



NOTICE INVITING TENDER

Ref.: OS/25-26/8111/O₂ Chamber/13

Date: 20.09.2025

Sub: Fabrication of Hyperbaric Oxygen Chamber (SO.NO.8111) inside the BHEL HPVP premises, 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 successful completion of similar works i.e., **Fabrication of Oxygen Chambers/ Pressure Vessels / Storage Tanks for Process Industries (or) Power Plants** during last 7 years ending 31st August 2025 for a minimum of one project. Bidders shall enclose Work Order, Work Completion Certificate and all other relevant documents from the customer in support of successful and satisfactory completion of the work.
- 1.2) Average Annual Financial Turnover of the bidder for the last 3 financial years should be a minimum of ₹ **6.00 Lakhs**. Bidders shall submit 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, Udyog Aadhar Memorandum (if registered with MSME) etc.
- 1.4) The works executed in own name of the individual / firm of the tenderer will only be considered for eligibility criteria.

2. LOCATION OF WORK SPOT:

- 2.1) The fabrication work is to be carried out inside the premises of BHEL-HPVP, Visakhapatnam.

3. VENDOR'S SCOPE OF WORK: Detailed scope of the fabrication work will be as follows:

- 3.1) Details of the Oxygen Chambers to be fabricated is as follows:

- a) PV-010 :1 No. @ 7.5 MT approx.
- b) PV-020: 1 No. @ 7.5 MT approx.

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

- 3.1.1 Complete Fabrication of Hyper baric oxygen chamber as per the Drawings, QAP, WPS, NDT & Specifications etc. are in the scope of vendor and it includes the following activities but not limited to the same.
- 3.1.2 Fabrication involves operations like marking, cutting, Machining, Drilling, slotting, assembly, fit-up, welding & Dressing as per drawing.
- 3.1.3 All machinery, welding electrodes and other consumables are in the scope of vendor.
Machining of SS plates
- 3.1.4 Hydro test
- 3.1.5 Collection of all free issue items (Raw materials & BOCs) from HPVP Shops / Stores and transportation to work spot and Unloading at work spot.
- 3.1.6 Loading of finished equipment onto the trailer by providing necessary manpower, tools & tackles and welding of all temporary supports required for transportation of vessels.

- 3.1.7 Surface Cleaning, Blasting and Painting as per approved Painting Schedule / Standards & Specifications of BHEL.
- 3.1.8 Letter painting of Dispatch particulars in a prescribed / specified format.
- 3.1.9 Hydra crane of sufficient capacity required for handling fabrication work shall be arranged by Vendor.
- 3.1.10 **All applicable NDT activities like DPT, MPT, RT, UT, Hardness Test etc., as per approved QAP/ITP shall be carried out by BHEL-HPVP. However, attending repairs if any, is in the scope of the vendor.**

3.2) Work Instruction/ Procedures to be followed during fabrication:

- 3.2.1 Welding is to be carried out by qualified welders only as per PQR. Welder's Qualification Tests shall be as per ASME Sec VIII. Vendor shall arrange for Qualification of Welders at their own cost. However, Test Coupons shall be provided by BHEL as free issue.
- 3.2.2 Experienced Site-in-charge and Qualified Engineers & Supervisors shall be deployed for proper co-ordination of the job. Vendor to submit Organization chart along with proposed qualified Engineers with their Bio-data.
- 3.2.3 Vendors should deploy Experienced & Qualified QC personnel for carrying out the inspection activities in coordination with BHEL QC inspector / TPIA / customer. **Non-deployment will attract penalty @ rate decided by BHEL and same will be deducted in RA Bills.**
- 3.2.4 Vendor shall deploy Main Ovens & Portable Ovens required for baking of electrodes, sufficient no. of calibrated Welding machines & accessories suitable for SMAW, SAW, GTAW processes etc., at site. All relevant documents shall also be made available for verification & approval by BHEL - HPVP (QC) / TPIA/ customer.
- 3.2.5 Arrangement of required tools & tackles like Measuring instruments eg., Tape, Fillet & Butt Weld Gauges, Plumb bobs with magnets, Thermal Chalks / Pyrometer etc. and valid calibration certificates for the same must be presented when required. All required lifting tools and Tackles like Slings, Felt slings, D-shackles, Turn buckles etc. are to be arranged by Vendor.
- 3.2.6 Arrangement of Site office, Stores and deployment of Security & Qualified Safety officer at site.
- 3.2.7 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.
- 3.2.8 Vendor shall take proper precaution for storage of all free issue materials & consumables 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.
- 3.2.9 Vendor shall maintain work timing & discipline and shall work in night shift/holidays as per requirement of work without any cost implication.
- 3.2.10 Vendor shall arrange additional manpower, equipment, machinery, if any required for completion of work in time without any additional cost implication.
- 3.2.11 Gate passes for the entry of Manpower, Materials, Cranes, Trailers etc., are to be taken care by the contractor.
- 3.2.12 Any modification work due to revision of drawings during fabrication is to be carried out by the vendor without any extra cost.
- 3.2.13 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.
- 3.2.14 No extra rates are applicable for the additional joints to be made in Plates / Pipes
- 3.2.15 Equipment details shall be hard stamped by encircling with paint and stencilled in a specific format with details of Project name, Customer No., Work Order No., PGMA No., Weight etc., for identification and dispatch as per the instructions of BHEL Engineer-in-charge. Fixing of Name plate, engraving as per the details given in the drawings and rub-off.
- 3.2.16 Submission of economic cutting plans for the plate materials and approval shall be obtained from BHEL-HPVP before taking up the same. 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.

- 3.2.17 Vendors shall have to return the excess / balance materials including off-cuts and total scrap available with the vendors 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 vendor, Recovery shall be made as per BHEL Rates / MSTC rates plus applicable taxes, prevailing at the time of processing of the final bills. Any claims for damage or theft of materials will not be allowed.
- 3.2.18 Power shall be provided free of charge at one point within the premises of BHEL-HPVP 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.**
- 3.2.19 Though not mentioned specifically, any other activity which is required for completion of the work is deemed to be included in the scope of work of vendor without any price implication.

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

- 4.2 Supply of Drawings and BOM, QAP, WPS, Standards and Specifications
- 4.3 Supply of Raw material in the form of Plates / Sheets / Pipes, Rounds etc in full / off-cuts
- 4.4 Supply of Paints and BOCs as per BOM
- 4.5 Dispatch of finished condition will be done by HPVP.

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 have to offer for Stage wise and Final inspection as per approved QAP/ITP and obtain necessary stage wise & final clearances before proceeding for further operations.
- 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 equipments.
- 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:**

The 1st (PV-010) and 2nd (PV-020) Oxygen Chambers shall be delivered within 30 days and 45 days respectively from the date of issue of the first consignment of free-issue materials, or within 2 weeks from the date of issue of the last consignment of materials, whichever occurs 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 have to complete site mobilization within one week from the date of receipt of order (or) from the date of intimation for the same by BHEL whichever is later.

8 PRICE:

- 8.1) 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 exclusive of GST.
- 8.2) The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of the work.
- 8.3) GST shall be reimbursable to the vendor as detailed in Clause - 11 and as per Annexure – GST.
- 8.4) Income tax will be deducted at applicable rates from RA & Final bills.

9 L1 EVALUATION:

- 9.1) L1 status will be evaluated for Total Quoted Value

10 PAYMENT TERMS:

- 10.1) Out of 100%, 90% payment will be in RA Bills and Balance 10% payment in Final Bill.

Payment shall be made against RA Bills for **90% of the order value** for the following stages of supply and fabrication of the equipment:

- a) After Mechanical Completion and Completion of Hydro testing, Blasting & Painting of PV-010- 45%
 - e) After Mechanical Completion and Completion of Hydro testing, Blasting & Painting of PV-020- 45%
- 10.2) Balance 10% payment shall be made after completion of the job in all respects including material reconciliation and handing over of the balance materials & returnable items, if any and submission of total documentation to BHEL (QC/QA).
 - 10.3) The weight indicated in the tender is tentative and may be subject to increase or decrease after completion of detailed engineering. However, payment shall be made for the finished weight executed as per approved engineering drawings and documents with due certification by BHEL-HPVP site in-charge and QC.
This clause shall be read in conjunction with the clause 18.0 of Annexure – III i.e., General Terms & Conditions.

11 GOODS & SERVICES TAX (GST):

- 11.1) Bidders shall make a note of the following points of GST before submission of their offer:
 - a) Vendors shall have to mention their GSTIN no. (15 Digits) in their Technical Bid. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.
 - b) Semi-finished goods are to be delivered by the Vendors in BHEL, HPVP premises within a maximum period of one year from the date of issue of the material, failing which the whole transaction will be considered as Supply & Sale and GST is required to be paid along with interest (calculated @ SBI Base Rate + 6%) along with penalty, if any, from the date of Challan on the whole value of materials. Hence vendors shall have to ensure that materials issued to them are returned within 365 days.
 - c) After fabrication, the vendors shall have to deliver the Semi - finished Goods by fulfilling the following formalities:
 - i) GST invoice should be raised by the vendors by paying GST on job work charges at applicable rates and by incorporating the HPVP GSTIN no. in the invoice for availing the reimbursement of GST from HPVP.
 - ii) The vendor shall also have to enter in their GST Return -1 (GSTR-1) the details of invoice raised for payment of GST so as to enable HPVP to avail input credit.

12 REVERSE AUCTION:

- 12.1) 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 and Guidelines for Reverse Auction are available on our website, www.bhel.com → supplier registration → Guidelines for Reverse Auction, before submission of their offer.
- 12.2) 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.
- 12.3) 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.
- 12.4) Bidders are advised to read the 'Business Rules' (Annexure – V) indicating details of RA event carefully, before reverse auction event.

13 Other Terms & Conditions, whichever applicable, shall be as per Annexure – III enclosed.

14 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.

15 VALIDITY OF OFFER:

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

16 GENERAL:

- 16.1) 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.
- 16.2) **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 Bid.
- 16.3) BHEL reserves the right to modify or cancel the tender enquiry at any stage without assigning any reasons thereof.
- 16.4) The General Terms & Conditions, if any, contradicting with the specific terms & conditions given in the tender, then specific terms & conditions shall only be considered.
- 17 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 Equipments 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) Drawings, Approved QAP/ITP, Painting Schedule etc.

PART - 2: PRICE BID

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

18 TENDER SUBMISSION (Through e-Procurement system):

- 18.1) 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 27.09.2025**.
Note: Techno-commercial bid along with all the tender documents shall be duly signed & stamped by the bidder on all pages.
- 18.2) **Tentative List of Man Power, Machinery, Tools & Tackles to be engaged by the vendor shall also be attached to the Techno-Commercial Bid (Part-1).**
- 18.3) 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.
- 18.4) **OFFERS SENT IN ANY OTHER FORM WILL BE TREATED AS INVALID AND WILL BE SUMMARILY REJECTED.**

19 TENDER OPENING:

- 19.1) Techno-commercial Bids will be opened on **27.09.2025 at 15:00 Hrs.** in online e-procurement portal.

19.2) 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.

For Bharat Heavy Electricals Limited,

**(SNVS Ramesh)
DGM (Outsourcing)**

SCHEDULE OF QUANTITIES & RATES

Tender Enquiry ref. OS/25-26/8111/O2 Chamber/13

Date: 20.09.2025

Sub: Fabrication of Hyperbaric Oxygen Chamber (SO.NO.8111) inside the BHEL HPVP premises, Visakhapatnam

Item No.	S.O. No.	Description of Work	Unit	Qty.	Unit Rate (₹)	Total Value (₹)
1		Fabrication of Hyperbaric Oxygen Chamber (SO.NO.8111) inside the BHEL HPVP premises, Visakhapatnam				
1.01	8111	Fabrication of Hyperbaric Oxygen Chambers PV-010 & PV-020	MT	15		

Notes:

- 1) The quantity and weight indicated above are approximate and may vary on both sides subject to revision or addition or deletion of drawings. However, payment shall be made for the actual weights as per the applicable drawings / BOM.
- 2) The price is inclusive of all applicable taxes & duties except GST. GST shall be reimbursed by BHEL on submission of proof of GST payment. Income tax will be deducted from Vendor's bills at applicable rates.
- 3) The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of work.

Signature of the Bidder with stamp

Details of Equipments to be fabricated

Ref: OS/25-26/8111/O2 Chamber/13

Date: 20.09.2025

Sub: Fabrication of Hyperbaric Oxygen Chamber (SO.NO.8111) inside the BHEL HPVP premises, Visakhapatnam.

Item No.	S.O.	PGMA	Drawing No.	Equipment / Item Description	Qty. (No.)	Approx.Wt. (MT)	Remarks
1	8111	PV-010	1-PV-010-U2008-R01	Hyperbaric Oxygen Chamber - 1	1	7.5	
2		PV-020	1-PV-010-U2008-R01	Hyperbaric Oxygen Chamber - 2	1	7.5	
				TOTAL		15	

Note : Dimensions & Weights indicated above are purely tentative and may be subject to change due to revision of the drawings. Hence, the approved drawings & documents issued to the vendor after ordering shall only be followed for execution & inspection of the job.

GENERAL TERMS & CONDITIONS

1. TECHNICAL DELIVERY CONDITIONS:

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

2. PARTY'S SCOPE:

The scope of the party shall be as follows: -

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

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

3. REVISION OF DRAWINGS:

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

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

5. X-RAY:

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

6. RECTIFICATIONS / REJECTIONS:

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

7. SECURITY DEPOSIT:

Vendors shall have to submit a Bank Guarantee for **10%** of the order value in case of **HPVP ADM / 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.

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 the first material** from BHEL - HPVP stores.

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

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

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

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

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

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:

If delivery exceeds the stipulated delivery schedule, penalty 1/2 % of the total value of order per week or part there of subject to a maximum of 10% on the total value of the order will be levied. However, time taken for the following will not be considered as delay on the part of the Sub-Contractor.

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

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. 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.

28. 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.

29. 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.

30. 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.

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 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. **Ref: OS/25-26/8111/O₂ Chamber/13, dated 20.09.2025**. BHEL shall finalise the Rates for **Fabrication of Hyperbaric Oxygen Chamber (SO.NO.8111) inside the BHEL HPVP premises, 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/25-26/8111/O₂ Chamber/13, dated 20.09.2025** (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.

Ref: OS/25-26/8111/O₂ Chamber/13

Date: 20.09.2025

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/25-26/8111/O₂ Chamber/13, dated 20.09.2025**. 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/Warranty certificate, work completion certificate, any other document mentioned in PO, shall be sent along with the vehicle/consignment where ever applicable. For all consignments received within the calendar month, input credit will be availed within that month in line with monthly returns filing cycle. In case of any discrepancy in the document or non-submission of documents mentioned in the PO, then BHEL will not be able to accept or account the material, in such case availing of tax credit will be deferred to next month or so.
6. In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the suppliers, within the calendar month notified by BHEL.
7. For any such delay in availing of tax credit for reasons attributable to supplier (as mentioned above), interest (calculated @ SBI Base Rate + 6%) along with penalty if any will be deducted for the delayed period i.e. from the month of receipt till the month tax credit is availed, from the running bills.
8. Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers/contractors. Hence applicable GST shall also be recoverable from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice number.
9. This is to inform that GST portion of invoice, shall be released only upon Vendor declaring such invoice in his GSTR-1 and receipt of goods and Tax invoice by BHEL and Confirmation of payment of GST thereon by vendor on GSTN portal. Alternatively, BG of appropriate value may be obtained from vendor which shall be valid At least one month after the confirmation of date of payment of GST by vendor on GSTN portal and receipt of Tax invoice and receipt of goods, whichever is later. Above is subject to receipt of goods/service and tax invoice thereof along with vendor declaring invoice in his return and paying GST within timeline prescribed for availing ITC by BHEL.
10. That in case vendor delays Declaring such invoice in his return and GST credit availed by BHEL is denied or reversed subsequently as per GST law, GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from vendor/contractor along with interest levied/ leviable on BHEL.

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

Signature of the Bidder with Stamp

80029-010-Ad-I
10N 01M1V2D

NOTES:-

1. The inside and outside of the chamber are painted on the remaining surfaces except for the airtight, threaded, and otherwise instructed surface in the following procedure to prevent corrosion after all welding is completed and the hydraulic inspection is carried out.

Color : White (KCC RAL 9010)

Inner coating

Shotblast: SA 2.5

First coating (Prime) : 60-80µm Zinc Epoxy Primer

Second coating (Finish) : 60-80µm Outdoor polyester-based hardener type

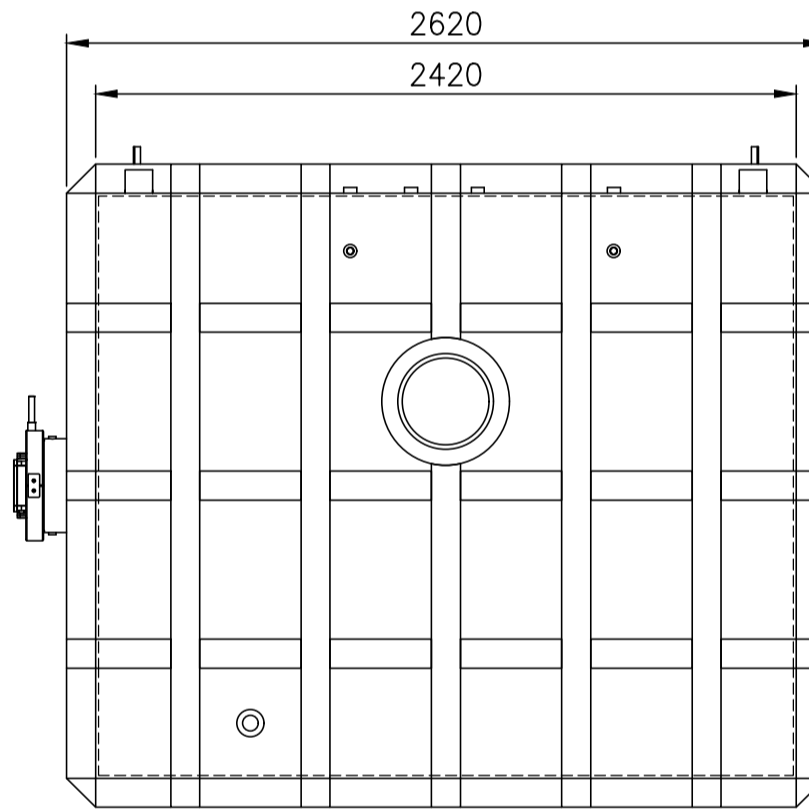
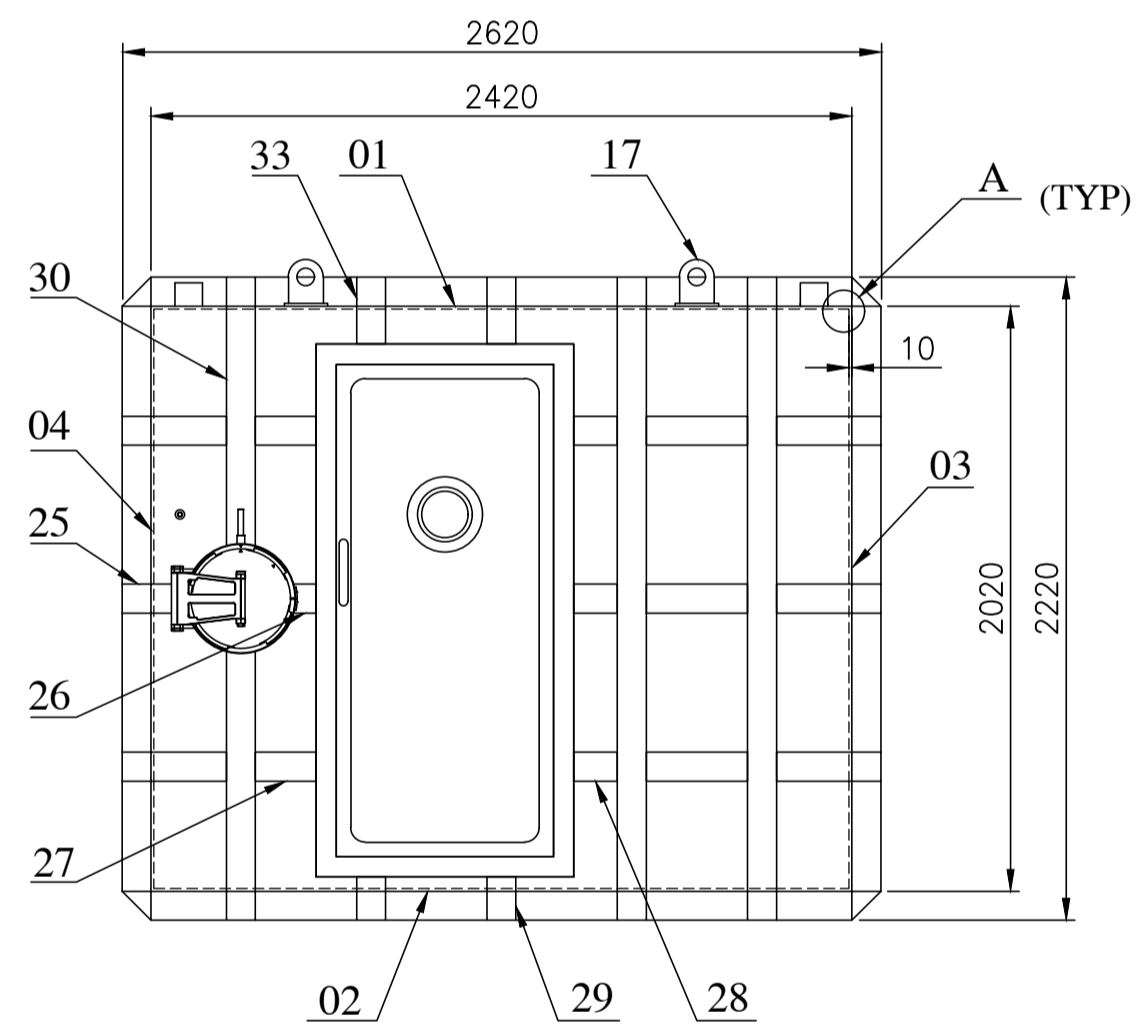
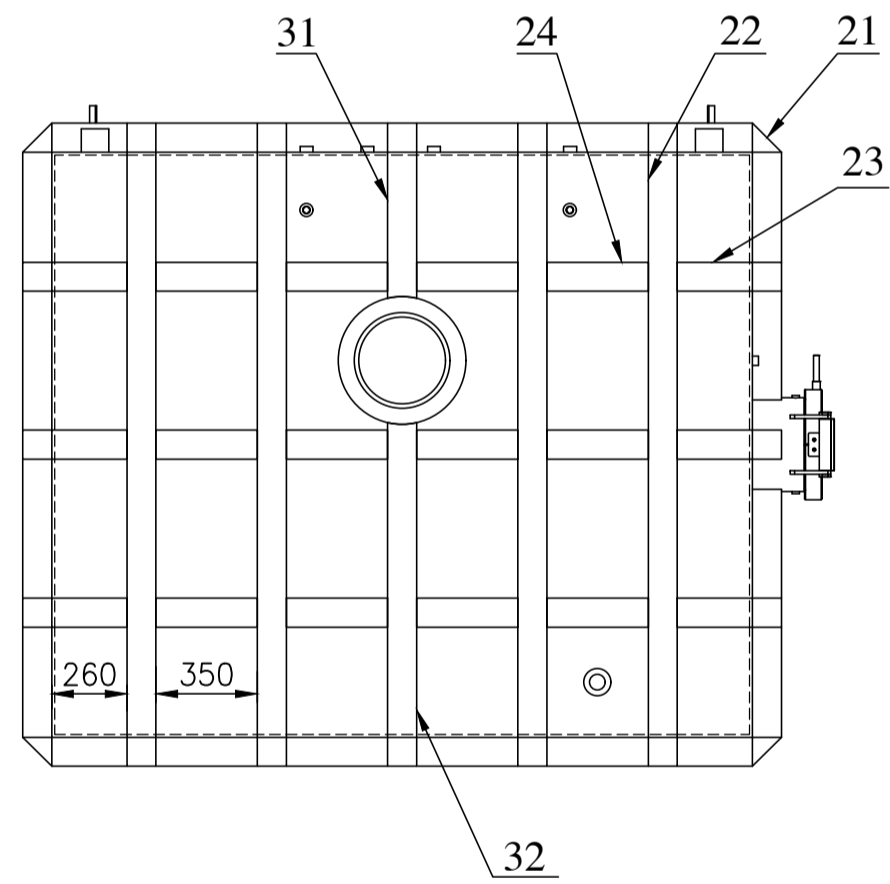
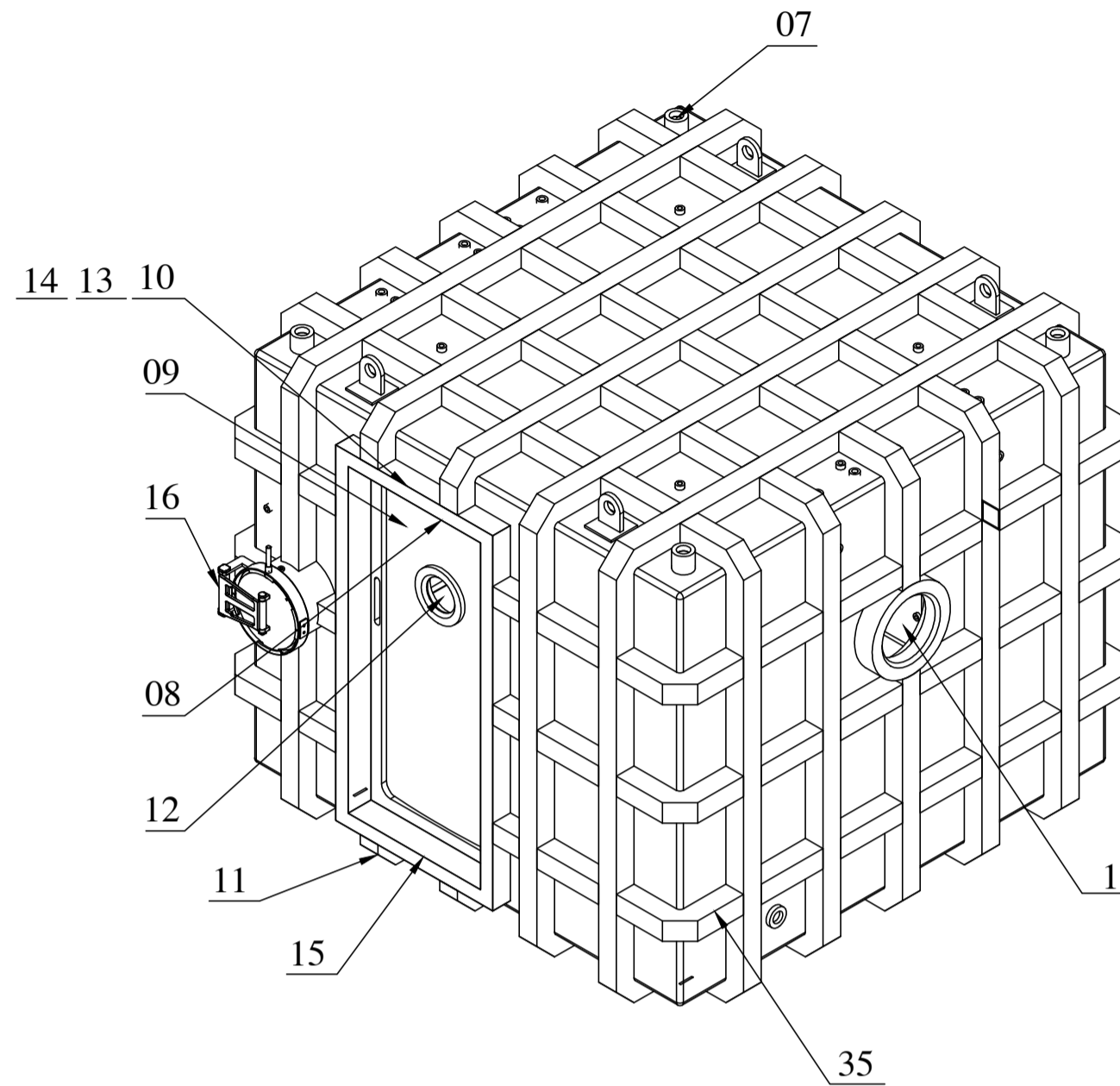
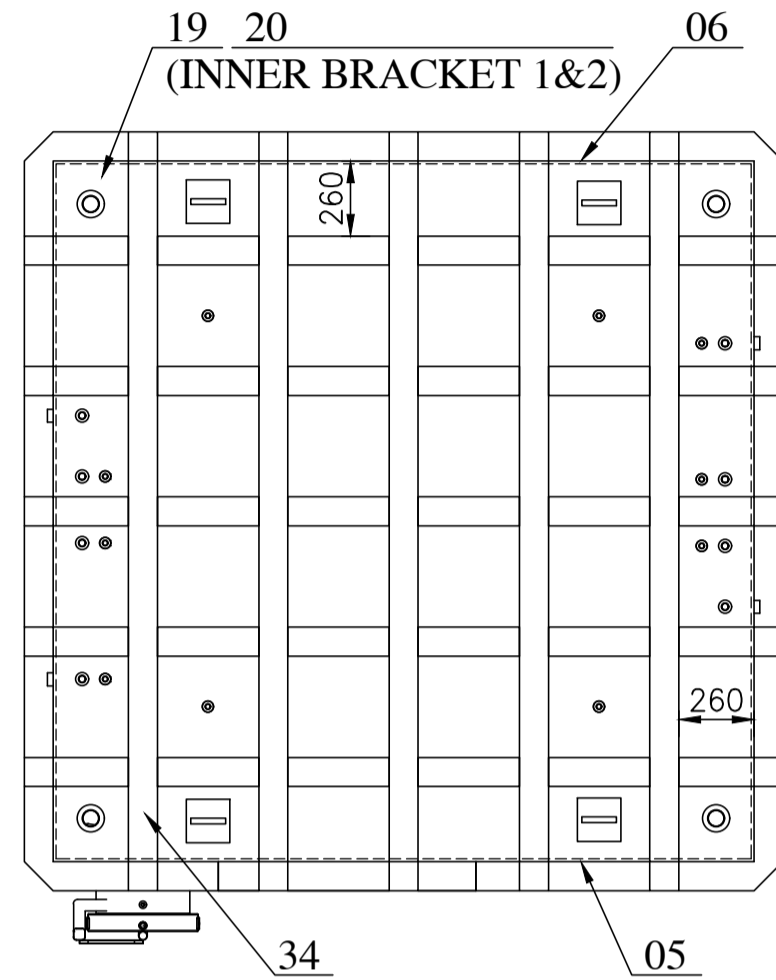
Exterior Coating

Shotblast: SA 2.5

First Coating(Prime) : 60-80µm Zinc Epoxy Primer

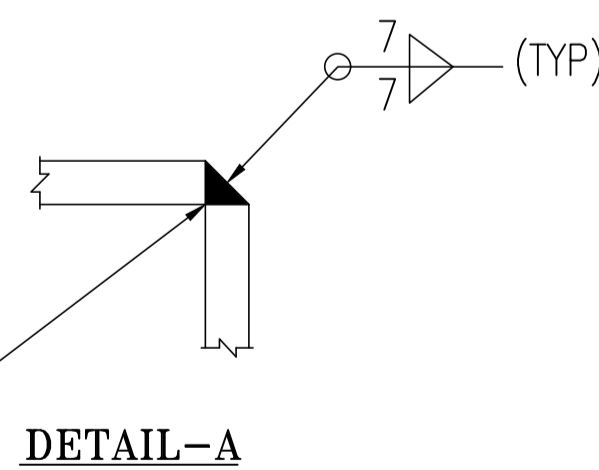
Second coating (Finish) : 60-80µm Outdoor polyester-based hardener type

Third coating (Finish) : 60-80µm Outdoor polyester-based hardener type



Review Items	Design Value
Codes and Standards	ASME Section VIII Div.1 ASME PVHO-1
Vessel Type	Rectangular
Size	Vessel : 2620W*2620L*2220H 10T
	Door : 890W*50L*1840H 12T
Capacity	11.52m ³
Contents	Compressed Air
Operating Pressure	0.20 MPa
Design Pressure	0.23 MPa
Hydrostatic Test Pressure	0.30 MPa
Joint Efficiency	0.85
Material	
Shell	SA516-70
Door	SA516-70
Stiffener	A36

1 Pass Root TIG-Back Bead
Back weld
GAP = 3 or More



ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT	VAR NO	MATERIAL SPECN	DI	QUANTITY	7.500
36	RAIL INSTALLATION DIAGRAM											1
35	STIFFENER (100X100X360)				FM7600100673		8.280					32
34	STIFFENER (100X100X2620)				FM7600100673		60.260					10
33	STIFFENER (100X100X131)				FM7600100673		3.013					2
32	STIFFENER (100X100X1084.73)				FM7600100673		24.955					2
31	STIFFENER (100X100X504.73)				FM7600100673		11.615					2
30	STIFFENER (100X100X855.91)				FM7600100673		19.688					2
29	STIFFENER (100X100X49)				FM7600100673		1.127					2
28	STIFFENER (100X100X150)				FM7600100673		3.450					3
27	STIFFENER (100X100X210)				FM7600100673		4.830					2
26	STIFFENER (100X100X105.91)				FM7600100673		2.438					1
25	STIFFENER (100X100X155.91)				FM7600100673		3.588					1
24	STIFFENER (100X100X360)				FM7600100673		8.280					79
23	STIFFENER (100X100X260)				FM7600100673		5.980					12
22	STIFFENER (100X100X2020)				FM7600100673		46.460					15
21	STIFFENER (10X100X141.42)				152110980000		1.110					56
20	INNER BRACKET-2	1-PV-010-U2022 (015-CUBE4)			150111820000		23.840					1
19	INNER BRACKET-1	1-PV-010-U2021 (014-CUBE4)			IS1079 D		19.180					1
18	VIEW PORT FRAME	1-PV-010-U2015 (008-CUBE4)			156016950000		2.410					2
17	LIFTING LUG	1-PV-010-U2009 (002-CUBE4)			IS 2062 GR.B		18.400					4
16	MEDICAL LOCK	1-PV-010-U2019 (012-CUBE4)					70.948					1
15	LOWER RAIL CURTAIN PL.	1-PV-010-U2018 (011-CUBE4)					14.130					1
14	UPPER RAIL BRACKET (LOWER)	1-PV-010-U2017 (010-CUBE4)					1.62					3
13	UPPER RAIL BRACKET (UPPER)	1-PV-010-U2016 (009-CUBE4)					1.45					3
12	VIEW GLASS						XX.XXX					X
11	LOWER RAIL	1-PV-010-U2014 (007-CUBE4)					9.70					1
10	UPPER RAIL	1-PV-010-U2013 (006-CUBE4)					21.87					1
09	DOOR 890X1840X50THK.	1-PV-010-U2012 (005-CUBE4)			VZ7600100681		454.22					1
08	DOOR FRAME 890X1840X130THK.	1-PV-010-U2011 (004-CUBE4)			SA 516 Gr.70		202.53					1
07	COUPLING	1-PV-010-U2010 (003-CUBE4)			VZ7600100681		42.390					1
06	REAR PLATE 2400X2000X10THK.				156018430000		376.80					1
05	FRONT PLATE 2400X2000X10THK.				SA 516 Gr.70		376.80					1
04	LHS PLATE 2400X2000X10THK.				156018430000		376.80					1
03	RHS PLATE 2400X2000X10THK.				SA 516 Gr.70		376.80					1
02	BOTTOM PLATE 2400X2400X10THK.				156018430000		452.16					1
01	TOP PLATE 2400X2400X10THK.				SA 516 Gr.70		452.16					1

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111	
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN	DATE
L K MANTRI		SSNM	27.06.2025
Y PRASAD KUMAR		APPD	30.06.2025
REF TO ASSY / OLD DWG	001_CUBE4	WEIGHT (kg)	5766.287
TITLE		OUTSIDE DRAWING	
DRAWING NO :		1-PV-010-U2008 01	

REV NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.
01	--	REVISED AS MARKED WITH REVISION CLOUD	GDM	LKM	YPK
			06.09.25	06.09.25	06.09.25

FORM NO. 0425/2

800ZU-010-Ad-I
ION ONI/MW/D

NOTES:-

1. The inside and outside of the chamber are painted on the remaining surfaces except for the airtight, threaded, and otherwise instructed surface in the following procedure to prevent corrosion after all welding is completed and the hydraulic inspection is carried out.

Color : White (KCC RAL 9010)

Inner coating

Shotblast: SA 2.5

First coating (Prime) : 60-80µm Zinc Epoxy Primer

Second coating (Finish) : 60-80µm Outdoor polyester-based hardener type

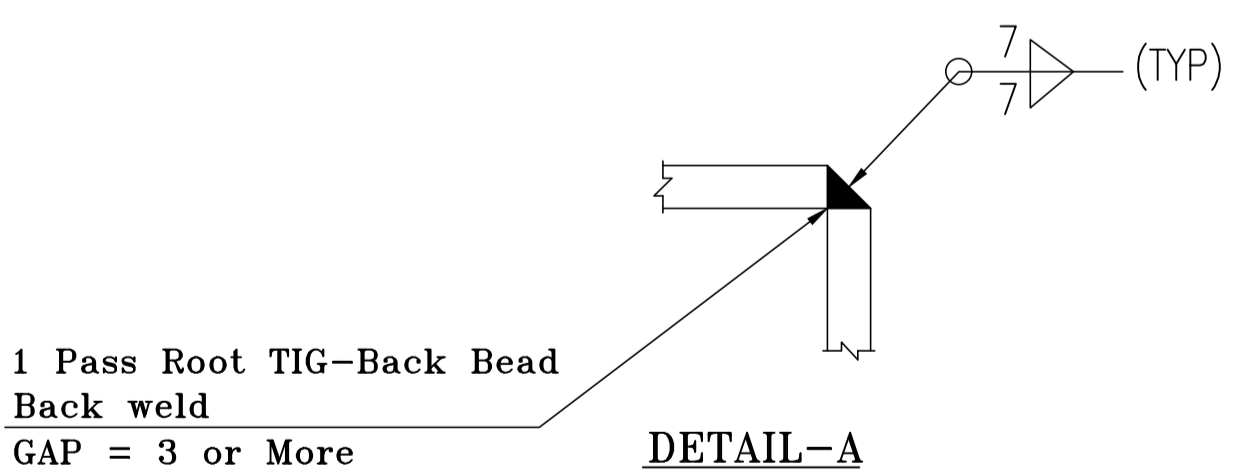
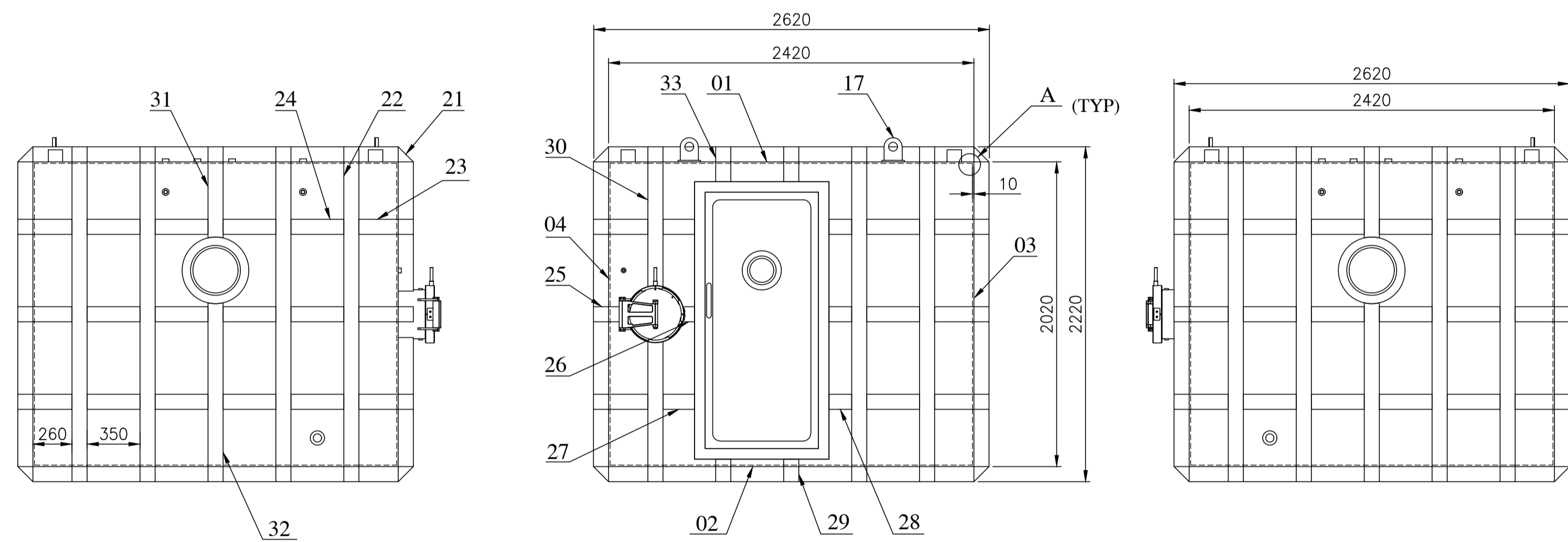
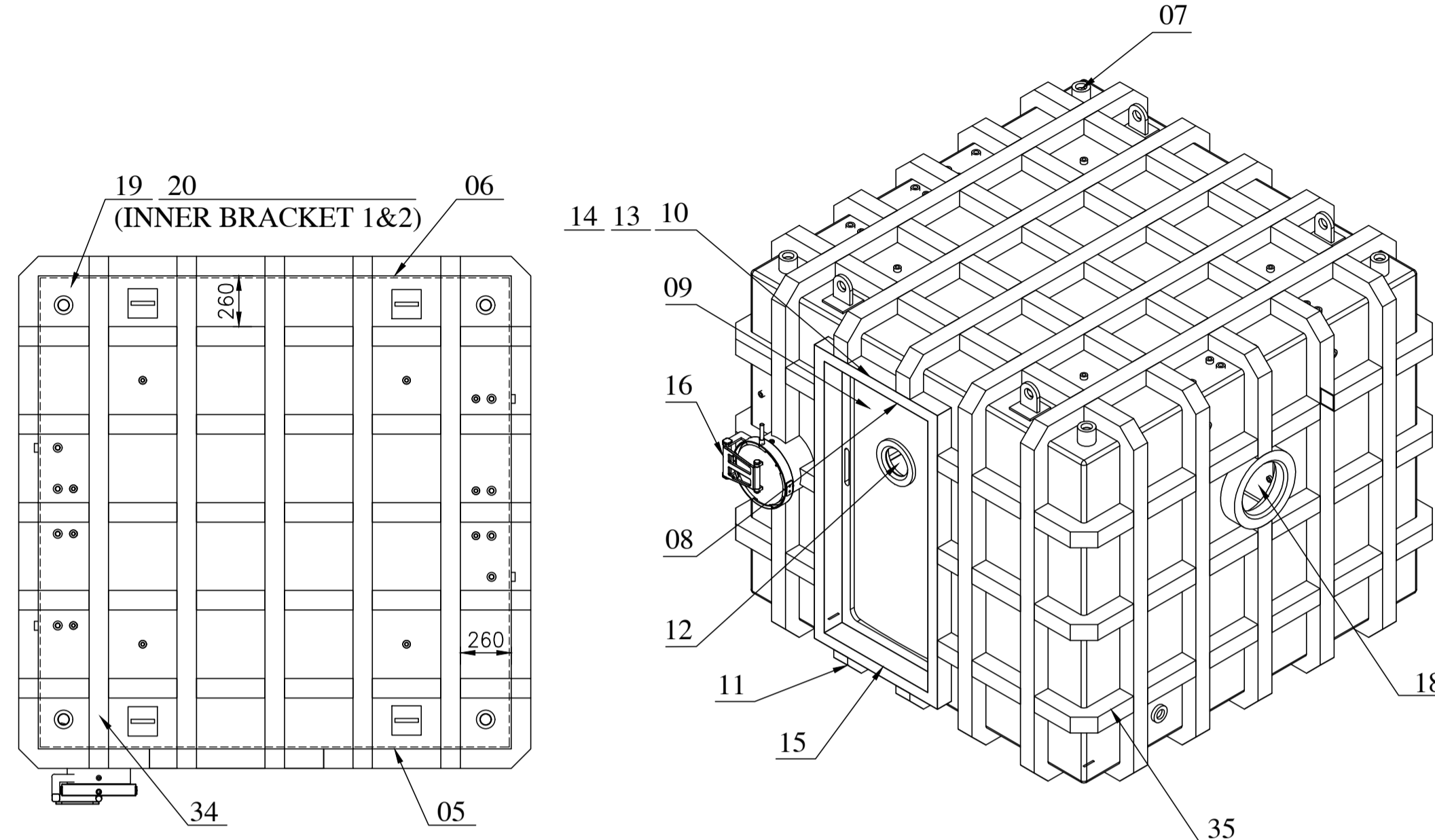
Exterior Coating

Shotblast: SA 2.5

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Review Items	Design Value
Codes and Standards	ASME Section VIII Div.1 ASME PVHO-1
Vessel Type	Rectangular
Size	Vessel : 2620W*2620L*2220H 10T Door : 890W*50L*1840H 12T
Capacity	11.52m ³
Contents	Compressed Air
Operating Pressure	0.20 MPa
Design Pressure	0.23 MPa
Hydrostatic Test Pressure	0.30 MPa
Joint Efficiency	0.85
Material	
Shell	SA516-70
Door	SA516-70
Stiffener	A36

ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT WEIGHT	QTY
VAR NO	MATERIAL SPECN	WELD	DI	QTY	QTY	QTY	QTY
35	STIFFENER (100X100X360)		FM7600100673			8.280	
			IS2062/SA36			32	
34	STIFFENER (100X100X2620)		FM7600100673			60.260	
			IS2062/SA36			10	
33	STIFFENER (100X100X131)		FM7600100673			3.013	
			IS2062/SA36			2	
32	STIFFENER (100X100X1084.73)		FM7600100673			24.955	
			IS2062/SA36			2	
31	STIFFENER (100X100X504.73)		FM7600100673			11.615	
			IS2062/SA36			2	
30	STIFFENER (100X100X855.91)		FM7600100673			19.688	
			IS2062/SA36			2	
29	STIFFENER (100X100X49)		FM7600100673			1.127	
			IS2062/SA36			2	
28	STIFFENER (100X100X150)		FM7600100673			3.450	
			IS2062/SA36			3	
27	STIFFENER (100X100X210)		FM7600100673			4.830	
			IS2062/SA36			2	
26	STIFFENER (100X100X105.91)		FM7600100673			2.438	
			IS2062/SA36			1	
25	STIFFENER (100X100X155.91)		FM7600100673			3.588	
			IS2062/SA36			1	
24	STIFFENER (100X100X360)		FM7600100673			8.280	
			IS2062/SA36			79	
23	STIFFENER (100X100X260)		FM7600100673			5.980	
			IS2062/SA36			12	
22	STIFFENER (100X100X2020)		FM7600100673			46.460	
			IS2062/SA36			15	
21	STIFFENER (10X100X141.42)		152110980000			1.110	
			IS2062/SA36			56	
20	INNER BRACKET-2	1-PV-010-U2022 (015-CUBE4)	150111820000			23.840	
			IS1079 D			1	
19	INNER BRACKET-1	1-PV-010-U2021 (014-CUBE4)	WELDMNT			19.180	
						1	
18	VIEW PORT FRAME	1-PV-010-U2015 (008-CUBE4)	156016950000			2.410	
			IS 2062 GR.B			2	
17	LIFTING LUG	1-PV-010-U2009 (002-CUBE4)	WELDMNT			18.400	
						4	
16	MEDICAL LOCK	1-PV-010-U2019 (012-CUBE4)	WELDMNT			70.948	
						1	
15	LOWER RAIL CURTAIN PL.	1-PV-010-U2018 (011-CUBE4)	WELDMNT			14.130	
						1	
14	UPPER RAIL BRACKET (LOWER)	1-PV-010-U2017 (010-CUBE4)	WELDMNT			1.62	
						3	
13	UPPER RAIL BRACKET (UPPER)	1-PV-010-U2016 (009-CUBE4)	WELDMNT			1.45	
						3	
12	VIEW GLASS					XX.XXX	
						X	
11	LOWER RAIL	1-PV-010-U2014 (007-CUBE4)	WELDMNT			9.70	
						1	
10	UPPER RAIL	1-PV-010-U2013 (006-CUBE4)	WELDMNT			21.87	
						1	
09	DOOR 890X1840X50THK.	1-PV-010-U2012 (005-CUBE4)	VZ7600100681			454.22	
			SA 516 Gr.70			1	
08	DOOR FRAME 890X1840X130THK.	1-PV-010-U2011 (004-CUBE4)	VZ7600100681			202.53	
			SA 516 Gr.70			1	
07	COUPLING	1-PV-010-U2010 (003-CUBE4)	WELDMNT			42.390	
						1	
06	REAR PLATE 2400X2000X10THK.		156018430000			376.80	
			SA 516 Gr.70			1	
05	FRONT PLATE 2400X2000X10THK.		156018430000			376.80	
			SA 516 Gr.70			1	
04	LHS PLATE 2400X2000X10THK.		156018430000			376.80	
			SA 516 Gr.70			1	
03	RHS PLATE 2400X2000X10THK.		156018430000			376.80	
			SA 516 Gr.70			1	
02	BOTTOM PLATE 2400X2400X10THK.		156018430000			452.16	
			SA 516 Gr.70			1	
01	TOP PLATE 2400X2400X10THK.		156018430000			452.16	
			SA 516 Gr.70			1	

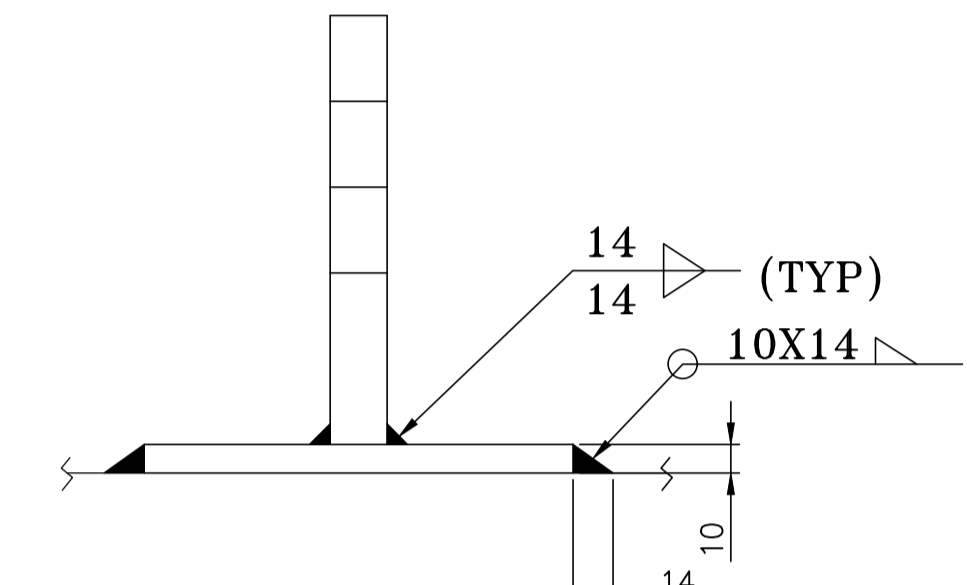
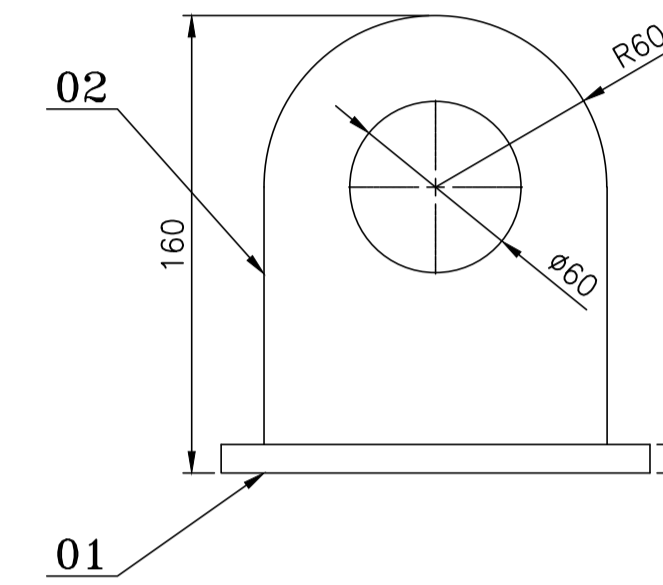
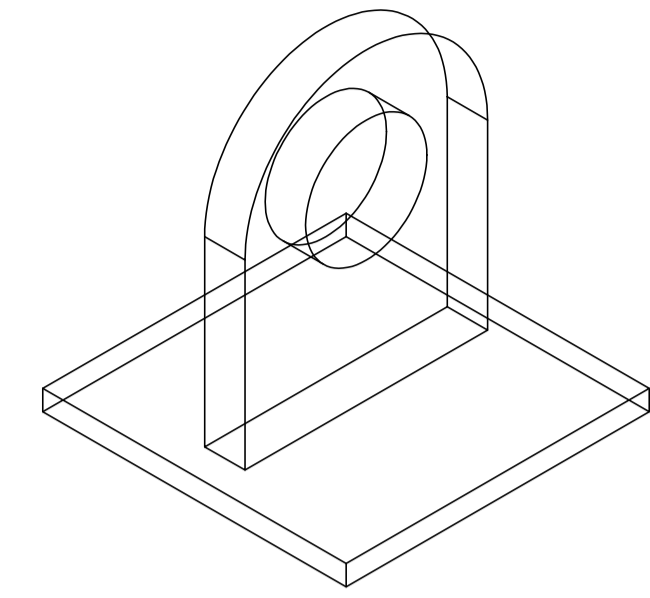
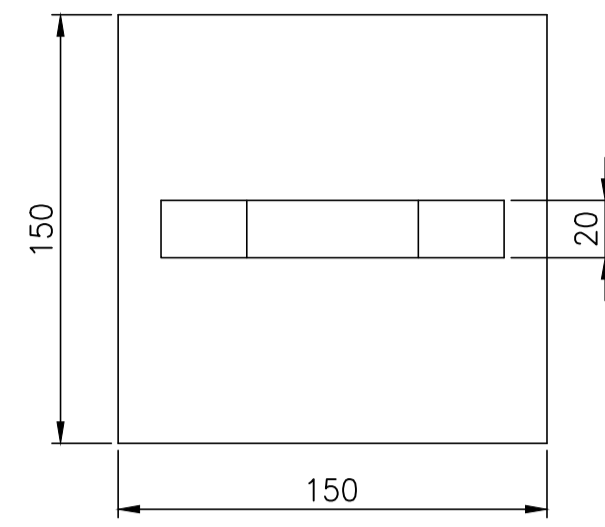
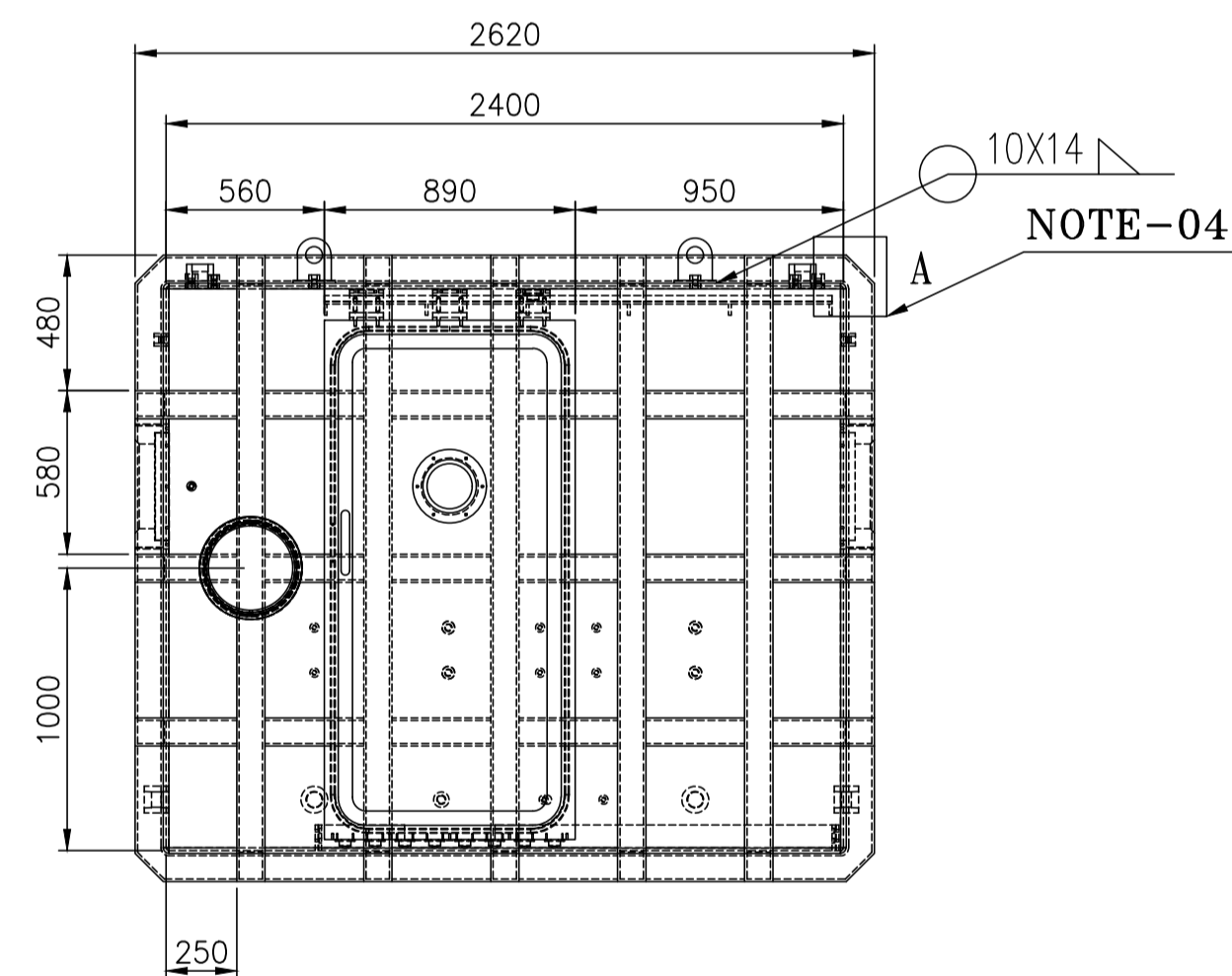
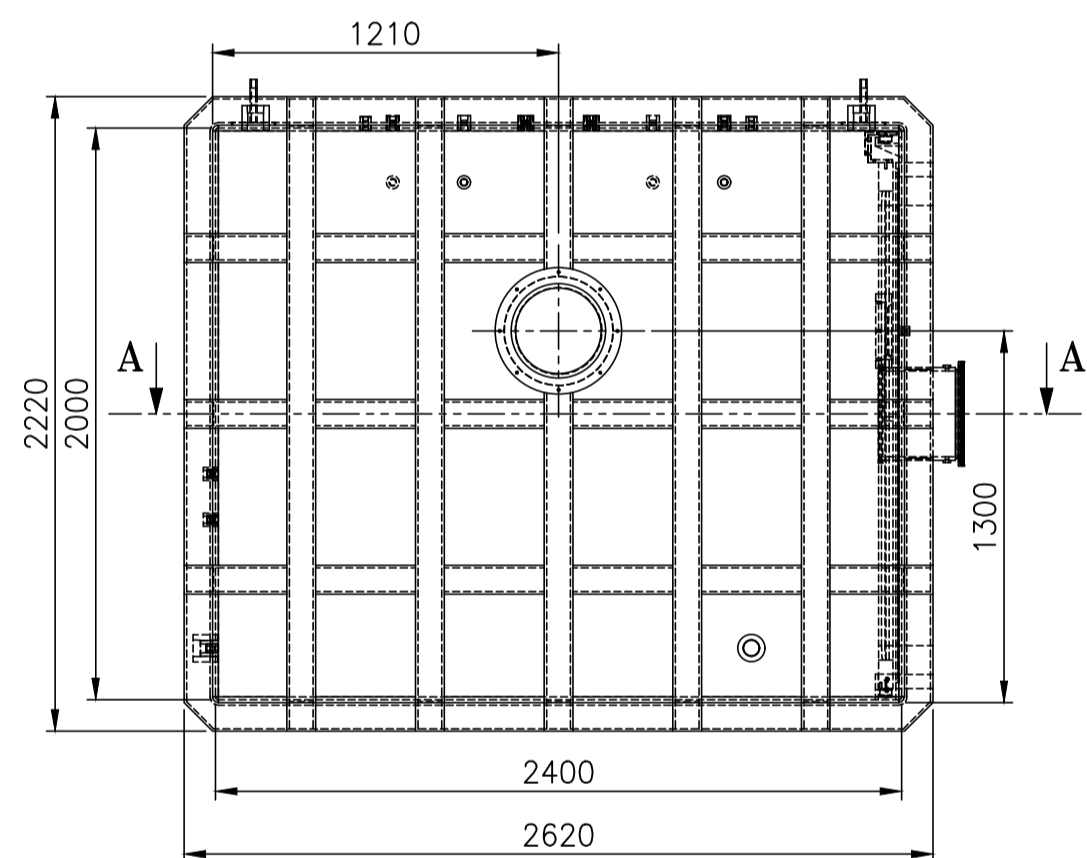
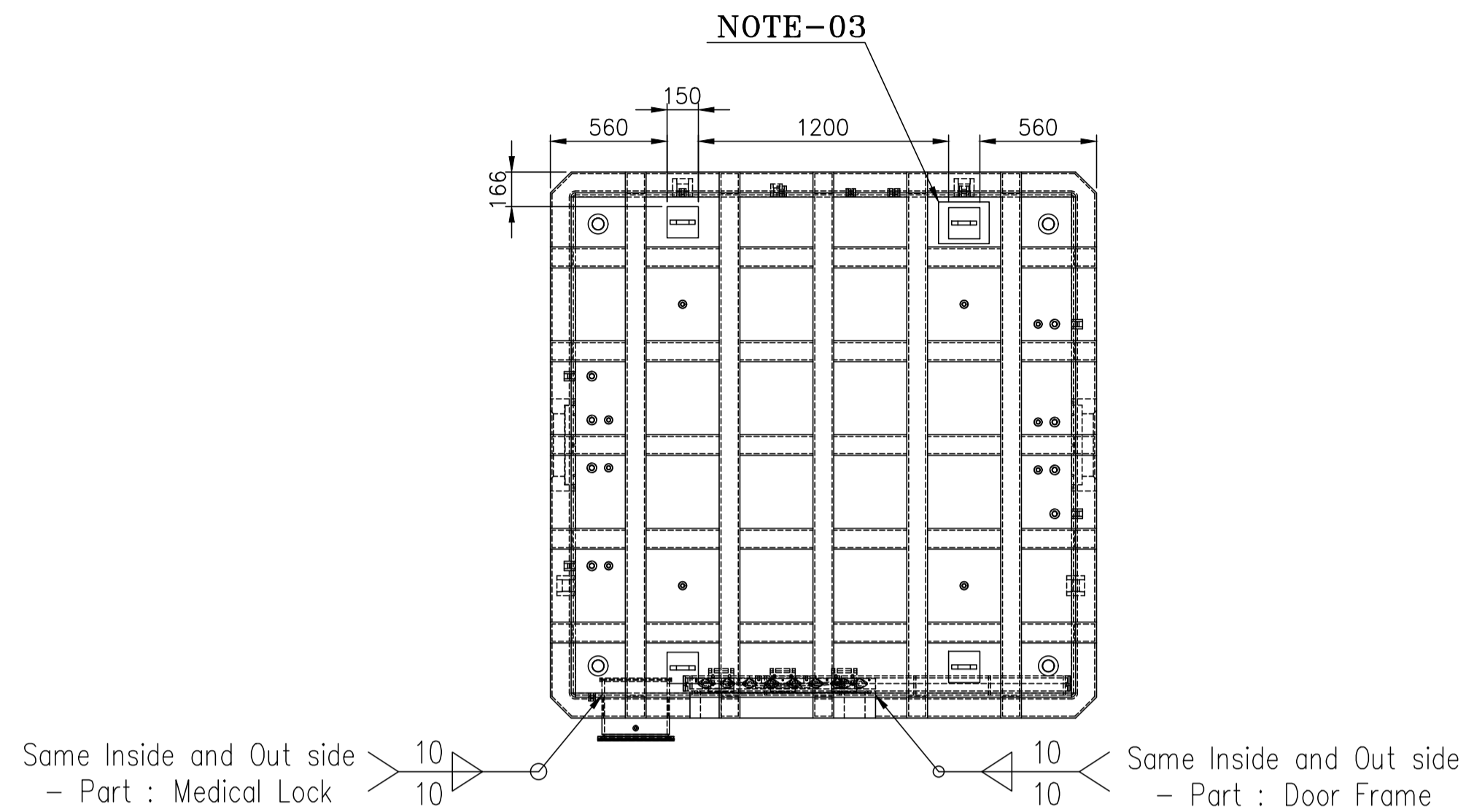
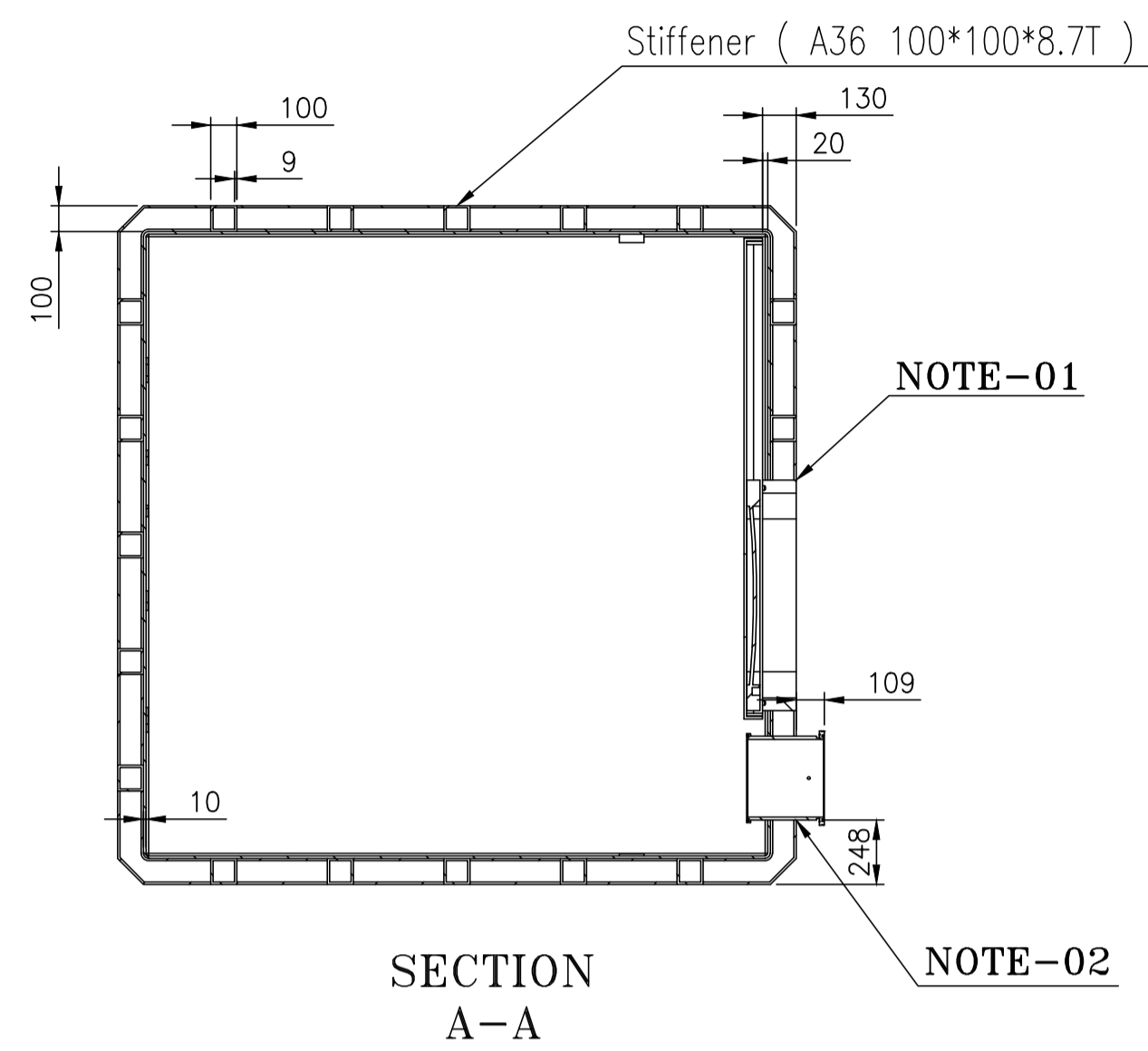
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way without the consent of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111	
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DATE	27.06.2025
DRN	SSNM	DATE	30.06.2025
DR	L K MANTRI	DATE	02.07.2025
APPD	Y PRASANNA KUMAR		
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE
CODE	N.T.S	WEIGHT (kg)	5766.287
TITLE	OUTSIDE DRAWING	REF TO ASSY / OLD DWG	001_CUBE4
		DRAWING NO :	1-PV-010-U2008
		REV	00

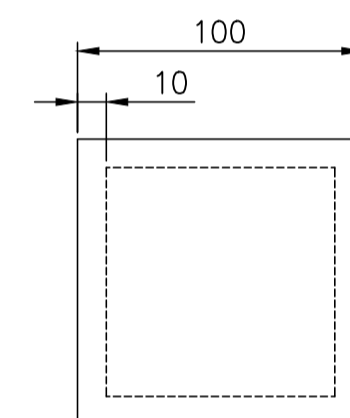
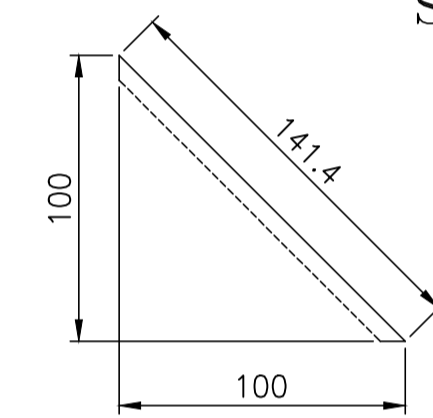
REV NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

FORM NO. 0425/2 A1 SIZE

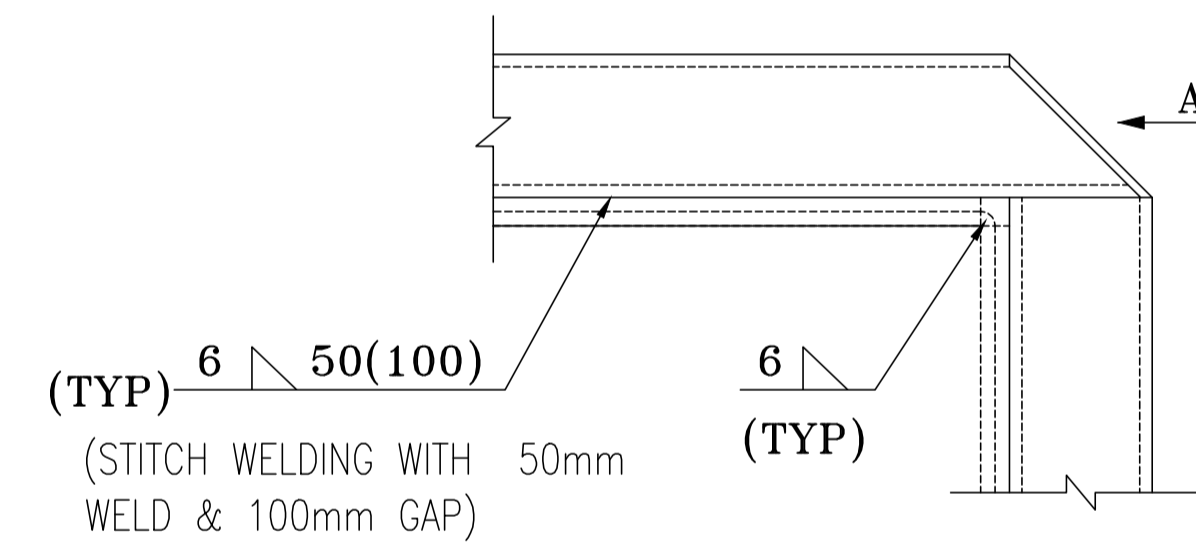
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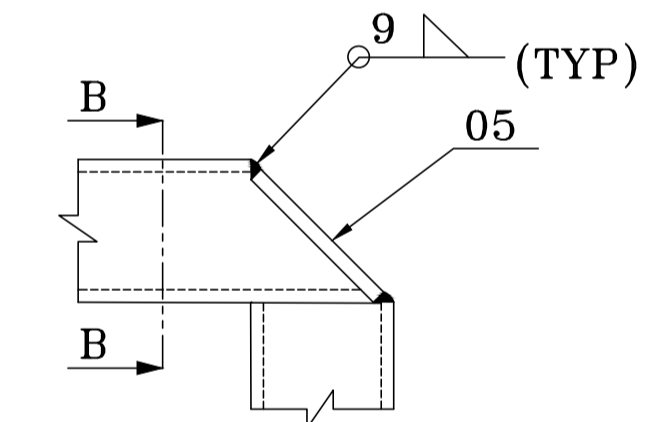
LIFTING LUG
SCALE 1:10



SECTION
B-B



STIFFENER COVER
DETAIL A
SCALE 1:5



VIEW-A

NOTES:-

1. Door Frame - Pressure Vessel Welding (Welding around the entire inside and outside of the pressure vessel)
2. Medical Lock pressure vessel- Pressure Vessel welding (Pressure vessel entire inside and outside of the pressure vessel)
3. Lifting Lug (4EA, Up, down, left, and right symmetrical mounting)
4. The reinforcement is used for the straight section of the pressure vessel, and the corner sections are cut or manufactured with covers and then welded.
5. The reinforcement should be carried out in the same way as the drawing view (top, bottom, vertical direction, and installation by cutting the middle node), and the reinforcement should not be arbitrarily separated and installed in a place other than a separate section on the drawing.
6. If there is a need for modification such as structure installation for the convenience of manufacturing, please communicate the contents to confirm.

ITEM NUMBER	DESCRIPTION	STD.	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT
02	LIFTING LUG PLATE 150X120X20THK.			156011430000	IS 2062		2.830
01	LIFT LUG BASE PLATE 150X150X10THK.			156018430000	SA 516 Gr.70		1.770

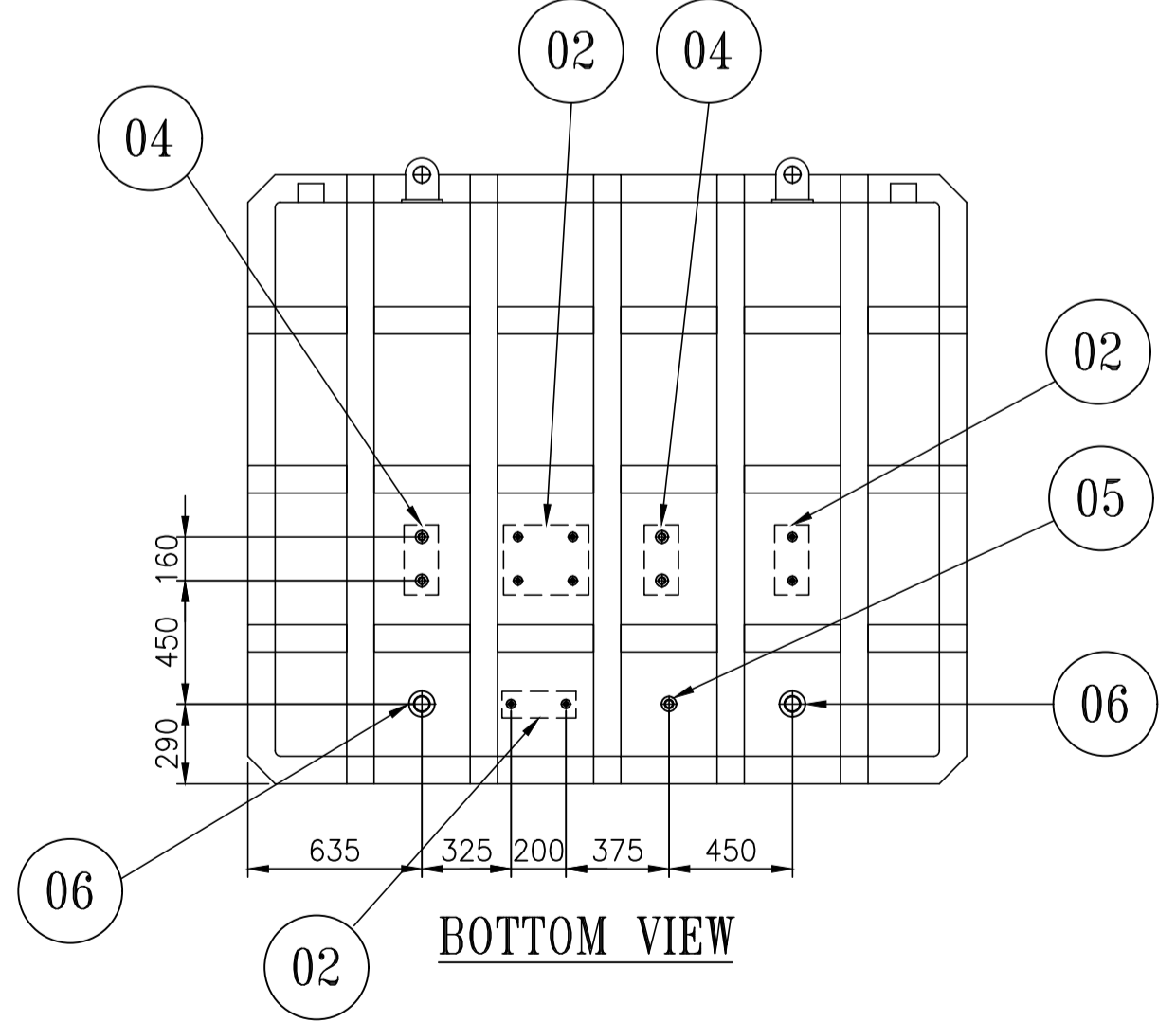
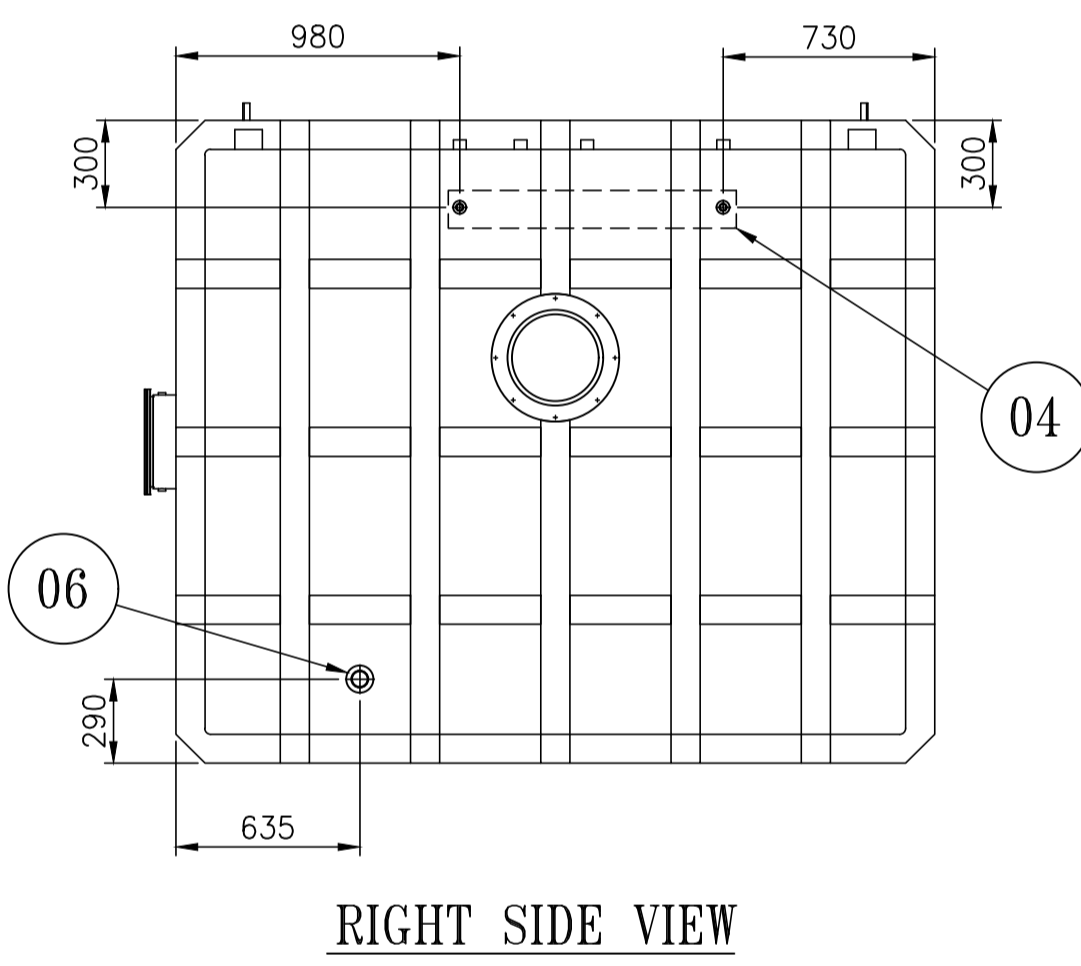
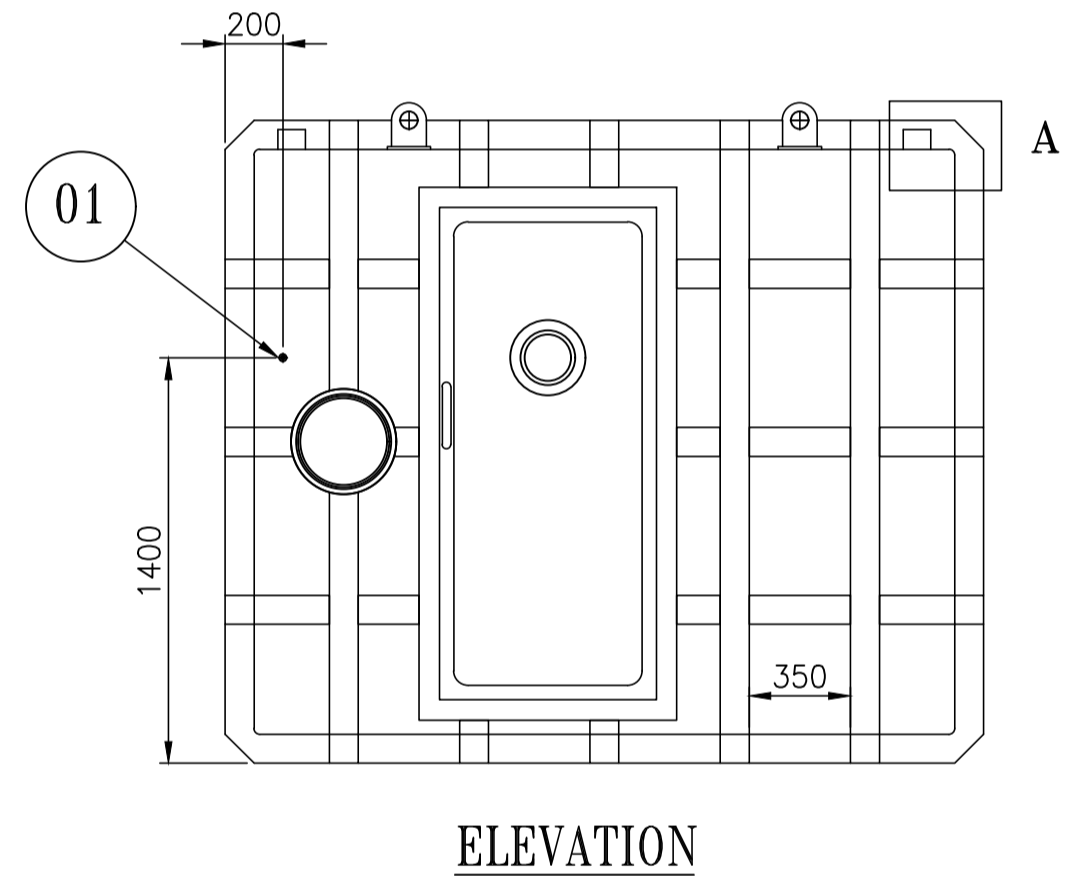
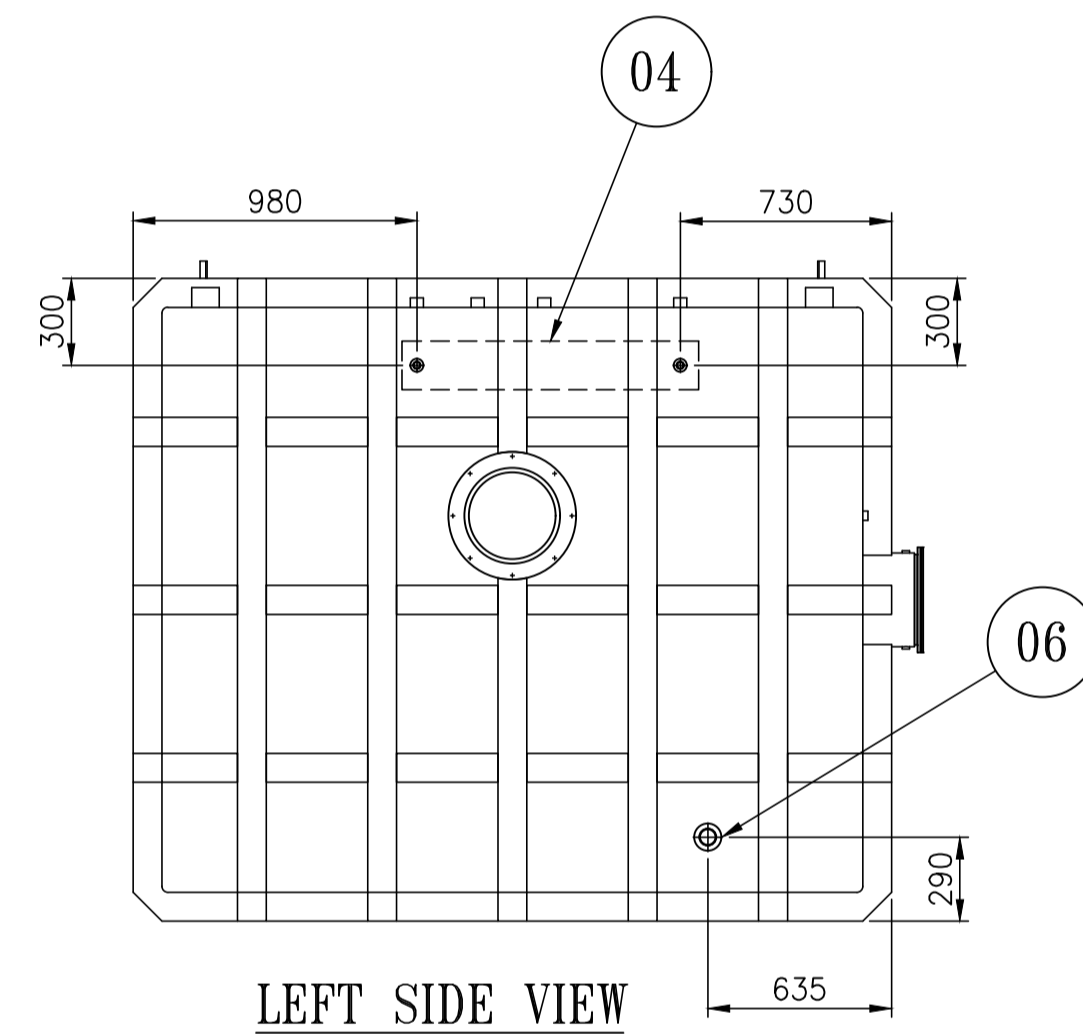
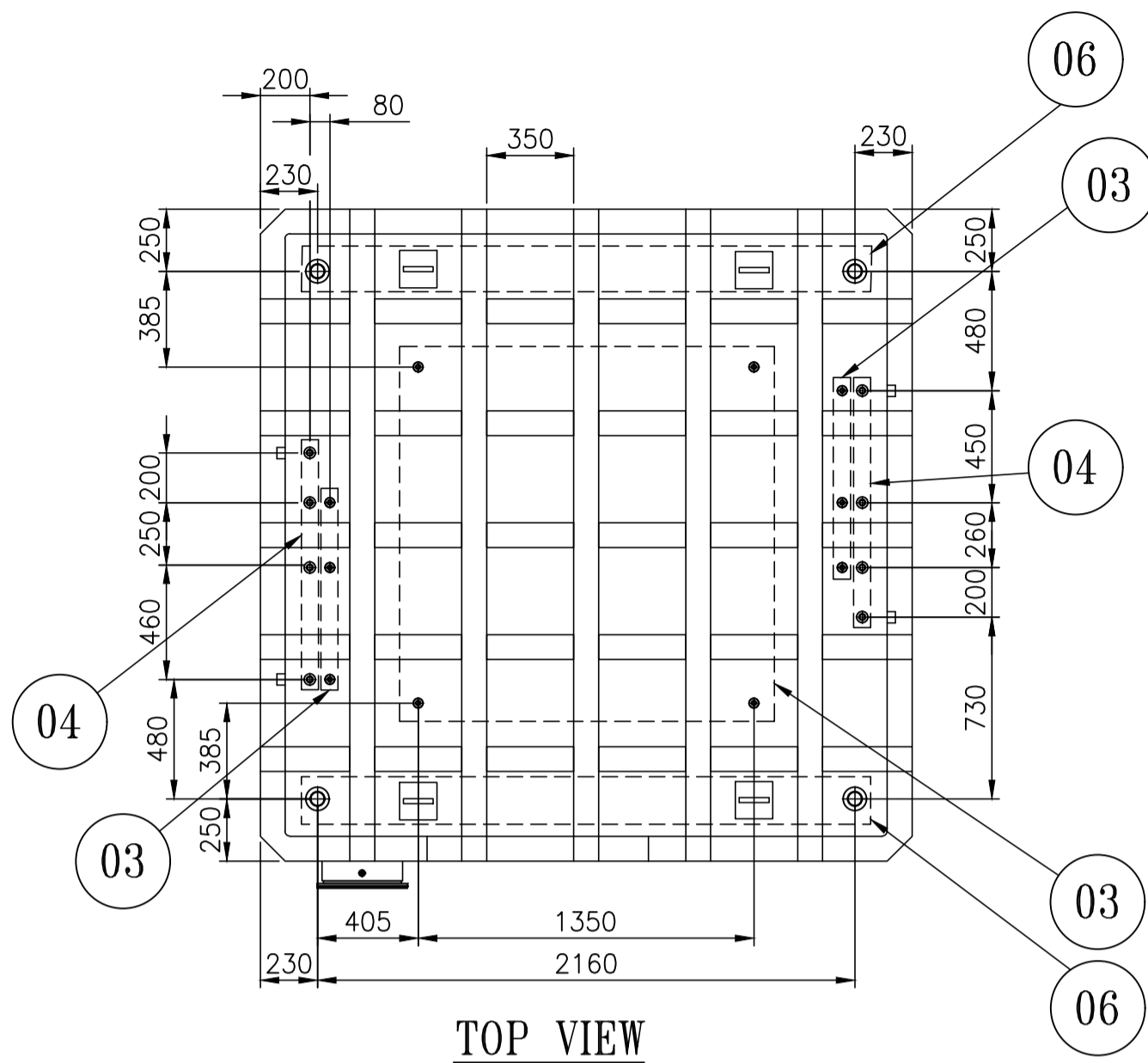
CAUTION: The information on this drawing is for reference only. It must not be used directly or indirectly in any way detrimental to the interest of the company.		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111	
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DATE	27.06.2025		
DESIGNER: L K MANTRI		DATE	30.06.2025		
APPROVER: Y. PRASANNA KUMAR		DATE	02.07.2025		
DEPT CODE	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (kg)	REF TO ASSY / OLD DWG
			N.T.S	4.600	002-CUBE4
TITLE				DRAWING NO :	REV
LIFTING LUG				1-PV-010-U2009	00

REV NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

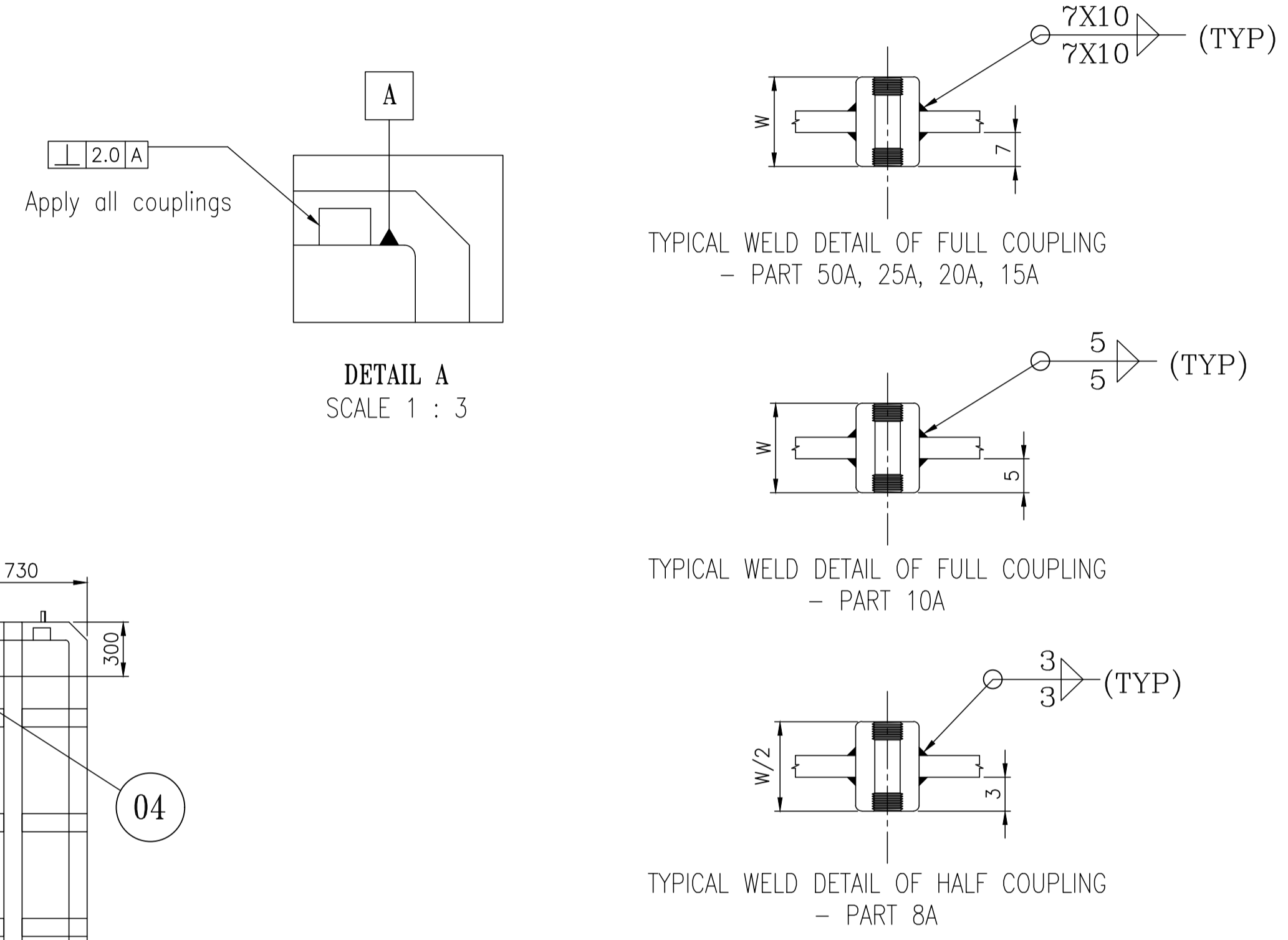
FORM NO. 0425/2

A1 SIZE

0102U-010-Ud-I
DRAWING NO.



No.	Item	Material	Size	Q.ty	FILLET (X)	Remark
50	50A Full Coupling 6000lb	SUS304	∅ 95*86L	8	12	
25	25A Full Coupling 6000lb	SUS304	∅ 55*61L	1	8	
20	20A Full Coupling 6000lb	SUS304	∅ 45*51L	16	7	
15	15A Full Coupling 6000lb	SUS304	∅ 38*48L	10	6	
10	10A Full Coupling 6000lb	SUS304	∅ 32*38L	8	5	
8	8A Full Coupling 6000lb	SUS304	∅ 25.4*35L	1	4	



ITEM NUMBER	DESCRIPTION	STD.	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT
06	50A FULL COUPLING, #6000				FM7245100420 SS 304		1.000 8
05	25A FULL COUPLING, #6000				FM7245100446 SS 304		1.000 1
04	20A FULL COUPLING, #6000				FM7245100454 SS 304		0.520 16
03	15A FULL COUPLING, #6000				FM7245100462 SS 304		0.400 10
02	10A FULL COUPLING, #6000				FM245100470 SS 304		0.240 8
01	8A FULL COUPLING, #6000				FM7245100489 SS 304		0.130 1

NOTE:-
1. When all couplings are installed, the length protruding into the pressure vessel is minimized.

REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT: PROJECT : 02 JOY INNOVATION S.O. NO. : 8111

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

DRN: SSNM DATE: 27.06.2025
CHD: L K MANTRI DATE: 30.06.2025
APPD: Y PRASANNA KUMAR DATE: 02.07.2025

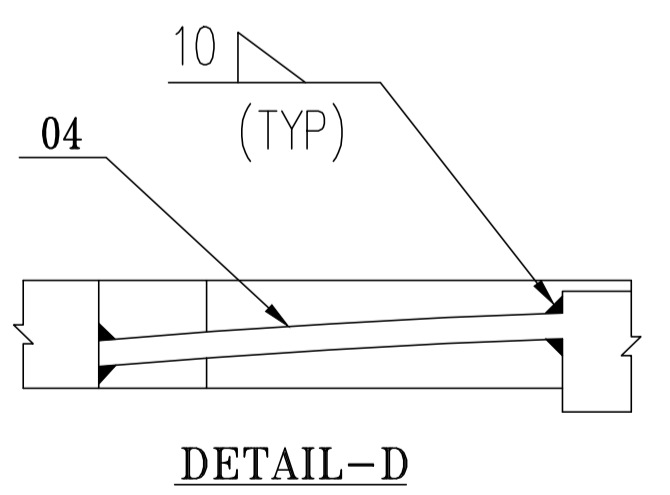
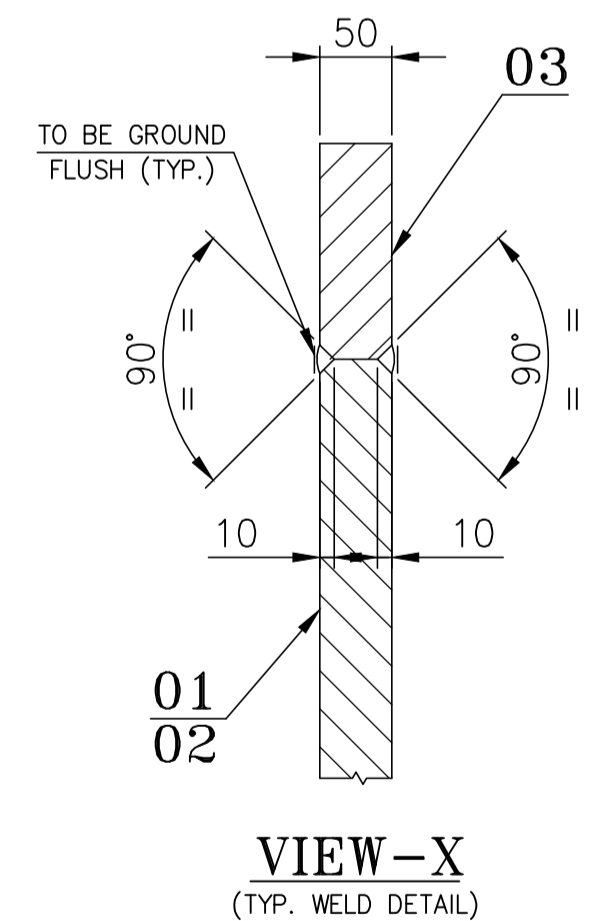
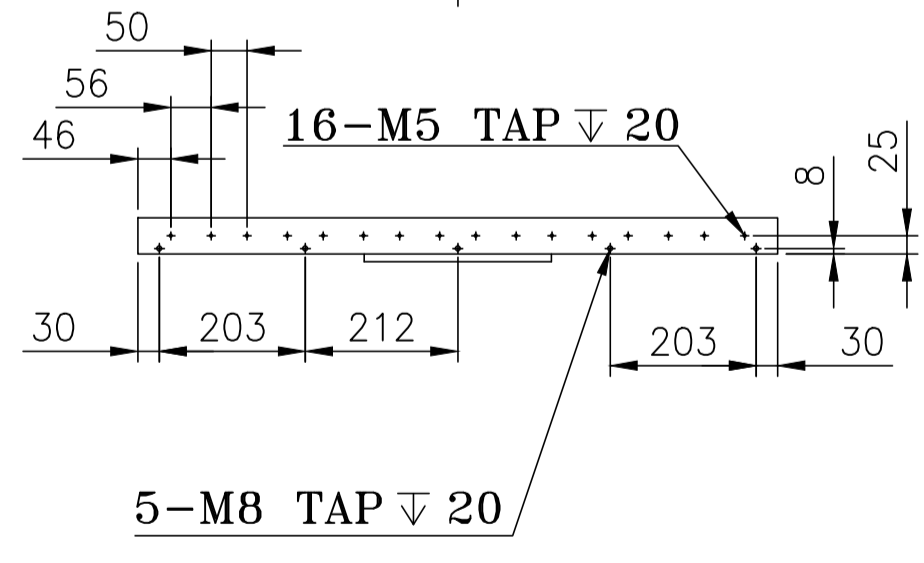
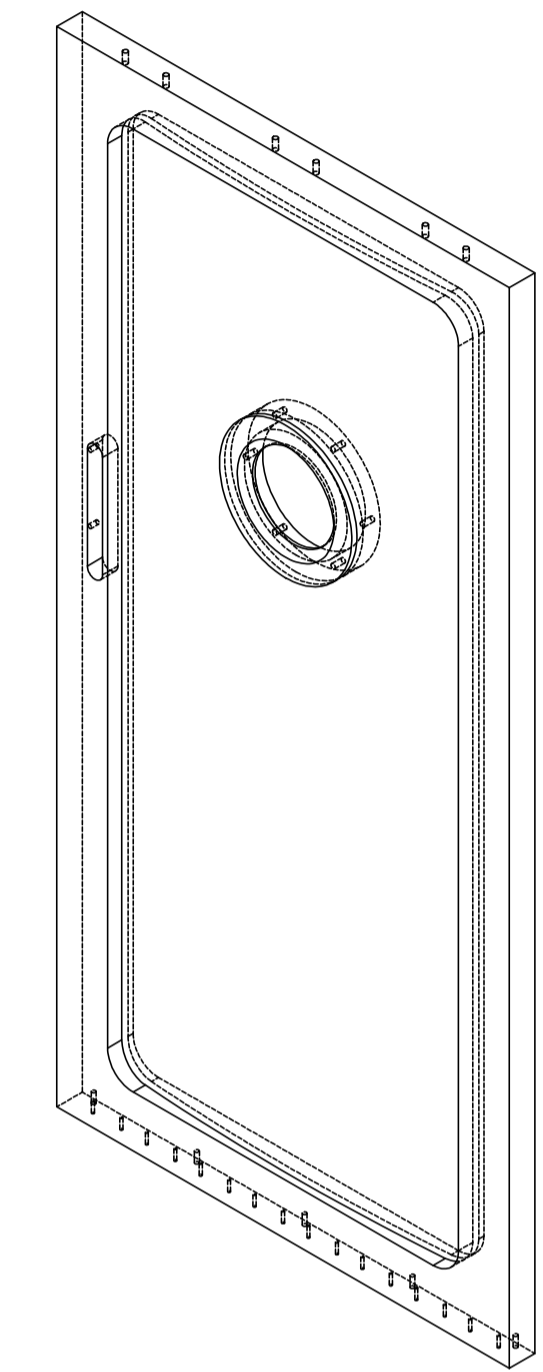
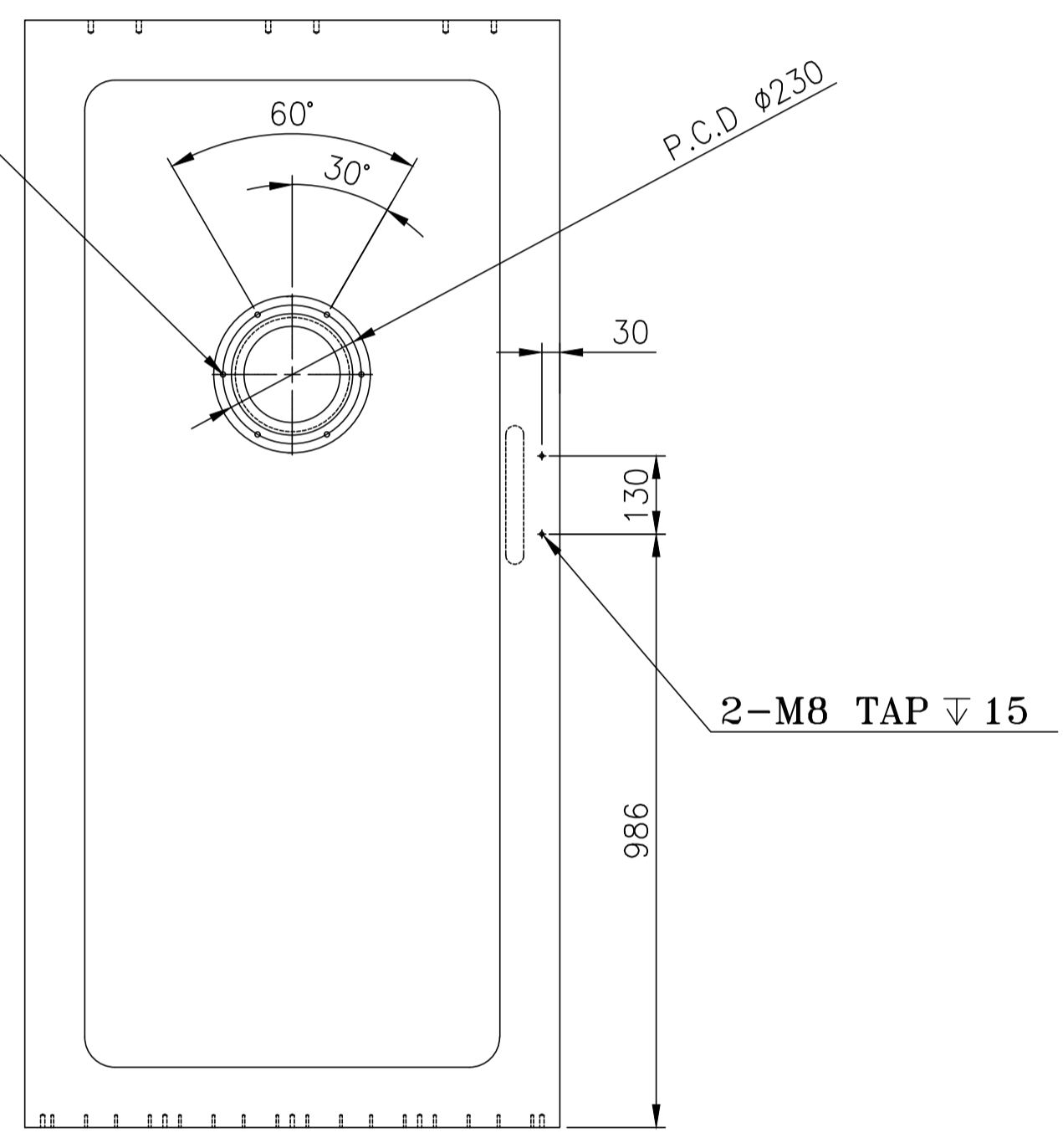
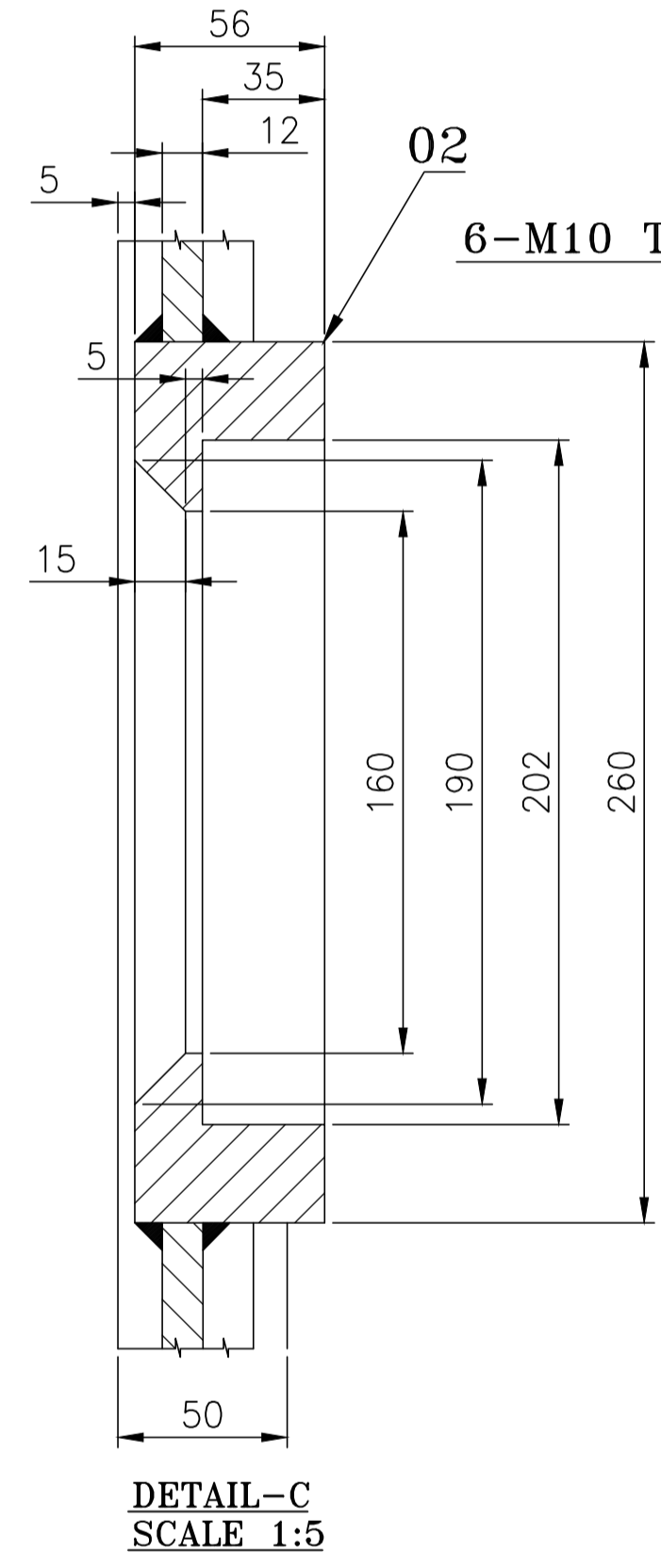
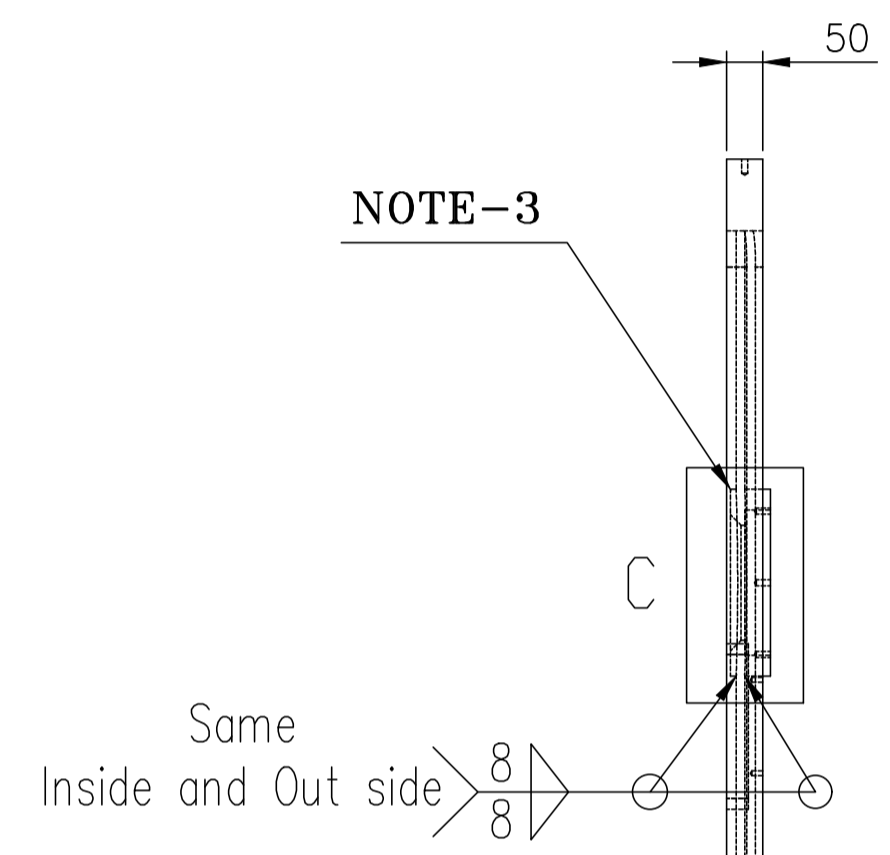
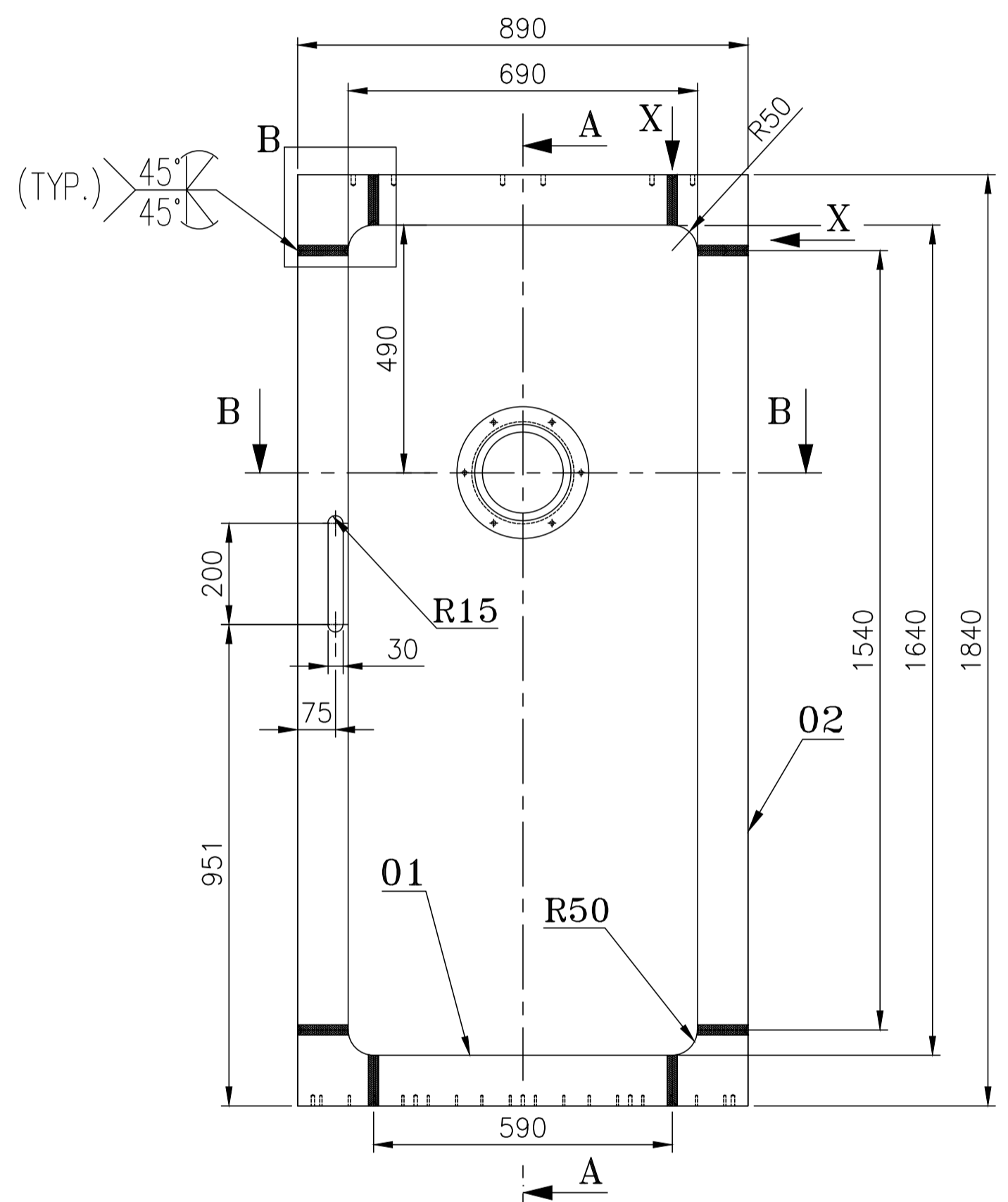
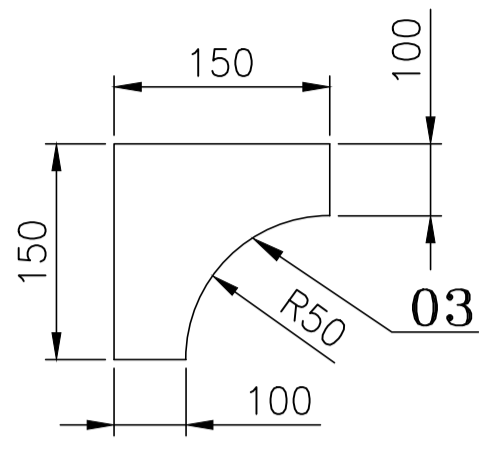
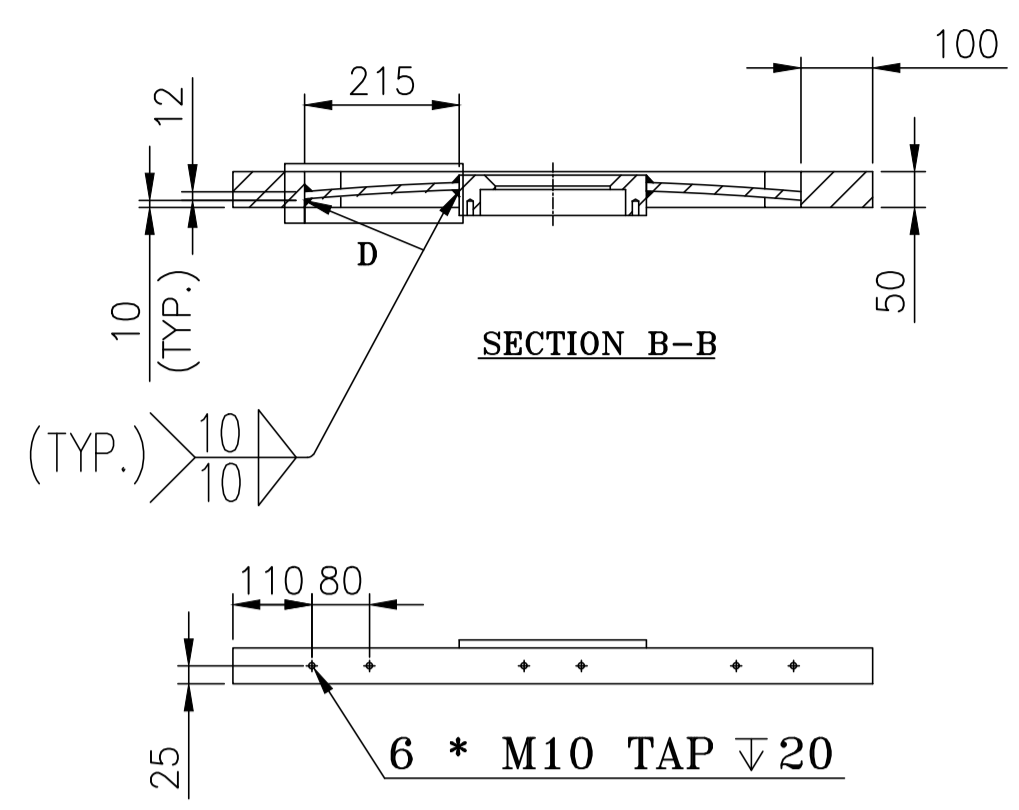
DEPT: ALL DIMENSIONS ARE IN MM PROJECTION: N.T.S SCALE: WEIGHT (kg): 23.370 REF TO ASSY / OLD DWG: 003-CUBE4

TITLE: COUPLINGS DRAWING NO.: 1-PV-010-U2010 00

FORM NO. 0425/2 C

A1 SIZE

1-PV-010-U2012
DRAWING NO.



WELDING DETAILS OF ITEM NO. 04

NOTES:-

1. In the state of the door one piece, mask the threads and proceed with painting.
2. After painting is completed, assembly and door installation are carried out.
3. When welding the frame of the observation window, it should not protrude from the border surface of the door.

ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO. VAR NO.	MATERIAL CODE MATERIAL SPECN	UNIT	UNIT WEIGHT QUANTITY
05	MAN HOLE PIPE (FROM PLATE) 56THK.X260X260				156010804000 SA 516 Gr.70		26.690 1
04	DOOR - INNER PLATE 1650X700X12THK.				156019030000 SA 516 Gr.70		108.800 1
03	CORNER BLOCKS (DOOR) 150X150X50THK.				156010950000 SA 516 Gr.70		8.850 4
02	DOOR - OUTER (LENGTH PLATE) 1540X100X50THK.				156010950000 SA 516 Gr.70		60.445 2
01	DOOR - OUTER (WIDTH PLATE) 590X100X50THK.				156010950000 SA 516 Gr.70		23.157 2

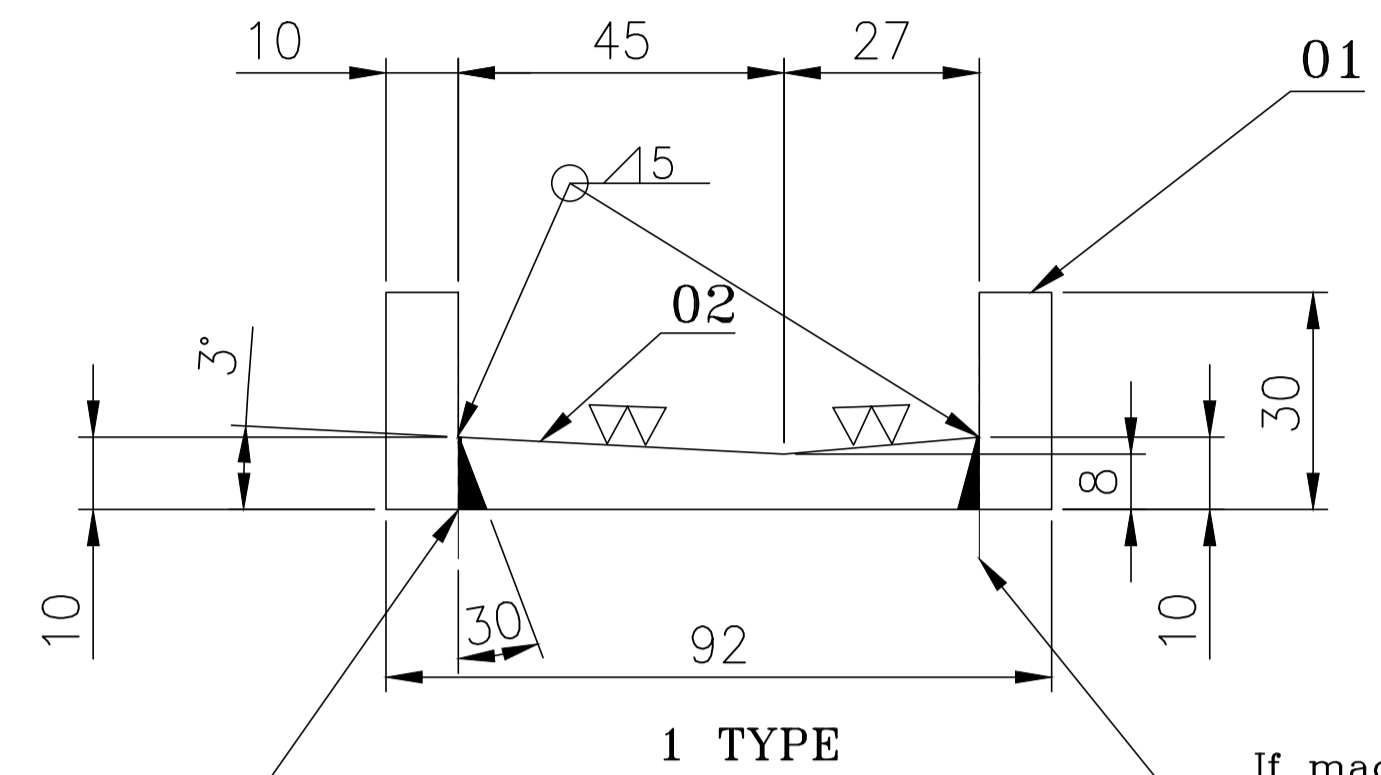
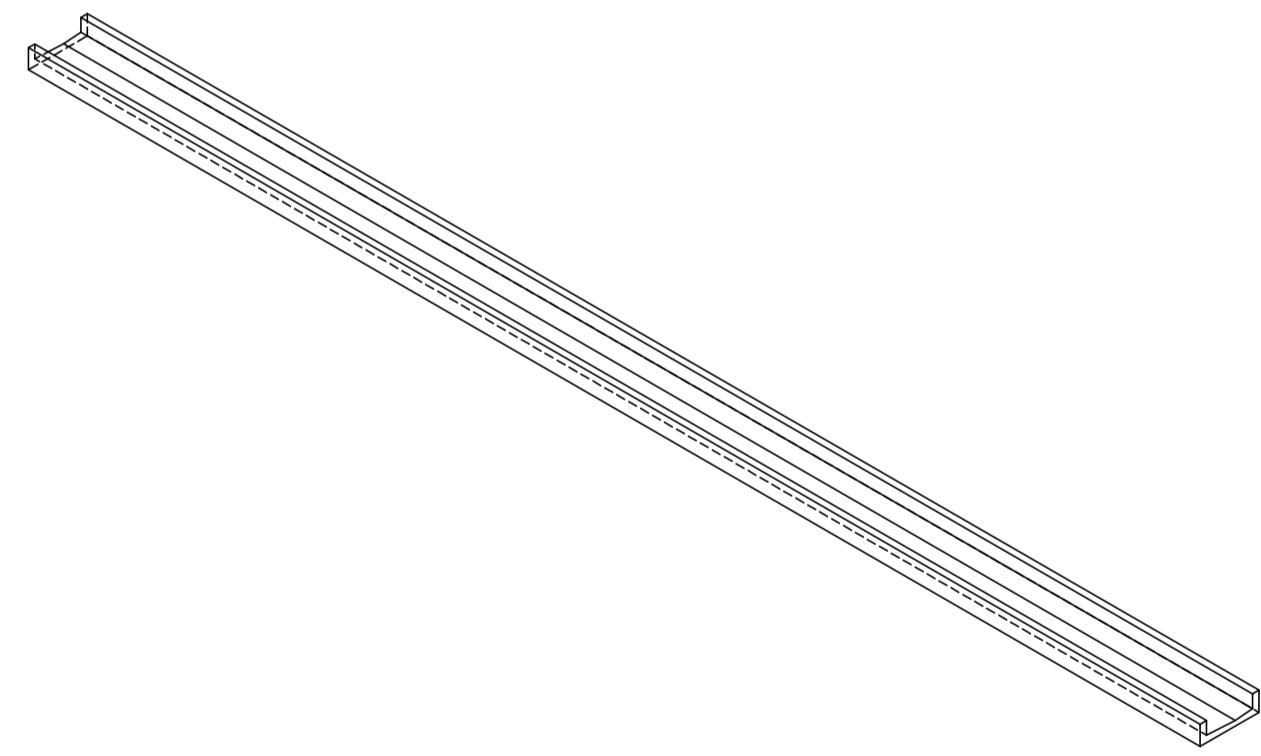
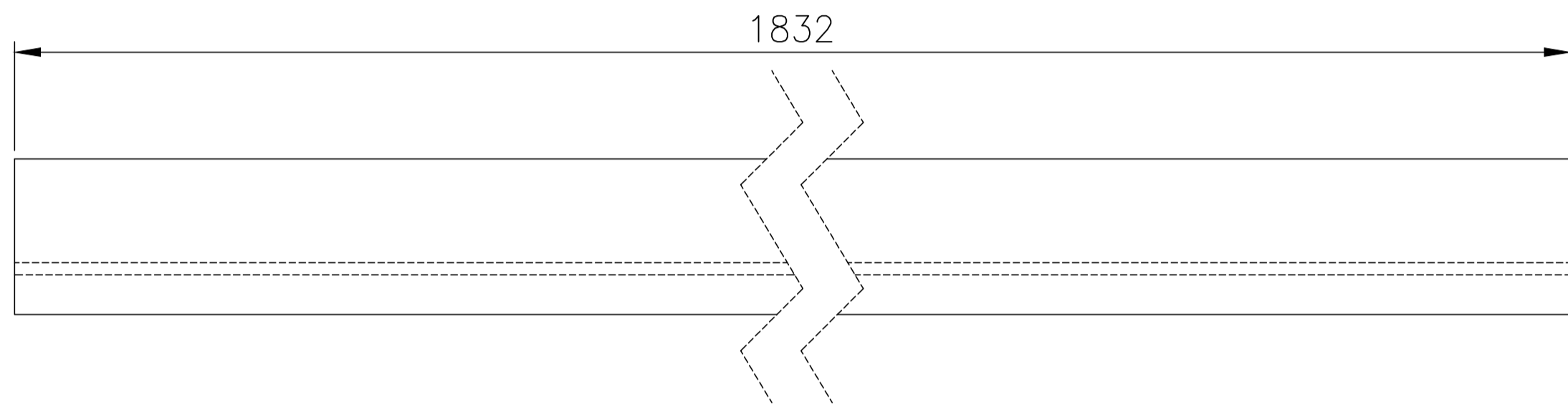
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111	
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN	SSNM 27.06.2025
		OD	L K MANTRI 30.06.2025
		APPD	Y PRASANNA KUMAR 02.07.2025
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE
			N.T.S
CODE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
	337.934		
TITLE		005-CUBE4	
DOOR		DRAWING NO :	REV
		1-PV-010-U2012	00

REV NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

FORM NO. 0425/2

A1 SIZE

1-PV-010-U2013
DRAWING NO.



Flush Grind after welding to ensure smooth surface(TYP)

If machining is not possible, it is manufactured in 3 parts and welded. - See Welding Methods : Dwg.CUBE 013

NOTES:-

1. Prohibition on bending production (processing production).
2. Masking the rail surface during painting.
3. For machining convenience or work efficiency, either of the two types can be selected for

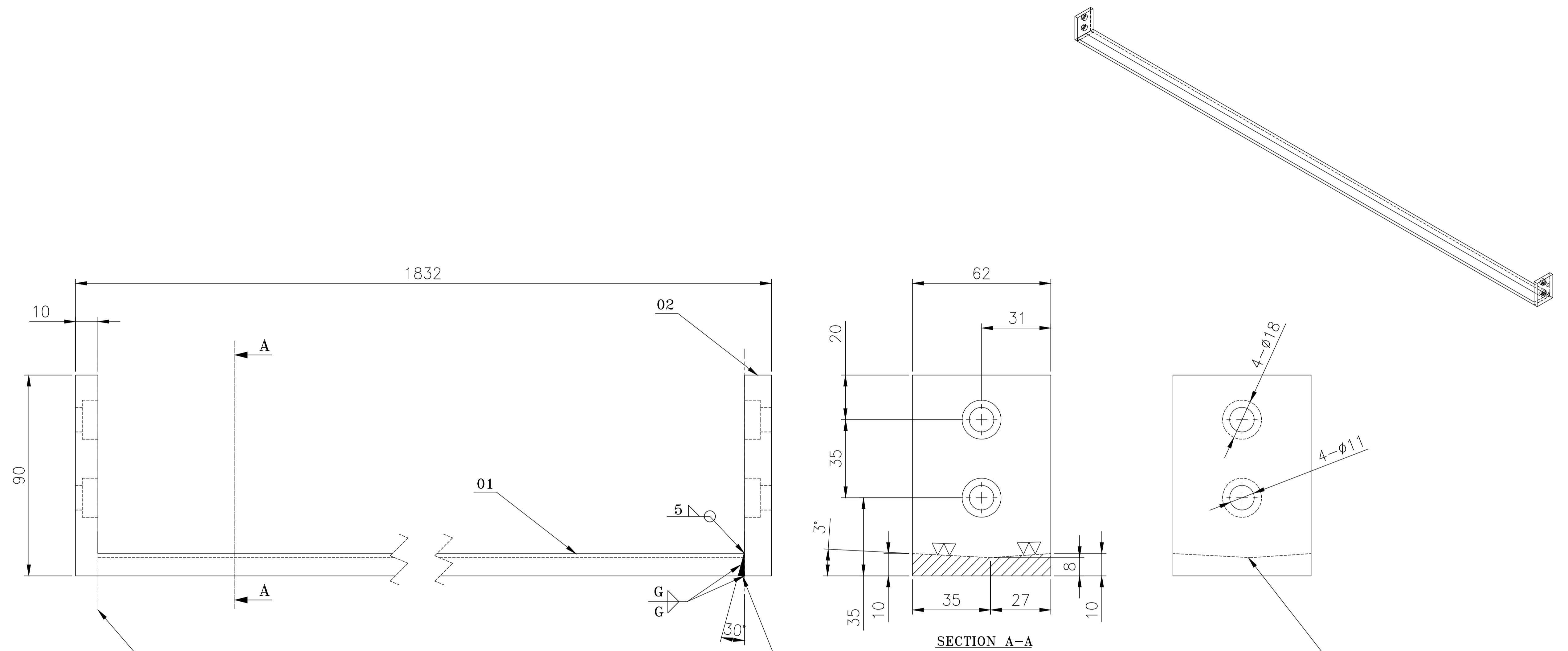
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT
02	PLATE 10THK. 1832X72					150113800000 SS 304		10.652 1
01	PLATE 10THK. 1832X30					150113800000 SS 304		4.320 2

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111		
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN	NAME	DATE
		CHK	L K MANTRI	30.06.2025
		APPD	Y PRASANNA KUMAR	02.07.2025
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (kg)
			N.T.S	19.292
TITLE			REF TO ASSY / OLD DWG	
UPPER RAIL			006-CUBE4	
DRAWING NO :			REV	
1-PV-010-U2013			00	

REV NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

FORM NO. 0425/2

DRAWING NO: 1-PV-010-U2014



If machining is not possible,
it is manufactured in 2 parts and welded.
- See Welding Methods : Dwg.CUBE 013

Flush Grind after welding
to ensure smooth surface(TYP)

Painting after rail surface masking

VAR/ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT
02	PLATE 10THK. 90X62				150113800000 SS 304		0.390 2
01	PLATE 10THK. 1812X62				150113800000 SS 304		8.920 1

NOTES:-

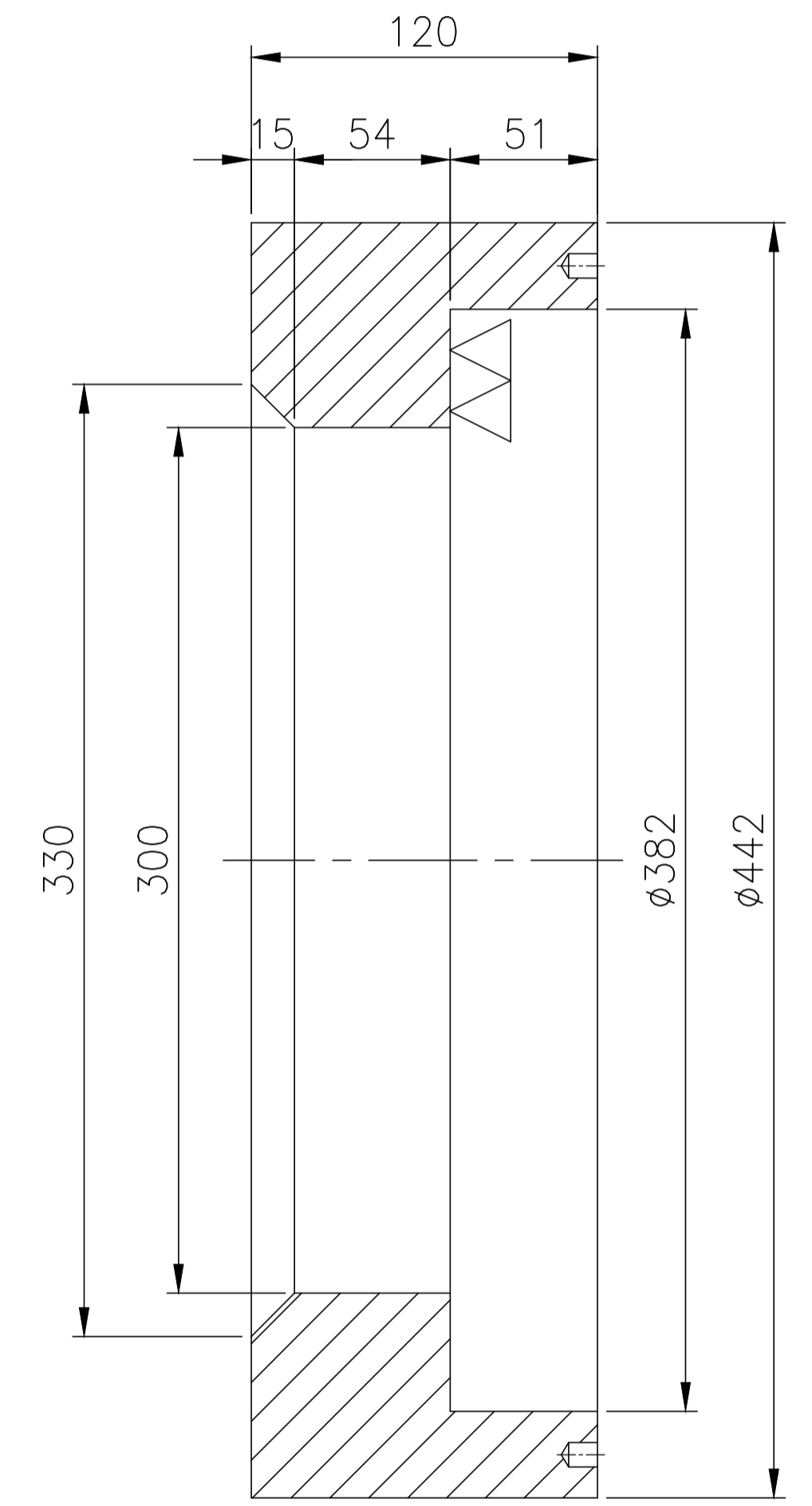
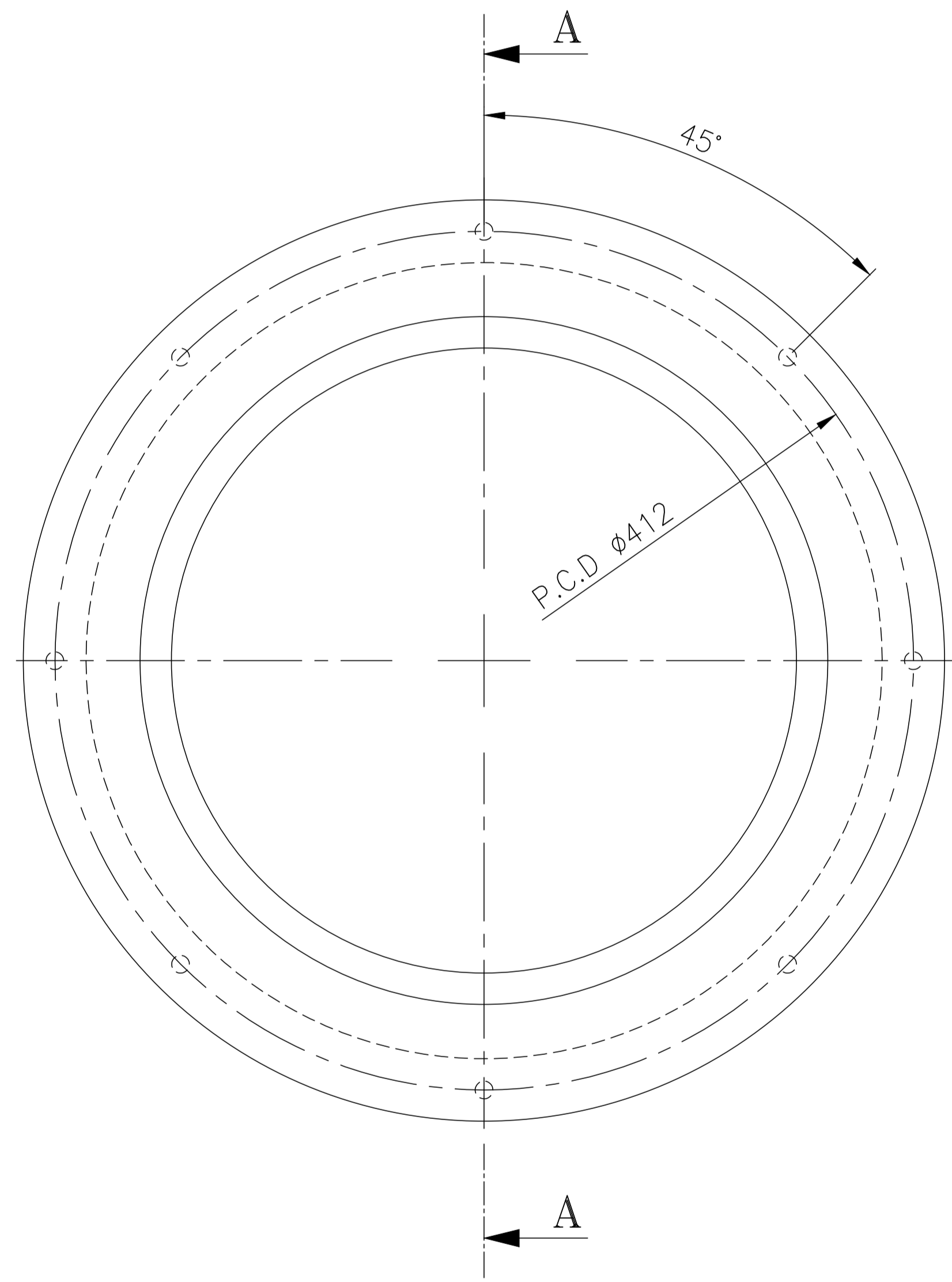
1. Can be manufactured by splitting and welding the rail face (machined) and side plate (machined or laser cut).
2. Masking the rail surface during painting.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111		
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN	NAME	DATE
		CHD	L K MANTRI	30.06.2025
		APPD	Y PRASANNA KUMAR	02.07.2025
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (kg)
			N.T.S	9.700
TITLE			REF TO ASSY / OLD DWG	
LOWER RAIL			007-CUBE4	
DRAWING NO :			REV	
1-PV-010-U2014			00	

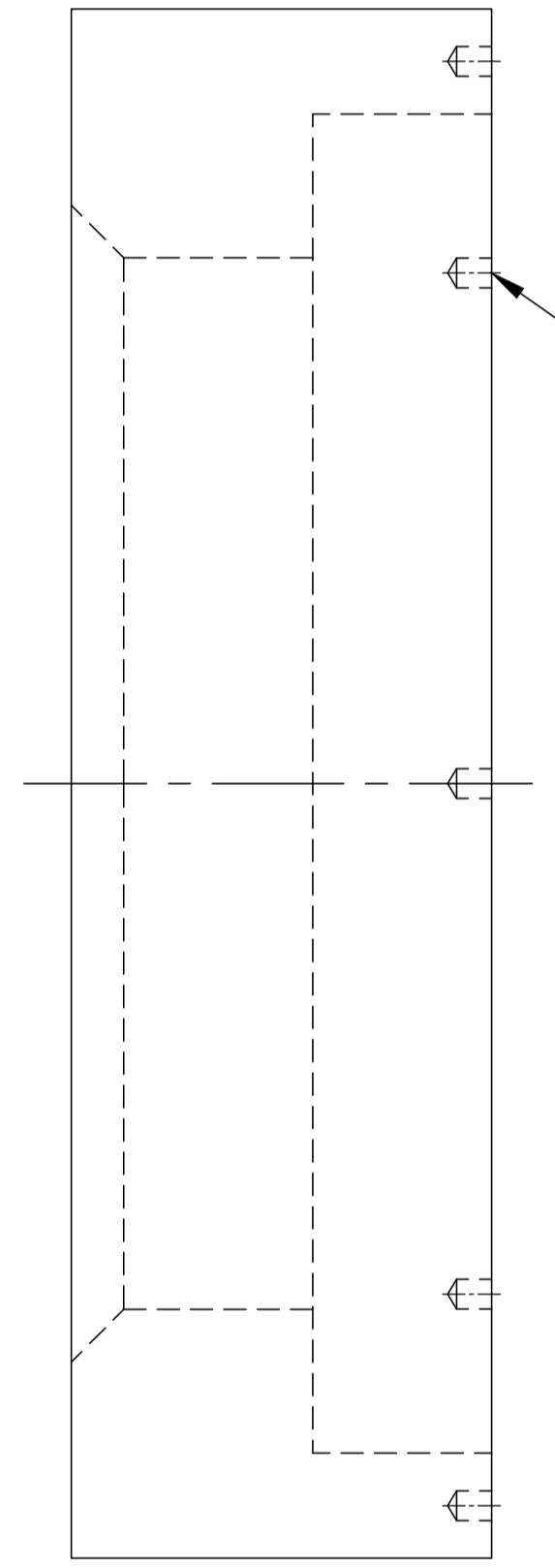
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FORM NO. 0425/2 C A1 SIZE

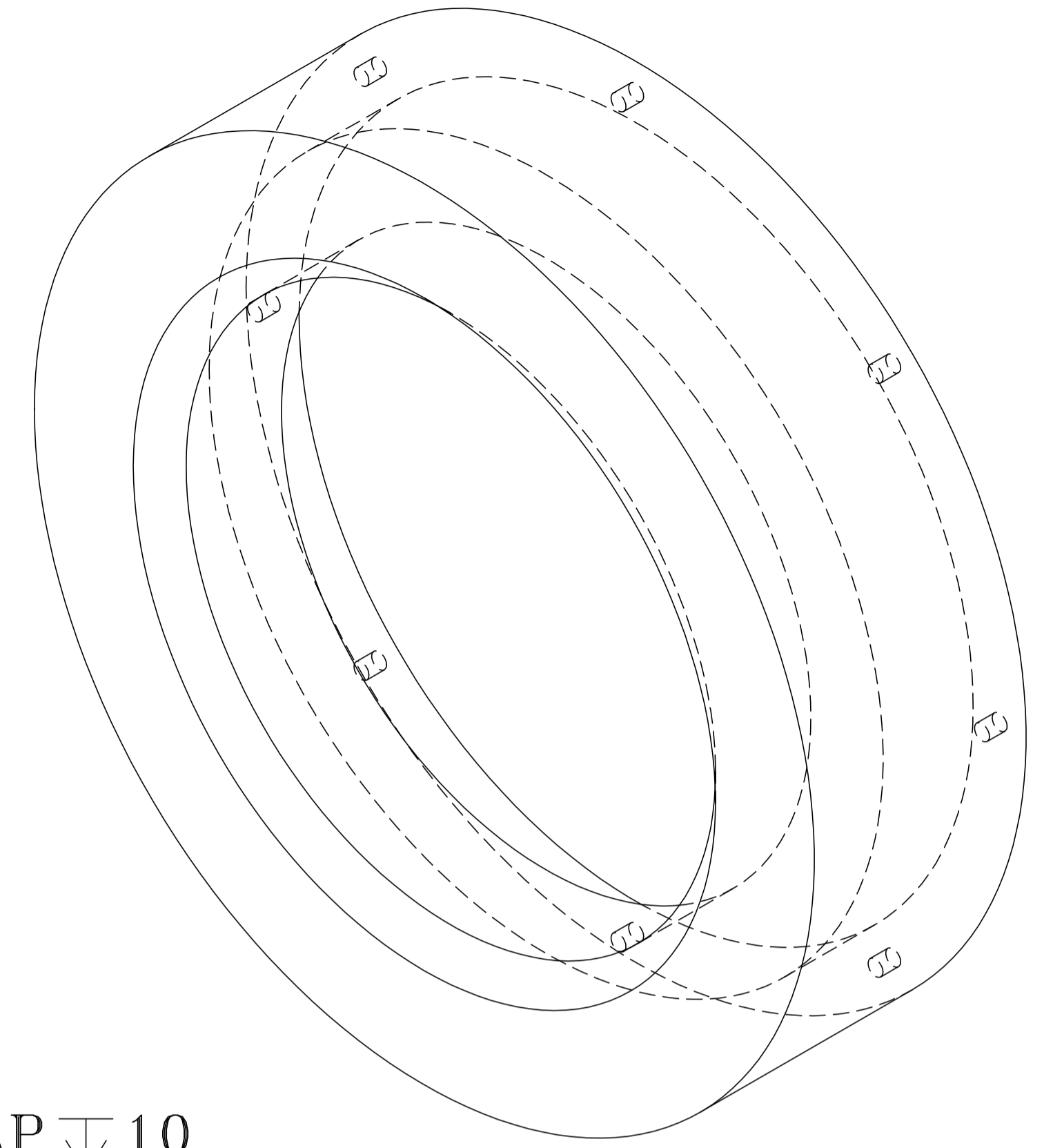
1-PV-010-U2015
DRAWING NO.



SECTION A-A



8-M10 TAP 10



VARIANT NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	A/C/P	UNIT	UNIT WEIGHT
01	VIEW PORT FRAME(Ø442XID300) 442X442X120				156016950000 IS 2062 GR.B			2.410
				VAR NO	MATERIAL SPECN		DI	QUANTITY

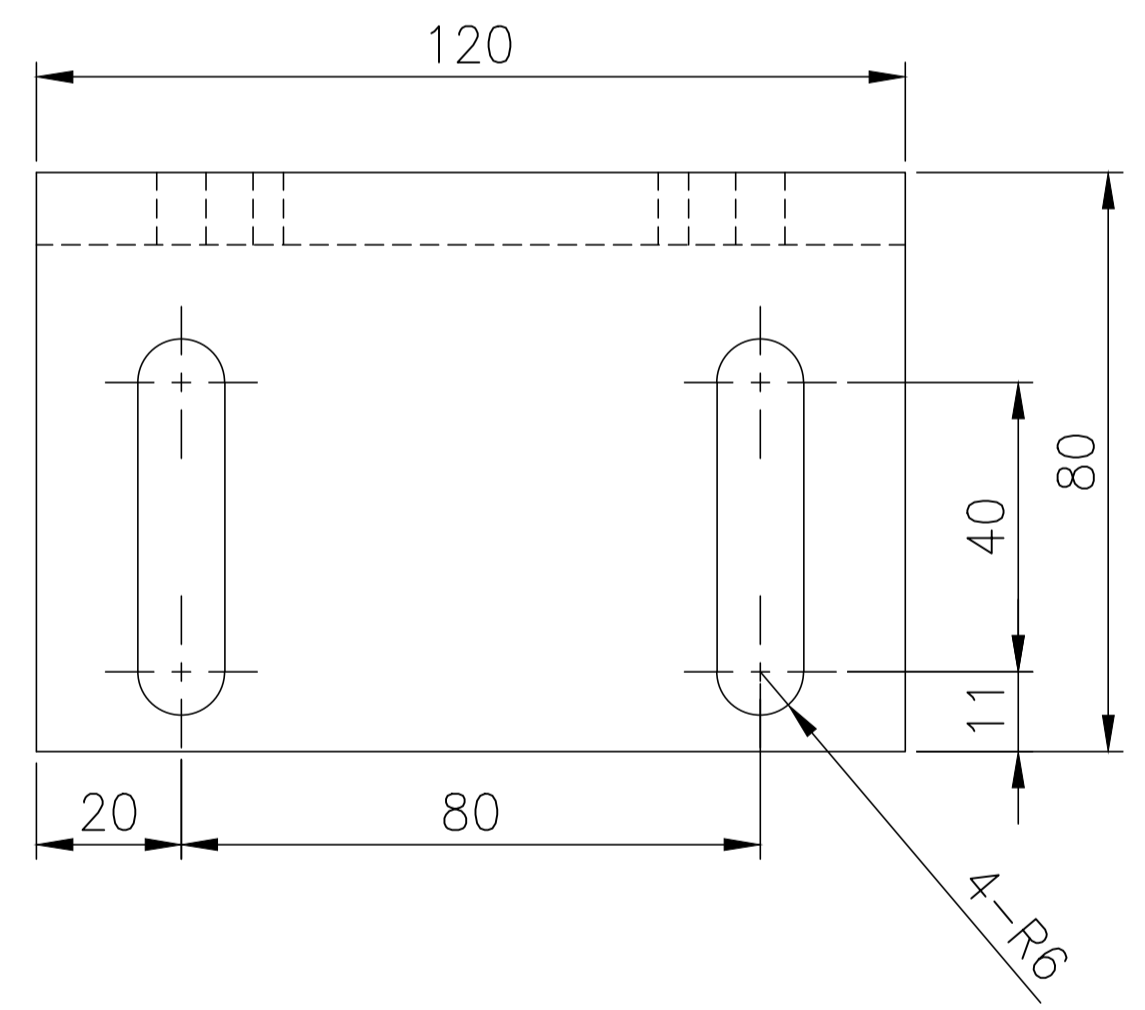
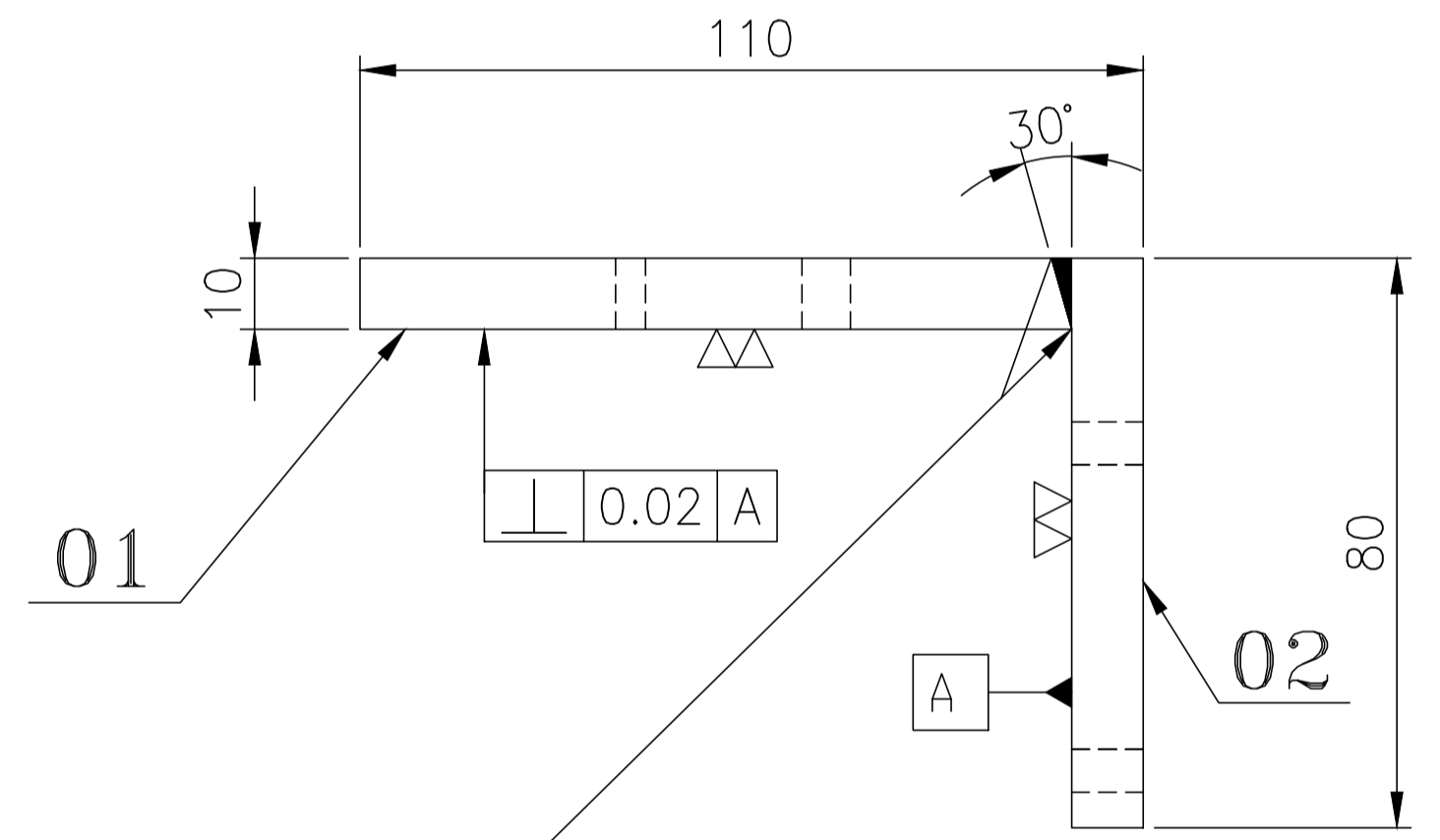
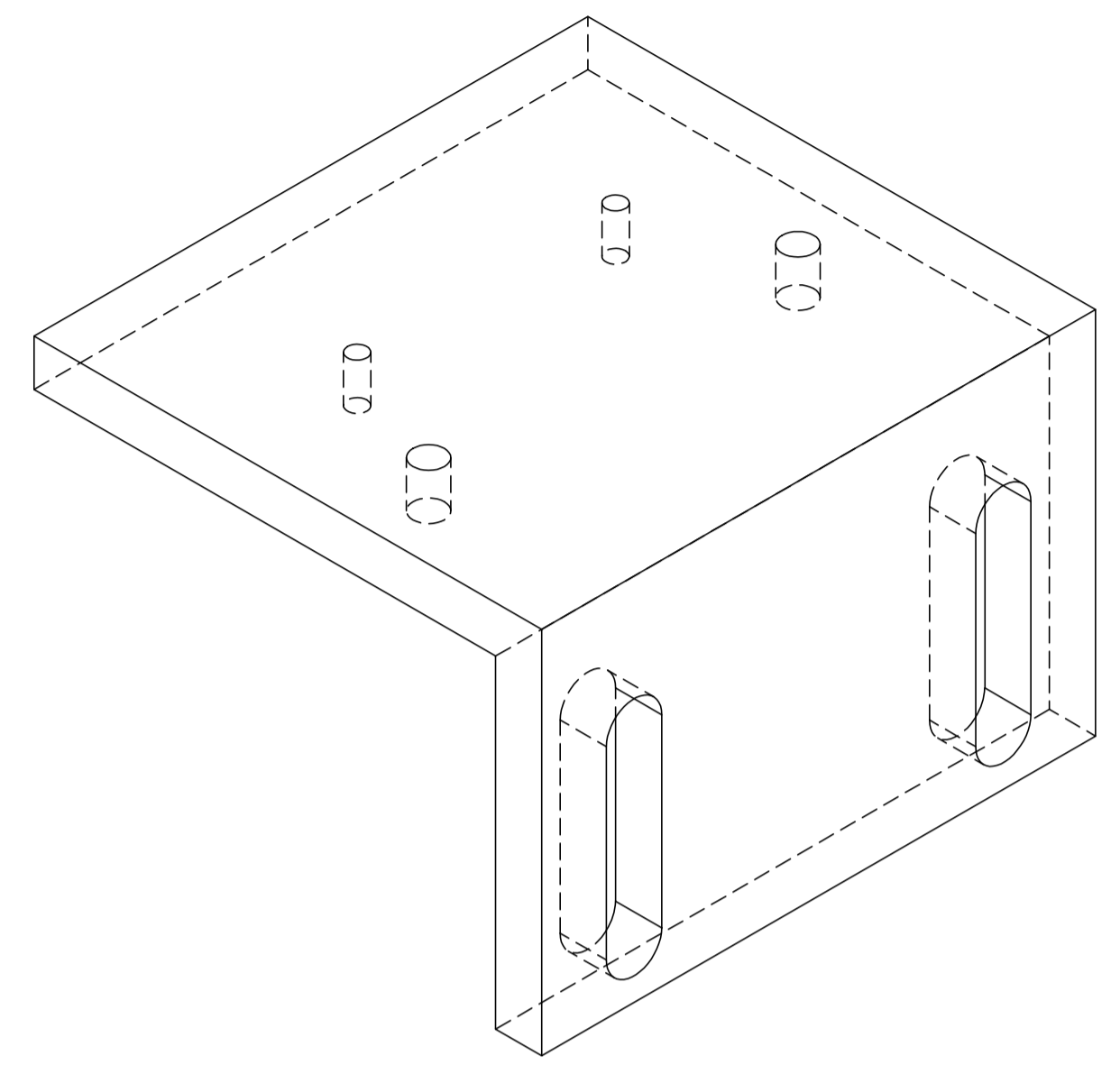
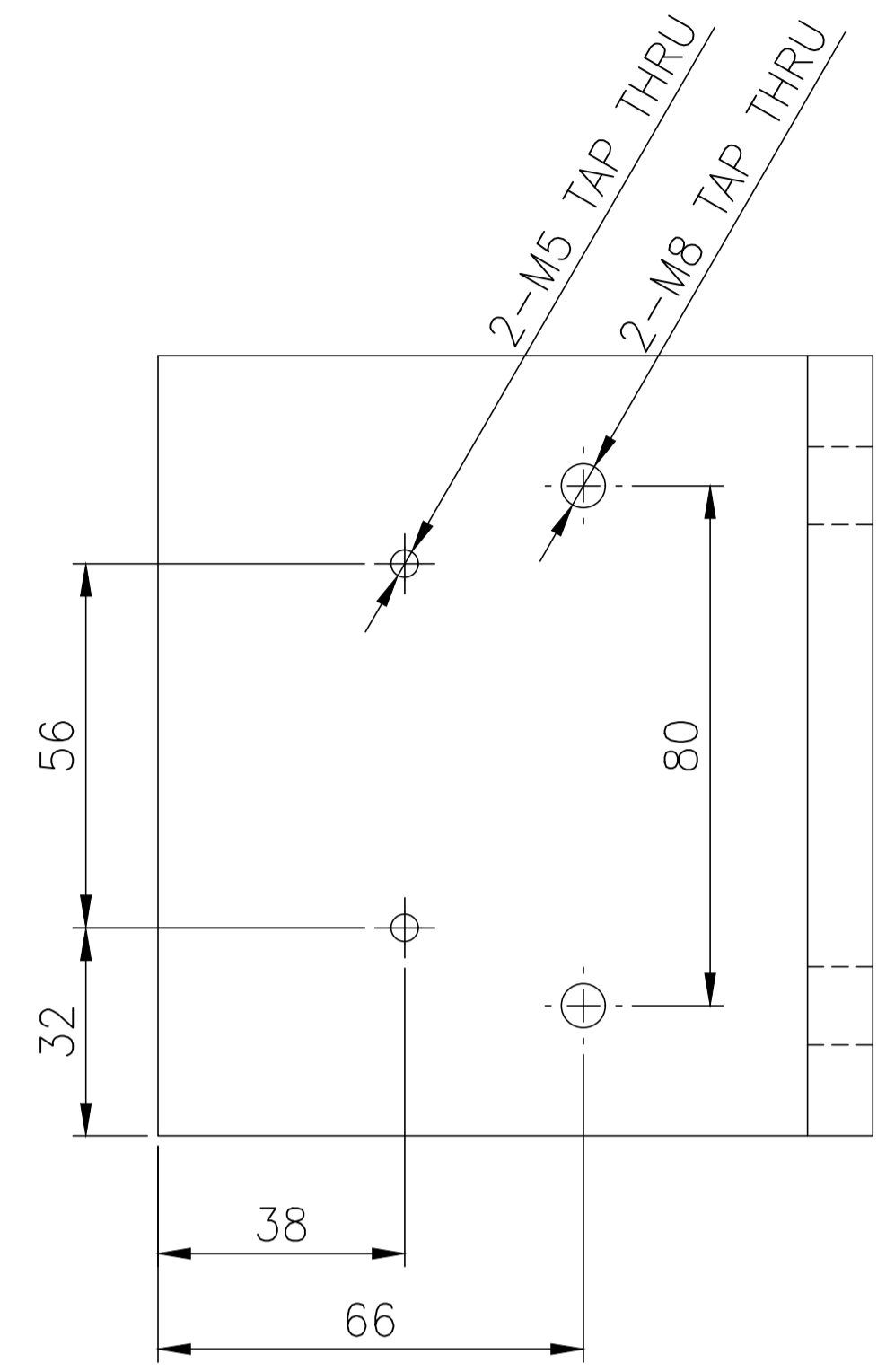
<p>CAUTION: The information on this drawing is the property of Bharat Heavy Electricals Ltd. It must not be used directly or indirectly in any way detrimental to the interest of the company.</p>	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111	
	Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN	DATE
	DEPT	PROJECTION	SCALE	WEIGHT (kg)
CODE	ARE IN MM	N.T.S	2.410	REF TO ASSY / OLD DWG
TITLE			DRAWING NO :	
VIEW PORT FRAME			1-PV-010-U2015 00	

REV NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

FORM NO. 0425/2

A1 SIZE

1-10-PV-010-U2016
DRAWING NO.



Flush Grind after welding to ensure smooth surface(TYP)

VARIANT NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT
02	PLATE 10THK. 120X80				150113800000 SS 304		0.750
01	PLATE 10THK. 100X120				150113800000 SS 304		0.960

NOTES:-

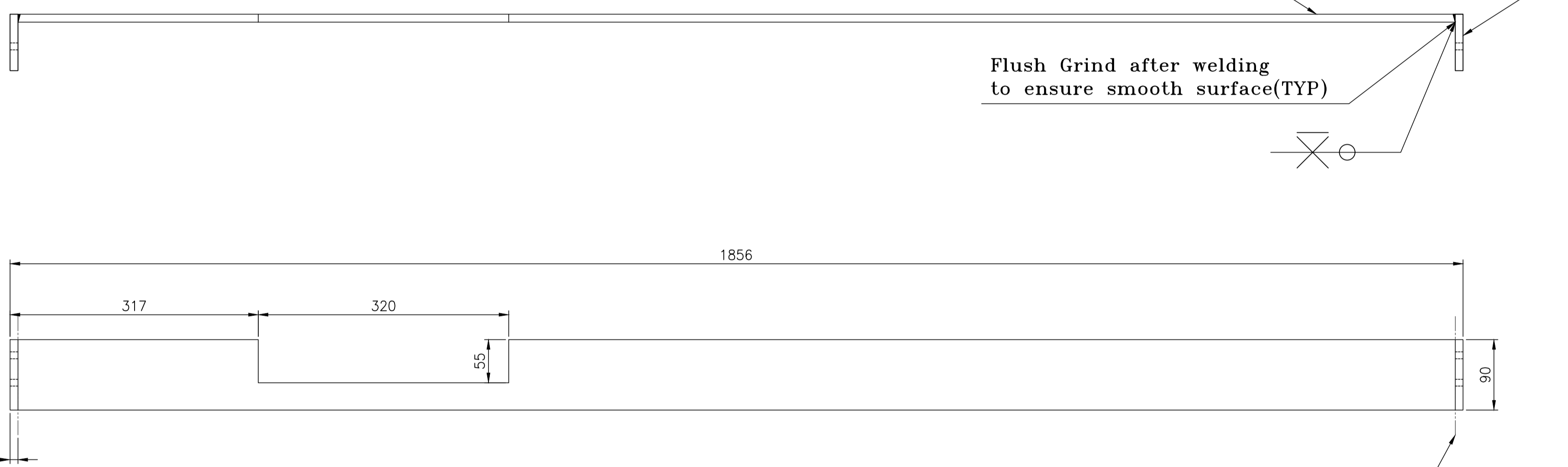
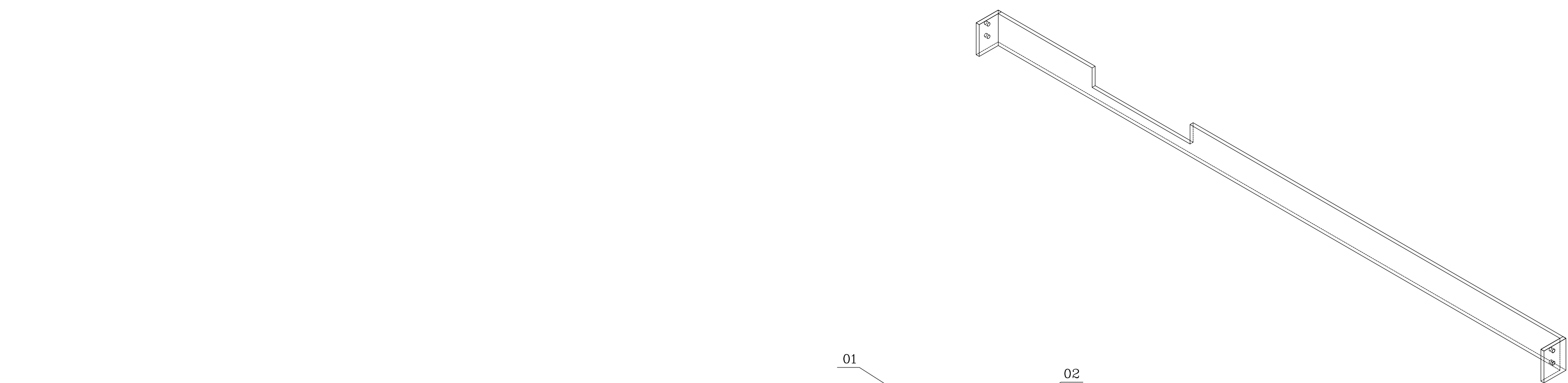
1. Prohibition on bending production (full processing).

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111		
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN	SSNM	DATE
DEPT		APPD	Y PRASANNA KUMAR	02.07.2025
ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (kg)	REF TO ASSY / OLD DWG
		N.T.S	1.710	009-CUBE4
TITLE		DRAWING NO :		REV
UPPER RAIL BRACKET UPPER		1-PV-010-U2016		00

REV NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

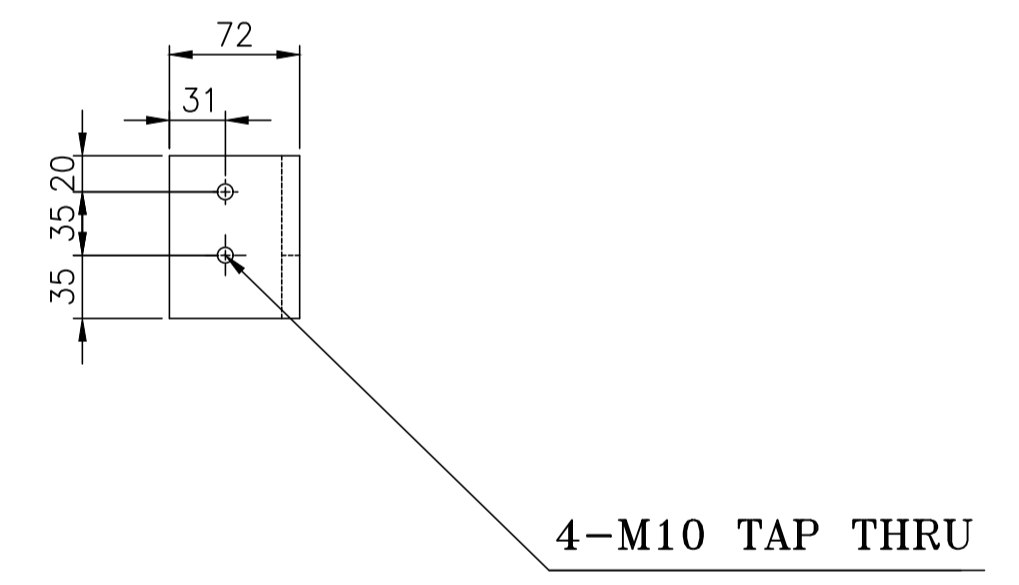
FORM NO. 0425/2 C A1 SIZE

1
DRAWING NO: 1-PV-010-U2018



01
02
Flush Grind after welding to ensure smooth surface(TYP)

If machining is not possible, it is manufactured in 3 parts and welded.

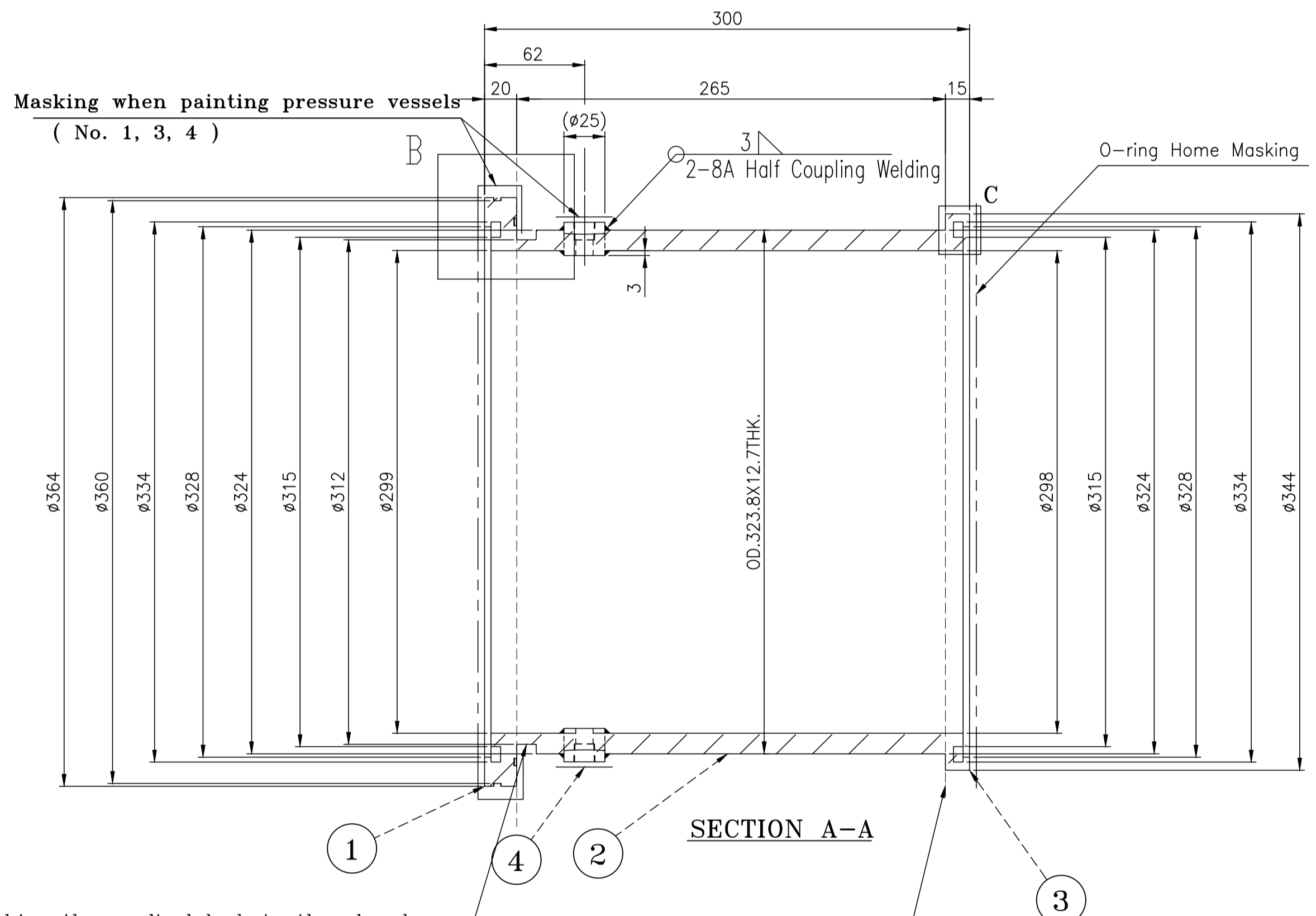
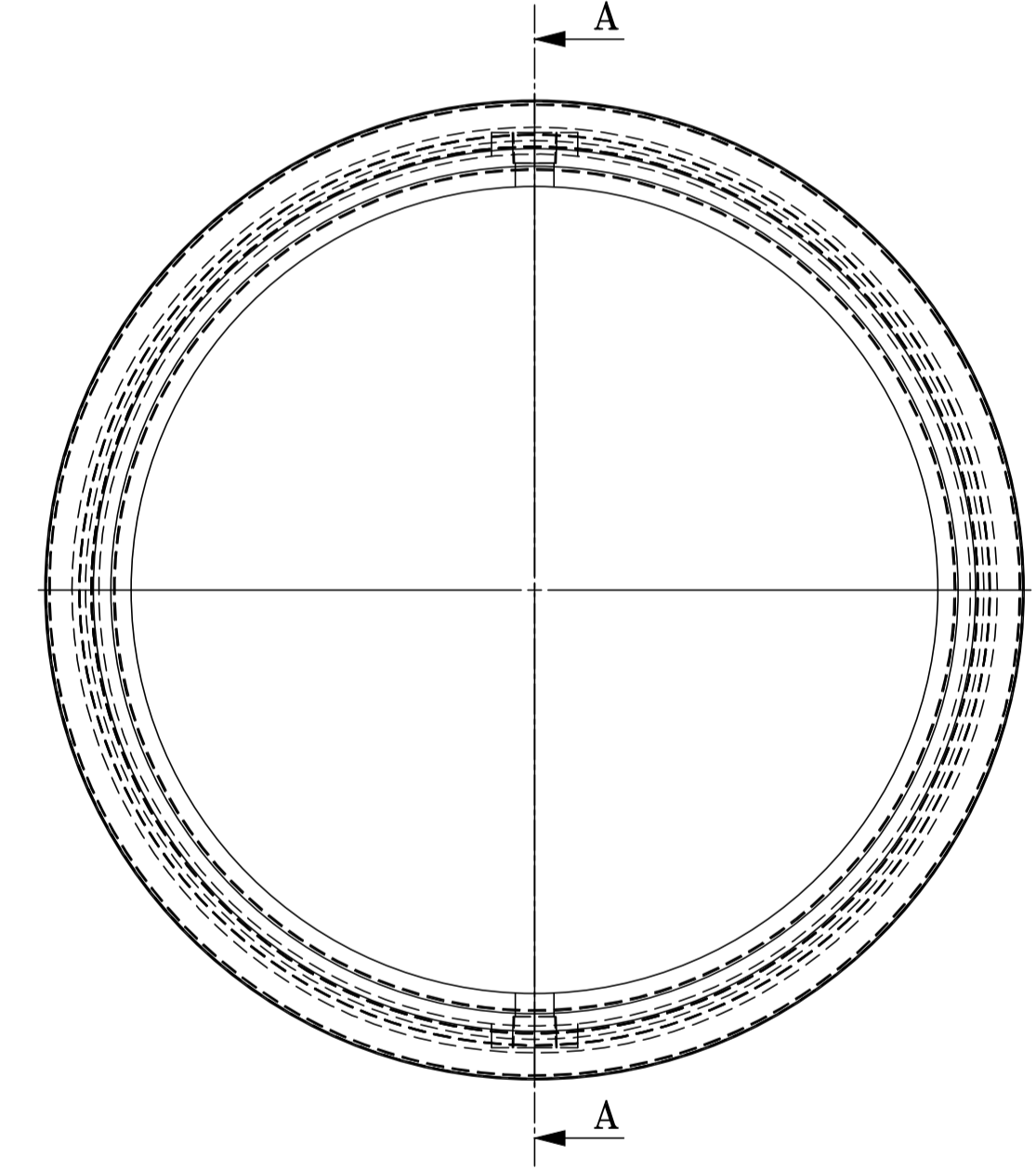
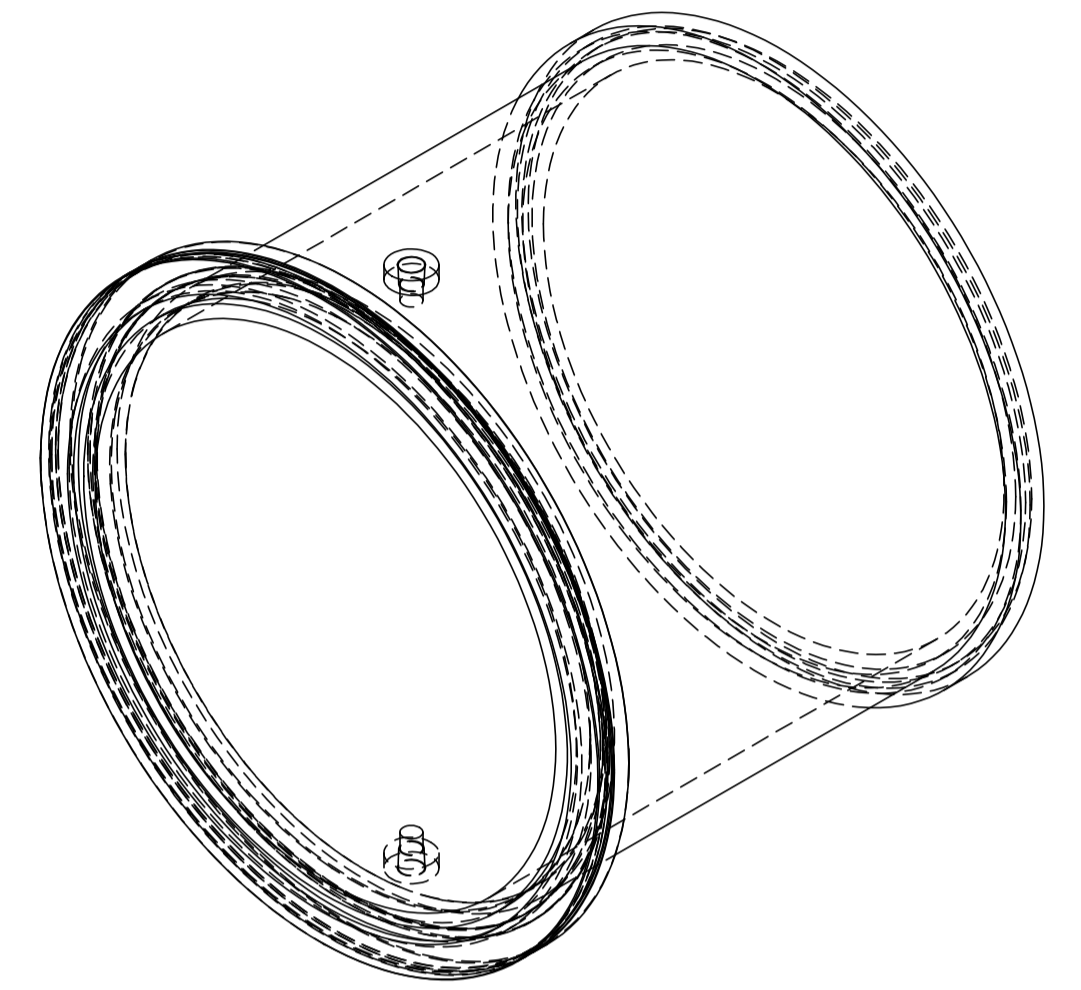
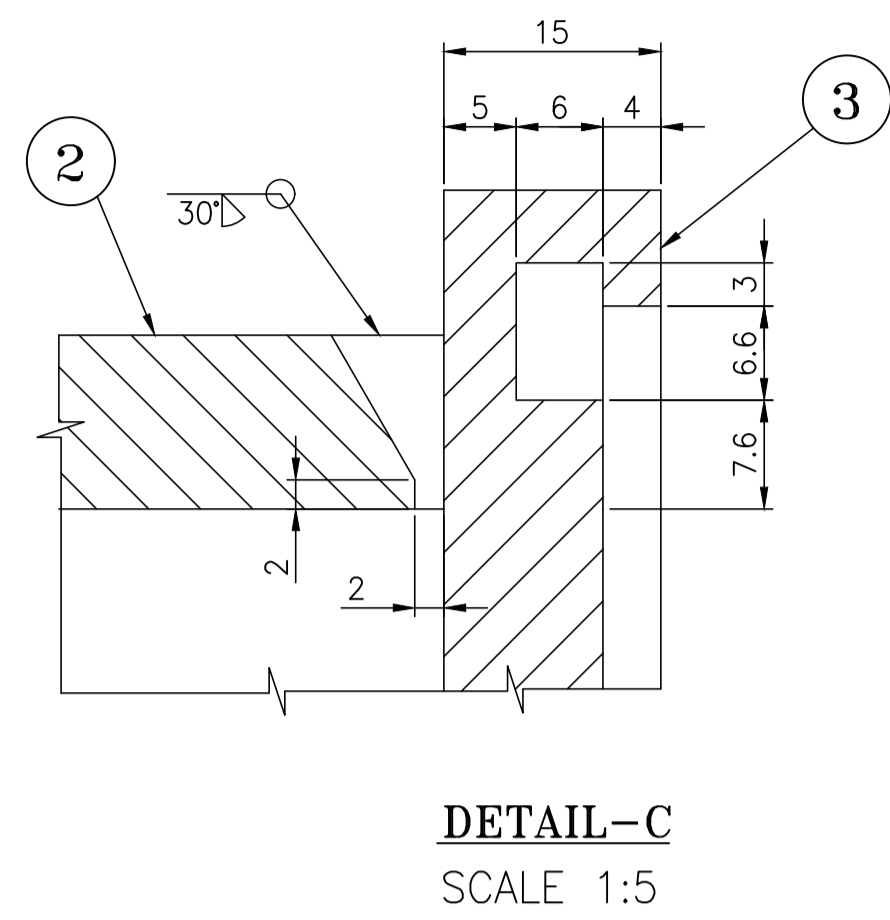
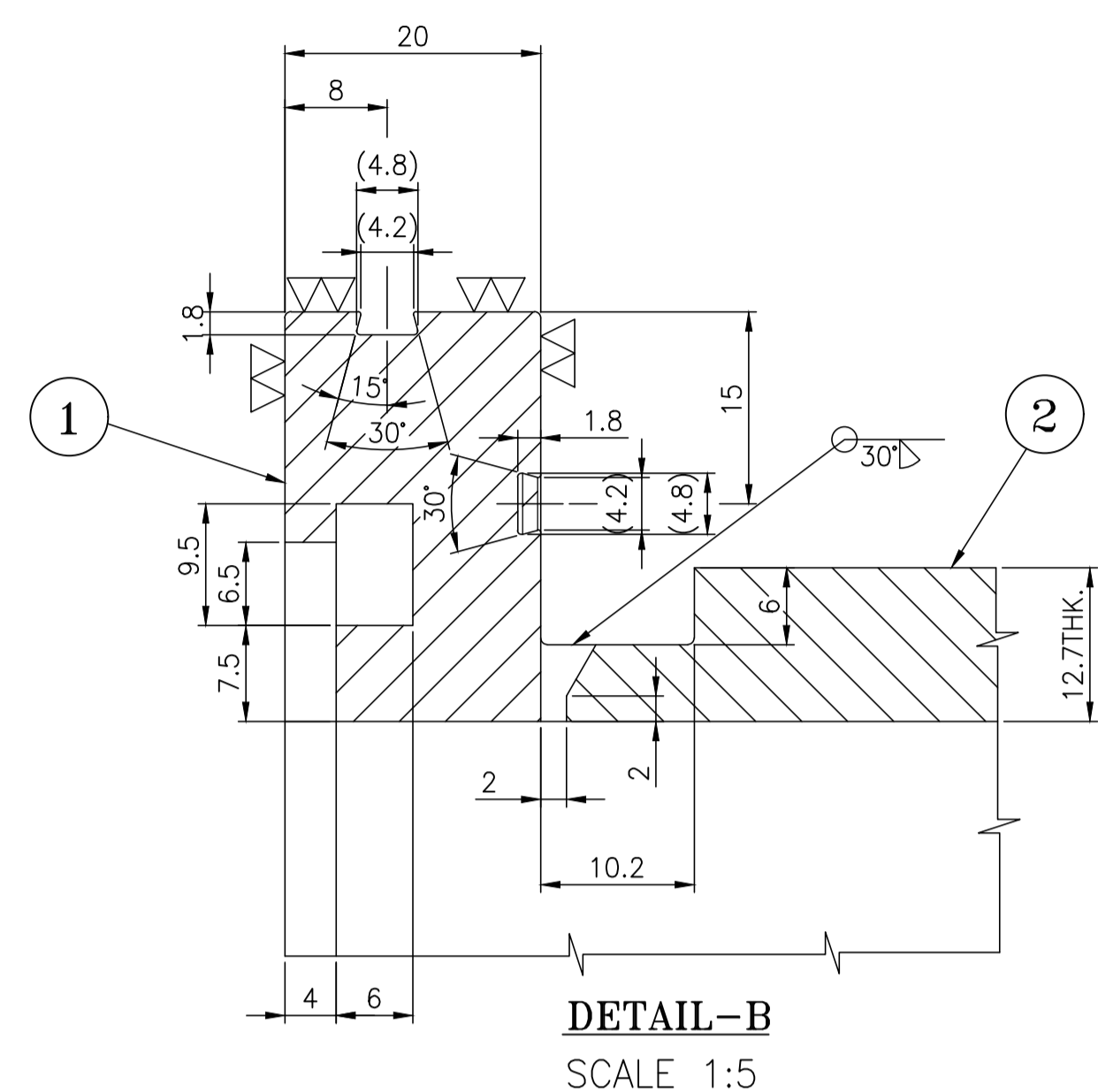


REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

ITEM NO	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT
02	PLATE 10THK. 90X72				150113800000 SS 304	02	0.510
01	PLATE 10THK. 1836X90				150113800000 SS 304		13.110

<small>CAUTION: The information on this drawing is the property of Bharat Heavy Electricals Ltd. It must not be used directly or indirectly in any way detrimental to the interest of the company.</small>	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111		
	Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN	DATE	
	CHD	L K MANTRI	30.06.2025	APPD	Y PRASANNA KUMAR
DEPT	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (kg)	REF TO ASSY / OLD DWG
			N.T.S	14.130	011-CUBE4
TITLE					DRAWING NO : 1-PV-010-U2018
LOWER RAIL CURTAIN PLATE					REV 00

FORM NO. 0425/2 C



Before attaching the medical lock to the chamber, complete Work Procedure 1, process the groove, and then proceed with Step 2.

Based on the dividing line, 3 segments are made, then welded, and then surface processed after welding.

ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT
04	8A HALF COUPLING, #6000 25.4X17.5L				FM7245100497		0.065
					SS 304		02
03	SUPPLY AND DEMAND PLATE (OD.344/D.298) 0344X15				156021410000		14.190
					SS 304		01
02	AIRTIGHT CONTAINER PIPE 323.8X265X12.7THK.				156070830000		35.000
					SS 304		01
01	SUPPLY PLATE (OD.364/D.299) 0364X20THK.				156032130000		20.908
					SS 304L		01

REV NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

CAUTION: The information on this drawing is the property of Bharat Heavy Electricals Ltd. It must not be used directly or indirectly in any way detrimental to the interest of the company.	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT	PROJECT : 02 JOY INNOVATION S.O. NO. : 8111		
DEPT	PRODUCTION	SCALE	WEIGHT (kg)	REF TO ASSY / OLD DWG
		N.T.S	70.948	012-CUBE4
TITLE	AIRTIGHT CONTAINER PIPE VESSEL MEDICAL LOCK		DRAWING NO :	REV
			1-PV-010-U2019	00

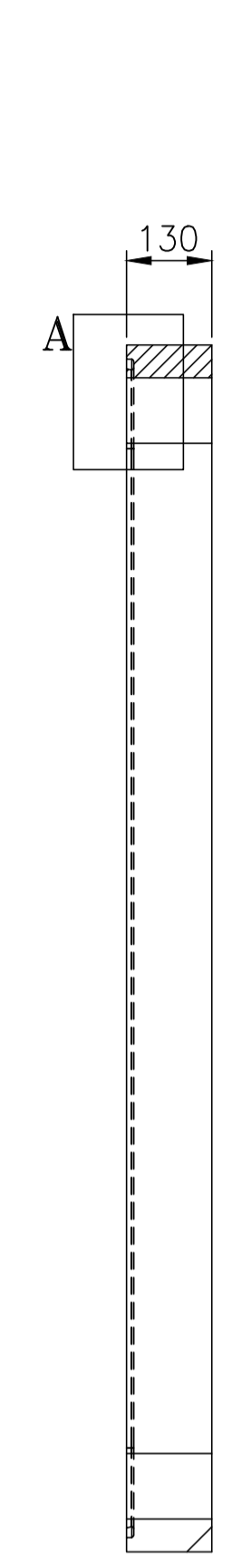
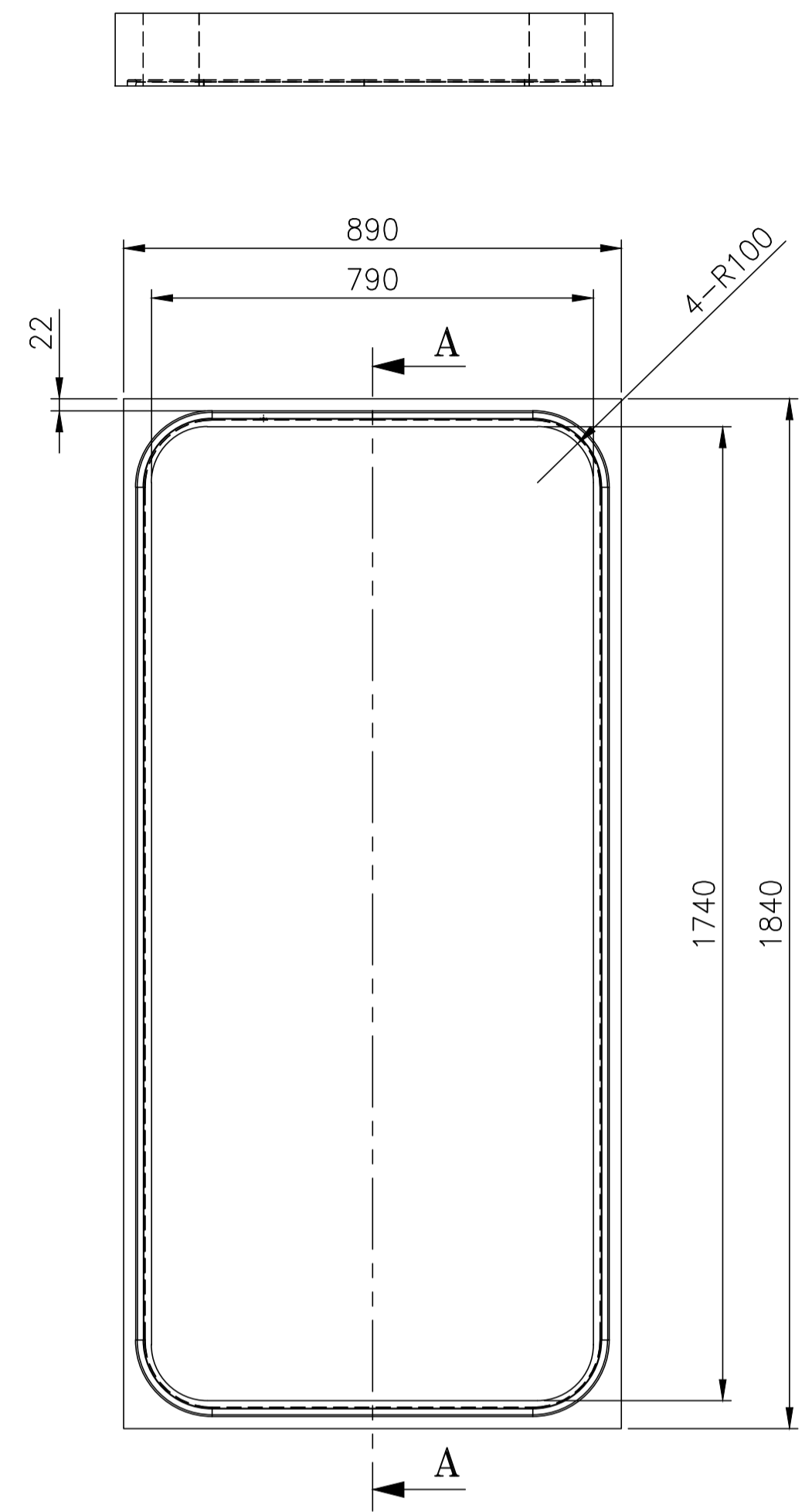
NOTES:-

1. Corner R0.5 without direction.

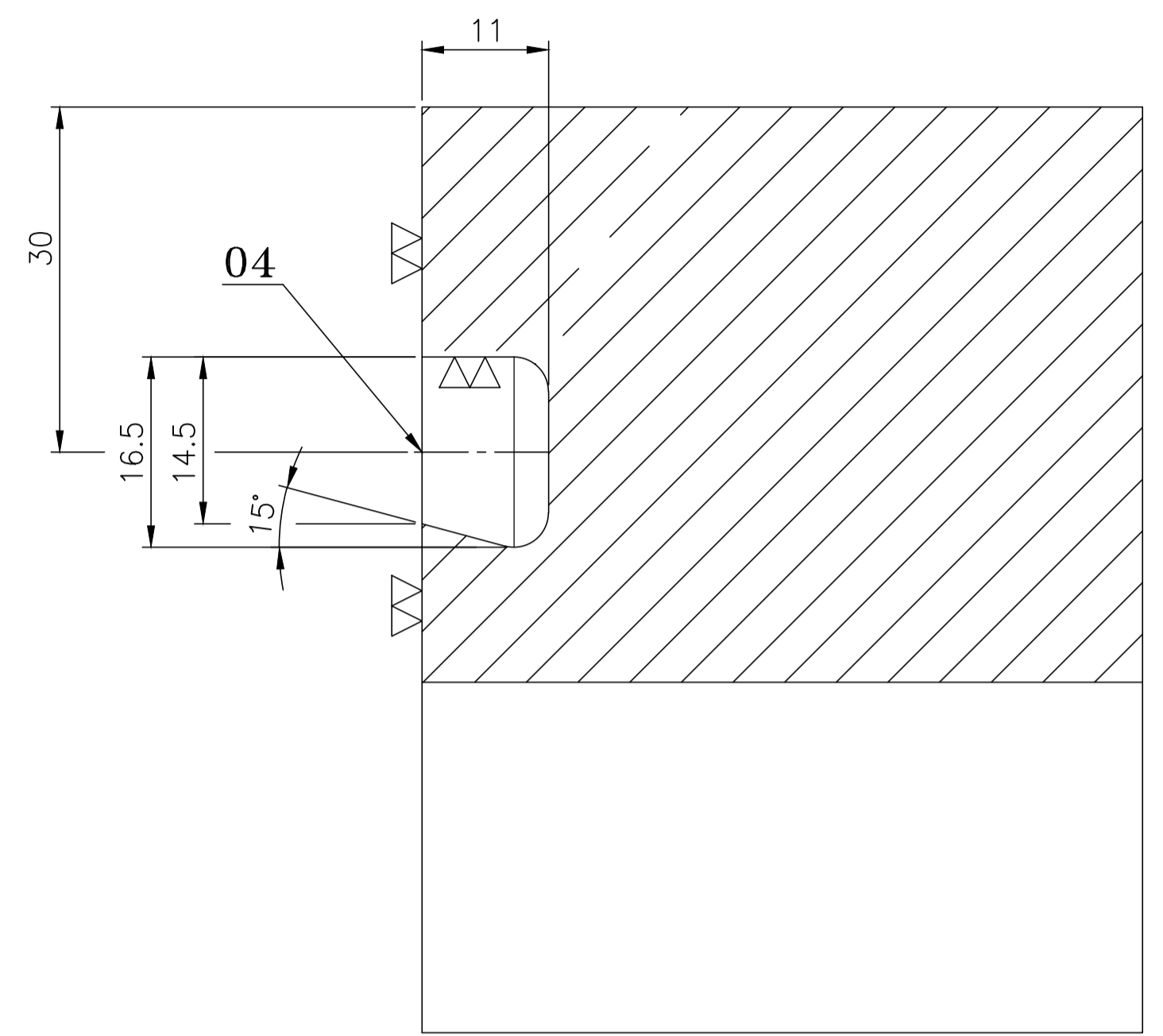
Work procedure

1. Supply plate, sealed container pipe (8A half coupling), welding after manufacturing the supply and demand plate.
2. After manufacturing the entire sealed container, weld it to fit the pressure vessel location.
3. Masking of the front surface of the supply plate, coupling threads, and the lip seal groove of the supply and demand plate before painting the pressure vessel.

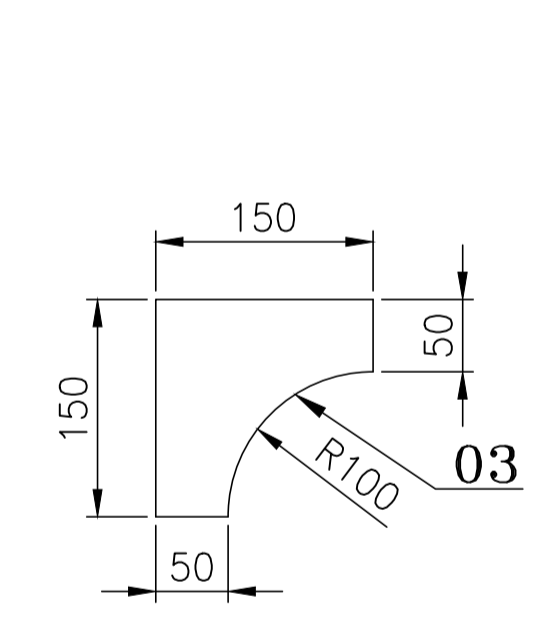
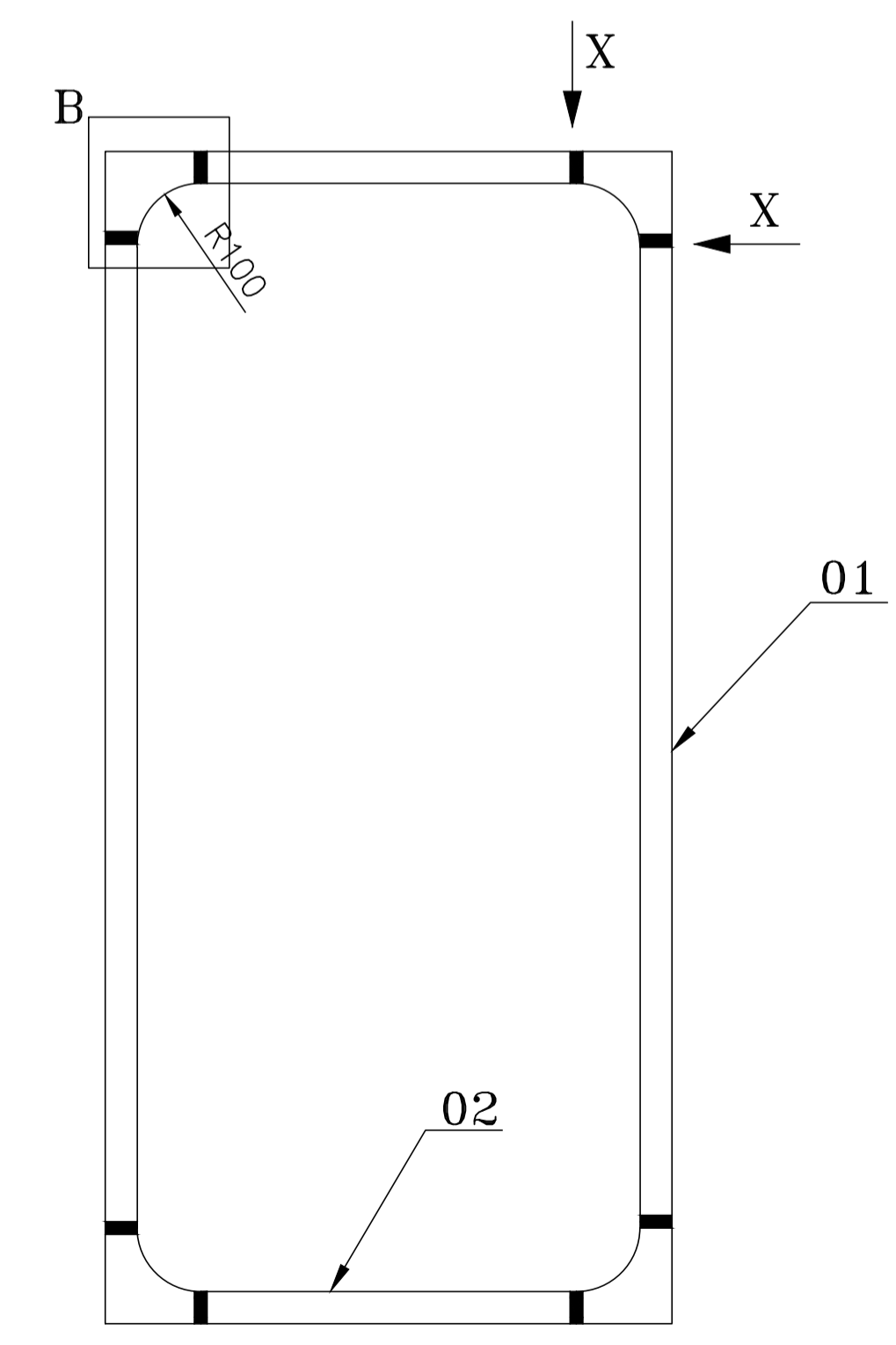
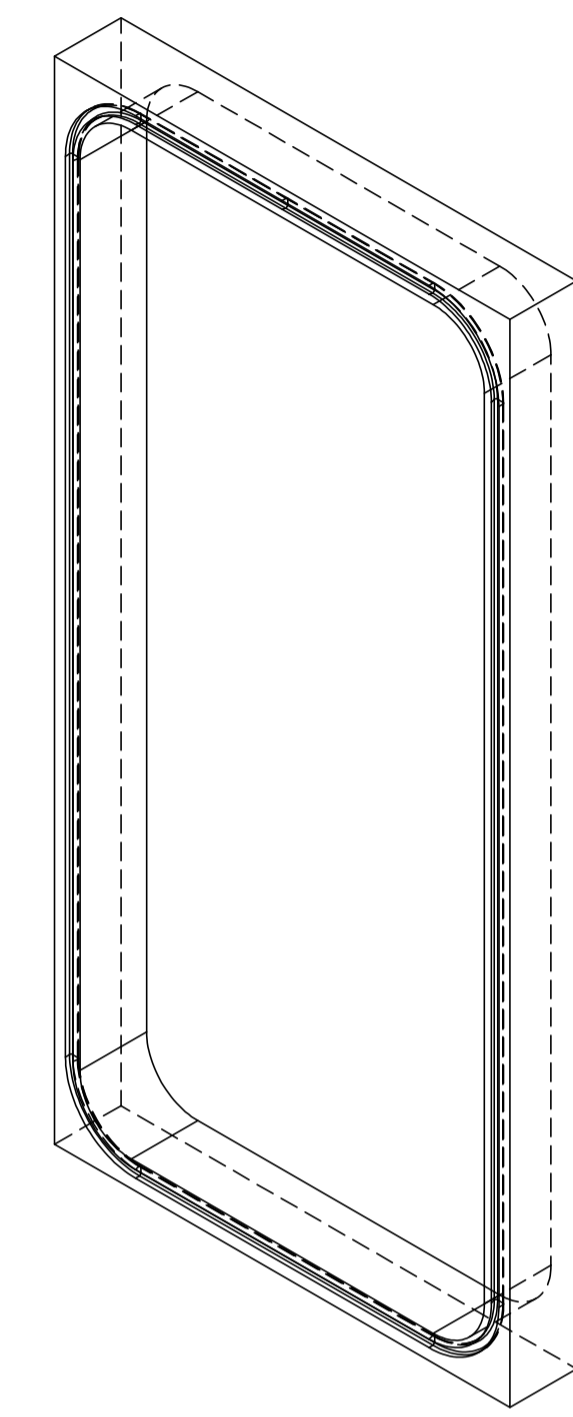
11020-010-A-I-1
DRAWING NO.



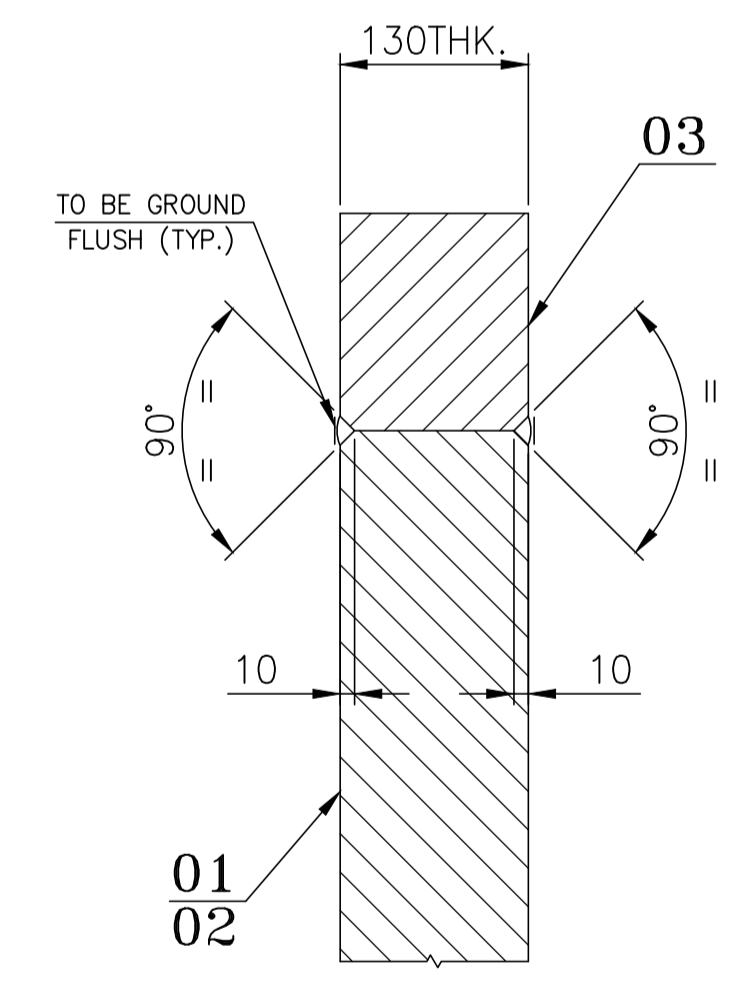
SECTION-A



DETAIL-A



DETAIL-B



VIEW-X
(TYP. WELD DETAIL)

ITEM NUMBER	DESCRIPTION	STD.	DRAWING NUMBER	ITEM NO.	MATERIAL CODE	UNIT	UNIT WEIGHT
04	NBR RUBBER GASKET FOR DOOR FRAME				FM7245100586 RUBBER		1.000
03	CORNER BLOCKS(DOOR FRAME) 150X150X130THK.				FM7600100681 SA 516 Gr.70		22.961
02	DOOR FRAME 590X130X50THK.				156010950000 SA 516 Gr.70		30.105
01	DOOR FRAME 1540X130X50THK.				156010950000 SA 516 Gr.70		78.500

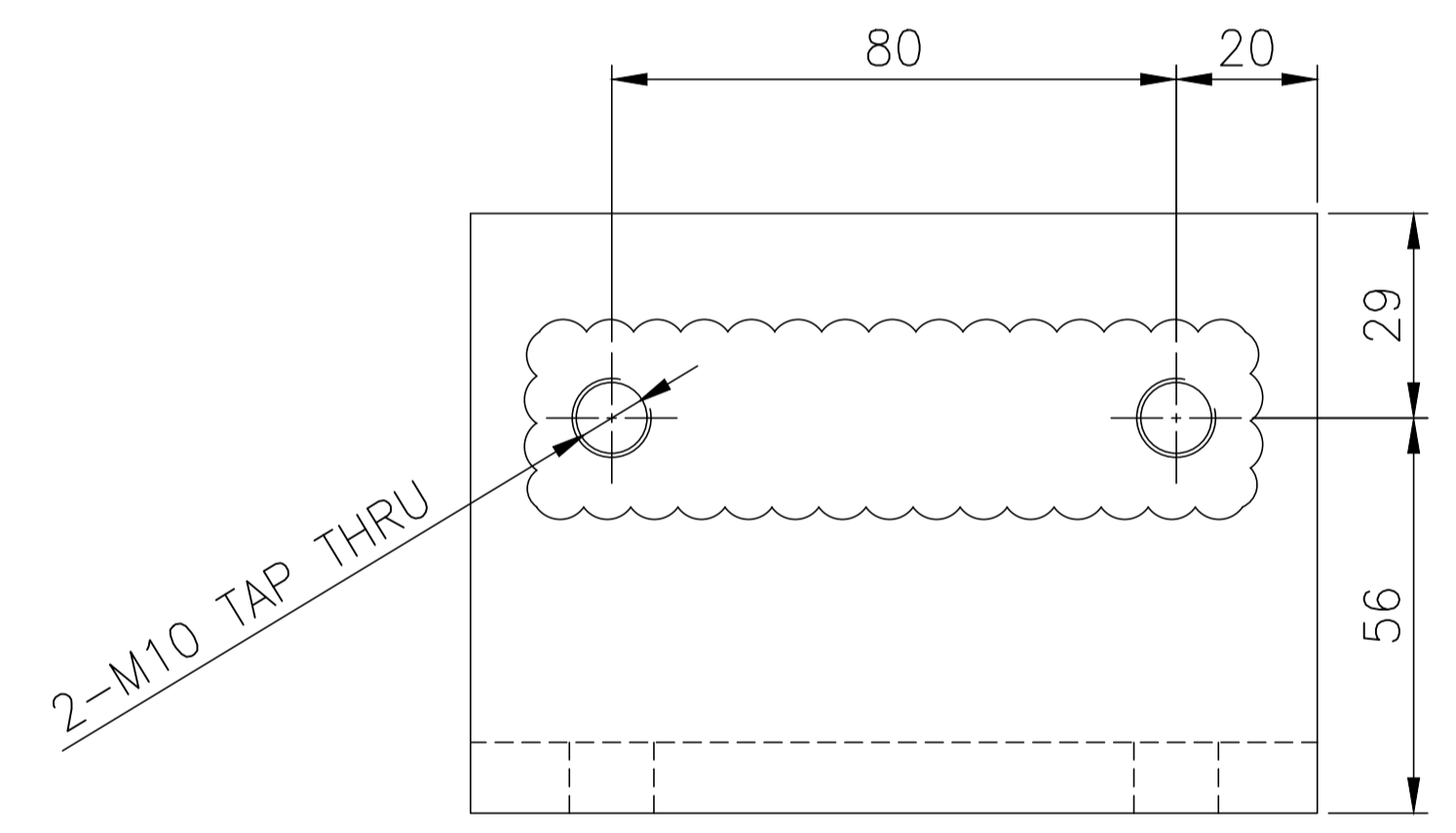
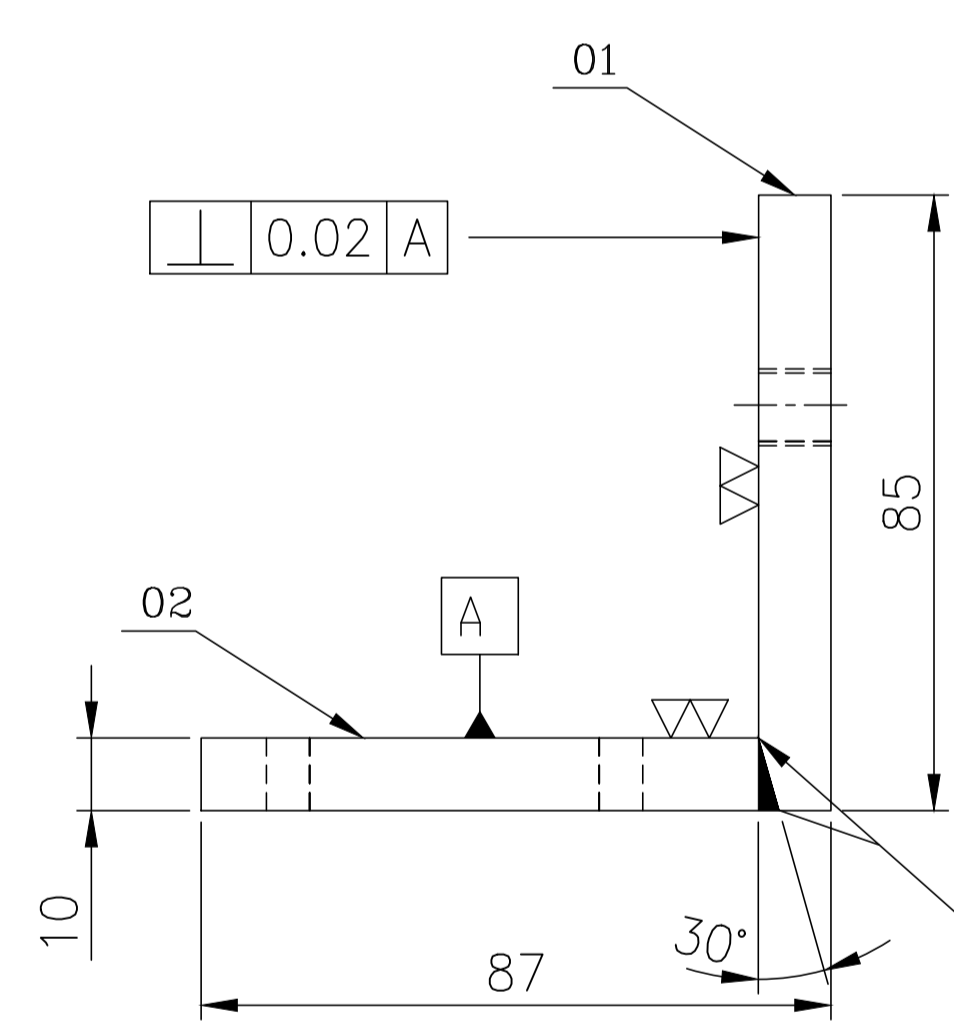
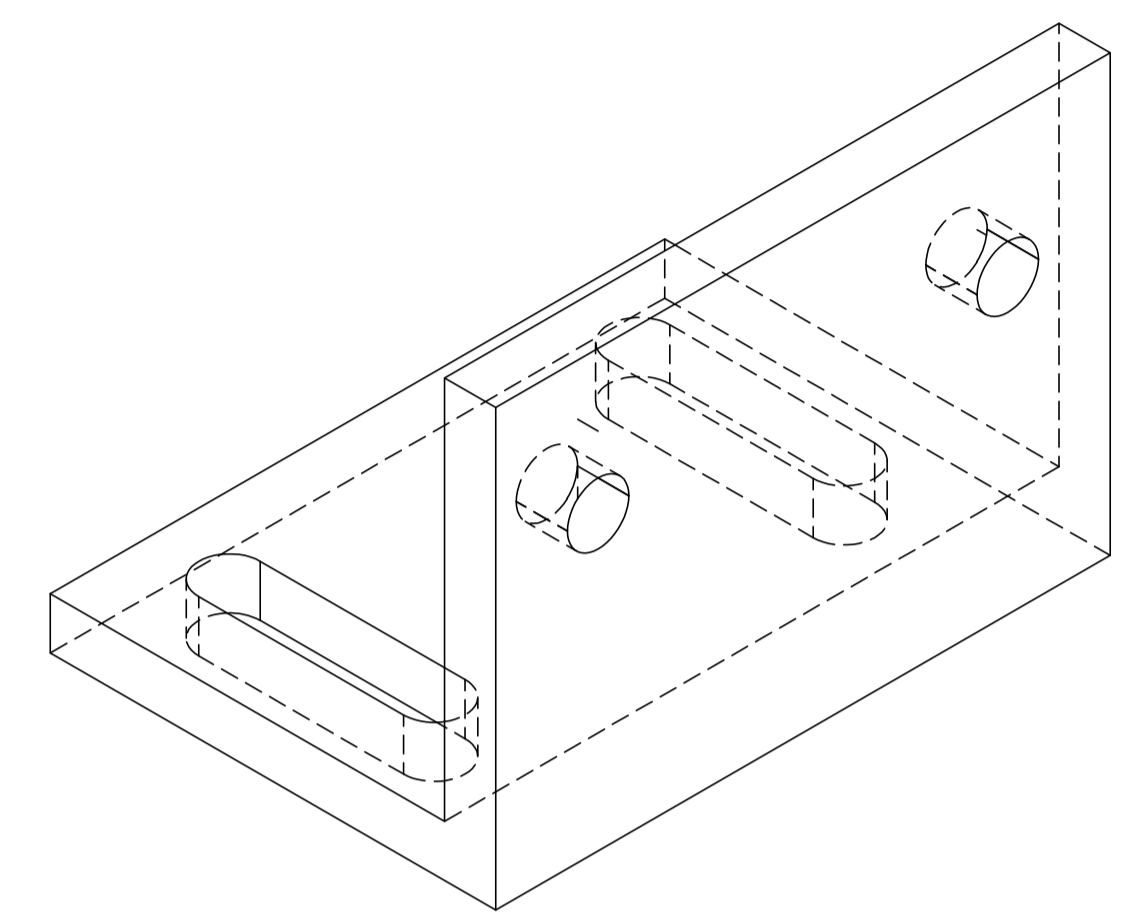
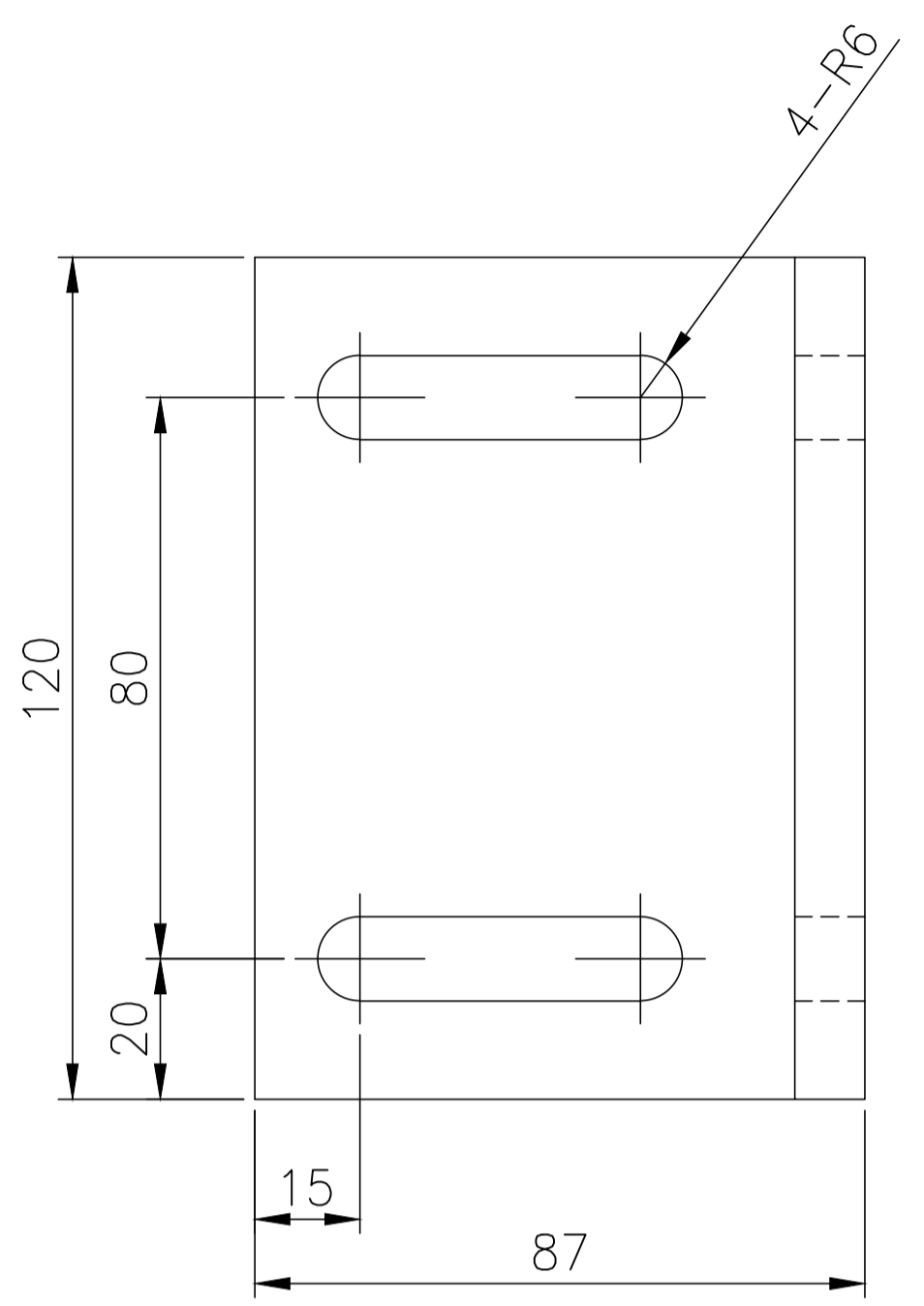
TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111	
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN SSNM	DATE 27.06.2025
CHD L K MANTRI		APPD Y PRASANNA KUMAR	DATE 30.06.2025
WEIGHT (Kg)	309.054	REF TO ASSY / OLD DWG	004-
TITLE DOOR FRAME		DRAWING NO : 1-PV-010-U2011 01	

REV NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.
01	--	REVISED AS MARKED WITH REVISION CLOUD	GDM 06.09.25	LKM 06.09.25	YPK 06.09.25

FORM NO. 0425/2 C

A1 SIZE

DRIVING NO. 1010-U2017



Flush Grind after welding to ensure smooth surface(TYP)

VARIANT NUMBER	DESCRIPTION	STD.	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT
02	PLATE 10THK. 120x77				150113800000 SS 304		0.820
01	PLATE 10THK. 120x85				150113800000 SS 304		0.800

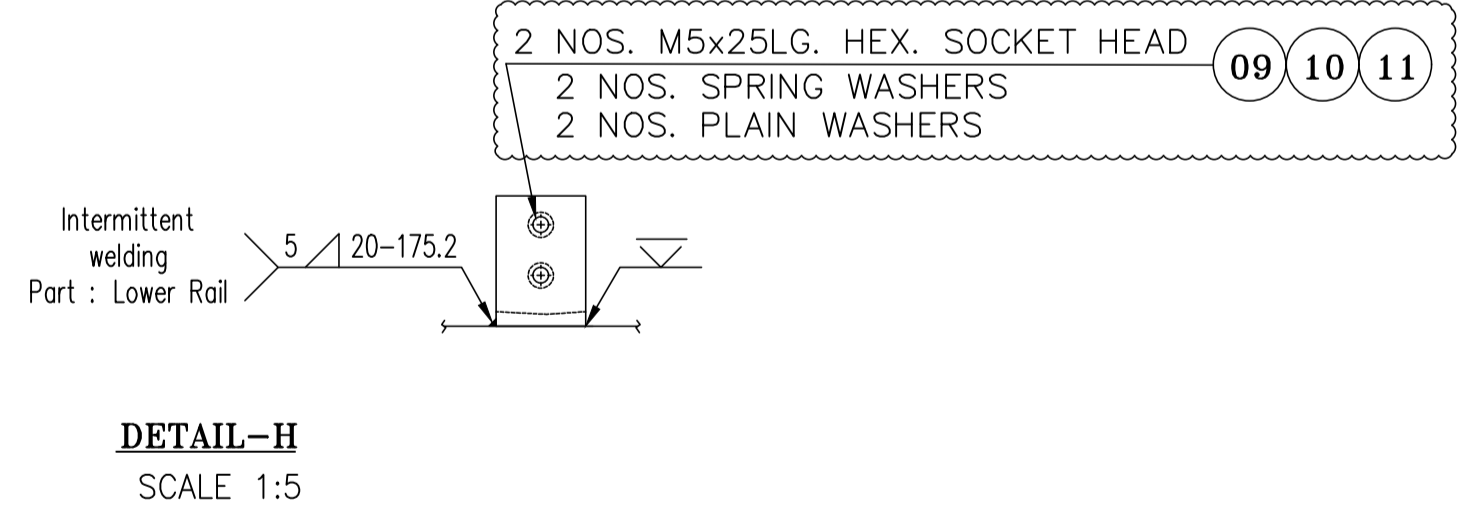
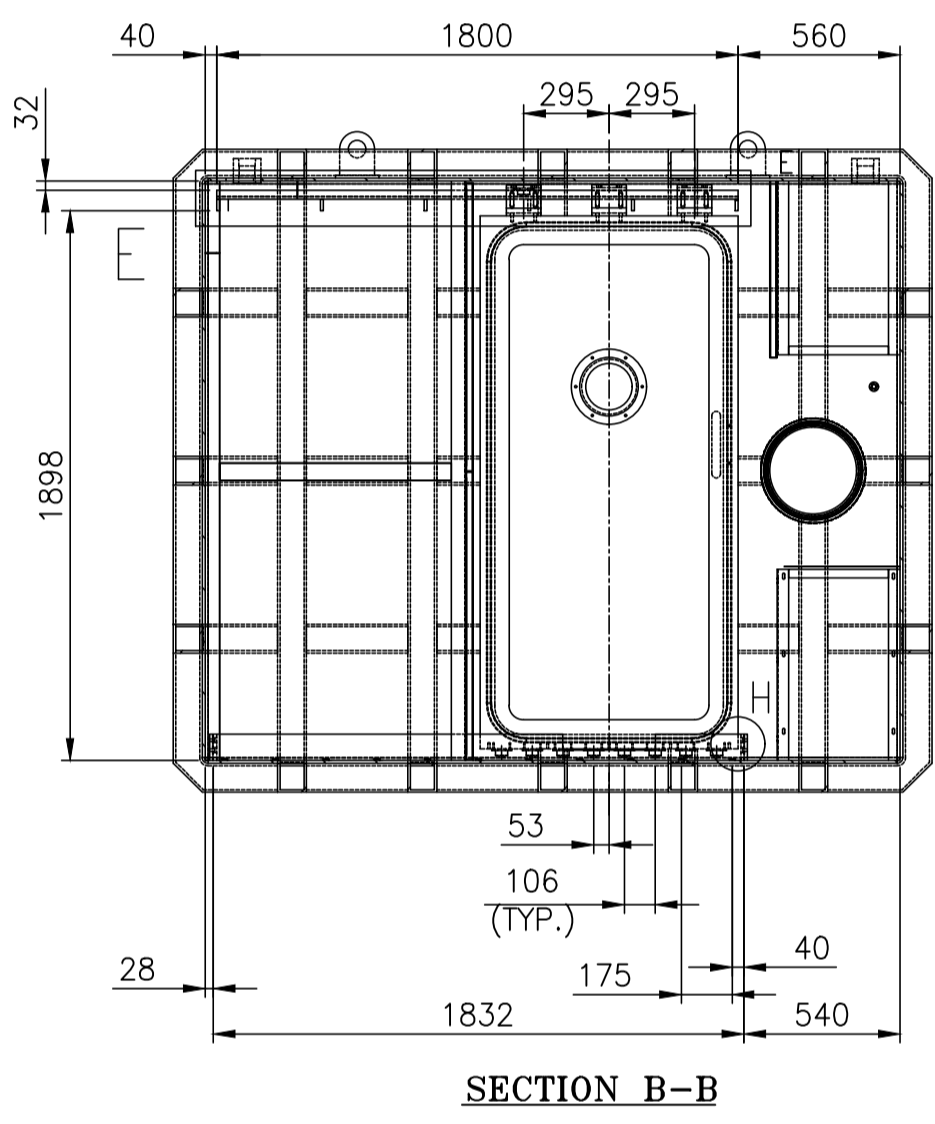
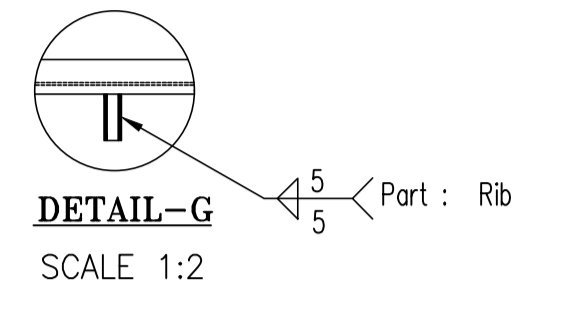
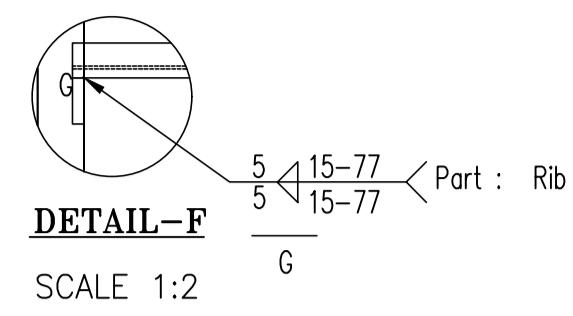
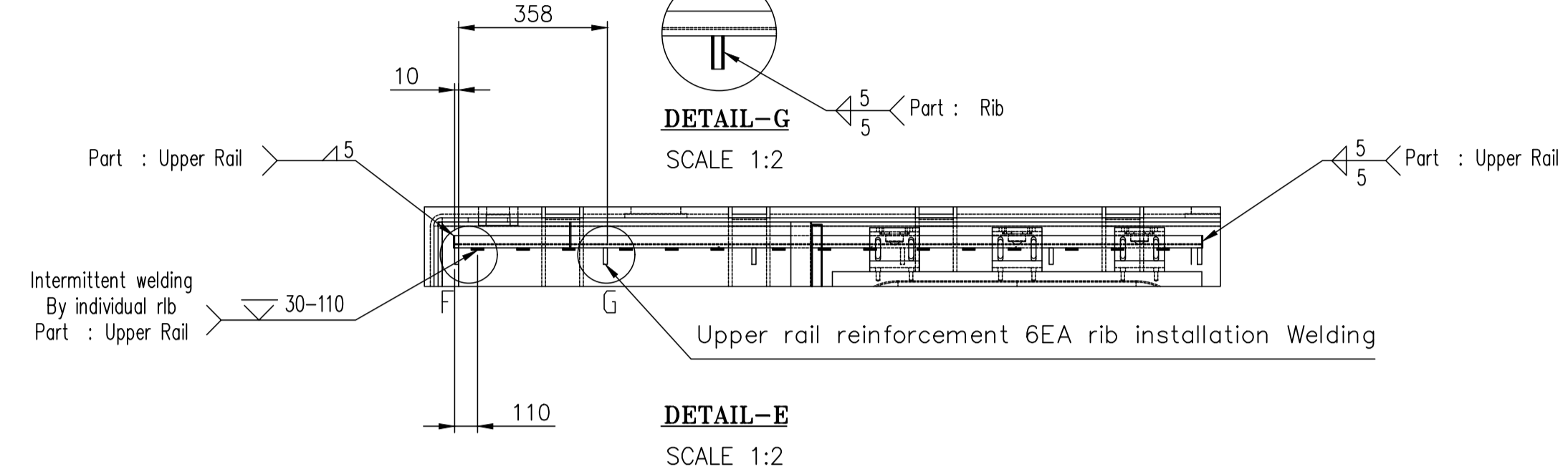
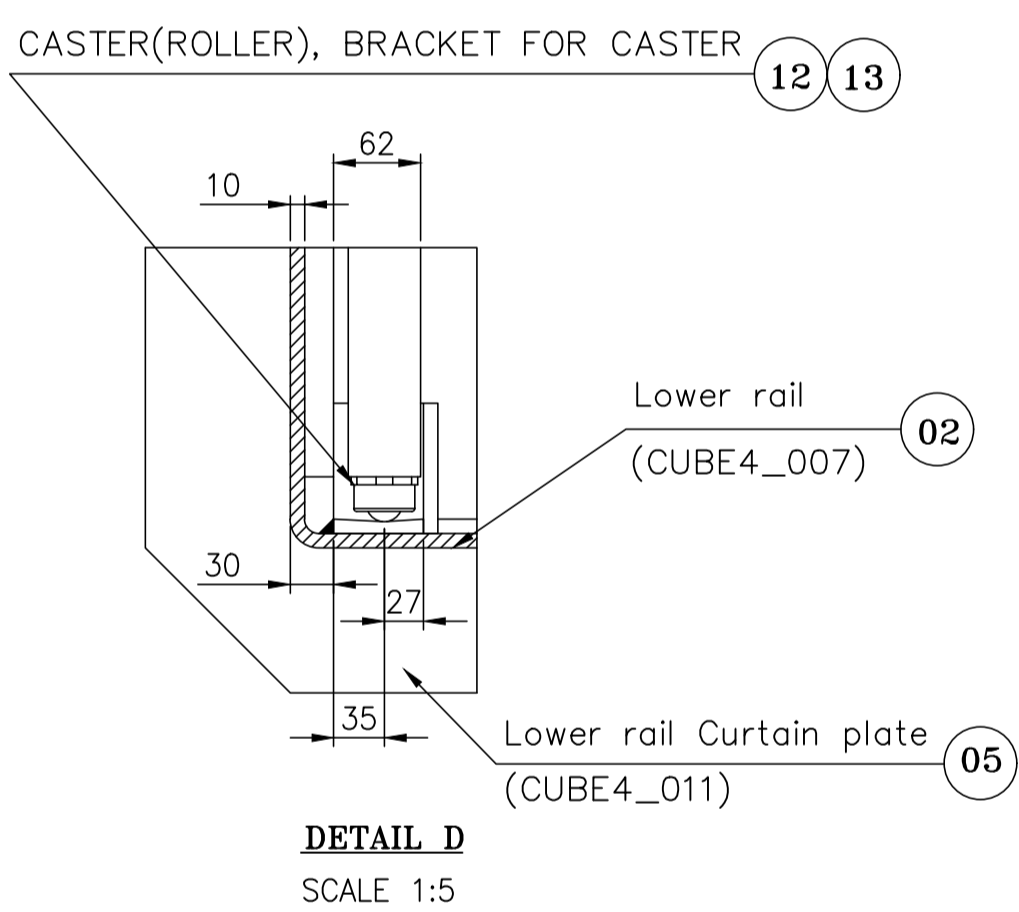
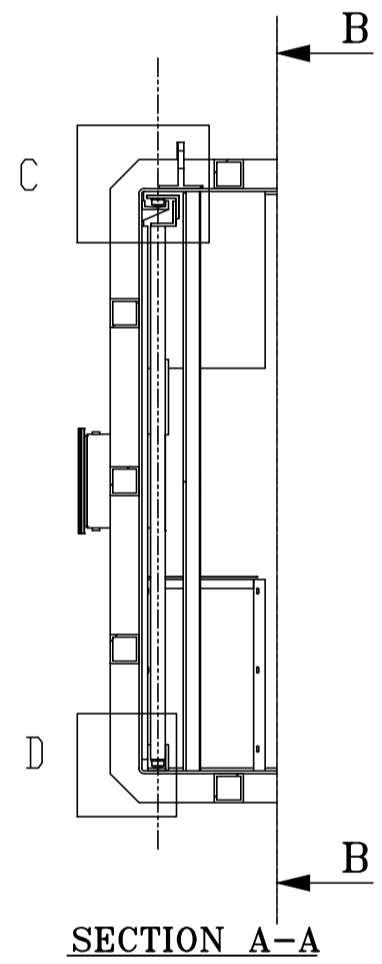
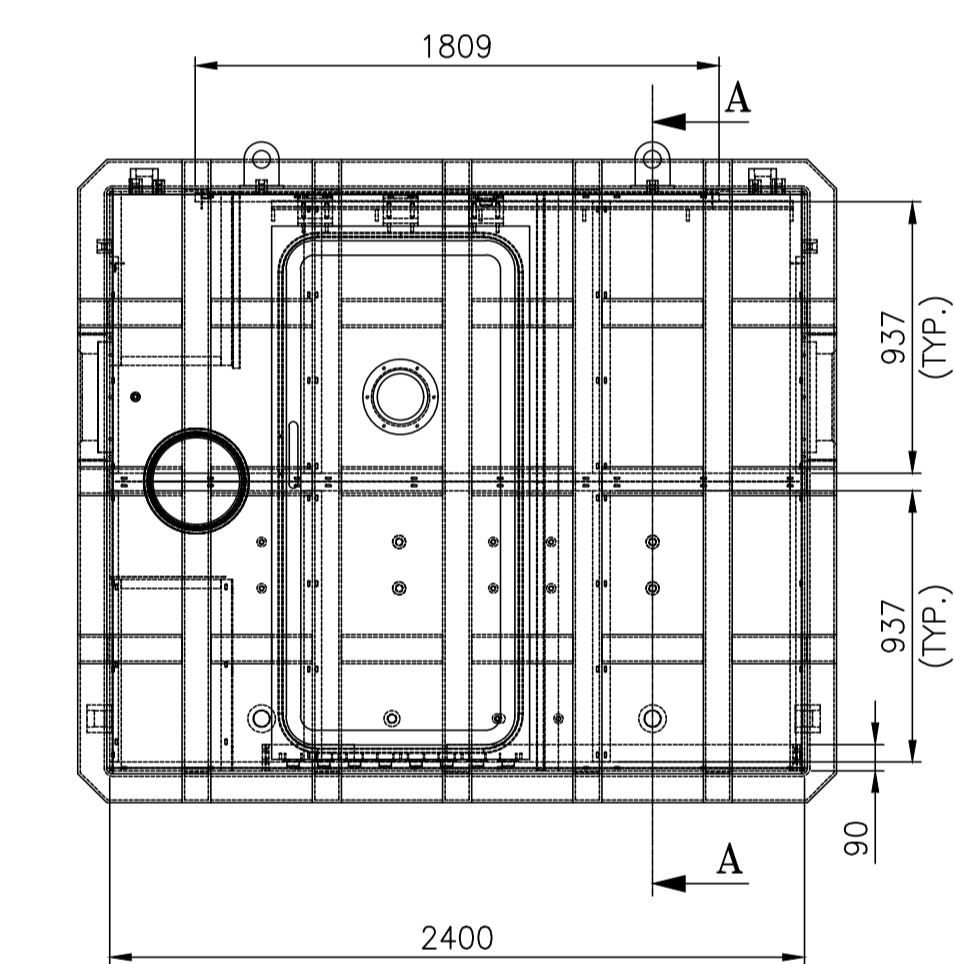
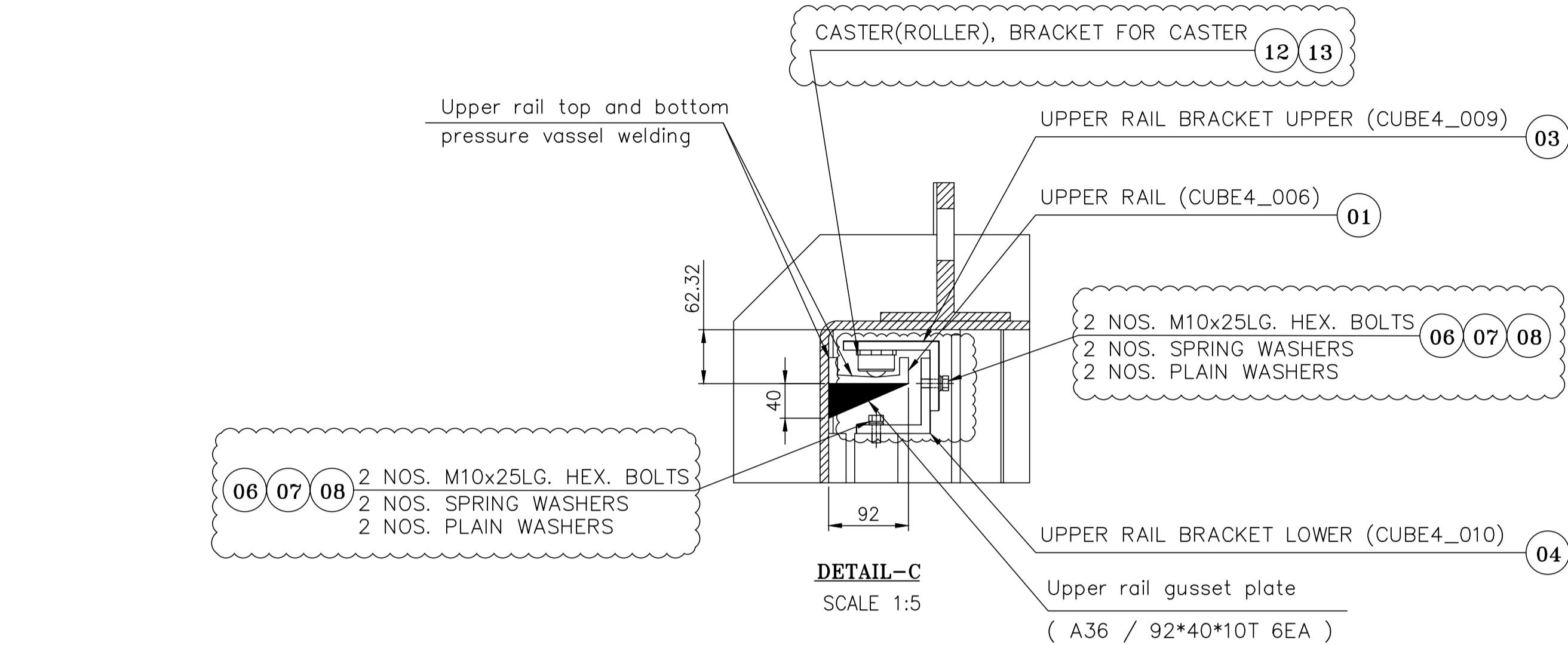
NOTES:-
1. Prohibition on bending production (full processing).

REV. NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.
01	--	REVISED AS MARKED WITH REVISION CLOUD	GDM 03.09.25	LKM 03.09.25	YPK 03.09.25

<p>CAUTION: The information on this drawing is the property of Bharat Heavy Electricals Ltd. It must not be used directly or indirectly in any way detrimental to the interest of the company.</p>	TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111		
	Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN	SSNM	DATE
	DRN: L K MANTRI APPD: Y PRASANNA KUMAR				27.06.2025 30.06.2025 02.07.2025
XPT CODE ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE N.T.S	WEIGHT (kg) 1.620	REF TO ASSY / OLD DWG 010-CUBE4	
TITLE UPPER RAIL BRACKET LOWER RAIL			DRAWING NO : 1-PV-010-U2017 01		

FORM NO. 0425/2 C

A1 SIZE



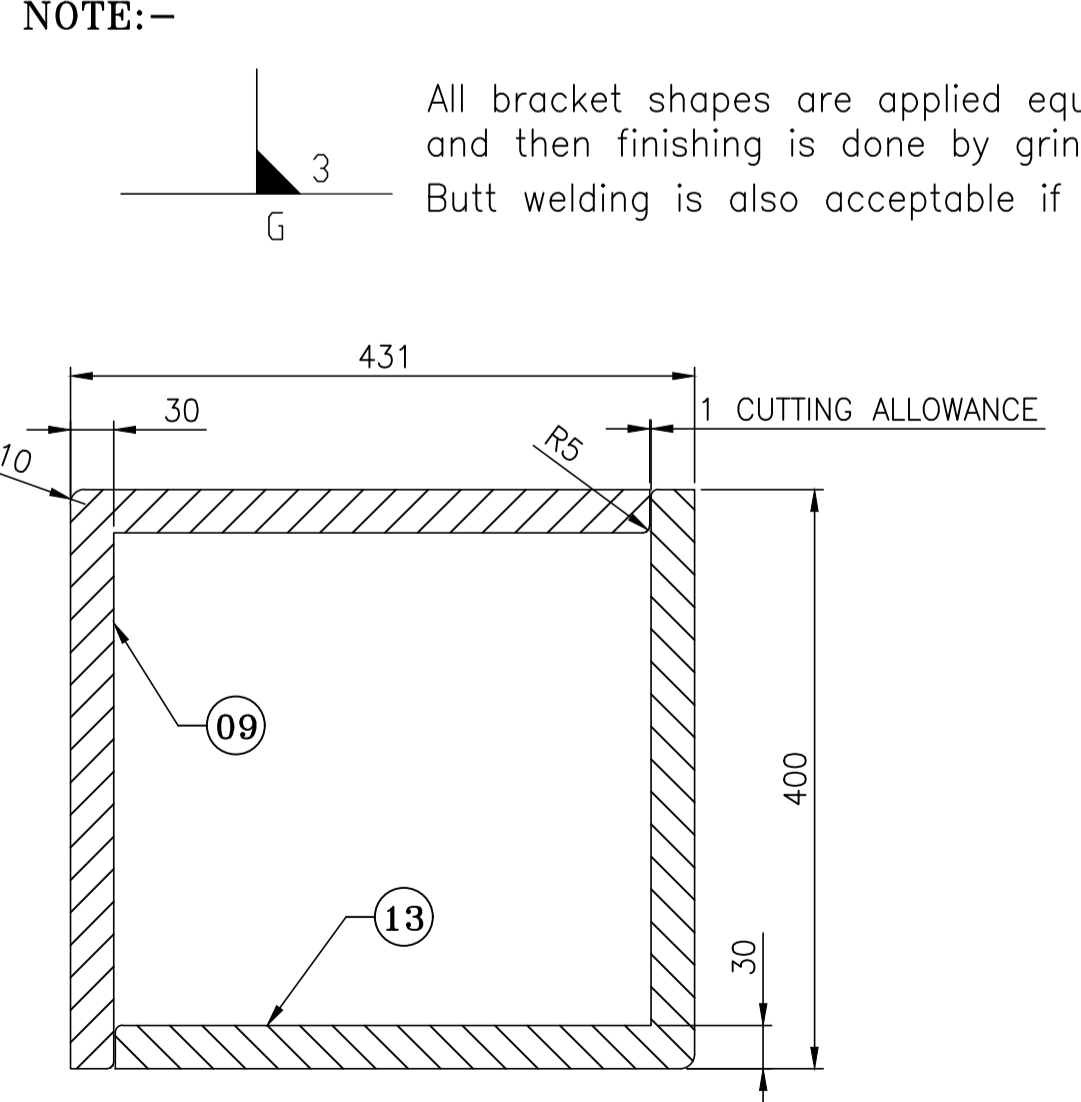
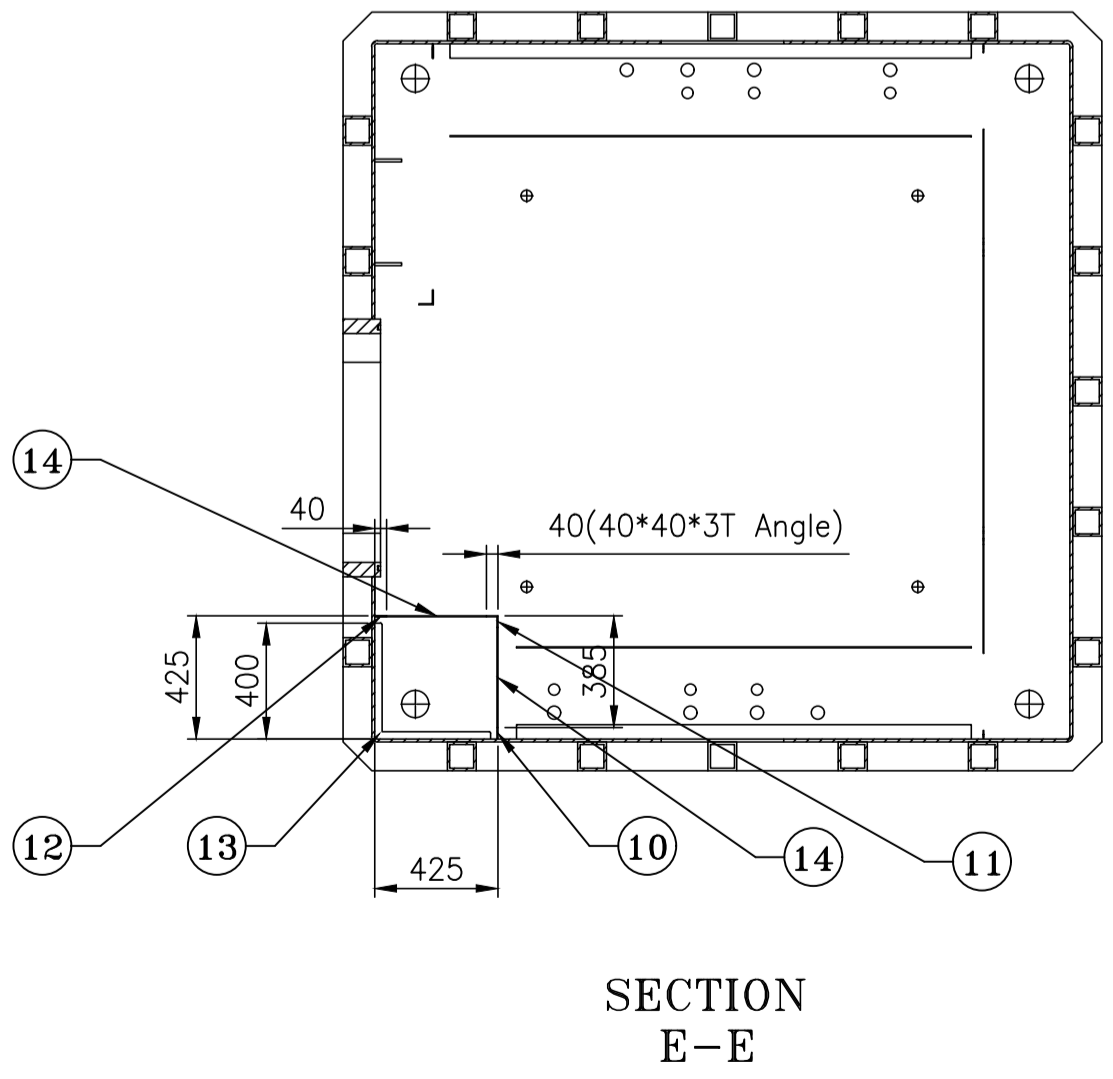
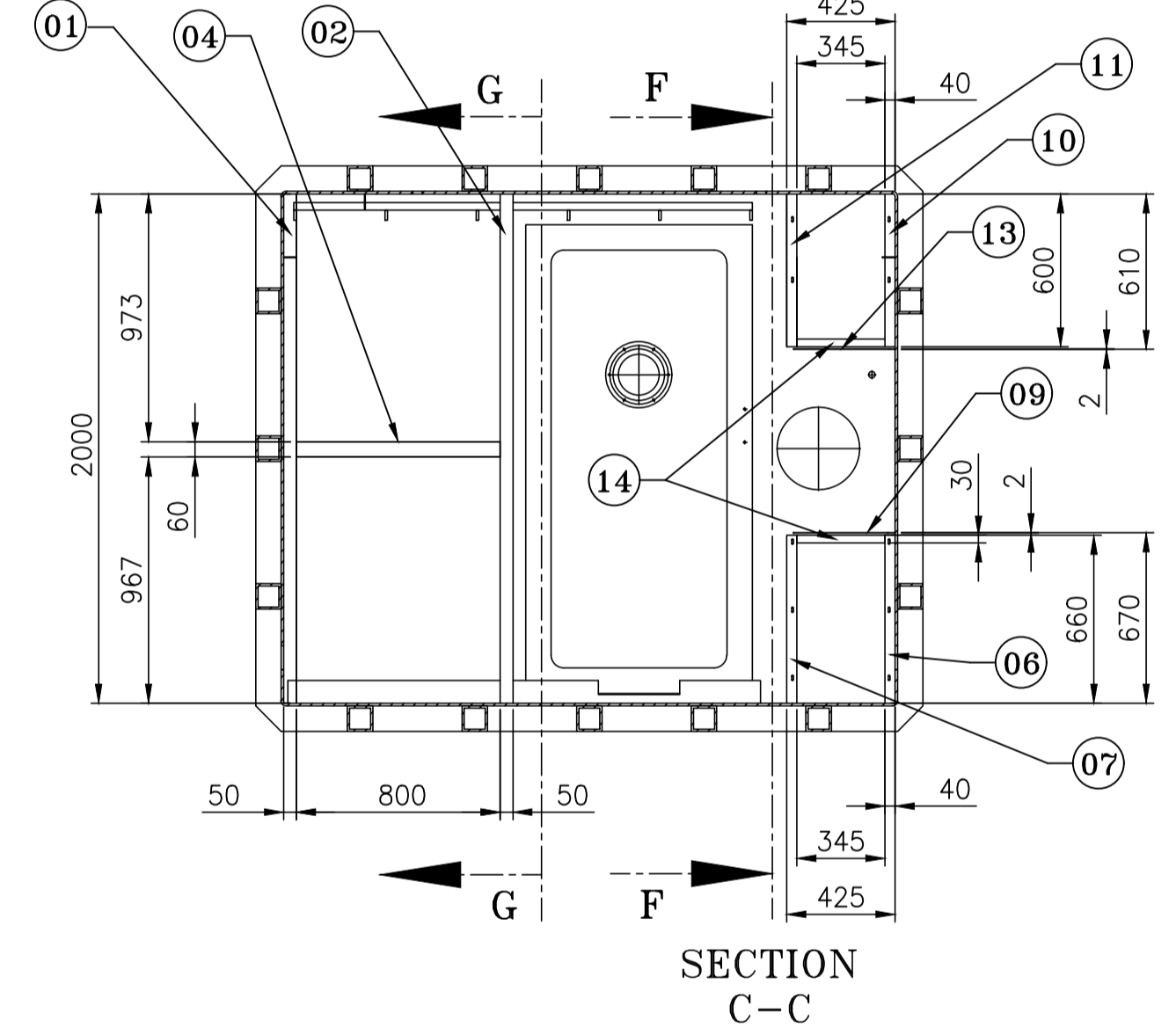
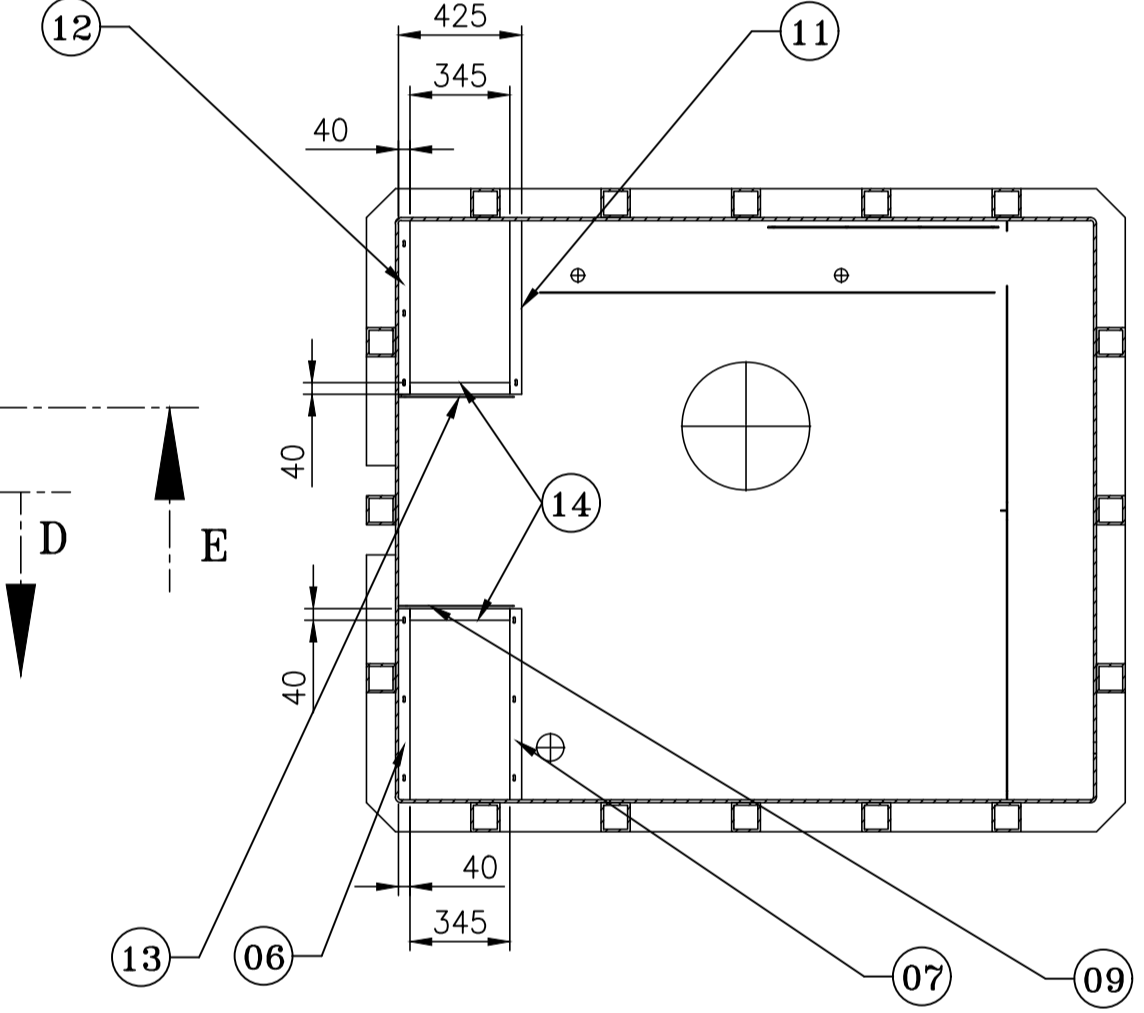
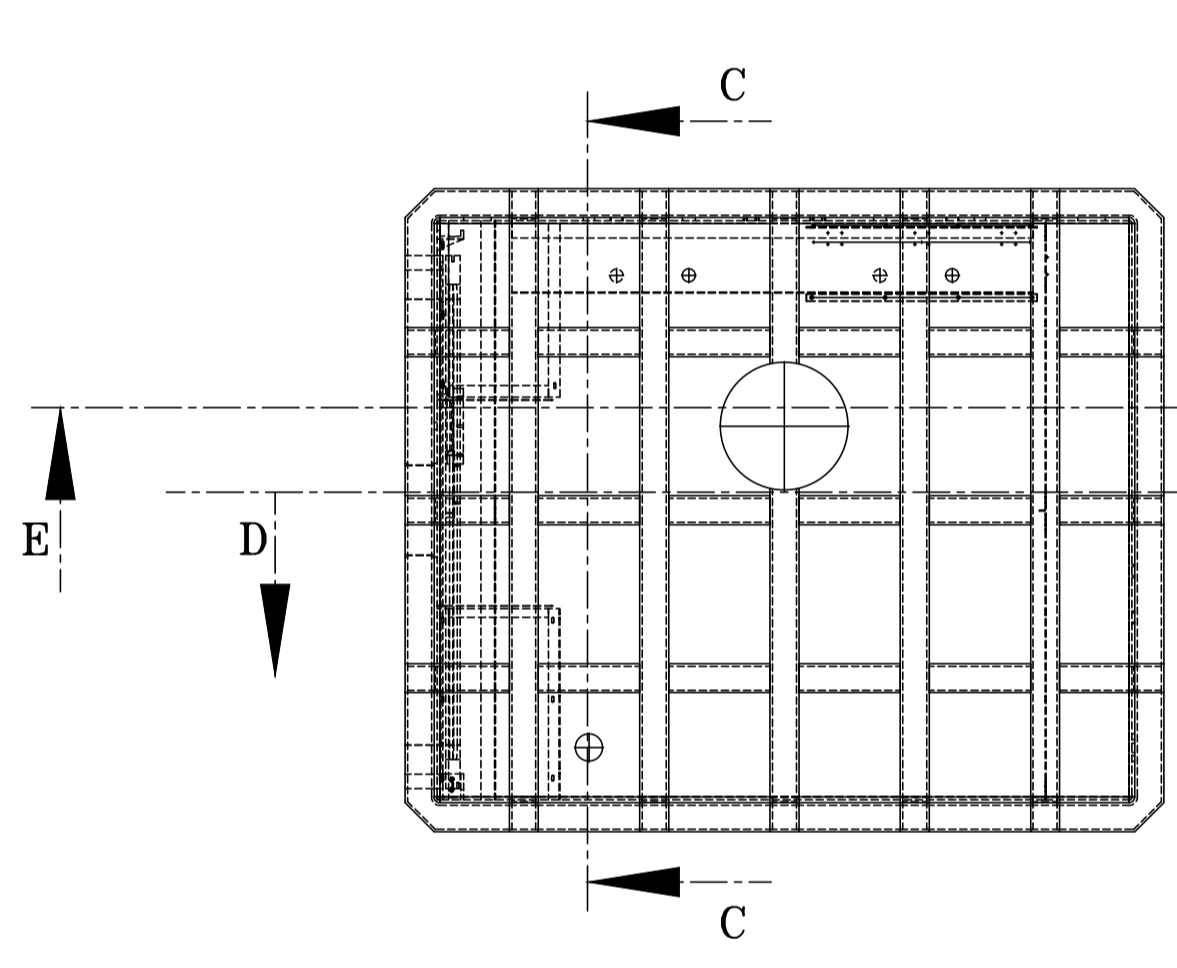
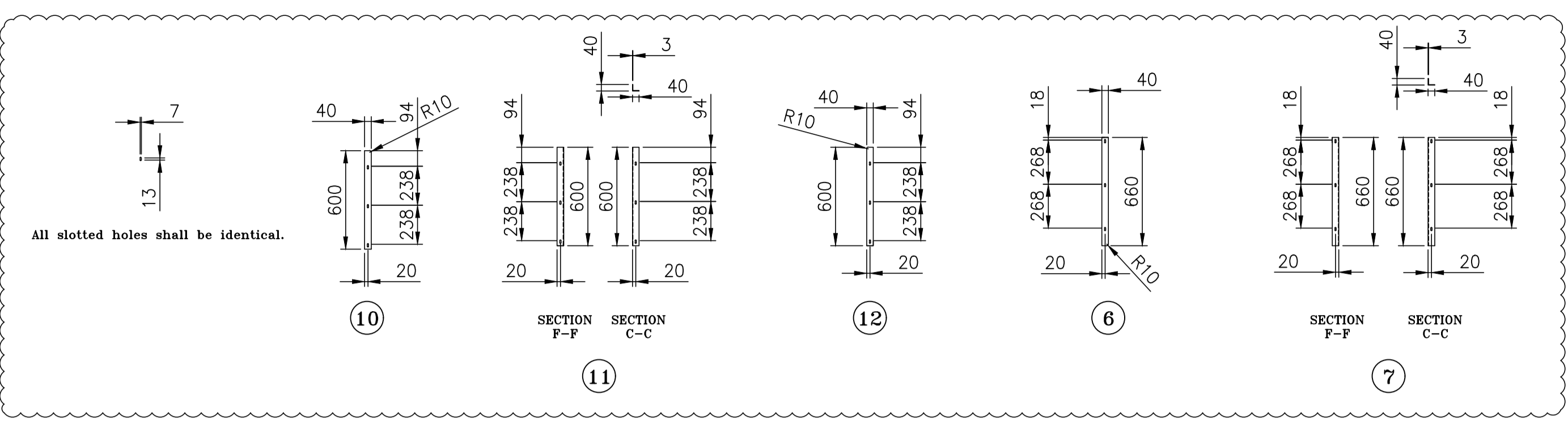
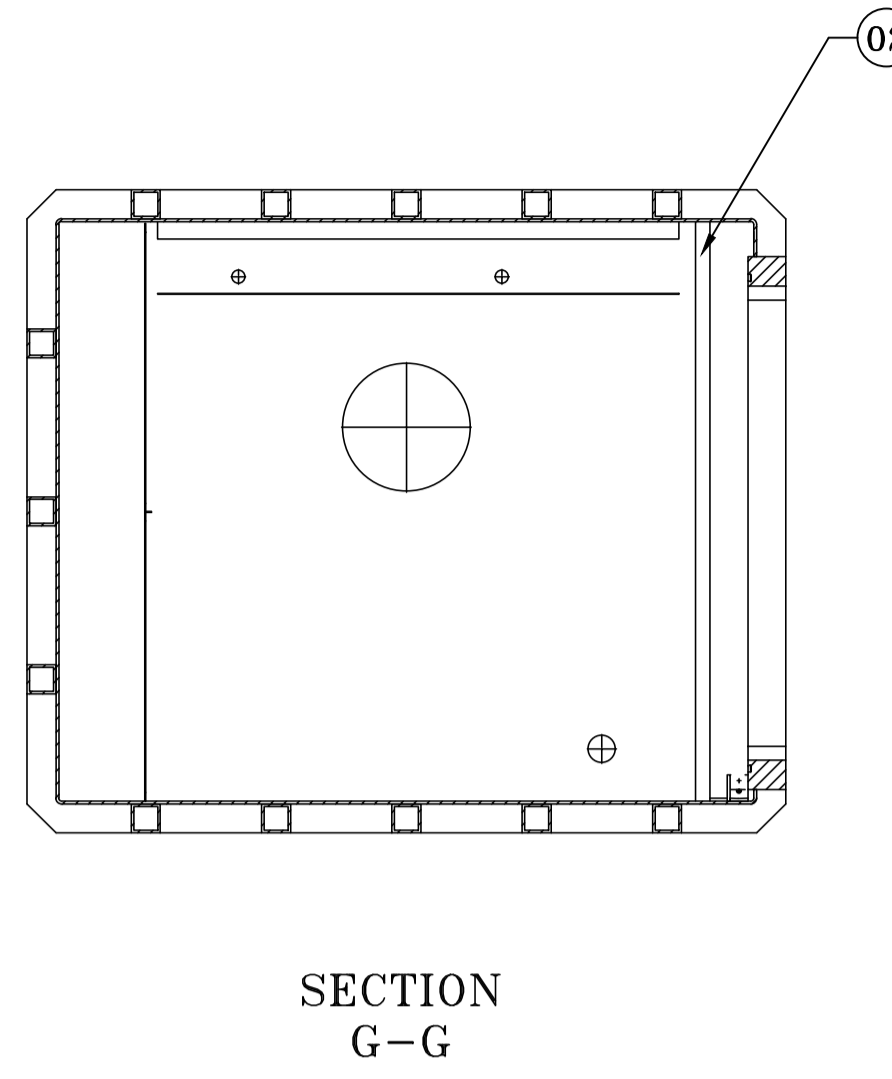
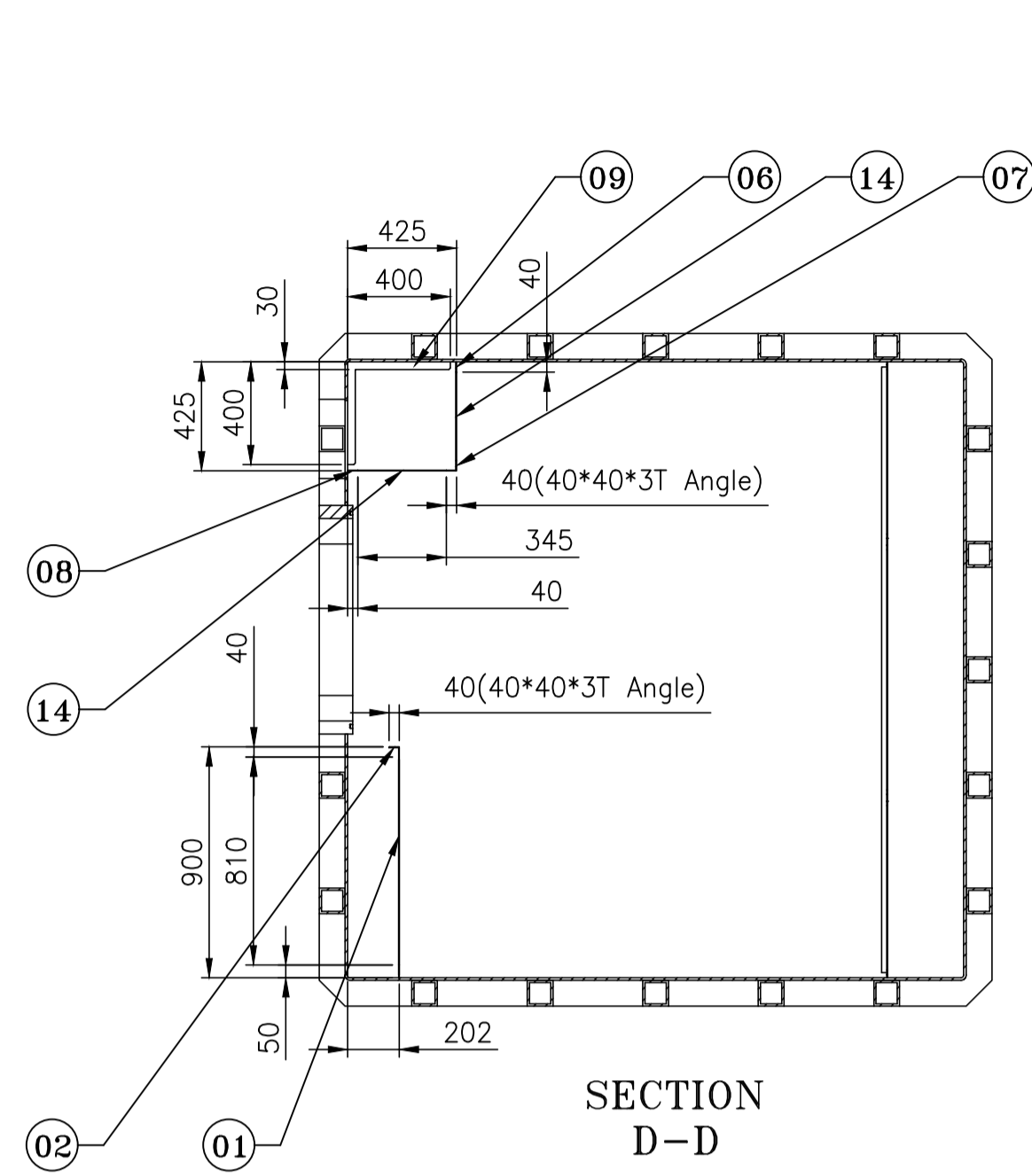
VARIANT NUMBER	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT
					VAR NO	MATERIAL SPECN		
	13	BRACKET FOR CASTER				FM7245100519		0.200
						SS 304		11
	12	CASTER (ROLLER)				FM7245100500		0.100
						SS 304		11
	11	PLAIN WASHERS M5				FM7245100578		0.050
						SS 304		2
	10	SPRING WASHERS M5				FM7245100560		0.050
						SS 304		2
	09	HEX. SOCKETED HEAD BOLT M5x25LG.				FM7245100535		0.125
						SS 304		2
	08	PLAIN WASHERS M10				FM7245100551		0.100
						SS 304		4
	07	SPRING WASHERS M10				FM7245100543		0.100
						SS 304		4
	06	HEX. BOLT M10x25LG.				FM7245100527		0.150
						SS 304		4
	05	LOWER RAIL CURTAIN PLATE	1-PV-010-U2018 CUBE4_011			159421090000		14.130
						SA 516 Gr.70		1
	04	UPPER RAIL BRACKET LOWER	1-PV-010-U2017 CUBE4_010			159421090000		1.620
						SA 516 Gr.70		3
	03	UPPER RAIL BRACKET UPPER	1-PV-010-U2016 CUBE4_009			159421090000		1.450
						SA 516 Gr.70		3
	02	LOWER RAIL	1-PV-010-U2014 CUBE4_007			159421090000		9.700
						SA 516 Gr.70		1
	01	UPPER RAIL	1-PV-010-U2013 CUBE4_006			159421090000		19.292
						SA 516 Gr.70		1

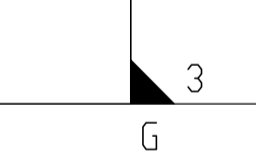
NOTES:-

- When installing the upper and lower rails, pay attention to the floor surface and level.
- When welding above and below the upper rail, consider the position of the reinforcement rib weld.
- When installing the upper and lower rails, pay attention to the verticality of the center.

REV NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.
01	--	REVISED AS MARKED WITH REVISION CLOUD	GDM	LKM	YPK
			06.09.23	06.09.25	06.09.25

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111	
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN	SSNM
CHD		L K MANTRI	27.06.2025
APPD		Y PRASANNA KUMAR	30.06.2025
REF TO ASSY / OLD DWG	013-CUBE4	WEIGHT (kg)	5.150
TITLE		DRAWING NO : 1-PV-010-U2020	
RAIL INSTALLATION DIAGRAM		REV 01	



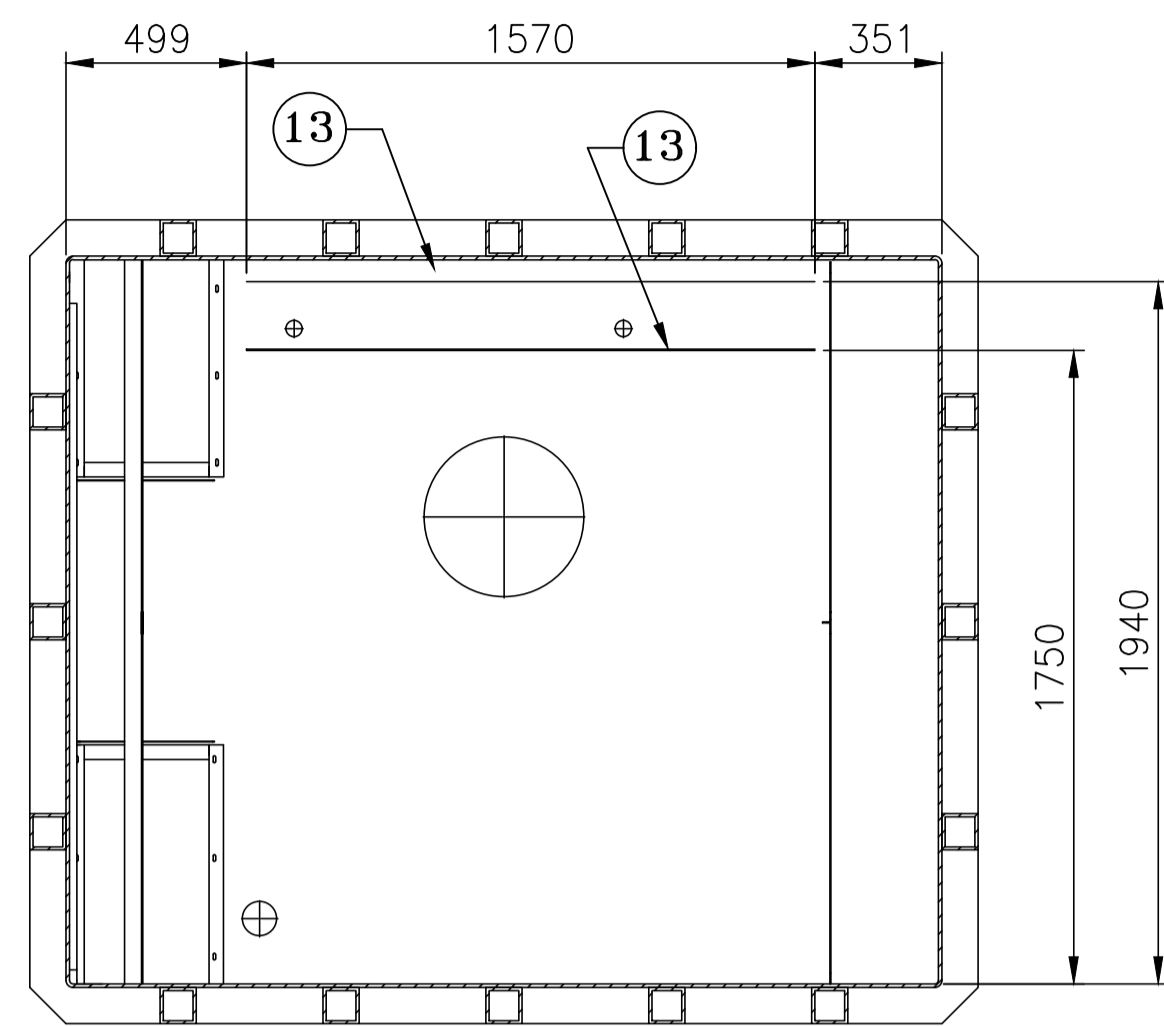
NOTE:-
 All bracket shapes are applied equally, and intermittent welding is performed without dimension specification, and then finishing is done by grinding and flattening after welding.
 Butt welding is also acceptable if strength is not an issue.

ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT
VAR NO	MATERIAL SPECN					QTY	
14	ENTRANCE SHELF INNER BRACKET-9 345X40X3.15 SHT.			15011820000	IS1079 D		0.341
13	ENTRANCE SHELF INNER BRACKET-8 ANGLE 400X30X1.6 (SEE CUTTING DIAGRAM)			159421960000	IS1079 D		0.200
12	ENTRANCE SHELF INNER BRACKET-7 600X40X3.15 SHT.			15011820000	IS1079 D		0.565
11	ENTRANCE SHELF INNER BRACKET-6 600X40X3.15 SHT.			15011820000	IS1079 D		0.565
10	ENTRANCE SHELF INNER BRACKET-5 600X40X3.15 SHT.			15011820000	IS1079 D		0.565
09	ENTRANCE SHELF INNER BRACKET-4 ANGLE 400X30X1.6 (SEE CUTTING DIAGRAM)			159421960000	IS1079 D		0.200
08	ENTRANCE SHELF INNER BRACKET-3 660X40X3.15 SHT.			15011820000	IS1079 D		0.622
07	ENTRANCE SHELF INNER BRACKET-2 660X40X3.15 SHT.			15011820000	IS1079 D		0.653
06	ENTRANCE SHELF INNER BRACKET-1 660X40X3.15 SHT.			15011820000	IS1079 D		0.622
05							
04	DOOR COVER INNER BRACKET-3 800X60X3.15 SHT.			15011820000	IS1079 D		1.145
03							
02	DOOR COVER INNER BRACKET-2 2000X40X40X3.15 SHT.(ANGLE)			15011820000	IS1079 D		3.956
01	DOOR COVER INNER BRACKET-1 2000X50X3.15 SHT.			15011820000	IS1079 D		2.355

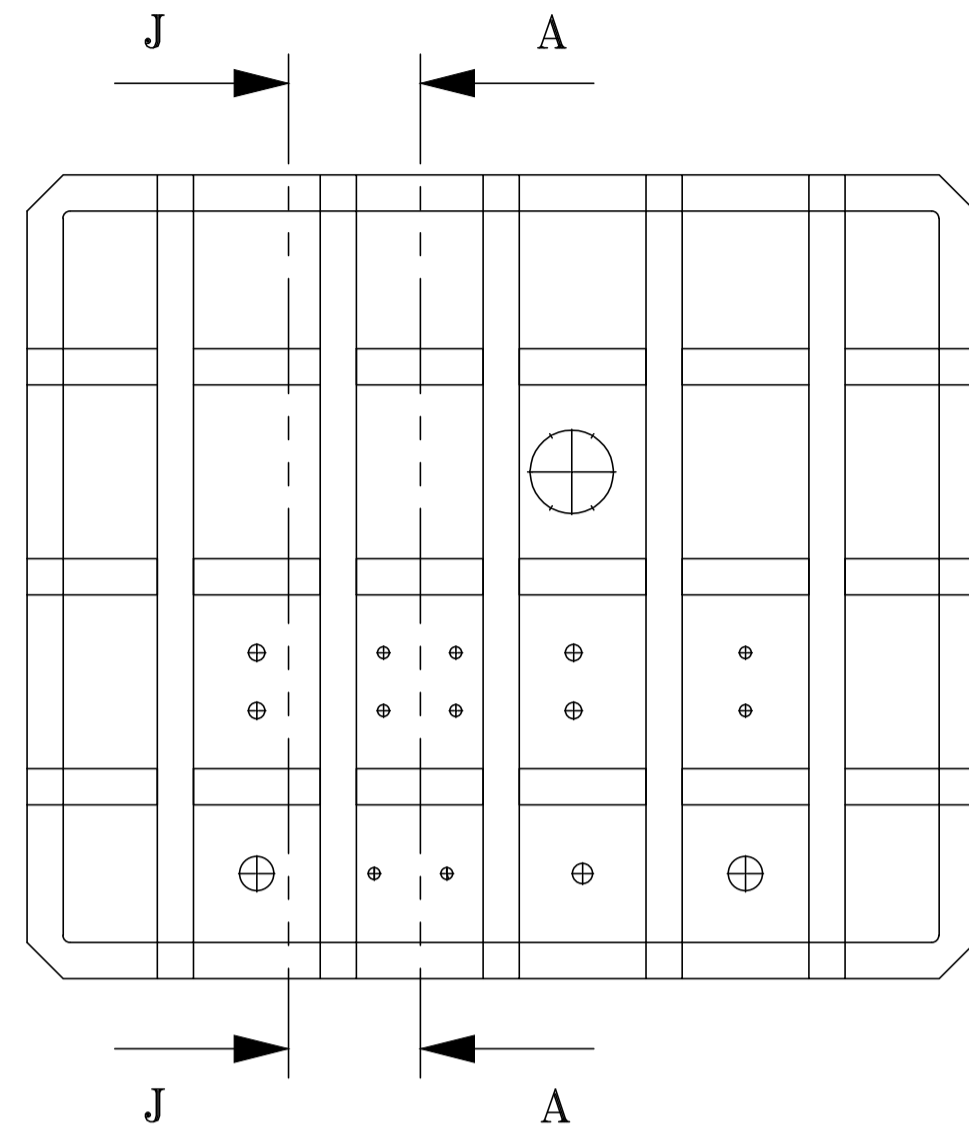
CAUTION: The information on this drawing is the property of Bharat Heavy Electricals Ltd. It must not be used directly or indirectly in any way detrimental to the interest of the company.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111	
Bharat Heavy Electricals Ltd		DRN	SSNM
UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		CHD	L K MANTRI
		APPD	Y PRASANNA KUMAR
SCALE	PROJECTION	WEIGHT (kg)	REF TO ASSY / OLD DWG
N.T.S		12.812	014-CUBE4
TITLE		DRAWING NO :	
INNER BRACKET_01		1-PV-010-U2021	
		REV	01

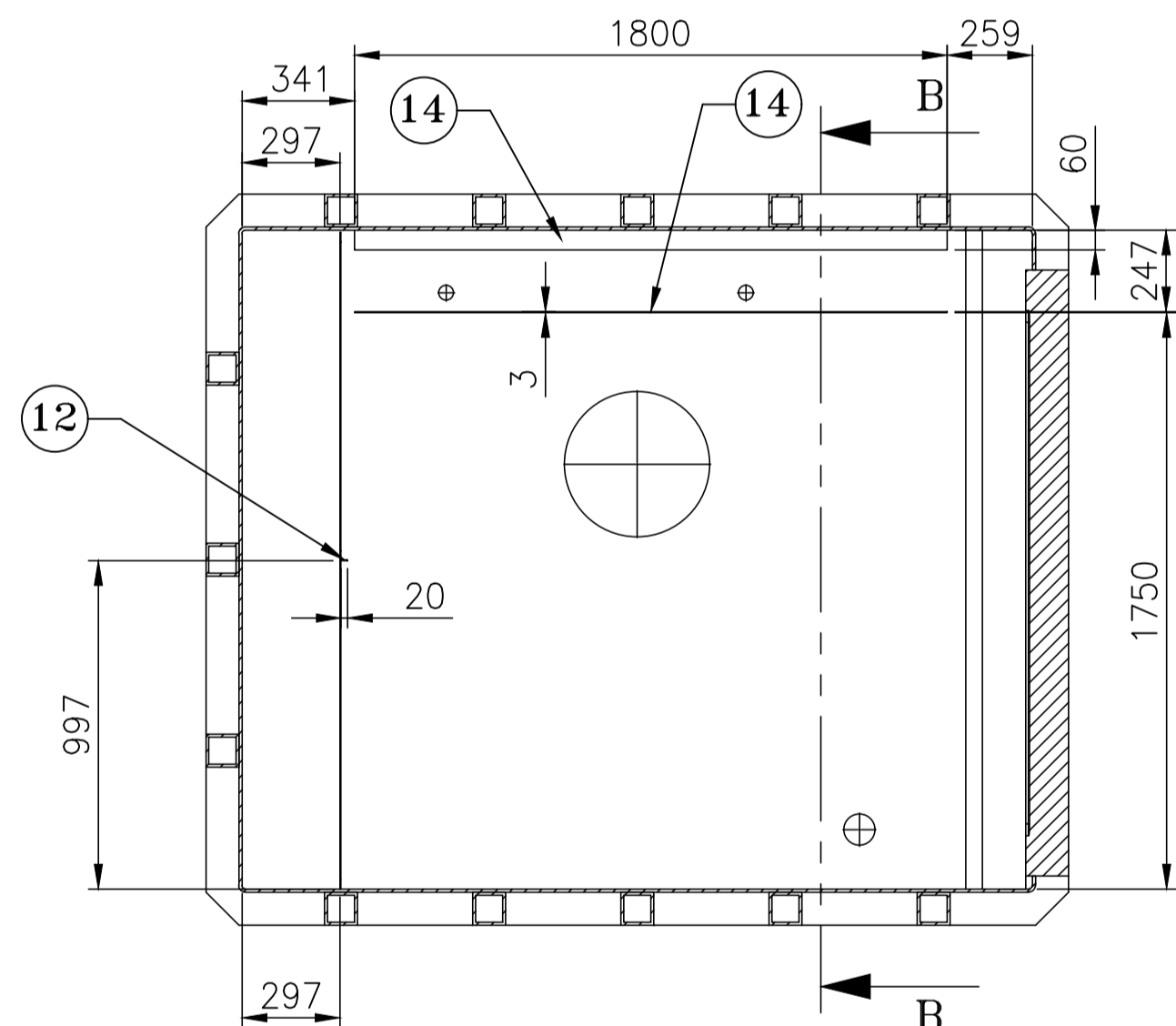
REV NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD	CHD	APPD
01	--	REVISED AS MARKED WITH REVISION CLOUD	GDM	LKM	YPK
			03.09.20	03.09.20	03.09.20



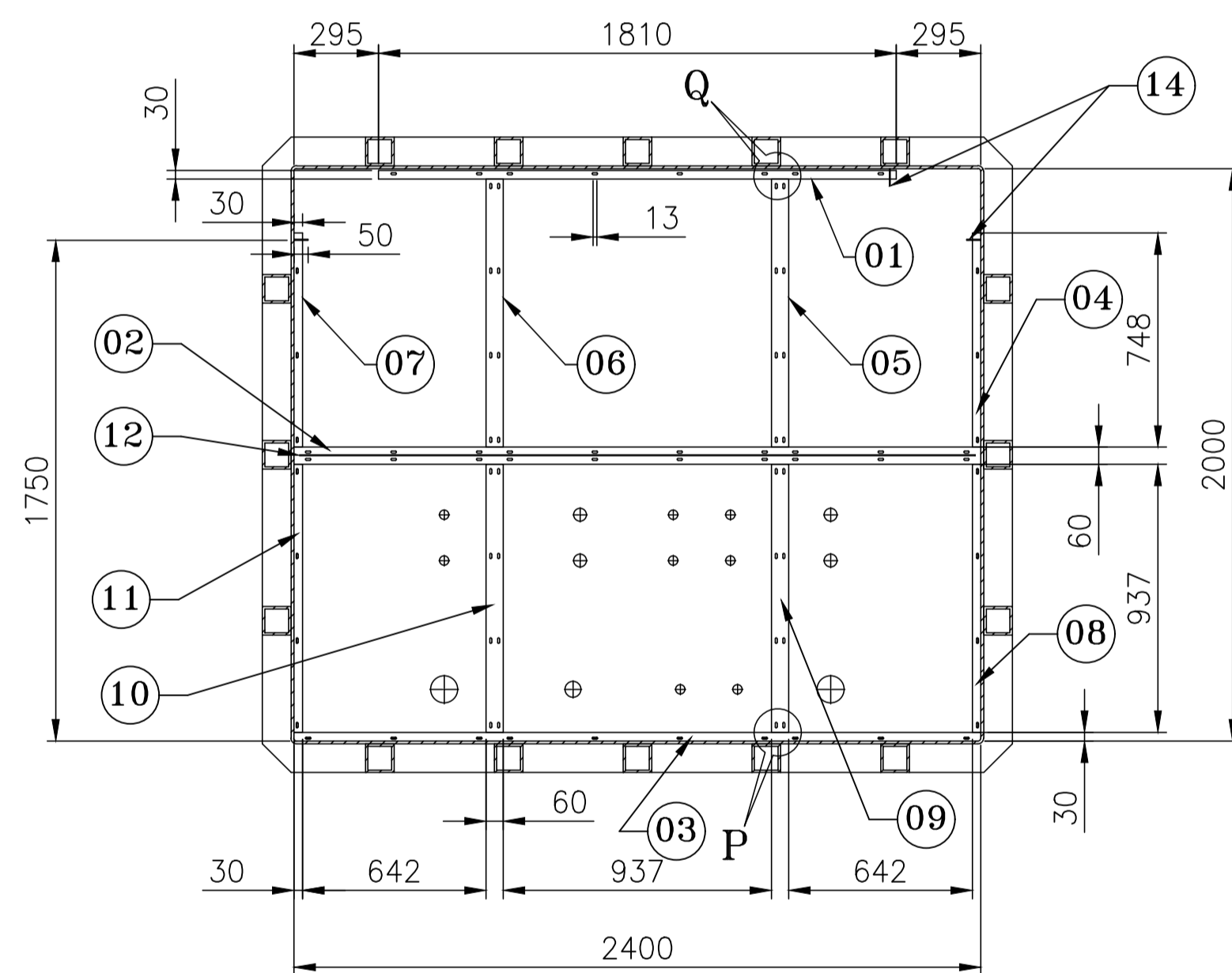
SECTION J-J



SECTION A-A

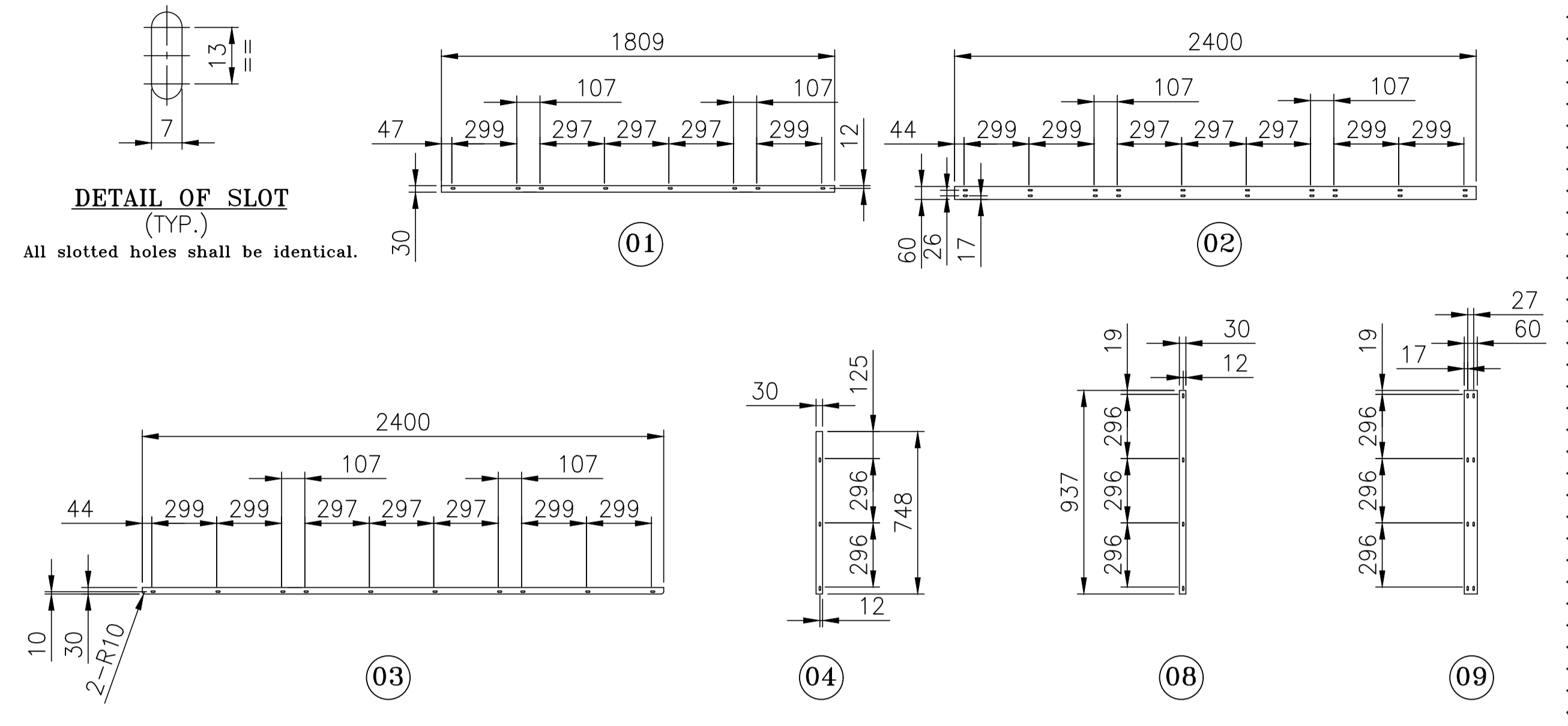


SECTION B-B

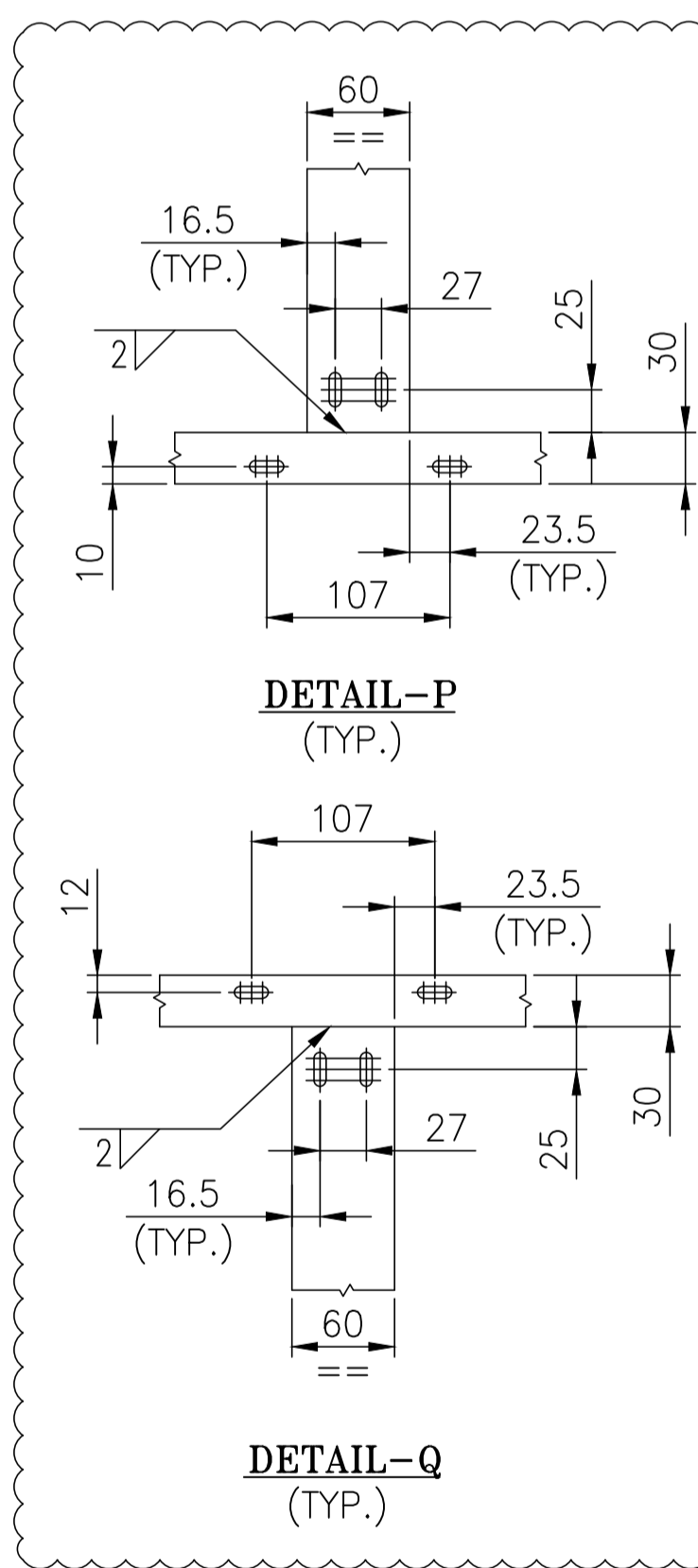


DETAIL OF SLOT
(TYP.)

All slotted holes shall be identical.



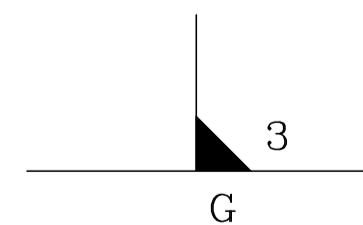
DETAIL-P
(TYP.)



DETAIL-Q
(TYP.)

SR	ITEM NUMBER	DESCRIPTION	STD	DRAWING NUMBER	ITEM NO	MATERIAL CODE	UNIT	UNIT WEIGHT
VAR NO							DI	QUANTITY
	14	UPPER SHELF INNER BRACKET-2 1800X50X3.15 SHT.				15011820000		2.225
						ISI079 D		2
	13	UPPER SHELF INNER BRACKET-1 1570X60X3.15 SHT.				15011820000		2.320
						ISI079 D		2
	12	WALL SHELF INNER BRACKET-12 2360X20X3.15 SHT.				15011820000		1.160
						ISI079 D		1
	11	WALL SHELF INNER BRACKET-11 937X30X3.15 SHT.				15011820000		0.695
						ISI079 D		1
	10	WALL SHELF INNER BRACKET-10 937X60X3.15 SHT.				15011820000		1.390
						ISI079 D		1
	09	WALL SHELF INNER BRACKET-9 937X60X3.15 SHT.				15011820000		1.390
						ISI079 D		1
	08	WALL SHELF INNER BRACKET-8 937X30X3.15 SHT.				15011820000		0.695
						ISI079 D		1
	07	WALL SHELF INNER BRACKET-7 748X30X3.15 SHT.				15011820000		0.555
						ISI079 D		1
	06	WALL SHELF INNER BRACKET-6 937X60X3.15 SHT.				15011820000		1.390
						ISI079 D		1
	05	WALL SHELF INNER BRACKET-5 937X60X3.15 SHT.				15011820000		1.390
						ISI079 D		1
	04	WALL SHELF INNER BRACKET-4 748X30X3.15 SHT.				15011820000		0.555
						ISI079 D		1
	03	WALL SHELF INNER BRACKET-3 2400X30X3.15 SHT.				15011820000		1.780
						ISI079 D		1
	02	WALL SHELF INNER BRACKET-2 2400X60X3.15 SHT.				15011820000		3.560
						ISI079 D		1
	01	WALL SHELF INNER BRACKET-1 1810X30X3.15 SHT.				15011820000		1.335
						ISI079 D		1

Note.



All bracket shapes are applied equally, and intermittent welding is performed without dimension specification, and then finishing is done by grinding and flattening after welding.
Butt welding is also acceptable if strength is not an issue.

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		PROJECT : 02 JOY INNOVATION S.O. NO. : 8111	
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN	SSNM
CHD		L K MANTRI	27.06.2025
APPD		Y PRASANNA KUMAR	30.06.2025
PROJECTION SCALE		WEIGHT (kg)	REF TO ASSY / OLD DWG
N.T.S		24.985	015-CUBE4
TITLE		DRAWING NO :	
INNER BRACKET_02		1-PV-010-U2022	
REV		REV	
01		01	

REV NO.	ZONE	BRIEF RECORD OF REVISIONS	GDM	LKM	YPK
01	--	REVISED AS MARKED WITH REVISION CLOUD.	06.09.25	06.09.25	06.09.25
			PPD.	CHD.	APPD.