



INVITATION TO TENDER

Ref.: OS/21-22/7909/EDS/11/015

Date: 09.09.2021

Sub: Fabrication of Exhaust Duct system against S.O. No. 7909 inside premises of BHEL-HPVP, Visakhapatnam

Dear Sir,

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

1. ELIGIBILITY CRITERIA:

- 1.1 The bidder should have an experience of having successfully completed similar works i.e. Fabrication of Structural items during the last 5 years ending 31st Aug' 2021.
Note: Work Order and Work Completion Certificate/ any other relevant document from the customer shall be enclosed in support of successful and satisfactory completion of the work.
- 1.2 Bidders shall also have to enclose the documents of Registration of Firm/ Factory License/ Certificate of Incorporation, EPF, ESI, PAN, GSTIN, Udyog Aadhar Memorandum/ Udyam Registration (if registered with MSME) etc.
- 1.3 The works executed in the name of 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:

- 3.1 **Fabrication of Ducts with supporting structure, cladding & insulation: 95 MT (approx.).**

The following are the details of Ducts to be fabricated in 9 Nos. of DUs along with insulation:

- | | |
|-----------------------------------|----------------------------------|
| i) Horizontal Transition Duct, H1 | ii) Horizontal Duct, H2 |
| iii) Elbow Duct, E1 | iv) Vertical Transition Duct, D1 |
| v) Vertical Transition Duct, D2 | vi) Circular Duct, VD1 |
| vii) Circular Duct, VD2 | viii) Circular Duct, VD3 |
| ix) Circular Duct, VD4 | |

Note: It may be noted that the weight indicated above is tentative only and may vary on both sides.

- 3.2 Different categories of items to be fabricated covers the following but not limited to the same:
 - a) Fabrication of various types of Ducts which include Straight Ducts, Bend Ducts, Elbow Ducts with/without Guide vanes, Transition Ducts, Circular Ducts, Duct supporting structure, duct cladding arrangement including fabrication of Studs etc., and application of Insulation (CF Blankets)
 - b) Fabrication of Stack supporting Structure of Bolted construction which includes Columns with or without Base plates, Beams, Bracings, Brackets, Platforms, Hand Rails and Posts, Ladders, Support structure, Small DUs if any etc.
- 3.3 Complete fabrication of the above items which involves Marking, Cutting, Edge Preparation, Match Drilling of holes in Duct flanges & Structure, Assembly, Fit-up, Welding, Trial Assembly of adjacent ducts & dismantling, Shearing, Punching / Drilling of holes in SS Retainer sheets / Seal Plates, Fixing and welding of SS Retainer sheets, Seal plates, Fabrication of SS Studs etc., for cladding arrangement of the ducts, NDT requirement as per QAP, Inspection, Surface Preparation by Grit Blast Cleaning, Application of total no. of coats of Paints on Structure and on Interior & Exterior surfaces of Ducts, Hot Dip Galvanizing & Painting of Ladders & Handrails, Application of Insulation (CF Blankets) as per relevant drawings, Specifications, QAP/ITP, WPS, Painting Schedule etc.

- 3.4 Collection & Transportation of Free issue raw materials, BOCs etc., from HPVP stores to fabrication yards, handing over of excess / balance materials at HPVP stores, Loading of finished items onto the trailer and handing over to HPVP - Logistics dept.
- 3.5 Rectification of Raw materials such as straightening etc., if any and trial assembly after fabrication wherever required as per Drawings / QAP and rectification of defects, if any attributable to vendors, found after handing over to Logistics dept.
- 3.6 LPI / MPI of Fillet welds shall be carried out as per approved drawings, QAP / inspection procedure.
- 3.7 The fabricated items shall strictly conform to the dimensions and tolerances indicated in the drawings. It must be ensured that correct dimensions and deviations, if any, are recorded properly and is made available to BHEL officials or their authorized agencies.
- 3.8 **Fabrication, Fit-up, Assembly & Welding of SS cladding sheets and SS Studs (to be fabricated from SS Round) as per relevant drawings**
- 3.9 The inside & outside surfaces of the Ducts and Structural surfaces shall be Grit blast cleaned to SA 2 - ½.
- 3.10 Hot Dip Galvanizing of Ladders & Handrails (approx. weight of 3 MT) to 80 - 85 Microns as per ISO 14713-2 / ISO 1461 before application of Primer is in vendor's scope. The Galvanized components shall have a minimum final coating weight not less than 610 Grams/M².
- 3.11 Application of total no. of coats of Paints on Structure and inside & outside surfaces of Ducts as per approved Painting Schedule after Power Tool / Grit blast cleaning. Paints shall be issued as Free Issue material by BHEL-HPVP.
- 3.12 Application of Insulation i.e., Ceramic Fibre Blankets inside surface of the ducts after painting. CF Blankets shall be free issue by BHEL.
- 3.13 Free issue materials should be collected within 3 days from the date of intimation by Outsourcing without failure. Any delay beyond 3 days shall be considered for levying of LD.
- 3.14 In case of requirement of off-cut materials, the vendor shall have to arrange for Gas Cutting at BHEL Stores.
- 3.15 Submission of economic cutting plans for all plate materials and sections issued by BHEL and obtaining approval of competent authority is mandatory before taking up fabrication.
Wherever fabrication is done without proper approved cutting plans, any loss of materials arising due to the same will be recovered as per BHEL recovery rates.
- 3.16 No extra rates are applicable for the additional joints to be made in Plates / Rolled sections.
- 3.17 The work is to be executed as per the latest approved Drawings, Group Manufacturing Specification (GMS), Shipping List released for each PGMA, QAP, WPS, Standards & Specifications etc.
- 3.18 All indirect materials, consumables like electrodes, gases, grinding wheels etc. required for fabrication are in the scope of the Vendor.
- 3.19 Identification of all items shall be hard stamped by encircling with paint and stenciled in a specific format with details of Project name, Customer No., Work Order No., PGMA No., DU No., Qty., Weight, direction of gas flow and match marking etc., for identification and dispatch as per the instructions of the concerned. Completed job without proper identification will not be accepted by HPVP - Stores / Logistics.
- 3.20 Vendors shall have to return the excess / balance materials including off-cuts and total scrap available with them exclusive of process allowance & invisible wastage to HPVP Stores after material reconciliation but before submission of their final bill. In case the same are not returned by the vendors, Recovery shall be made as per BHEL Rates / MSTC rates plus applicable taxes, prevailing at the time of processing of the final bills.
- 3.21 Cranes of suitable capacity, Chains / Slings required for shifting, fabrication, loading & unloading etc., are in the scope of vendor.
- 3.22 Qualified Engineers & Supervisors shall be deployed for proper co-ordination of the job. **Deployment of Qualified QC Engineer for monitoring of all Quality aspects of the job is a mandatory requirement.**
- 3.23 Welding is to be carried out by qualified welders only. Qualification of welders shall be carried out by the vendor at HPVP under supervision of BHEL / WT dept. at their own cost. However, Test Coupons shall be provided by BHEL as free issue.
- 3.24 **All the Bed materials required for fabrication, Scaffolding materials like Pipes, Clamps, GI sheets etc. required for closed enclosure for blasting and painting of the items are to be arranged by the vendor at their cost.**

- 3.25 Compressor and other machinery / equipments required for Blasting and Painting are to be arranged by the vendor at their cost. Blast Cleaning and Painting as per Painting Schedule **is to be carried out in a closed enclosure. Painting is to be carried out by Painters qualified by HPVP as per Doc. No. SIP:H:PP:22.** All the necessary tests like checking of Surface preparation with Profile Gauge, Tape adhesion, Galvanizing DFT for applicable items, Elcho Meter for measuring DFT etc., required during the painting are to be carried out by the Vendor as per approved painting procedure and QAP / inspection procedure.
- 3.26 Any modification work due to revision of the drawings during fabrication is to be carried out by the vendor without any additional cost.
- 3.27 Sufficient Area lighting at the work place shall be arranged by the vendor at their cost.
- 3.28 Open yard will be provided by BHEL for carrying out the fabrication activities. All other arrangements for site enabling including Jungle Clearance & Surface Levelling etc., if required, shall be done by the vendor only.
- 3.29 Adequate facilities like welding equipments, baking oven, handling facilities and measuring instruments duly calibrated must be available with the vendor. All the above equipments must be under working condition and relevant documents for the same are to be made available for verification by BHEL - HPVP / TPI Officials or their authorized agents.
- 3.30 All the measuring instruments used for inspection and testing shall have valid calibration certificates from NABL Laboratory or traceable to national / international standards.
- 3.31 Loading of finished items onto the trailer and Handing over of the same to Logistics dept.
- 3.32 Vendors shall abide by all the rules and statutory regulations in force from time to time as per the Factories Act. It is their responsibility to ensure the safety of their workmen and fulfilling the ESI, PF and other relevant statutory regulations.
- 3.33 Arrangement of Power Distribution Board with suitable capacity Switch Fuse unit 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, Working Area Lighting.
- 3.34 Though not mentioned specifically, any activity which is required for completion of the work is deemed to be included in the scope of work of bidders.

4. BHEL SCOPE:

BHEL – HPVP shall provide the following as free issue:

- 4.1 Supply of Drawings, GMS, QAP, Inspection Procedure, NDE Procedures, WPS, Painting Schedule etc.
- 4.2 Plates as full plates / off-cuts as per requirement
- 4.3 Pipes, Rolled Sections in running meters and SS Rounds for fabrication of Studs
- 4.4 Paints as per Painting Schedule
- 4.5 Ceramic Fibre blankets for Insulation
- 4.6 Power and Water will be provided at one point and further distribution to the work location is to be carried out by the vendor.

5. INSPECTION:

- 5.1 Inspection shall be carried out by M/s. BHEL-HPVP, Vizag / BHEL Authorized Inspection Agency / Customer as per approved QAP / Inspection procedure. Contractor shall have to offer for Stage wise and Final inspection as per approved QAP 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 for the finished items.
- 5.3 All the documentation related to inspection clearance of M/s. BHEL / TPI / 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.

Note:

QAP enclosed with the tender document is tentative only and may be subject to revision due to incorporation of comments of the approving authority. Hence, the approved QAP issued to the vendor after ordering shall only be followed for execution and inspection of the job.

6. DELIVERY:

Fabricated items after Painting shall be handed over to HPVP-Logistics within **Eight weeks** along with inspection documents / certificates.

The delivery period will be calculated from the date of issue of last consignment of materials to the date of delivery of finished items against respective DUs. The delivery period includes the time involved in collection of all raw materials, cutting plan approval, handing over of finished items at HPVP- Logistics.

Note: 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:

Successful bidders shall have to complete site mobilization within 10 days from the date of issue of sub-contract order.

8. PRICE:

- 8.1 The price shall be quoted **strictly** as per the Schedule of Rates enclosed at Annexure – I for the detailed scope of work and the quoted price shall be inclusive of all applicable taxes & duties **except 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 - 8 and as per Annexure – GST.
- 8.4 Income tax will be deducted at applicable rates from RA & Final bills.

9. GOODS & SERVICES TAX (GST):

- 9.1 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.

10. REVERSE AUCTION:

- 10.1 BHEL shall be resorting to Reverse Auction (RA) for this tender. RA shall be conducted among the eligible techno-commercially qualified bidders. Business Rules for Reverse Auction are given at Annexure – V. Bidder may refer Guidelines for Reverse Auction available on our website, www.bhel.com → supplier registra on → Guidelines for Reverse Auction 2021, before submission of their offer.
- 10.2 E-mail 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 e-mail price bid along with applicable loading, if any, shall be considered for ranking.
- 10.3 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.
- 10.4 Bidders are advised to read the 'Business Rules' (Annexure – V) indicating details of RA event carefully, before reverse auction event.

11. VALIDITY OF OFFER:

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

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

14. GENERAL:

14.1 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, clarifications related to welding or any other details of the tender document, over phone between 09:00 AM and 04:00 PM on any working day or through e-mail.

14.2 **Conditional / Partial Price Bids** and any other deviations to the tender terms & conditions are not acceptable and BHEL reserves the right to reject such offers without further correspondence. Bidders shall confirm their acceptance to all the terms & conditions of the tender enquiry in the Techno-commercial Bids and any deviations mentioned in the Price Bids shall not be considered for evaluation.

14.3 BHEL reserves the right to modify or cancel the tender enquiry at any stage without assigning any reasons thereof.

14.4 The General Terms & Conditions, if any, contradicting with the specific terms & conditions given in the tender, then specific terms & conditions shall only be considered.

15. The following documents shall form part of the tender enquiry:

- | | | |
|------|---|------------------|
| i) | Schedule of Rates | : Annexure – I |
| ii) | List of Reference Drawings/ Documents | : 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) | QAP, Painting Schedule | |

16. TENDER SUBMISSION (through E – Mail only):

16.1 Techno-commercial bids along with the tender document duly signed & stamped by the bidder on all pages and a covering letter on Company's Letter Head addressed to DGM (Outsourcing), BHEL-HPVP, Visakhapatnam shall be sent through an e-mail to the e-mail ID technicalbid-hpvp@bhel.in

16.2 **Tentative List of Man Power, Machinery, Tools & Tackles to be engaged by the vendor shall also be attached to the Techno-Commercial Bid.**

16.3 Price bid (i.e., Schedule of Rates, Annexure – I) shall also be sent separately through e-mail to another e-mail ID pricebid-hpvp@bhel.in

16.4 Offers completed in all respects along with all the supporting documents shall be sent to the above e-mails only latest by 14.00 Hrs. on **23.09.2021** duly mentioning the Name of Work, Tender Ref. No. & Date and Technical Bid / Price Bid in the subject of the e-mail.

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

16.5 Bidders shall ensure correctness of the e-mail addresses while submitting their offer. There shall be no other e-mail address at the receiving end while submission of the above bids otherwise the system will reject such mails. Bidder shall be solely responsible for non-receiving of such mails at the above mentioned e-mail addresses and no communication in this regard will be entertained.

16.6 TENDERS RECEIVED AFTER THE DUE DATE & TIME ARE NOT ACCEPTABLE.

16.7 OFFERS SENT IN ANY OTHER FORM WILL BE TREATED AS INVALID AND WILL BE SUMMARILY REJECTED.

17. TENDER OPENING:

17.1 Techno-commercial Bids will be opened at 14.00 Hrs on 23.09.2021. The bidders may depute their representatives at the time of opening of Technical bids.

17.2 After evaluation of the Techno-commercial Bids, intimation regarding date & procedure of conducting reverse auction shall be given by the service provider to all eligible techno-commercially qualified bidders through an e-mail in advance at an appropriate time.

For Bharat Heavy Electricals Limited,


09/09/2021
D. N. MURTHY
Dy. Manager (OS)
Bharat Heavy Electricals Ltd.
HPVP, Visakhapatnam-530 012

SCHEDULE OF RATES

Ref: OS/21-22/7909/EDS/11/015

Date: 09.09.2021

Sub: Fabrication of Exhaust Duct system against S.O. No. 7909 inside premises of BHEL-HPVP, Visakhapatnam

SL. No.	Description of Item	Unit	Total Qty.	Unit Rate (Rs.)	Total Amount (Rs.)
	Fabrication of Ducts which includes SS Cladding arrangement, Supporting Structure, Platforms, Ladders, Handrails, application of Paint and Insulation as per the applicable drawings, QAP, Procedures, Painting Schedule etc., with Free issue materials inside HPVP premises. The job involves Marking, Cutting, Edge Preparation, Match Drilling of holes in Duct flanges & Structure, Assembly, Fit-up, Welding, Trial Assembly, Shearing, Punching / Drilling of holes in SS Retainer sheets / Seal Plates, Fixing and welding of SS Retainer sheets, Seal plates, Fabrication of SS Studs etc., for cladding arrangement of the ducts, NDT requirement as per QAP, Inspection, Surface Preparation by Grit Blast Cleaning, Application of total no. of coats of Paints on Structure and on Interior & Exterior surfaces of Ducts, Hot Dip Galvanising & Painting of Ladders & Handrails, Application of Insulation (CF Blankets) as per relevant drawings, Specifications, QAP/ITP, WPS, Painting Schedule etc. (All Consumables are in vendor's scope)				
1	Ducts	MT	40		
2	SS Cladding arrangement	MT	25		
3	Structure	MT	20		
4	Hot Dip Galvanising of Ladders and Handrails	MT	3		
5	Application of Insulation (Ceramic Fibre blankets)	MT	10		
	TOTAL				
Total Amount in words:					

Notes :

- 1) L1 Status will be evaluated on the Total Quoted Amount.
- 2) The quantity and weights indicated above are tentative and may slightly vary on both sides depending upon the requirement at the time of ordering / execution. However, payment shall be made for the actual quantities & weights only.
- 3) The quoted price shall be inclusive of all applicable taxes & duties **except GST**. GST shall be reimbursable to the vendor as detailed in Clause – 9. Income tax shall be deducted at applicable rates from the vendor's bills.
- 4) The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of the work.
- 5) The evaluation currency for this tender shall be **INR**.
- 6) Tenderer should quote the amount in figures & words. It may be noted that corrections, overwriting etc. are not allowed. If there is a discrepancy between amount in figures & words, the amount in words shall prevail unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail. If there is an error in the total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail and total shall be corrected accordingly.

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

Signature of the Bidder with Stamp

LIST OF REFERENCE DRAWINGS / DOCUMENTS**Sub : Fabrication of Exhaust Ducting System against S.O. No. 7909 inside premises of BHEL-HPVP, Visakhapatnam**

Sl. No.	S.O. No.	Description of Work	Description of Drawings / Documents	Drawing / Document No.	Rev. No.	No. of Sheets
1	7909	Fab. of Exhaust Ducting System	SQP for Exhaust Duct System	CQP/2518	0	5
2			GA of Exhaust Duct & Bypass Stack	1-00-260-U4041	1	1
3			Notes- Exhaust Duct & Bypass Stack	1-364-09-31002	0	1
4			Horizontal Transition Duct- H1	1-HL-501-U5004	2	1
5			Horizontal Transition Duct- H1 (Duct Supports)	1-HL-501-U5005	2	1
6			Cladding arrangement for Horizontal Transition Duct- H1	1-32-040-U0046	1	1
7			Cladding details of Horizontal Transition Duct- H1	1-32-040-U0047	1	1
8			Cladding details of Horizontal Transition Duct- H1	1-32-040-U0048	1	1
9			Horizontal Transition Duct- H2	1-HL-501-U5006	0	1
10			Horizontal Transition Duct- H2 (Duct Supports)	1-HL-501-U5007	0	1
11			Cladding arrangement for Horizontal Transition Duct- H2	1-32-040-U0049	A	1
12			Cladding details of Horizontal Transition Duct- H2	1-32-040-U0050	A	1
13			Cladding details of Horizontal Transition Duct- H2	1-32-040-U0051	A	1
14			Stack Platforms	1-ST-211-U0371	0	1
15			Stack Shell	1-ST-410-U0369	0	1
16			Stack Platform Gratings	1-ST-811-U0370	0	1
17			Ladders from Stack Base to Stack Top Platform	1-ST-820-U0373	0	1
18			Ladders till Stack Base level	1-ST-820-U0374	0	1
19			Stack Platform Handrails	1-ST-850-U0372	0	1
20			GA of Structures below Stack	0-ST-110-UXXXX		1

Note : Documents indicated above are purely tentative and may be subject to revisions due to incorporation of comments of the approving authority. Hence, the approved drawings and 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 towards Security Deposit and safe custody of free issue materials within 15 days from the date of issue of Order. The BG shall be valid for the entire 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.

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 thereof subject to a maximum of 10% on the total value of the order will be levied. However, time taken for the following will not be considered as delay on the part of the Sub-Contractor.

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

18. PAYMENT TERMS:

Payment shall be made against RA Bills within 45 days from the date of submission of Bill.

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

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

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

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. 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.

- 27. 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.

- 28. 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 & stamped on all the pages by the Owner / authorized representative of the bidder are attached herewith.

Signature of the Bidder with Stamp

BUSINESS RULES FOR REVERSE AUCTION (RA)

This has reference to tender no. **OS/21-22/7909/EDS/11/015, dated 09.09.2021**. BHEL shall finalize the Rates for **Fabrication of Exhaust Duct system against S.O. No. 7909 inside premises of BHEL-HPVP, Visakhapatnam** through Reverse Auction mode. BHEL has made arrangement with an authorized Service provider (details will be shared before reverse auction) for conducting RA. Bidders should go through the instructions given below and submit acceptance of the same.

The technical & commercial terms are as per (a) BHEL Tender Enquiry No. **OS/21-22/7909/EDS/11/015, dated 09.09.2021**, (b) Bidders' technical & commercial bid (in case of two-part bid) and (c) subsequent correspondences between BHEL and the bidders, if any.

1. Procedure of Reverse Auctioning:

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

2. Schedule for reverse auction: The Reverse Auction schedule will be intimated to the eligible techno-commercially qualified bidders at a later stage.**3. Auction extension time:** If a bidder places a bid in the last {5} minutes of closing of the Reverse Auction and if that bid gets accepted, then the auction's duration shall get extended automatically for another {5} 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 {5} 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 {5} minutes. In case, there is no bid in the last {5} 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 **except GST** but inclusive of Packing & Forwarding charges, all the routine & type tests as per tender scope, taxes, duties, freight and insurance as specified in tender document including loading (if indicated by BHEL due to deviations in technical/ commercial terms) for the Items specified. Details are as shown in Excel Sheet for calculation of total cost to BHEL (To be specified by Unit as per NIT conditions).**5. Bidding currency and unit of measurement:** Bidding will be conducted in **Indian Rupees** per *Unit* of the material as per the specifications mentioned in the tender.

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

6. **Validity of bids:** Price shall be valid for **3 months** from the date of reverse auction. These shall not be subjected to any change whatsoever.
7. **Lowest bid of a bidder:** In case the bidder submits more than one bid, the lowest bid at the end of Reverse Auction will be considered as the bidder's final offer to execute the work.
8. Unique user IDs shall be used by bidders during bidding process. All bids made from the Login ID given to the bidders will be deemed to have been made by the bidders/ bidders' company.
9. **Post auction procedure:** BHEL will proceed with the Lowest Bid in the Reverse Auction for further processing.
10. Any commercial/ technical loading shall be separately intimated to respective bidders prior to RA. The excel sheet provided in this regard shall cover all these aspects. Commercial/ technical loading if any, shall be added by the respective bidder in its price during Reverse Auction.
Modalities of loading & de-loading shall be separately intimated to the bidders. The responsibility for correctness of total cost to BHEL shall lie with the bidders.
11. Reverse auction shall be conducted by BHEL (through M/s {Service Provider}), on pre-specified date, while the bidders shall be quoting from their own offices/ place of their choice. Internet connectivity shall have to be ensured by bidders themselves.

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

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

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

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

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

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

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

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

14. M/s. {Service provider}, shall arrange to demonstrate/ train the bidder or bidder's nominated person(s), without any cost to bidders. M/s. {Service provider}, shall also explain the bidders, all the business rules related to the Reverse Auction. Bidders are required to submit their acceptance to the terms/ conditions/ modalities before participating in the Reverse Auction in the process compliance form as enclosed. Without this, the bidder will not be eligible to participate in the event.
15. Successful bidder shall be required to submit the final prices (L1) in prescribed format (Annexure – VI) for price breakup, quoted during the Reverse Auction, duly signed and stamped as token of acceptance without any new condition (other than those already agreed to before start of auction), after the completion of auction to M/s. {Service provider} besides BHEL **within two working days of Auction** without fail.
16. Any variation between the final bid value and that in the confirmatory signed price breakup document will be considered as tampering the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
17. Bidders' bid will be taken as an offer to execute the work/ supplies the item as per enquiry no. **OS/21-22/7909/EDS/11/015, dated 09.09.2021**. Bids once made by the bidder, cannot be cancelled/ withdrawn and bidder shall be bound to execute the work as mentioned above at bidder's final bid price. Should bidder back out and not execute the contract as per the rates quoted, BHEL shall take action as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
18. Bidders shall be able to view the following on their screen along with the necessary fields during Reverse Auction:
 - a. Leading (Running Lowest) Bid in the Auction (only total price of package)
 - b. Bid Placed by the bidder
 - c. Start Price
 - d. Decrement value
 - e. Rank of their own bid during bidding as well as at the close of auction.
19. BHEL's decision on award of contract shall be final and binding on all the Bidders.
20. BHEL reserves the right to extend, reschedule or cancel the Reverse Auction process at any time, before ordering, without assigning any reason, with intimation to bidders.
21. BHEL shall not have any liability to bidders for any interruption or delay in access to the site irrespective of the cause. In such cases, the decision of BHEL shall be binding on the bidders.
22. Other terms and conditions shall be as per bidder's techno-commercial offers and other correspondences, if any, till date.
23. If there is any clash between this business document and the FAQ available, if any, in the website of M/s. {Service provider}, the terms & conditions given in this business document will supersede the information contained in the FAQs. Any changes made by BHEL/ service provider (due to unforeseen contingencies) after the first posting shall be deemed to have been accepted if the bidder continues to access the portal after that time.
24. Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action *as per extant BHEL guidelines for suspension of business dealings (as available on www.bhel.com)*, shall be initiated by BHEL.

Signature of the Bidder with Stamp

GST COMPLIANCE FOR INDIGENOUS SUPPLIERS

1. In Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GSTIN which should be clearly mentioned in the offer. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.
2. Supplier shall mention their GSTIN in all their invoices and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no etc., then the Invoice No which is linked/uploaded in GSTN network shall be clearly indicated), item description as per 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

	BHARAT HEAVY ELECTRICAL LTD VISAKHAPATNAM QUALITY ASSURANCE	STANDARD QUALITY PLAN FOR EXHAUST DUCT SYSTEM	PROJECT: EXHAUST DUCT AND BYPASS STACK FOR GAIL GANDHAR BHEL STANDARD: GT 54313/REV 17 VARIANT NO 34	QP NO : CQP/2518 REV.NO: 00 DATE 25/06/2021
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SL NO	COMPONENTS & OPERATIONS	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
								M	B	C	
1	2	3	5	6	7	8	9 D	10			11
A	REVIEW OF WELDING PROCEDURES AND WELDER QUALIFICATION										
1	Review of welding procedures & procedure qualification records	Procedure & performance test	Verification	Each welder	As per BHEL Standard	WPS RECORDS	✓		V	V	
2	Review of procedure qualification records	Procedure & performance test	Verification	Each welder	As per BHEL Standard	PQR RECORDS	✓		V	V	
3	Review of welder qualification records	Procedure & performance test	Verification	Each welder	As per BHEL Standard	WQR Records	✓		V	V	
B	RAW MATERIAL										
1	Plates (for duct casings & flanges)	Chemical & Mechanical properties	Review of TC	1/Heat	Material Specification as per drawing	TC	✓		V	V	

 VAMSI KRISHNA VADDI उपाध्यक्ष / Deputy Manager गुणवत्ता आश्वासन / Quality Assurance भारतीहवन-एनएससीपी / BHEL-HPVP Visakhapatnam / VISAKHAPATNAM-530 012	Legend *RECORDS, IDENTIFIED WITH (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. M: VENDOR: B: BHEL/BHEL AUTHORISED INSPECTION AGENCY C: EIL; P: PERFORM W: WITNESS H: HOLD AND V: VERIFICATION,	
BHEL		APPROVAL BY EIL

	BHARAT HEAVY ELECTRICAL LTD VISAKHAPATNAM QUALITY ASSURANCE	STANDARD QUALITY PLAN FOR EXHAUST DUCT SYSTEM	PROJECT: EXHAUST DUCT AND BYPASS STACK FOR GAIL GANDHAR BHEL STANDARD: GT 54313/REV 17 VARIANT NO 34	QP NO : CQP/2518 REV.NO: 00 DATE 25/06/2021
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									M	B	C	
1	2	3	5	6	7	8	9	D	10			11
2	Angles & stiffeners	Chemical & Mechanical properties	Review of TC	1/Heat	Material Specification as per drawing		TC	✓		V	V	
3	Ceramic wool & fibre glass	Material properties	Review of TC	1/Batch	Material Specification as per drawing & BHEL Standard		TC	✓		V	V	
4	Liner plates & Retainer sheets	Chemical & Mechanical properties	Review of TC	1/Heat	Material Specification as per drawing		TC & DR	✓		V	V	
5	High Temperature resistant Gaskets	Material properties	Review of TC	1/Batch	Material Specification as per drawing		TC	✓		V	V	
6	SS Fasteners	Chemical & Mechanical properties	Review of TC	1/Batch	Material Specification as per drawing		TC	✓		V	V	
7	Support structures	Chemical & Mechanical properties	Review of TC	1/Heat	Material Specification as per drawing		TC	✓		V	V	

 VAMSI KRISHNA VADDI उप प्रबंधक / Deputy Manager गुणवत्ता आश्वासन / Quality Assurance भारती भारती / BHEL-HPVP विशाखापट्टनम / VISAKHAPATNAM-530 012	Legend *RECORDS, IDENTIFIED WITH (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. M: VENDOR: B: BHEL/BHEL AUTHORISED INSPECTION AGENCY C: EIL; P: PERFORM W: WITNESS H: HOLD AND V: VERIFICATION,	
BHEL		APPROVAL BY EIL

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										M	B	C	
1	2	3	5	6	7	8	9	D		10			11
C IN PROCESS													
1	Marking, Cutting & preparation	Shape, size & EP	Measurement	100%	Drawings		TR	✓	P	V	V		
2	Welding a. Visual b. Final weld for butt & fillet c. Lifting lugs	Weld appearance & soundness	Visual, LPI	100%	ASME Sec V	ASME Sec VIII	IR	✓	P	V	V		
3	Dimension a. Duct opening b. Flange holes & pitches etc c. Supporting structure dimensions, holes & pitches etc	Dimensional accuracy	Visual & Measurement	100%	Specification as per drawing		Internal DR	✓	P	W	V		

 VAMSI KRISHNA VADDI उप निबंधक / Deputy Manager गुणवत्ता आश्वासन / Quality Assurance बीएचएल, विशाखापट्टनम / BHEL-HPVP विशाखापट्टनम / VISAKHAPATNAM-530 012	Legend *RECORDS, IDENTIFIED WITH (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. M: VENDOR: B: BHEL/BHEL AUTHORISED INSPECTION AGENCY C: EIL; P: PERFORM W: WITNESS H: HOLD AND V: VERIFICATION,	
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1	2	3	5	6	7	8	9	D	10	11
D	FINAL INSPECTION									
1	Trial assembly of adjacent ducts	a. Visual b. Overall dimensions c. Orientation d. Identification & match marking e. Part no/position no & direction of gas flow	Visual & Measurement	100%	As per Drawing & BHEL Standard	TRIAL ASSEMBLY REPORT	✓	P	W	H
2	Surface preparation & primer paint	a. Visual b. Surface roughness c. Primer coat DFT	Visual & Measurement	Random	As per Drawing & BHEL Standard	IR	✓	P	W	V
3	Insulation with SS Cladding	a. Insulation layers b. Cladding sheet fixing c. Flow direction	Visual & Measurement	100%	As per Drawing & BHEL Standard	IR	✓	P	W	V

 VAMSI KRISHNA VADDI उप प्रबंधक / Deputy Manager गुणवत्ता आश्वासन / Quality Assurance भारत भारी बिजली लि. / BHEL-HPVP विशाखापट्टनम / VISAKHAPATNAM-530 012	Legend *RECORDS, IDENTIFIED WITH (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. M: VENDOR: B: BHEL/BHEL AUTHORISED INSPECTION AGENCY C: EIL; P: PERFORM W: WITNESS H: HOLD AND V: VERIFICATION,	
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	BHARAT HEAVY ELECTRICAL LTD VISAKHAPATNAM QUALITY ASSURANCE	STANDARD QUALITY PLAN FOR EXHAUST DUCT SYSTEM		PROJECT: EXHAUST DUCT AND BYPASS STACK FOR GAIL GANDHAR BHEL STANDARD: GT 54313/REV 17 VARIANT NO 34	QP NO : CQP/2518 REV.NO: 00 DATE 25/06/2021
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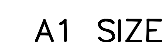
SL NO	COMPONENTS & OPERATIONS	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			
1	2	3	5	6	7	8	9	D	10			11
4	Final painting and inspection	a. Visual b. Shade c. Total DFT d. Adhesion test e. Galvanizing DFT for applicable items f. Workmanship	Visual & Measurement	Random	Painting specification as per drawing & BHEL Standard		TR	✓	P	W	V	
5	Packing & Desptach	a. Visual b. Marking on packing case	Visual Qty verification	100%	As per Drawing & BHEL Standard		Packing list	✓	P	V	V	

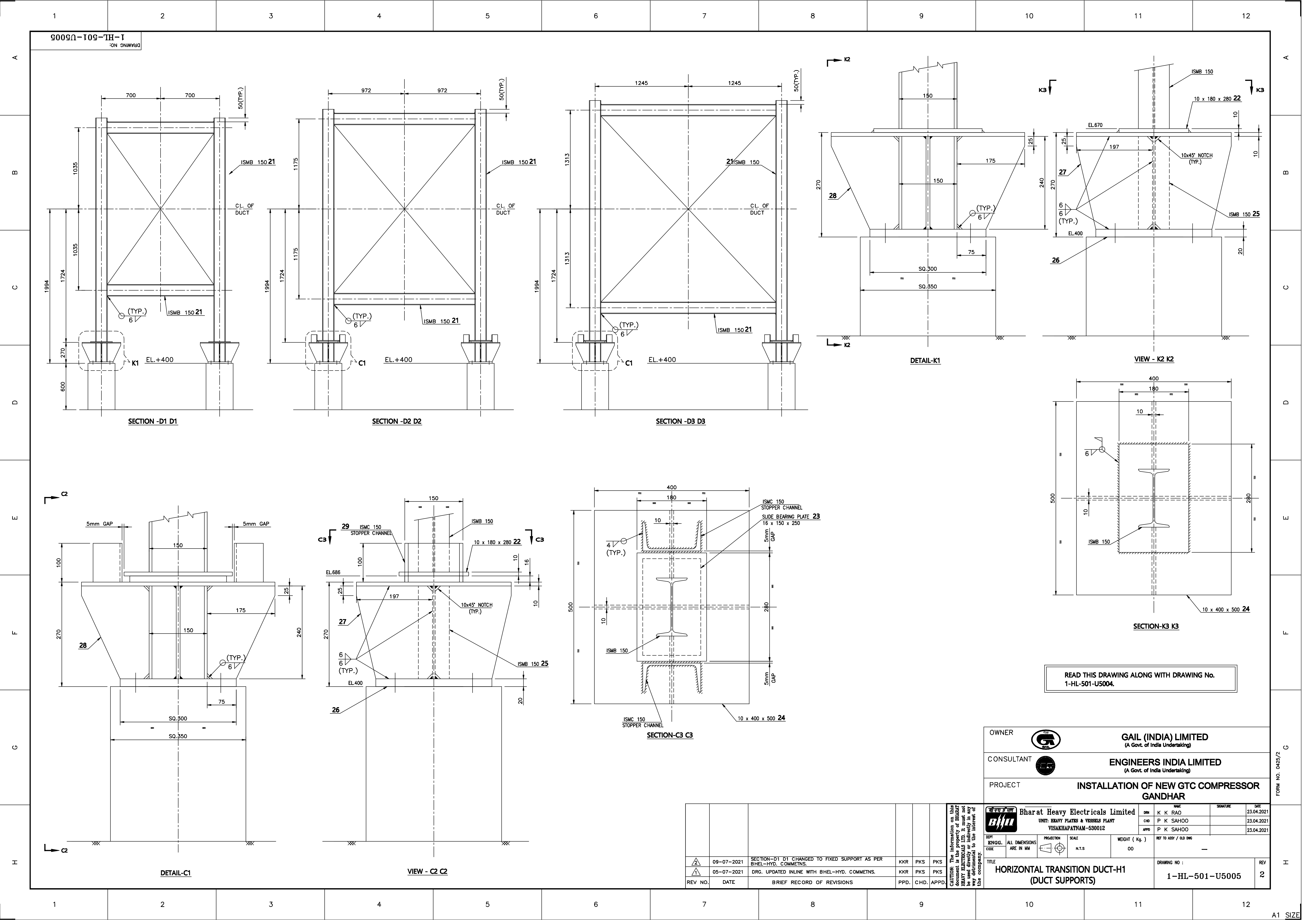
Safety and stability is to be fully considered for trail assembly position and supporting during trial assembly.

All critical dimensions shall be checked and recorded during trial assembly.

Before dismantling the assembly, the match marks shall be clearly punched, stenciled and bordered with white pain.

 VAMSI KRISHNA VADDI उप प्रबंधक / Deputy Manager गुणवत्ता आश्वासन / Quality Assurance बीएचईएल-एचपीपी / BHEL-HPVP विशाखापट्टनम / VISAKHAPATNAM-530 012	Legend *RECORDS, IDENTIFIED WITH (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. M: VENDOR: B: BHEL/BHEL AUTHORISED INSPECTION AGENCY C: EIL; P: PERFORM W: WITNESS H: HOLD AND V: VERIFICATION,	
BHEL		APPROVAL BY EIL

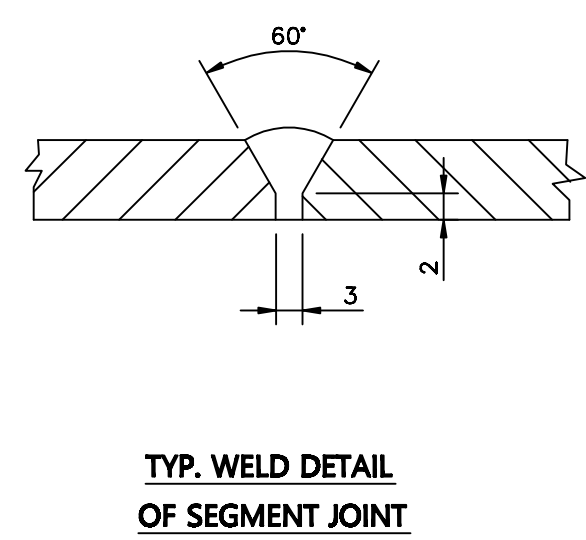




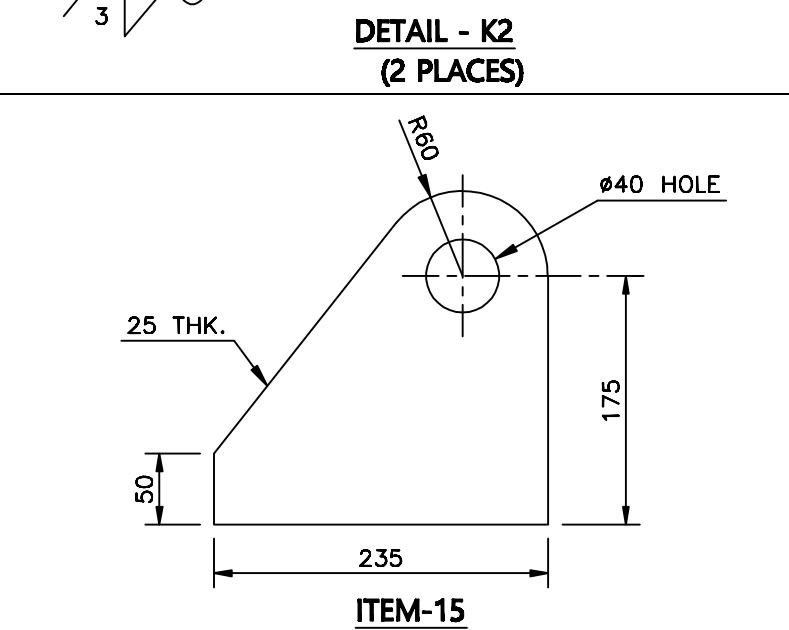
OWNER		GAIL (INDIA) LIMITED (A Govt. of India Undertaking)	
CONSULTANT		ENGINEERS INDIA LIMITED (A Govt. of India Undertaking)	
PROJECT		INSTALLATION OF NEW GTC COMPRESSOR GANDHAR	
DWG. NO.	UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-630012	DATE	23.04.2021
CHKD.	P. K. SAHOO	SIGNATURE	
APPD.	P. K. SAHOO	DATE	23.04.2021
REF TO ASSY / OLD DWG	—		
Bharat Heavy Electricals Limited		DRAWING NO :	
HORIZONTAL TRANSITION DUCT-H1 (DUCT SUPPORTS)		1-HL-501-U5005	
REV 2			

FORM NO. 0425/2

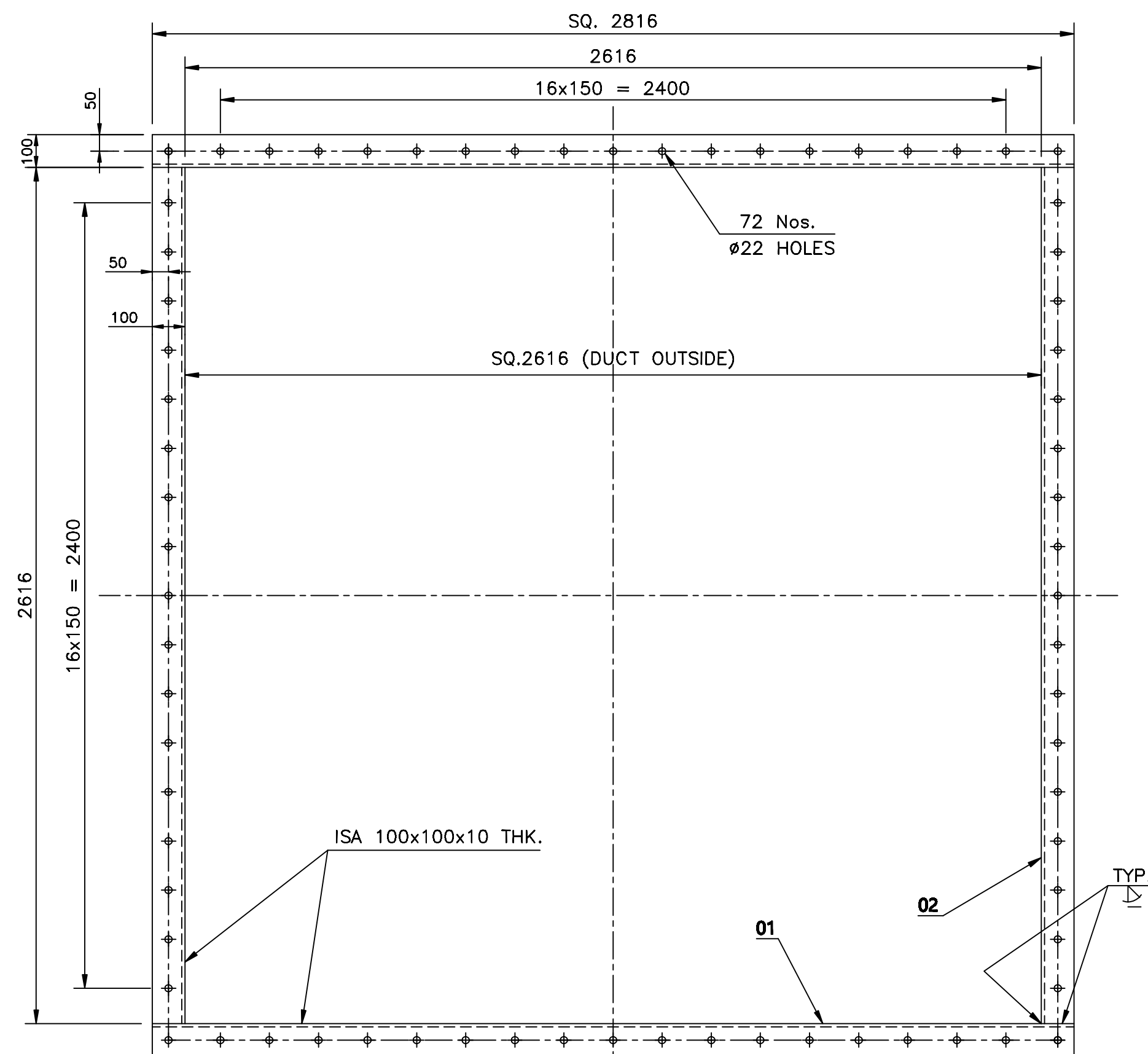
A1 SIZE



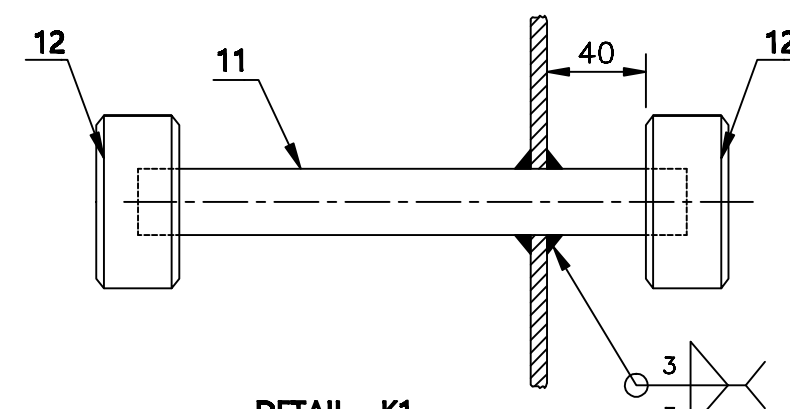
**READ THIS DRAWING ALONG WITH DRAWING No.
1-HL-501-U5007.**



1. TRANSPORT STIFFENER (ITEM-07) MAKE SUITABLE HOLES AT ENDS AND USE WITH FASTENERS ON DUCT BOTH ENDS AS SHOWN.
2. ALL STIFFENERS TO BE STITCH WELDED TO DUCT FRAME PLATES, 50 - 150.
3. WELD ITEM NO-10 AT 4 FACES OF THE DUCT AT VISIBLE LOCATION AND PUNCH WORK ORDER NO., PART NO. AND H2.



DETAIL OF ANGLE FRAME



DETAIL - K1
(4 PLACES)

ITEM NO.	DESCRIPTION	UNIT	DRAWING NUMBER	MATERIAL CODE		QTY	UNIT WEIGHT
				MATERIAL SPEC	QTY		
27	HEX. HEADED BOLT WITH HEX. NUT M16x50 LG. (CHANNEL SIDE FASTENERS)				190254420000		0.200
					IS1363CL8.8/8		72
26	GUSSET PLATE 10 THK. x 175 x 240				150110980000		3.297
					IS 2062 GRA		8
25	STOPPER CHANNEL ISMIC 150x75 - 100 LG.				150103500000		1.680
					IS 2062 GRA		8
24	GUSSET PLATE 10 THK. x 197 x 250				150110980000		3.866
					IS 2062 GRA		8
23	BOTTOM SUPPORT PLATE 20 THK. x 300 x 300				150111500000		14.130
					IS 2062 GRA		4
	DUCT SUPPORT BEAM ISMB 150 - 240 LG.				150090220000		3.600
					IS 2062 GRA		4
21	BEAM BOTTOM SUPPORT PLATE 10 THK. x 450 x 500				150110980000		15.700
					IS 2062 GRA		4
20	SLIDE BEARING SUPPORT PLATE 16 THK. x 150 x 250				961121110100		0.200
					(ASBESTOS FIBRE)		4
19	BEAM BOTTOM SUPPORT PLATE 10 THK. x 180 x 280				150110980000		5.888
					IS 2062 GRA		4
18	DUCT SUPPORT BEAM ISMB 150 - 240 LG.		CUT & USE		150090220000		447.000
					IS 2062 GRA		4
17	CHANNEL FRAME ISMIC 200x75 - 2616 LG.				150100380000		250.835
					IS 2062 GRA		2
16	CHANNEL FRAME ISMIC 200x75 - 3016 LG.				150100380000		250.835
					IS 2062 GRA		2
15	LIFTING LUG 25 THK. x 235 x 235				150110810000		10.838
					IS 2062 GRA		8
14	SS PIPE CAP 1/2"NPT(F) 300#				191224012360		0.060
					SA182P316		4
13	PIPE OD 21.3 x 3.73 x 380 LG.				151910020000		0.618
					SA335P22		4
12	SS PIPE CAP 3/4"NPT(F) 300#				156230650000		0.100
					SA182P316		8
11	PIPE (SMLS) 26.7 x 3.91 x 380 LG.				159510249000		0.840
					SA3120RTF304		4
10	DIRECTION PLATE 8 THK. x 40 x 120				150110270000		0.301
					IS 2062 GRA		4
09	HEX. HEADED NUT M20		FOR SITE USE FLANGE ERECTION		190259160000		0.064
					(S6623 C110 S HOTDIPALUMINIZED)		72
08	HEX. HEADED BOLT M20x50 LG.		FOR SITE USE FLANGE ERECTION		190259030000		0.200
					(S3757 C15 S HOTDIPALUMINIZED)		72
07	TRANSPORT STIFFENER ANGLE ISA 75x75x8 THK. - 2850 LG.				156290210000		25.365
					IS 2062 GRA		4
06	STIFFENING CHANNEL ISMIC 150x75 - 17250 LG.		CUT TO SUIT		150100350000		282.900
					IS 2062 GRA		1
05	LIFTING LUG 25 THK. x 235 x 235				150110810000		10.838
					IS 2062 GRA		8
04	CORNER ANGLE ISA 75x75x8 THK. - 2121 LG.				156290210000		18.876
					IS 2062 GRA		4
03	PLATE 8 THK. x 2121 x 2550				150110270000		339.657
					IS 2062 GRA		4
02	ANGLE FRAME ISA 100x100x10 THK. - 2616 LG.				150130180000		38.978
					IS 2062 GRA		2
01	ANGLE FRAME ISA 100x100x10 THK. - 2616 LG.				150130180000		41.958
					IS 2062 GRA		2



GAIL (INDIA) LIMITED
(A Govt. of India Undertaking)



ENGINEERS INDIA LIMITED
(A Govt. of India Undertaking)

INSTALLATION OF NEW GTC COMPRESSOR GANDHAR

	Bharat Heavy Electricals Limited		NAME	SIGNATURE	DATE
	UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		DRN	K K RAO	28.04.2022
			CHD	P K SAHOO	28.04.2022
			APPD	P K SAHOO	28.04.2022

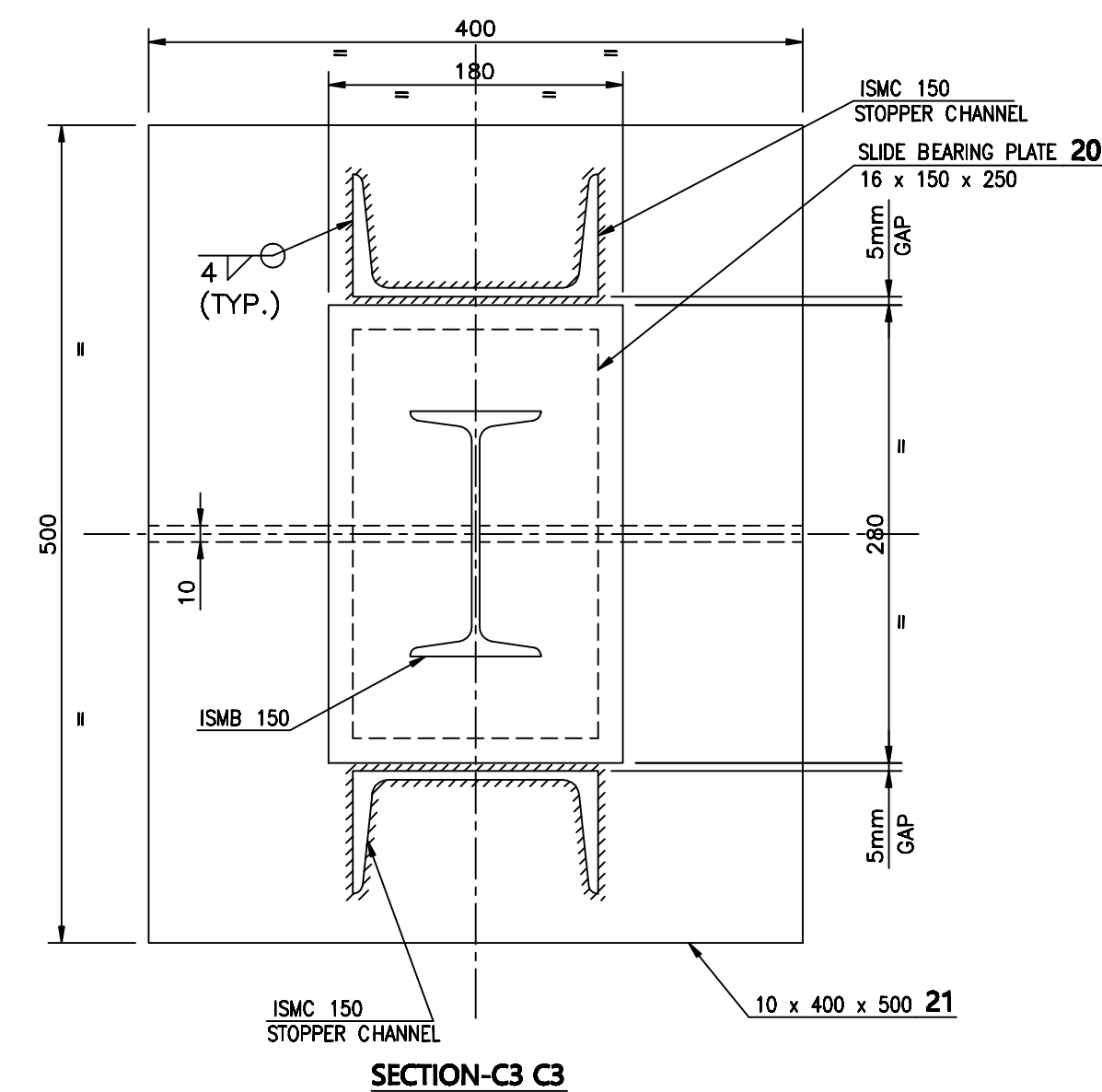
HORIZONTAL DUCT - H2

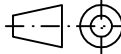
1-HL-501-U5006

REV
0

REV NO.	DATE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.
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CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of the company.

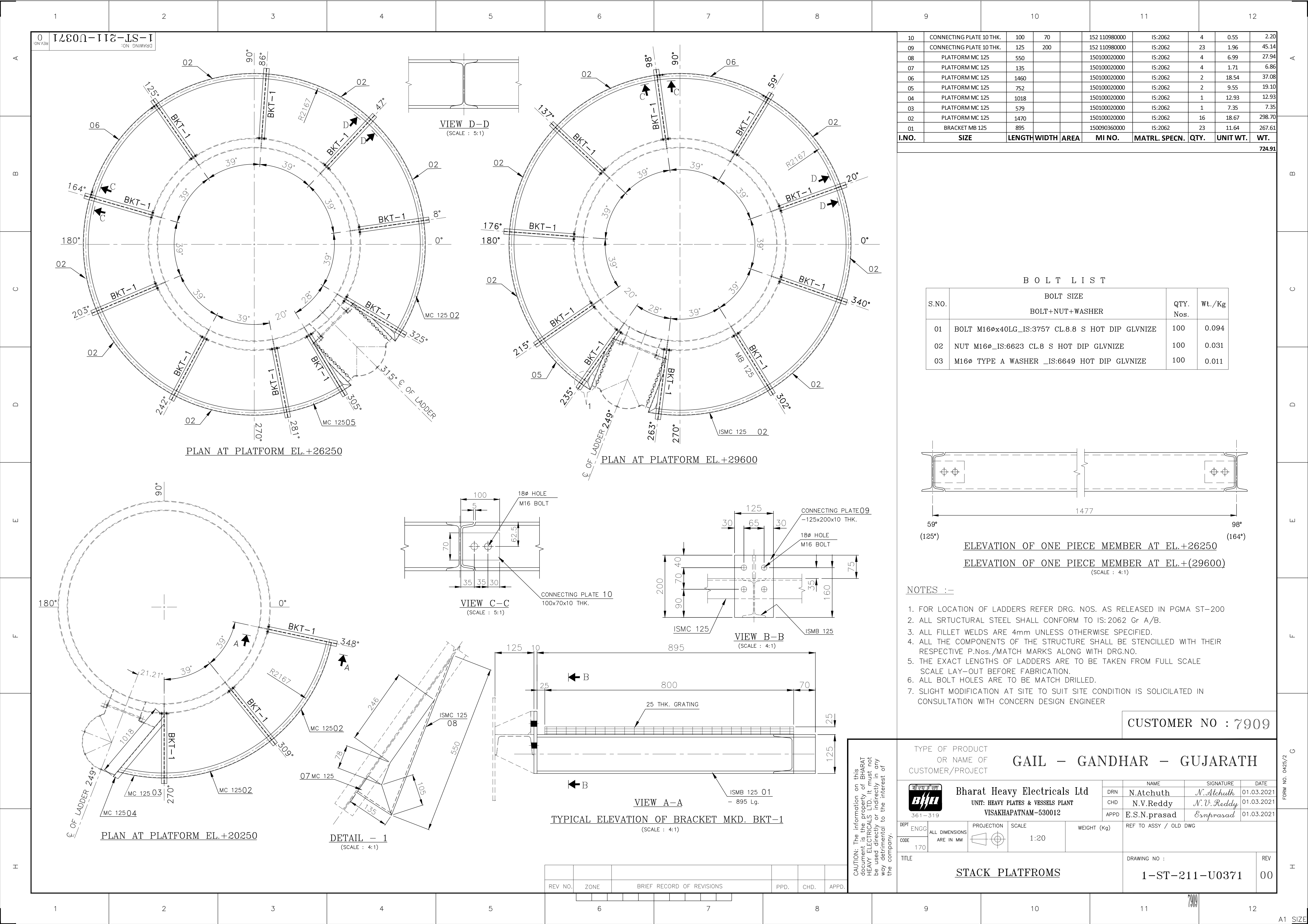


OWNER				GAIL (INDIA) LIMITED (A Govt. of India Undertaking)																	
CONSULTANT				ENGINEERS INDIA LIMITED (A Govt. of India Undertaking)																	
PROJECT		INSTALLATION OF NEW GTC COMPRESSOR GANDHAR																			
		Bharat Heavy Electricals Limited UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-630012		<table border="1"> <thead> <tr> <th colspan="2">DATE</th> <th>SIGNATURE</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>DRW</td> <td>K K RAO</td> <td></td> <td>28.04.2022</td> </tr> <tr> <td>CHD</td> <td>P K SAHOO</td> <td></td> <td>28.04.2022</td> </tr> <tr> <td>APPD</td> <td>P K SAHOO</td> <td></td> <td>28.04.2022</td> </tr> </tbody> </table>		DATE		SIGNATURE	DATE	DRW	K K RAO		28.04.2022	CHD	P K SAHOO		28.04.2022	APPD	P K SAHOO		28.04.2022
DATE		SIGNATURE	DATE																		
DRW	K K RAO		28.04.2022																		
CHD	P K SAHOO		28.04.2022																		
APPD	P K SAHOO		28.04.2022																		
DEPT. ENGINEGG. CODE	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE N.T.S	WEIGHT (Kg.) 00	REF TO ASBY / QLD DWG —																
TITLE HORIZONTAL DUCT- H2 (DUCT SUPPORTS)				DRAWING NO : 1-HL-501-U5007																	
				REV 0																	

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

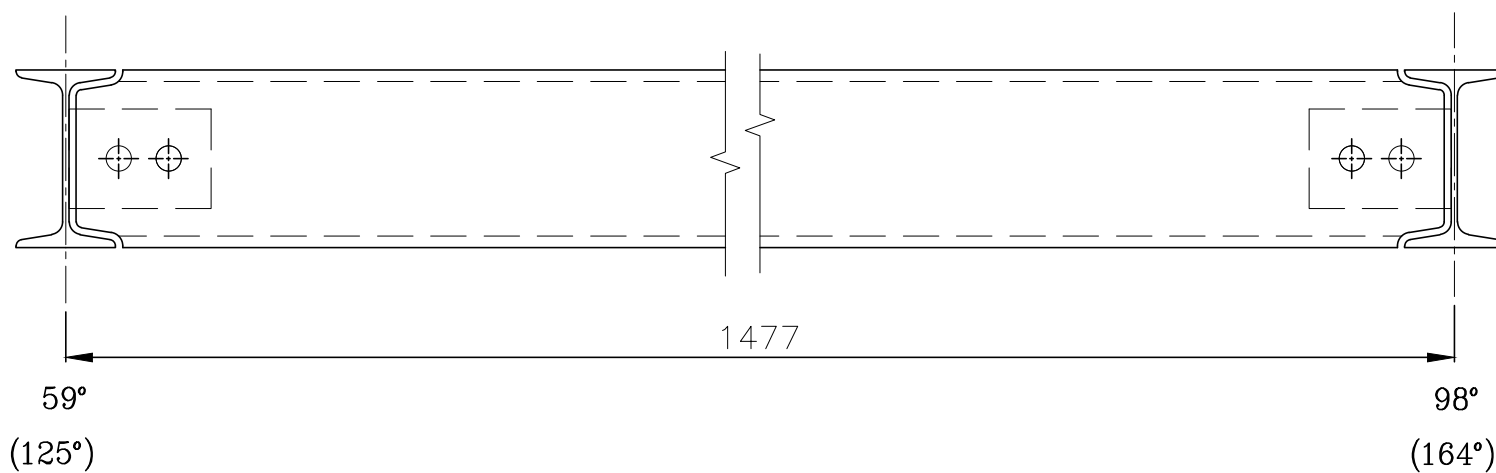
CAUTION: The information on this document is the property of BHARAT HEAVY ELECTRICALS LTD. It must not be used directly or indirectly in any way detrimental to the interest of

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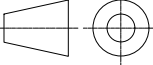
10	CONNECTING PLATE 10 THK.	100	70		152 110980000	IS:2062	4	0.55	2.20
09	CONNECTING PLATE 10 THK.	125	200		152 110980000	IS:2062	23	1.96	45.14
08	PLATFORM MC 125	550			150100020000	IS:2062	4	6.99	27.94
07	PLATFORM MC 125	135			150100020000	IS:2062	4	1.71	6.86
06	PLATFORM MC 125	1460			150100020000	IS:2062	2	18.54	37.08
05	PLATFORM MC 125	752			150100020000	IS:2062	2	9.55	19.10
04	PLATFORM MC 125	1018			150100020000	IS:2062	1	12.93	12.93
03	PLATFORM MC 125	579			150100020000	IS:2062	1	7.35	7.35
02	PLATFORM MC 125	1470			150100020000	IS:2062	16	18.67	298.70
01	BRACKET MB 125	895			150090360000	IS:2062	23	11.64	267.61
I.NO.									WT.
									724.91

B O L T L I S T			
S.NO.	BOLT SIZE BOLT+NUT+WASHER	QTY. Nos.	Wt./Kg
01	BOLT M16øx40LG_IS:3757 CL.8.8 S HOT DIP GLVNIZE	100	0.094
02	NUT M16ø_IS:6623 CL.8 S HOT DIP GLVNIZE	100	0.031
03	M16ø TYPE A WASHER _IS:6649 HOT DIP GLVNIZE	100	0.011

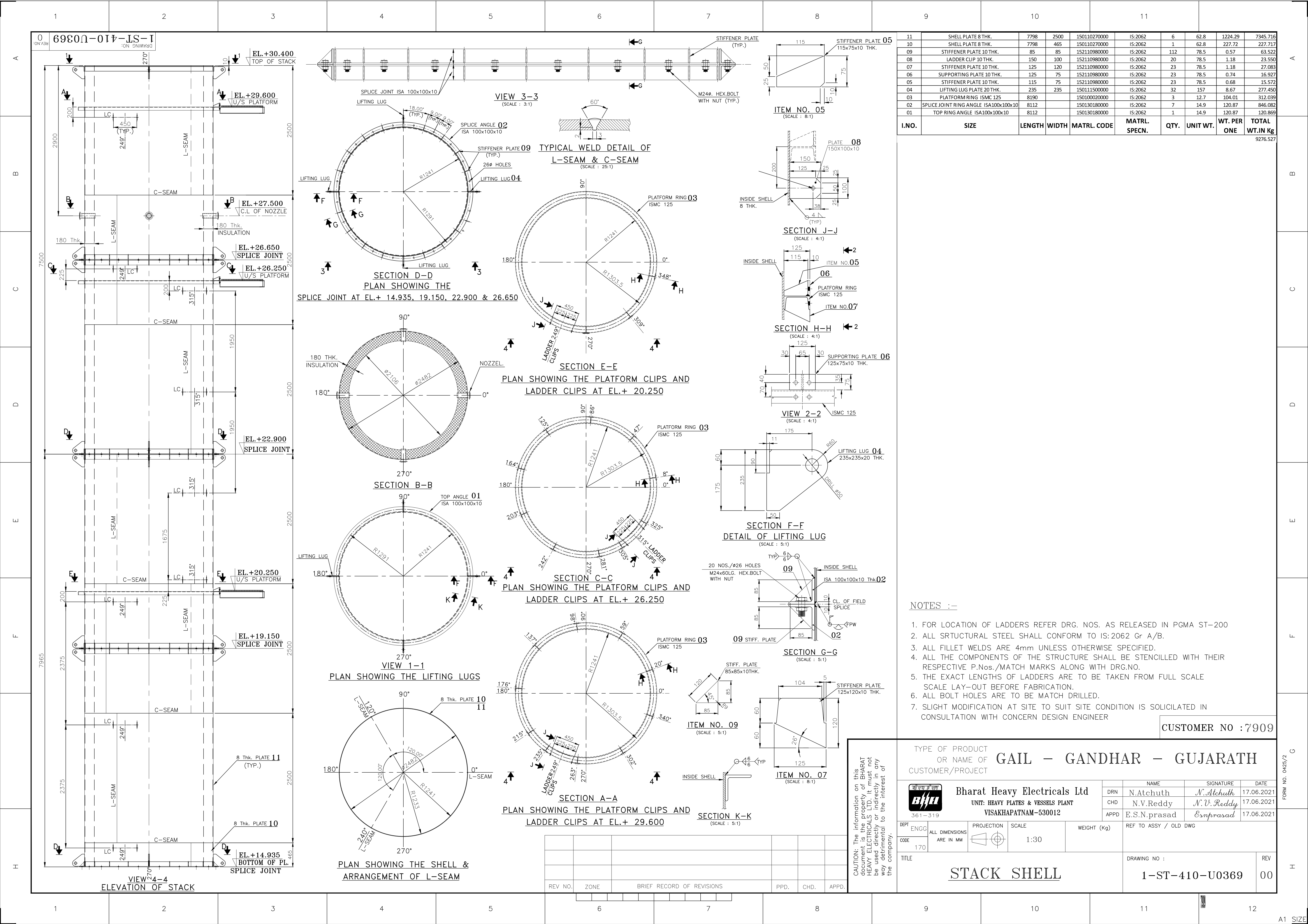


- NOTES :-**
- FOR LOCATION OF LADDERS REFER DRG. NOS. AS RELEASED IN PGMA ST-200
 - ALL SRTUCTURAL STEEL SHALL CONFORM TO IS:2062 Gr A/B.
 - ALL FILLET WELDS ARE 4mm UNLESS OTHERWISE SPECIFIED.
 - ALL THE COMPONENTS OF THE STRUCTURE SHALL BE STENCILLED WITH THEIR RESPECTIVE P.Nos./MATCH MARKS ALONG WITH DRG.NO.
 - THE EXACT LENGTHS OF LADDERS ARE TO BE TAKEN FROM FULL SCALE SCALE LAY-OUT BEFORE FABRICATION.
 - ALL BOLT HOLES ARE TO BE MATCH DRILLED.
 - SLIGHT MODIFICATION AT SITE TO SUIT SITE CONDITION IS SOLICITATED IN CONSULTATION WITH CONCERN DESIGN ENGINEER

CUSTOMER NO : 7909

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT			GAIL – GANDHAR – GUJARATH			
 361-319 Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012				NAME	SIGNATURE	DATE
			DRN	N.Atchuth	N. Atchuth	01.03.2021
			CHD	N.V.Reddy	N. V. Reddy	01.03.2021
			APPD	E.S.N.prasad	Emprasad	01.03.2021
DEPT	ENGG	ALL DIMENSIONS ARE IN MM		SCALE 1:20	WEIGHT (Kg)	REF TO ASSY / OLD DWG
CODE	170					
TITLE			DRAWING NO : 1-ST-211-U0371			REV 00

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



11	SHELL PLATE 8 THK.	7798	2500	150110270000	IS:2062	6	62.8	1224.29	7345.715
10	SHELL PLATE 8 THK.	7798	465	150110270000	IS:2062	1	62.8	227.72	227.717
09	STIFFENER PLATE 10 THK.	85	85	152110980000	IS:2062	112	78.5	0.57	63.522
08	LADDER CLIP 10 THK.	150	100	152110980000	IS:2062	20	78.5	1.18	23.550
07	STIFFENER PLATE 10 THK.	125	120	152110980000	IS:2062	23	78.5	1.18	27.083
06	SUPPORTING PLATE 10 THK.	125	75	152110980000	IS:2062	23	78.5	0.74	16.927
05	STIFFENER PLATE 10 THK.	115	75	152110980000	IS:2062	23	78.5	0.68	15.572
04	LIFTING LUG PLATE 20 THK.	235	235	150111500000	IS:2062	32	157	8.67	277.450
03	PLATFORM RING ISMC 125	8190		150100020000	IS:2062	3	12.7	104.01	312.039
02	SPICE JOINT RING ANGLE ISA100x100x10	8112		150130180000	IS:2062	7	14.9	120.87	846.082
01	TOP RING ANGLE ISA100x100x10	8112		150130180000	IS:2062	1	14.9	120.87	120.869
									9276.527
I.NO.	SIZE	LENGTH	WIDTH	MATRL. CODE	MATRL. SPECN.	QTY.	UNIT WT.	WT. PER ONE	TOTAL WT.IN Kg

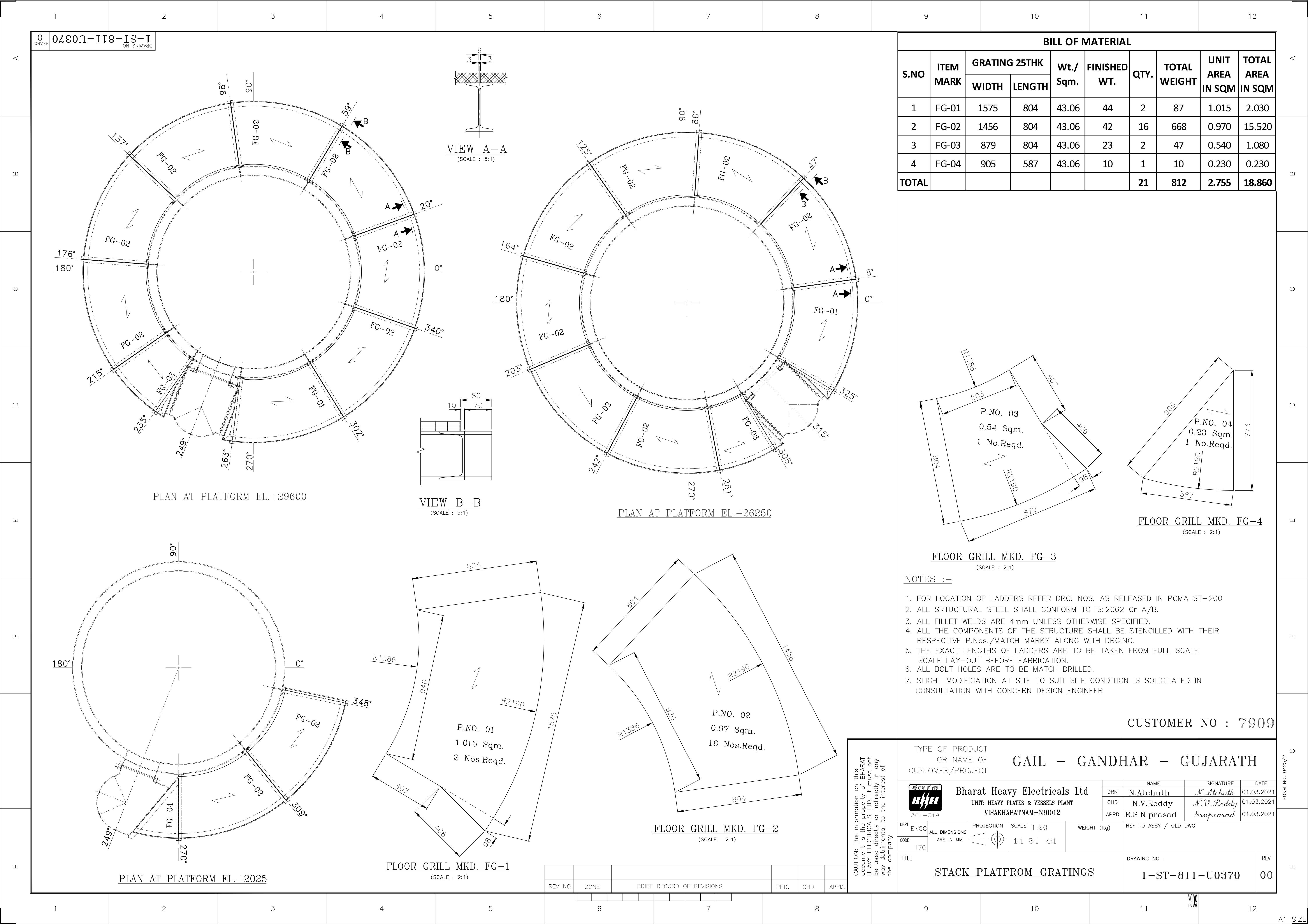
NOTES :-

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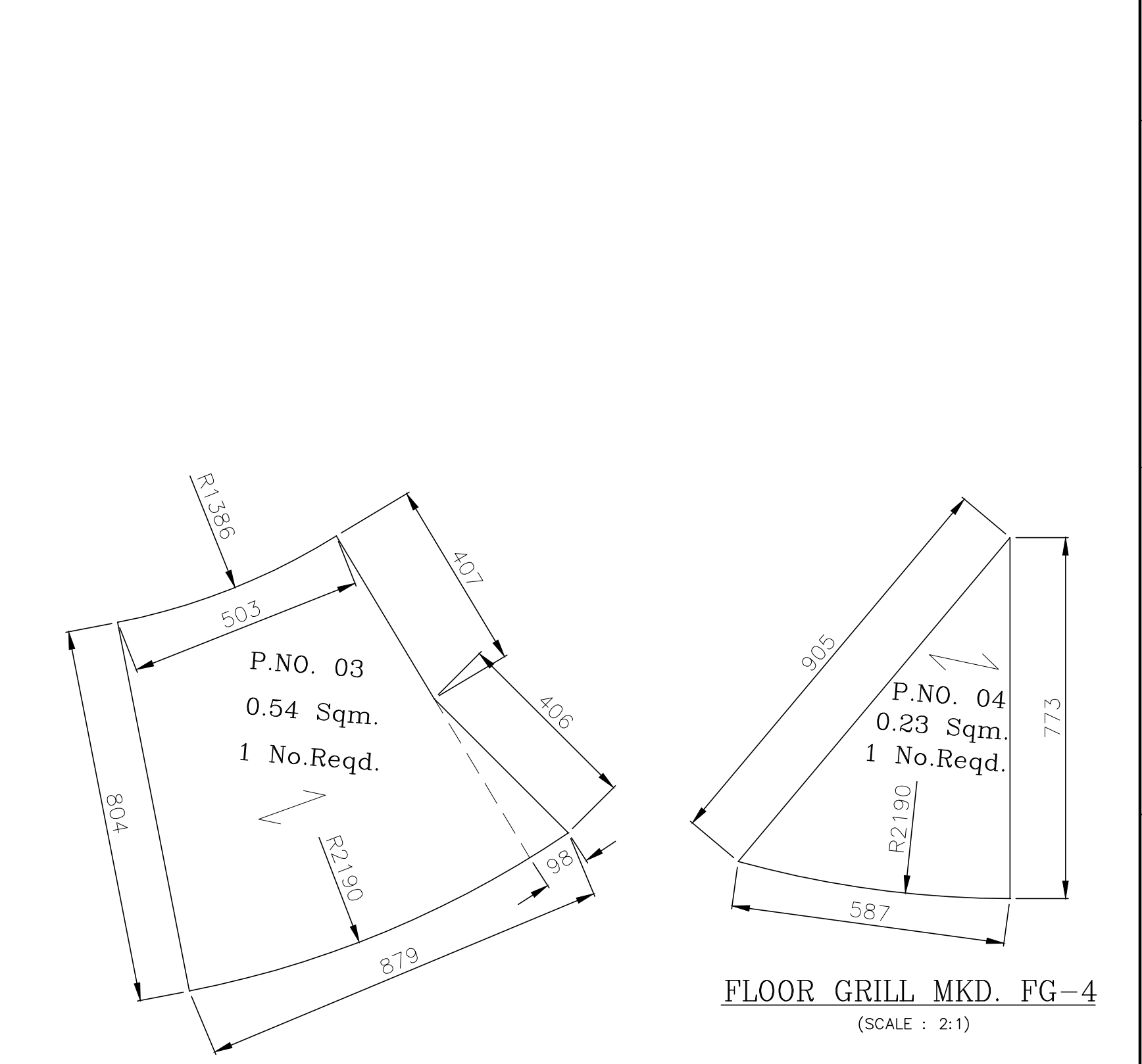
CUSTOMER NO : 7909

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				GAIL - GANDHAR - GUJARATH			
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012				NAME	SIGNATURE	DATE	
DEPT	ENGG	ALL DIMENSIONS ARE IN MM	PROJECTION	SCALE	WEIGHT (Kg)	REF TO ASSY / OLD DWG	
CODE	170			1:30			
TITLE				DRAWING NO : 1-ST-410-U0369			
REV NO.				REV			
ZONE				00			
BRIEF RECORD OF REVISIONS							
PPD.				CHD.			
APPD.							

FORM NO. 0425/2
A1 SIZE



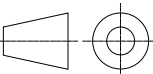
BILL OF MATERIAL									
S.NO	ITEM MARK	GRATING 25THK		Wt./ Sqm.	FINISHED WT.	QTY.	TOTAL WEIGHT	UNIT AREA IN SQM	TOTAL AREA IN SQM
		WIDTH	LENGTH						
1	FG-01	1575	804	43.06	44	2	87	1.015	2.030
2	FG-02	1456	804	43.06	42	16	668	0.970	15.520
3	FG-03	879	804	43.06	23	2	47	0.540	1.080
4	FG-04	905	587	43.06	10	1	10	0.230	0.230
TOTAL						21	812	2.755	18.860



NOTES :-

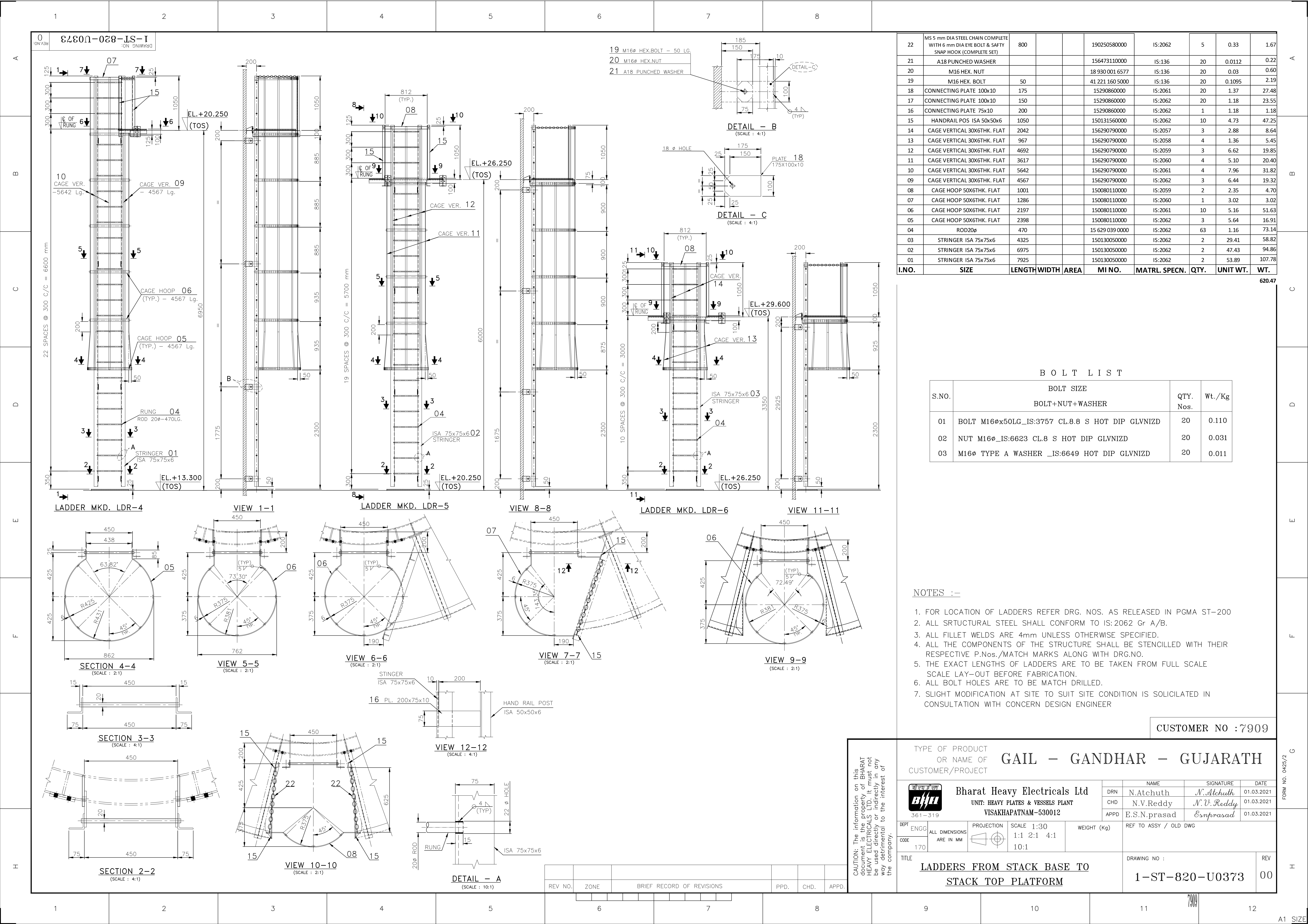
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CUSTOMER NO : 7909

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT				GAIL – GANDHAR – GUJARATH				
ISO 9001:2015  361 – 319		Bharat Heavy Electricals Ltd				NAME	SIGNATURE	DATE
		UNIT: HEAVY PLATES & VESSELS PLANT		DRN	N.Atchuth	N. Atchuth	01.03.2021	
		VISAKHAPATNAM-530012		CHD	N.V.Reddy	N. V. Reddy	01.03.2021	
				APPD	E.S.N.prasad	Esnprasad	01.03.2021	
DEPT	ENGG	ALL DIMENSIONS ARE IN MM	PROJECTION 	SCALE 1:20 1:1 2:1 4:1	WEIGHT (Kg)	REF TO ASSY / OLD DWG		
CODE	170							
TITLE						DRAWING NO :		REV
STACK PLATFROM GRATINGS						1-ST-811-U0370		00

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

FORM NO. 0425/2
A1 SIZE



22	MS 5 mm DIA STEEL CHAIN COMPLETE WITH 6 mm DIA EYE BOLT & SAFETY SNAP HOOK (COMPLETE SET)	800			190250580000	IS:2062	5	0.33	1.67
21	A18 PUNCHED WASHER				156473110000	IS:136	20	0.0112	0.22
20	M16 HEX. NUT				18 930 001 6577	IS:136	20	0.03	0.60
19	M16 HEX. BOLT	50			41 221 160 5000	IS:136	20	0.1095	2.19
18	CONNECTING PLATE 100x10	175			15290860000	IS:2061	20	1.37	27.48
17	CONNECTING PLATE 100x10	150			15290860000	IS:2062	20	1.18	23.55
16	CONNECTING PLATE 75x10	200			15290860000	IS:2062	1	1.18	1.18
15	HANDRAIL POS ISA 50x50x6	1050			150131560000	IS:2062	10	4.73	47.25
14	CAGE VERTICAL 30X6THK. FLAT	2042			156290790000	IS:2057	3	2.88	8.64
13	CAGE VERTICAL 30X6THK. FLAT	967			156290790000	IS:2058	4	1.36	5.45
12	CAGE VERTICAL 30X6THK. FLAT	4692			156290790000	IS:2059	3	6.62	19.85
11	CAGE VERTICAL 30X6THK. FLAT	3617			156290790000	IS:2060	4	5.10	20.40
10	CAGE VERTICAL 30X6THK. FLAT	5642			156290790000	IS:2061	4	7.96	31.82
09	CAGE VERTICAL 30X6THK. FLAT	4567			156290790000	IS:2062	3	6.44	19.32
08	CAGE HOOP 50X6THK. FLAT	1001			150080110000	IS:2059	2	2.35	4.70
07	CAGE HOOP 50X6THK. FLAT	1286			150080110000	IS:2060	1	3.02	3.02
06	CAGE HOOP 50X6THK. FLAT	2197			150080110000	IS:2061	10	5.16	51.63
05	CAGE HOOP 50X6THK. FLAT	2398			150080110000	IS:2062	3	5.64	16.91
04	ROD 20ø	470			15 629 039 0000	IS:2062	63	1.16	73.14
03	STRINGER ISA 75x75x6	4325			150130050000	IS:2062	2	29.41	58.82
02	STRINGER ISA 75x75x6	6975			150130050000	IS:2062	2	47.43	94.86
01	STRINGER ISA 75x75x6	7925			150130050000	IS:2062	2	53.89	107.78
I.NO.	SIZE	LENGTH	WIDTH	AREA	MI NO.	MATRL. SPECN.	QTY.	UNIT WT.	WT.

BOLT LIST			
S.NO.	BOLT SIZE BOLT+NUT+WASHER	QTY. Nos.	Wt./Kg
01	BOLT M16øx50LG_IS:3757 CL.8.8 S HOT DIP GLVNIZD	20	0.110
02	NUT M16ø_IS:6623 CL.8 S HOT DIP GLVNIZD	20	0.031
03	M16ø TYPE A WASHER _IS:6649 HOT DIP GLVNIZD	20	0.011

- NOTES :-
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 - ALL SRUTCTURAL STEEL SHALL CONFORM TO IS:2062 Gr A/B.
 - ALL FILLET WELDS ARE 4mm UNLESS OTHERWISE SPECIFIED.
 - ALL THE COMPONENTS OF THE STRUCTURE SHALL BE STENCILLED WITH THEIR RESPECTIVE P.Nos./MATCH MARKS ALONG WITH DRG.NO.
 - THE EXACT LENGTHS OF LADDERS ARE TO BE TAKEN FROM FULL SCALE SCALE LAY-OUT BEFORE FABRICATION.
 - ALL BOLT HOLES ARE TO BE MATCH DRILLED.
 - SLIGHT MODIFICATION AT SITE TO SUIT SITE CONDITION IS SOLICITATED IN CONSULTATION WITH CONCERN DESIGN ENGINEER

CUSTOMER NO :7909

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT
GAIL - GANDHAR - GUJARATH

 361-319	Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012			NAME N.Atchuth	SIGNATURE N.Atchuth	DATE 01.03.2021
	DEPT ENGG	ALL DIMENSIONS ARE IN MM	PROJECTION SCALE 1:30 1:1 2:1 4:1 10:1	CHD N.V.Reddy	SIGNATURE N.V.Reddy	DATE 01.03.2021
	CODE 170	WEIGHT (Kg)	REF TO ASSY / OLD DWG	APPD E.S.N.prasad	SIGNATURE E.S.N.prasad	DATE 01.03.2021

TITLE LADDERS FROM STACK BASE TO STACK TOP PLATFORM	DRAWING NO : 1-ST-820-U0373	REV 00
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REV NO.	ZONE	BRIEF RECORD OF REVISIONS	PPD.	CHD.	APPD.

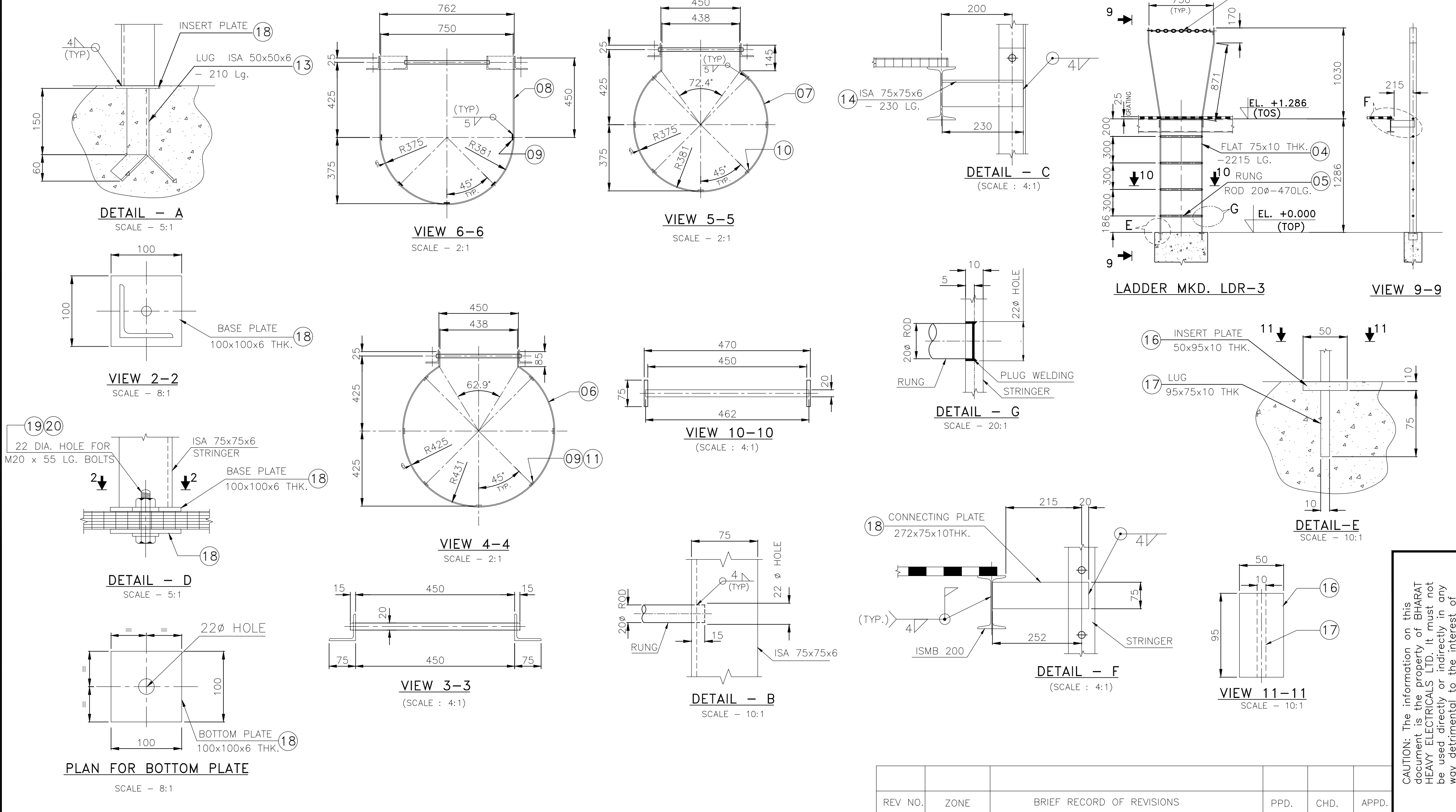
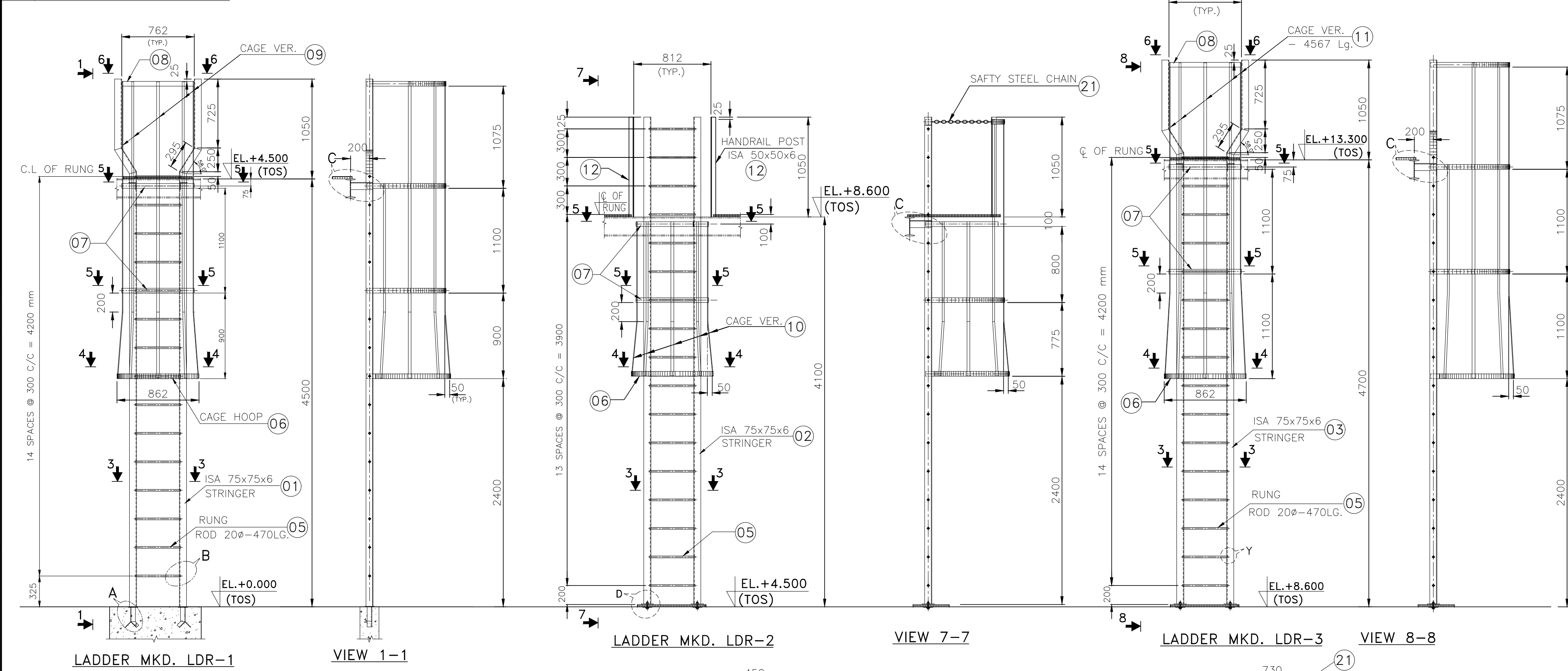
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FORM NO. 0425/2

II

A1 SIZE

1-ST-820-U0374



21	MS 5 mm DIA STEEL CHAIN COMPLETE WITH 6 mm DIA EYE BOLT & SAFETY SNAP HOOK (COMPLETE SET)	800			190250580000	IS:2062	5	0.33	1.67
20	A22 PUNCHED WASHER				156473220000	IS:136	4	0.017	0.07
19	M20 HEX. BOLT WITH NUT	290			190020270000	IS:136	4	0.83	3.32
18	BASE & BOTTOM PLATE 6	100	100		152110920000	IS:2062	10	47.10	0.94
17	LUG PLATE 10 THK.	95	75		150110390000	IS:2062	2	78.5	1.12
16	INSERT PLATE 10 THK.	50	95		150110390000	IS:2062	2	78.5	0.75
15	CONNECTING PLATE 10 THK.	272	75		150110390000	IS:2062	2	78.5	3.20
14	CONNECTING ANGLE ISA 75x75x6	230			150130050000	IS:2062	6	1.56	9.38
13	LUG ISA 50x50x6	210			150131560000	IS:2062	2	0.95	1.89
12	HANDRAIL POST ISA 50x50x6	1050			150131560000	IS:2062	2	4.73	9.45
11	CAGE VERTICAL 30X6THK. FLAT	3318			156290790000	IS:2061	5	4.68	23.39
10	CAGE VERTICAL 30X6THK. FLAT	1618			156290790000	IS:2062	7	2.28	15.97
09	CAGE VERTICAL 30X6THK. FLAT	3118			156290790000	IS:2062	5	4.40	21.98
08	CAGE HOOP 50X6THK. FLAT	2097			150080110000	IS:2060	2	4.93	9.86
07	CAGE HOOP 50X6THK. FLAT	2205			150080110000	IS:2061	6	5.18	31.09
06	CAGE HOOP 50X6THK. FLAT	2405			150080110000	IS:2062	3	5.65	16.96
05	ROD20ø	470			156290390000	IS:2062	50	1.16	58.05
04	FLAT 75x10	2327			152908600000	IS:2062	2	13.68	27.37
03	STRINGER ISA 75x75x6	5764			150130050000	IS:2062	2	39.20	78.39
02	STRINGER ISA 75x75x6	5119			150130050000	IS:2062	2	34.81	69.62
01	STRINGER ISA 75x75x6	5595			150130050000	IS:2062	2	38.05	76.09
I.NO.	SIZE	LENGTH	WIDTH	AREA	MI NO.	MATRL. SPECN.	QTY.	UNIT WT.	WT.

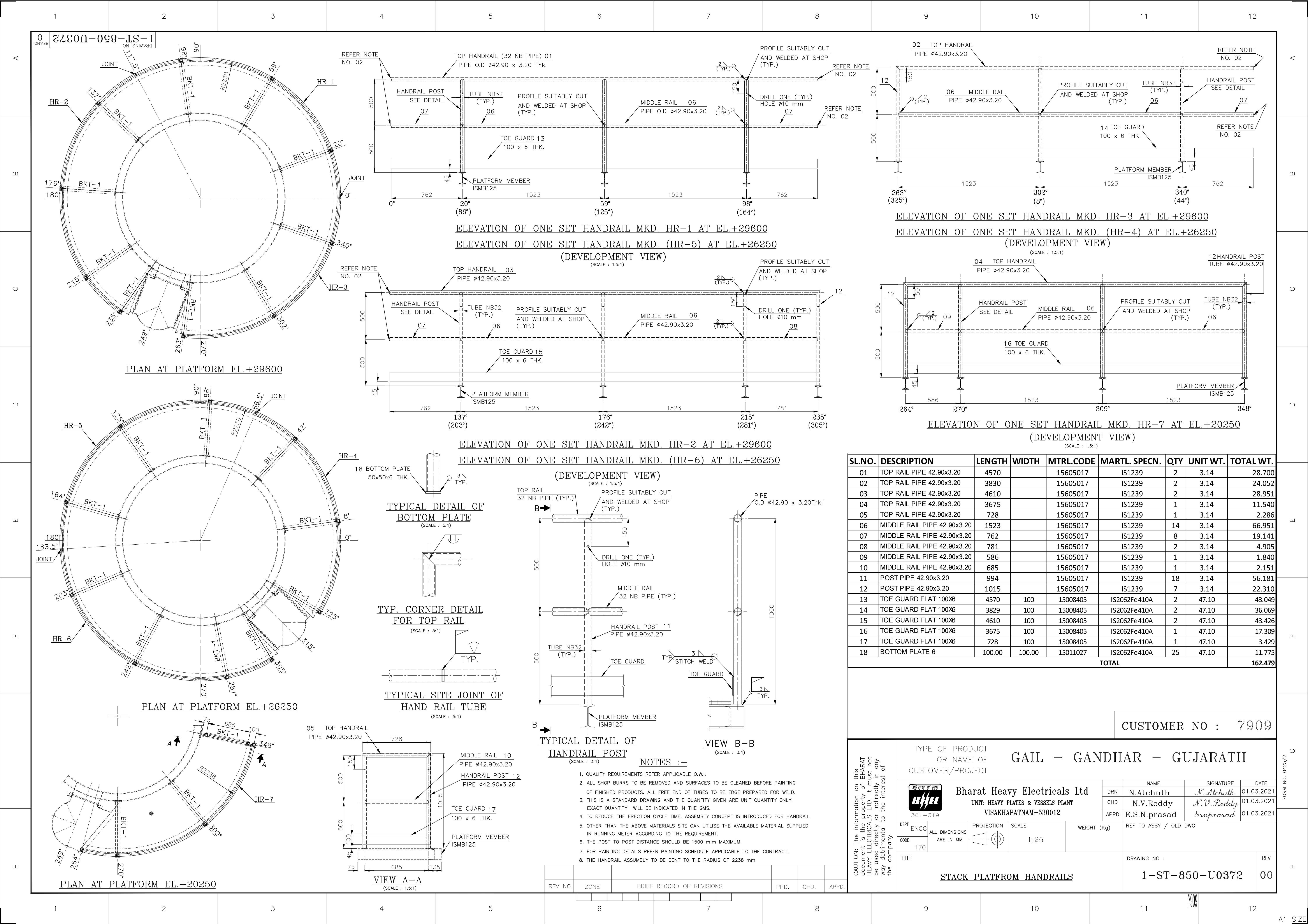
NOTES :-

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- SLIGHT MODIFICATION AT SITE TO SUIT SITE CONDITION IS SOLICITED IN CONSULTATION WITH CONCERN DESIGN ENGINEER

CUSTOMER NO :7909

TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		GAIL - GANDHAR - GUJARATH		
Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		NAME	SIGNATURE	DATE
DEPT ENGG	ALL DIMENSIONS ARE IN MM	DRN	N.Atchuth	01.03.2021
CODE	PROJECTION SCALE 1:30 1:1 2:1 4:1 10:1	CHD	N.V.Reddy	01.03.2021
TITLE	WEIGHT (Kg)	APPD	E.S.N.prasad	01.03.2021
LADDERS TILL STACK BASE LEVEL		REF TO ASSY / OLD DWG		REV
		DRAWING NO : 1-ST-820-U0374		00

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

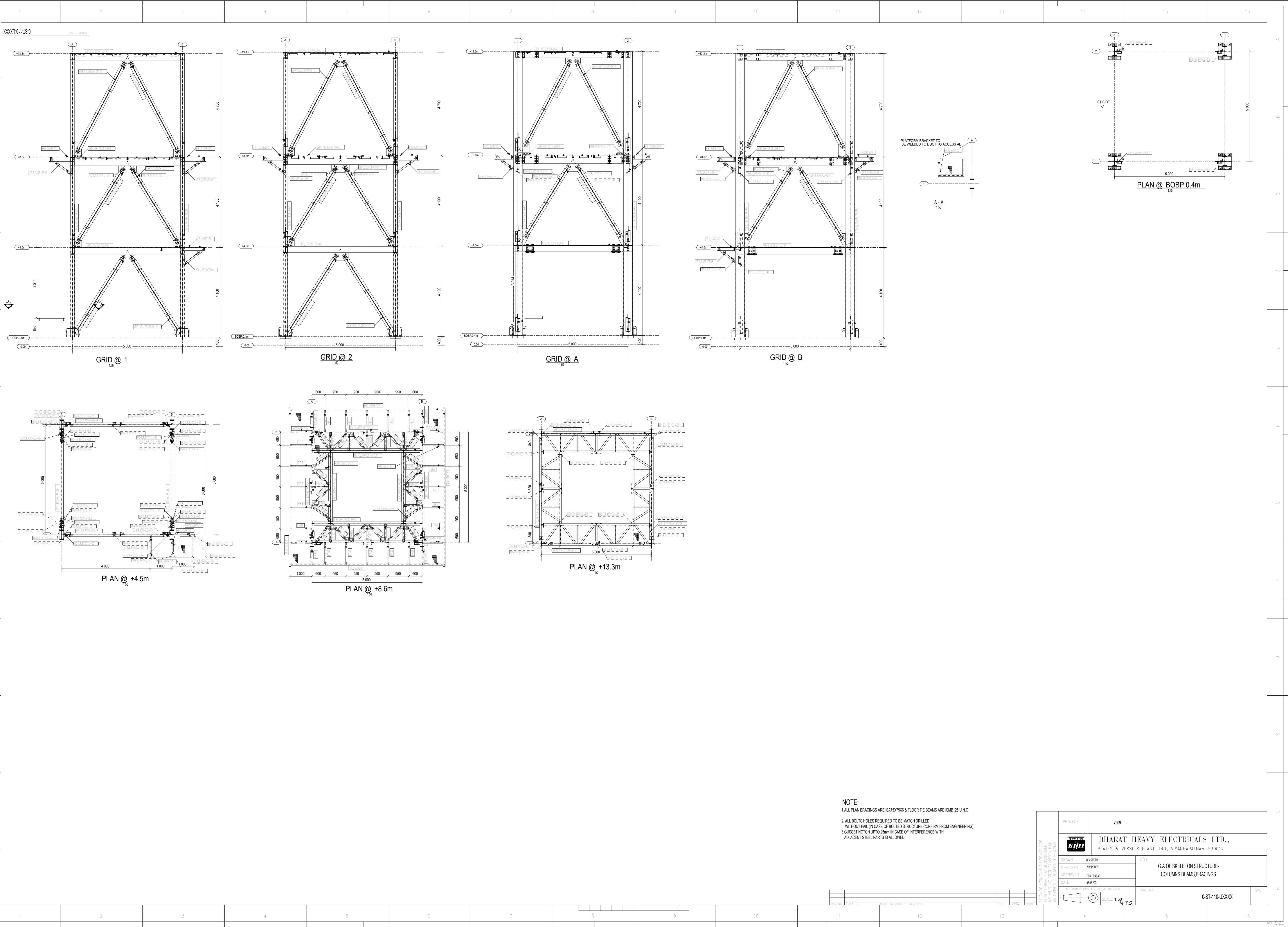


SL.NO.	DESCRIPTION	LENGTH	WIDTH	MTRL.CODE	MARTL. SPECN.	QTY	UNIT WT.	TOTAL WT.
01	TOP RAIL PIPE 42.90x3.20	4570		15605017	IS1239	2	3.14	28.700
02	TOP RAIL PIPE 42.90x3.20	3830		15605017	IS1239	2	3.14	24.052
03	TOP RAIL PIPE 42.90x3.20	4610		15605017	IS1239	2	3.14	28.951
04	TOP RAIL PIPE 42.90x3.20	3675		15605017	IS1239	1	3.14	11.540
05	TOP RAIL PIPE 42.90x3.20	728		15605017	IS1239	1	3.14	2.286
06	MIDDLE RAIL PIPE 42.90x3.20	1523		15605017	IS1239	14	3.14	66.951
07	MIDDLE RAIL PIPE 42.90x3.20	762		15605017	IS1239	8	3.14	19.141
08	MIDDLE RAIL PIPE 42.90x3.20	781		15605017	IS1239	2	3.14	4.905
09	MIDDLE RAIL PIPE 42.90x3.20	586		15605017	IS1239	1	3.14	1.840
10	MIDDLE RAIL PIPE 42.90x3.20	685		15605017	IS1239	1	3.14	2.151
11	POST PIPE 42.90x3.20	994		15605017	IS1239	18	3.14	56.181
12	POST PIPE 42.90x3.20	1015		15605017	IS1239	7	3.14	22.310
13	TOE GUARD FLAT 100X6	4570	100	15008405	IS2062Fe410A	2	47.10	43.049
14	TOE GUARD FLAT 100X6	3829	100	15008405	IS2062Fe410A	2	47.10	36.069
15	TOE GUARD FLAT 100X6	4610	100	15008405	IS2062Fe410A	2	47.10	43.426
16	TOE GUARD FLAT 100X6	3675	100	15008405	IS2062Fe410A	1	47.10	17.309
17	TOE GUARD FLAT 100X6	728	100	15008405	IS2062Fe410A	1	47.10	3.429
18	BOTTOM PLATE 6	100.00	100.00	15011027	IS2062Fe410A	25	47.10	11.775
TOTAL								162.479

CUSTOMER NO : 7909

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	Bharat Heavy Electricals Ltd UNIT: HEAVY PLATES & VESSELS PLANT VISAKHAPATNAM-530012		NAME	SIGNATURE	DATE
	DEPT ENGG	ALL DIMENSIONS ARE IN MM	DRN N.Atchuth	N.Atchuth	01.03.2021
	CODE 170	PROJECTION	CHD N.V.Reddy	N.V.Reddy	01.03.2021
	TITLE	WEIGHT (Kg)	APPD E.S.N.prasad	REF TO ASSY / OLD DWG	
STACK PLATFROM HANDRAILS			DRAWING NO : 1-ST-850-U0372		REV 00

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



NOTE:
1 ALL PLAN BRACINGS ARE ISAT5X75X6 & FLOOR TIE BEAMS ARE ISMB125 U.N.O
2 ALL BOLTS HOLES REQUIRED TO BE MATCH DRILLED
WITHOUT FAIL (IN CASE OF BOLTED STRUCTURE CONFIRM FROM ENGINEERING)
3 GUSSET NOTCH UPTO 25mm IN CASE OF INTERFERENCE WITH
ADJACENT STEEL PARTS IS ALLOWED.

PROJECT		7909	
DRAWN		BY VEDDY	
CHECKED		BY VEDDY	
APPROVED		BY PRASAD	
DATE		05.06.2021	
SCALE		1:50	
TITLE		G.A OF SKELETON STRUCTURE- COLUMNS,BEAMS,BRACINGS	
DRG No.		0-ST-110-UXXXX	
REV.			