY :		REVIEWED BY:		APPROVED BY:								
M Manoj Pandi, Mgr/PQ		K Saranya, Mgr/PQ		S Jegan, Sr.Mgr/PQ								

BTG & AUXILIARIES

	OWNER ADANI POWER LIMITED (APL) - RAIGARH, PHASE-II, 2x800 MW ULTRA SUPER CRITICAL THERMAL POWER PROJECT
	OWNER'S ENGINEER TATA CONSULTING ENGINEERS LIMITED
	BTG CONTRACTOR BHARAT HEAVY ELECTRICALS LTD. CUSTOMER NO: U8-1842/1843, UNIT – I & II
	SUB-CONTRACTOR / SUB-SUPPLIER NOT APPLICABLE

PLANT	HIGH PRESSURE BOILER PLANT, TIRUCHIRAPPALLI
DOCUMENT TITLE	LP PIPING - PAINTING SCHEME
OWNER DOC. NO.	P59K-E-BTG-TGA-DM-O-V-0008
CONTRACTOR / SUPPLIER DOC. NO.	1842 QPC 12
PACKAGE DISCIPLINE	STG
PREPARED BY	M MANOJ PANDI
REVIEWED BY	K SARANYA
APPROVED BY	S JEGAN

Revision Control History

Sr. No.	Revision No.	Date	Reasons for Change
1	00	24-06-2024	First issue

 BHARAT HEAVY ELECTRICALS LIMITED HPBP, TRICHY		LP PIPING - PAINTING SCHEME									
		PROJECT NAME : ADANI POWER LIMITED (APL) - RAIGARH, PHASE-II, 2x800MW							QP No:	1842 QPC 12	
		PACKAGE : STG							Rev No:	0	
		BHEL CUSTOMER Nos : 1842, 1843							Date:	24.06.2024	
Sl. No	PGMA / Description	Surface preparation/ Profile	Primer coat		Intermediate coat		Finish coat		Shade	Total DFT Microns (Min.)	Remarks
			Primer	No of coats & Min.DFT	Paint	No of coats & Min.DFT	Paint	No of coats & Min.DFT			
1	2	3	4	5	6	7	9	10	11	12	13
1	(a) Internal Surface - CW & ACW Pipe (for pipe dia 1000mm and above)	Blast Cleaning SSPC SP-10 SA 2½	Epoxy based Zinc rich Primer	1 (50 Microns per coat)	-----	-----	Coal tar epoxy	3 (150 Microns per coat)	-----	500	Refer Note 1 & 2
	(b) Holiday test for Internal surface coating	Holiday testing by low voltage (75 Volts Min.) Wet sponge Holiday detector or by High voltage (Votage per micron of DFT is as recommended by Paint Manufacturer subjected to minimum of 5V/ Micron). Holiday Equipment to be calibrated before testing.									Refer Note 3
	(c) Internal Surface - ACW pipe (for pipe diameter greater than 800 NB): i) ACW Supply line from terminal point to SCS and PHE ii) ACW Return line from PHE to terminal point.	Blast Cleaning SSPC SP-10 SA 2½	Epoxy based Zinc rich Primer	1 (50 Microns per coat)	-----	-----	Coal tar epoxy	3 (150 Microns per coat)	-----	500	Refer Note 1 & 2
2	External Surface of ACW - Buried Piping/ Encased in concrete (For pipe dia 1000mm and above)	Blast Cleaning SSPC SP-10 SA 2½	Epoxy based Zinc rich Primer	1 (50 Microns per coat)	-----	-----	Coal tar epoxy	2 (75 Microns per coat)	-----	200	Refer Note 1 & 2
3	External Surface (Over Ground piping) of ACW- all diameters)	Blast Cleaning SSPC SP-10 SA 2½	Inorganic ethyl self curing zinc silicate primer to IS14946	1 (75 microns per coat)	High build epoxy MIO coating cured with polyamide hardener	1 (100 microns per coat)	One coat of High Build Gloss Aliphatic Acrylic Polyurethane	1 (50 microns per coat)	-----	225	Refer Note 1
4	External Surface of ECW, Plant water (For all diameters)	Blast Cleaning SSPC SP-10 SA 2½	Inorganic ethyl self curing zinc silicate primer to IS14946	1 (75 microns per coat)	High build epoxy MIO coating cured with polyamide hardener	1 (100 microns per coat)	One coat of High Build Gloss Aliphatic Acrylic Polyurethane	1 (50 microns per coat)	-----	225	Refer Note 1
5	Stainless steel / Galvanized piping	No painting									
Notes:											
1. Blast cleaning to near white metal to obtain roughness as per epoxy paint data sheet.											
2. Application of Epoxy based Zinc rich Primer, Coal Tar Epoxy shall be done as per manufacturer's data sheet / recommendation, meeting the thickness requirements as per this doc.											
3. Witness by BHEL / BHEL nominated inspection agency											
4. Flange Face, Machined surfaces, Threaded surfaces shall be coated with rust preventive oil.											
 PREPARED BY :		 REVIEWED BY:		 APPROVED BY:		For Customer Use:					
M Manoj Pandi, Dy.Mgr/ PCQ		K Saranya, Mgr/ PCQ		S Jegan, Sr.Mgr/ PCQ							

Reference : CC-ENGG-9587-001-102-PVM-B-001B

Date : 27/07/2024

From : RAMESH CHANDRA SHIAL
ENGINEER

To : BHARAT HEAVY ELECTRICALS LTD
NEW DELHI
110049
IN

Cc : sudipt@bhel.in
dipakbag@bhel.in

Subject : EPC Package

Please find enclosed following drawings/ documents for necessary action at your end.

Vendor Drg. No. : HPBP-00-9587-315
Orgn. Drg. No. : 9587-001-102-PVM-B-001B
Revision No. : 01
Drg. Title : PAINTING SCHEME FOR LP PIPING
App. Category : CAT-I
Release Date : 27/07/2024



Scan to verify

Comments : No comments

Ramesh

 BHARAT HEAVY ELECTRICALS LIMITED PIPING QUALITY ASSURANCE & CONTROL DEPT, TRICHY			PAINTING SCHEME FOR LP PIPING (ACW / ECW / Plant water, Air Piping, etc...,) PROJECT : NTPC LARA SUPER THERMAL POWER PLANT - STAGE II (2X800MW) BHEL CUSTOMER Nos : 1834, 1835								QPNo: 1834:QPC:12 REV.NO: 01 Dt : 19.07.2024		
SI. NO	PGMA / Description	Surface Preparation & Surface Profile	Primer coat		Intermediate coat			Finish coat			Total DFT Microns (Min.)	REMARKS	
			Primer	No of coats	Paint	No of coats	Shade	Paint	No of coats	Shade			
1	2	3	4	5	6	7	8	9	10	11	12	13	
1	(a) Internal Surface - ACW Pipe (for pipe - dia - 1000 mm and above)	Blast Cleaning SSPC SP-10 SA 2½ (Refer Note 1)	Epoxy based Zinc rich Primer (Refer Note 2)	1 (50 Microns Min. per coat)	----	----	----	Coal tar epoxy (Refer Note 2)	2 (75 Microns Min. per coat)	----	200 Microns (Refer Note 3)	(Refer Note 3)	
	(b) Holiday test (Refer Note 3)	Holiday testing by low voltage (75 Volts Min.) wet sponge Holiday detector or by High voltage (Voltage per micron of DFT is as recommended by Paint Manufacturer subjected to minimum of 5V / Micron). Holiday test Equipment to be calibrated before testing.											
2	External Surface of ACW --Buried Piping / Encased in concrete (Temporary Protection for transportation from works to site). **Further protection to be done by BHEL Erection Group as per Contract requirement.	SSPC-SP3 / Power Tool Cleaning	Red Oxide Zinc Phosphate (Alkyd base to IS 12744)	1 (30 Microns per coat)	----	----	----	----	----	----	30 Microns		
3	External Surface a) Over ground piping of ACW.(For all diameters) b) External Surface of ECW, Plant water (For all diameters)	SSPC-SP3 / Power Tool Cleaning	Red Oxide - Zinc Phosphate (Alkyd base to IS: 12744)	2 (25 Microns per coat)	----	----	----	Synthetic enamel Long oil Alkyd to IS: 2932	3 ** (35 microns per coat)	Smoke Grey (Shade No. 692 of IS: 5)	120 at shop + 35 at site	** (2 coat at shop + 1 coat at site)	
4	Galvanised and Stainless steel Piping	No painting											
Notes: 1. Blast cleaning to near white metal to obtain roughness as per epoxy paint data sheet. 2. Application of Epoxy based Zinc rich Primer, Coal Tar Epoxy shall be done as per manufacturer's data sheet / recommendation, meeting the thickness requirements as per this document. 3. Testing requirements like DFT, holiday test shall be as per BHEL approved QP with Witness by BHEL / BHEL nominated inspection agency. 4. Colour shade shall be as per NTPC colour coding scheme.													
 PREPARED BY : K. SARANYA MGR/QA		 APPROVED BY: S JEGAN SR.MGR/Q		For NTPC use MDL No : 9587-001-102-PVM-B-001B								Page 1/1	